AGENDA

LOCAL TRAFFIC COMMITTEE MEETING

MONDAY 20 JUNE 2022

11.00AM

Location Ashfield Service Centre, 260 Liverpool Road, Ashfield

Function of the Local Traffic Committee

Background

Roads and Maritime Services (RMS) is legislated as the Authority responsible for the control of traffic on all NSW Roads. The RMS has delegated certain aspects of the control of traffic on local roads to councils. To exercise this delegation, councils must establish a local traffic committee and obtain the advice of the RMS and Police. The Inner West Council Local Traffic Committee has been constituted by Council as a result of the delegation granted by the RMS pursuant to Section 50 of the Transport Administration Act 1988.

Role of the Committee

The Local Traffic Committee is primarily a technical review and advisory committee which considers the technical merits of proposals and ensures that current technical guidelines are considered. It provides recommendations to Council on traffic and parking control matters and on the provision of traffic control facilities and prescribed traffic control devices for which Council has delegated authority. These matters are dealt with under **Part A** of the agenda and require Council to consider exercising its delegation.

In addition to its formal role as the Local Traffic Committee, the Committee may also be requested to provide informal traffic engineering advice on traffic matters not requiring Council to exercise its delegated function at that point in time, for example, advice to Council's Development Assessment Section on traffic generating developments. These matters are dealt with under **Part C** of the agenda and are for information or advice only and do not require Council to exercise its delegation.

Committee Delegations

The Local Traffic Committee has no decision-making powers. The Council must refer all traffic related matters to the Local Traffic Committee prior to exercising its delegated functions. Matters related to State Roads or functions that have not been delegated to Council must be referred directly to the RMS or relevant organisation.

The Committee provides recommendations to Council. Should Council wish to act contrary to the advice of the Committee or if that advice is not supported unanimously by the Committee members, then the Police or RMS have an opportunity to appeal to the Regional Traffic Committee.

Committee Membership & Voting

Formal voting membership comprises the following:

- one representative of Council as nominated by Council;
- one representative of the NSW Police from each Local Area Command (LAC) within the LGA, being Newtown, Marrickville, Leichhardt and Ashfield LAC's.
- one representative from the RMS; and
- State Members of Parliament (MP) for the electorates of Summer Hill, Newtown, Heffron, Canterbury, Strathfield and Balmain or their nominees.

Where the Council area is represented by more than one MP or covered by more than one Police LAC, representatives are only permitted to vote on matters which effect their electorate or LAC.

Informal (non-voting) advisors from within Council or external authorities may also attend Committee meetings to provide expert advice.

Committee Chair

Council's representative will chair the meetings.

Public Participation

Members of the public or other stakeholders may address the Committee on agenda items to be considered by the Committee. The format and number of presentations is at the discretion of the Chairperson and is generally limited to 3 minutes per speaker. Committee debate on agenda items is not open to the public.

AGENDA

1 Apologies

2 Disclosures of Interest

3 Confirmation of Minutes

Minutes of 16 May 2022 Local Traffic Committee Meeting **5**

4 Matters Arising from Council's Resolution of Minutes

5 Part A – Items Where Council May Exercise Its Delegated Functions

Traffic Matters

Parking Matters

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Late Items

Nil at time of printing.

6 Part B - Items for Information Only

Nil at the time of printing.

7 Part C - Items for General Advice

Nil at the time of printing.

8 General Business

9 Close of Meeting

Minutes of Local Traffic Committee Meeting
Held on 16 May 2022 at Ashfield Service Centre

Meeting commenced at 11.00AM

ACKNOWLEDGEMENT OF COUNTRY BY CHAIRPERSON

I acknowledge the Gadigal and Wangal people of the Eora nation on whose country we are meeting today, and their elders past and present.

COMMITTEE REPRESENTATIVES PRESENT

Mayor Darcy Byrne	Councillor – Baludarri-Balmain Ward (Chair)
Bill Holliday	Representative for Jamie Parker MP, Member for Balmain
Graeme McKay	Representative for Jo Haylen MP, Member for Summer Hill
Sgt Charles Buttrose	NSW Police – Leichhardt Police Area Command
Solon Ghosh	Transport for NSW (TfNSW)
Anwar Subel	Transport for NSW
Taskira Islam	Transport for NSW

OFFICERS IN ATTENDANCE

Colin Jones	Inner West Bicycle Coalition (IWBC)
Cr Justine Langford	Councillor – Midjuburi-Marrickville Ward
Manod Wickramasinghe	IWC's Traffic and Transport Services Manager
George Tsaprounis	IWC's Coordinator Traffic Engineering Services (South)
Sunny Jo	IWC's Coordinator Traffic Engineering Services (North)
Christina Ip	IWC's Business Administration Officer

VISITORS

Nil.

APOLOGIES:

Sgt Anthony Kenny	NSW Police – Inner West Police Area Command
Colin Hesse	Representative for Jenny Leong MP, Member for Newtown
Maryanne Duggan	Representative for Jason Yat-Sen Li, Member for Strathfield

DISCLOSURES OF INTERESTS:

Nil.

CONFIRMATION OF MINUTES

The minutes of the Local Traffic Committee meeting held on 19 April 2022 were confirmed.

MATTERS ARISING FROM COUNCIL'S RESOLUTION OF MINUTES

The Local Traffic Committee recommendations of its meeting on 19 April 2022 were adopted at Council's meeting on 10 May 2022.

LTC0522(1) Item 1 Dudley Street, Dulwich Hill; Illawarra Road, Marrickville; Burrows Avenue, Railway Road, Gleeson Avenue And (Lower) Railway Parade, Sydenham - Temporary Parking Changes During Major Rail Shutdown of T3 Line for Sydney Metro Upgrade Works - Bus Replacements 2 Week Period 2 – 15 July 2022 (Midjuburi - Marrickville Ward / Summer Hill Electorate / Inner West PAC)

SUMMARY

Council has been notified by Transport for NSW (TfNSW) that Sydney Metro works will involve a major rail shutdown of the Sydenham to Bankstown rail line (T3) for a 2 week period between Saturday 2 July and Friday 15 July 2022. During the shutdown buses will replace train services along the T3 line and to accommodate the increased bus movements and necessary holding areas some short-term parking changes are required at a number of locations.

Specifically, TfNSW is requesting approval for the temporary conversion of multiple parking spaces at the following locations: Dudley Street, Dulwich Hill; Illawarra Road, Marrickville; Burrows Avenue, Railway Road, Gleeson Avenue and (Lower) Railway Parade, Sydenham. It is recommended that no objections be raised, and Council approves the temporary short-term parking changes at the identified locations during the rail shutdowns.

Officer's Recommendation

THAT this report be received and noted and the following temporary short-term parking changes from Saturday 2 July to Friday 15 July 2022 (inclusive) be approved and implemented by TfNSW:

Dulwich Hill Station Precinct - Dudley Street (5 parking spaces)

1. The short-term conversion of 7m (1 parking space) 'Loading Zone 8:30 am – 6 pm Mon – Fri & 8:30 am – 12:30 pm Sat' on the northern side of Dudley Street (between Wardell Road and School Parade) to a 'Bus Zone' be APPROVED in order to provide an additional bus bay with adequate draw-in length;
2. The short-term conversion of 18m (3 parking spaces) 'P30 min 8:30 am – 6 pm Mon – Fri & 8:30 am – 12:30 pm Sat' on the northern side of Dudley Street (between Wardell Road and School Parade) to a 'Bus Zone' be APPROVED in order to provide an additional bus bay with adequate draw-in length;
3. The short-term conversion of 7m (1 parking space) 'Unrestricted Parking' on the southern side of Dudley Street (between School Parade and Wardell Road) to a 'Bus Zone' be APPROVED in order to provide an additional bus bay with adequate draw-in length;

Marrickville Station Precinct - Illawarra Road (1 parking space)

4. The short-term conversion of 7m (1 parking space) '1P 8:30 am – 6 pm' on the western side of Illawarra Road (between Warburton Street and Greenbank Street) to a 'Bus Zone' be APPROVED in order to provide additional space for adequate bus draw-in/draw-out length;

Sydenham Station Precinct - Burrows Avenue (23 parking spaces)

5. The short-term conversion of 50m (14 parking spaces) rear to kerb 'unrestricted parking' on the northern kerb of Burrows Avenue (west of Gleeson Avenue) to a 'Bus Zone' be APPROVED in order to provide additional bus bays for adequate bus draw-in/draw-out length;
6. The short-term conversion of 58m (9 parking spaces) 'unrestricted parking' on the

southern kerb of Burrows Avenue (west of Gleeson Avenue) to a 'Bus Zone' be APPROVED in order to provide additional bus bays for bus layover purposes;

Sydenham Station Precinct – Railway Road (3 parking spaces)

7. The short-term conversion of 18m (3 parking spaces) '2P 8:30 am – 10 pm Mon - Fri' on the eastern side kerb of Railway Road (between Burrows Avenue and Gleeson Avenue) to a 'Bus Zone' be APPROVED in order to provide additional bus bays for bus layover purposes;

Sydenham Station Precinct - Gleeson Avenue (2 parking spaces)

8. The short-term conversion of 12m (2 parking spaces) '1P 9:00 am – 3:30 pm Mon - Fri and No Parking 6 am-9 am & 3:30 pm – 6:30 pm' on the eastern kerb of Gleeson Avenue (between Burrows Avenue and Unwins Bridge Road) to a 'Bus Zone' be APPROVED in order to provide a bus stop extension with adequate draw-in/draw-out length;

Sydenham Station Precinct - Lower Railway Parade (57 parking spaces)

9. The short-term conversion of 122m (46 parking spaces) 45 degree angled 'unrestricted parking' on the southern side kerb of Lower Railway Parade (between Sydenham Road and Marrickville Road) to a 'Bus Zone' be APPROVED in order to provide additional layover and standby bus bays;

10. The short-term conversion of 32m (11 parking spaces) 45 degree angled parking '4P 8:30 am – 6 pm Mon - Fri' on the southwest kerb of Lower Railway Parade (between Gleeson Avenue and Marrickville Road) to a 'Bus Zone' be APPROVED in order to provide additional layover bus bays with adequate draw-in length; and

11. The applicant and Council Rangers be advised in terms of this report.

DISCUSSION

The Committee members agreed with the Officer's recommendation.

COMMITTEE RECOMMENDATION

THAT this report be received and noted and the following temporary short-term parking changes from Saturday 2 July to Friday 15 July 2022 (inclusive) be approved and implemented by TfNSW:

Dulwich Hill Station Precinct - Dudley Street (5 parking spaces)

1. **The short-term conversion of 7m (1 parking space) 'Loading Zone 8:30 am – 6 pm Mon – Fri & 8:30 am – 12:30 pm Sat' on the northern side of Dudley Street (between Wardell Road and School Parade) to a 'Bus Zone' be APPROVED in order to provide an additional bus bay with adequate draw-in length;**
2. **The short-term conversion of 18m (3 parking spaces) 'P30 min 8:30 am – 6 pm Mon – Fri & 8:30 am – 12:30 pm Sat' on the northern side of Dudley Street (between Wardell Road and School Parade) to a 'Bus Zone' be APPROVED in order to provide an additional bus bay with adequate draw-in length;**
3. **The short-term conversion of 7m (1 parking space) 'Unrestricted Parking' on the southern side of Dudley Street (between School Parade and Wardell Road) to a 'Bus Zone' be APPROVED in order to provide an additional bus bay with adequate draw-in length;**

Marrickville Station Precinct - Illawarra Road (1 parking space)

4. **The short-term conversion of 7m (1 parking space) '1P 8:30 am – 6 pm' on the**

western side of Illawarra Road (between Warburton Street and Greenbank Street) to a 'Bus Zone' be APPROVED in order to provide additional space for adequate bus draw-in/draw-out length;

Sydenham Station Precinct - Burrows Avenue (23 parking spaces)

5. **The short-term conversion of 50m (14 parking spaces) rear to kerb 'unrestricted parking' on the northern kerb of Burrows Avenue (west of Gleeson Avenue) to a 'Bus Zone' be APPROVED in order to provide additional bus bays for adequate bus draw-in/draw-out length;**

6. **The short-term conversion of 58m (9 parking spaces) 'unrestricted parking' on the southern kerb of Burrows Avenue (west of Gleeson Avenue) to a 'Bus Zone' be APPROVED in order to provide additional bus bays for bus layover purposes;**

Sydenham Station Precinct – Railway Road (3 parking spaces)

7. **The short-term conversion of 18m (3 parking spaces) '2P 8:30 am – 10 pm Mon - Fri' on the eastern side kerb of Railway Road (between Burrows Avenue and Gleeson Avenue) to a 'Bus Zone' be APPROVED in order to provide additional bus bays for bus layover purposes;**

Sydenham Station Precinct - Gleeson Avenue (2 parking spaces)

8. **The short-term conversion of 12m (2 parking spaces) '1P 9:00 am – 3:30 pm Mon - Fri and No Parking 6 am-9 am & 3:30 pm – 6:30 pm' on the eastern kerb of Gleeson Avenue (between Burrows Avenue and Unwins Bridge Road) to a 'Bus Zone' be APPROVED in order to provide a bus stop extension with adequate draw-in/draw-out length;**

Sydenham Station Precinct - Lower Railway Parade (57 parking spaces)

9. **The short-term conversion of 122m (46 parking spaces) 45 degree angled 'unrestricted parking' on the southern side kerb of Lower Railway Parade (between Sydenham Road and Marrickville Road) to a 'Bus Zone' be APPROVED in order to provide additional layover and standby bus bays;**

10. **The short-term conversion of 32m (11 parking spaces) 45 degree angled parking '4P 8:30 am – 6 pm Mon - Fri' on the southwest kerb of Lower Railway Parade (between Gleeson Avenue and Marrickville Road) to a 'Bus Zone' be APPROVED in order to provide additional layover bus bays with adequate draw-in length; and**

11. **The applicant and Council Rangers be advised in terms of this report.**

For motion: Unanimous

LTC0522(1) Item 2 Victoria Road, Marrickville at the Rail overbridge between Charlotte Avenue and Meeks Street – temporary full road closure ENRC/2022/0014 - 8 day period from 2 July to 10 July 2022 - Southwest Metro Upgrade Project - Sydney Metro City & Southwest (Midjuburi-Marrickville Ward / Summer Hill Electorate / Inner West PAC)

SUMMARY

An application (ENRC/2022/0014) has been received from Sydney Metro City & Southwest for the temporary full road closure of Victoria Road, Marrickville at the Rail overbridge

between Charlotte Avenue and Meeks Street, for an 8 day period scheduled for Saturday 2 July to Sunday 10 July 2022 in order to facilitate the Shutdown Rail Possession activities at the Victoria Road Bridge location. The road will be temporarily closed to all vehicular traffic, including emergency vehicles. It is recommended that the proposed temporary full road closures be approved, subject to the conditions outlined in this report.

Officer's Recommendation

THAT the proposed temporary full road closure of Victoria Road, Marrickville at the Rail overbridge between Charlotte Avenue and Meeks Street, for an 8 day period scheduled for Saturday 2 July to Sunday 10 July 2022 be approved, in order to facilitate the Shutdown Rail Possession activities for Sydney Metro Upgrade works at the Victoria Road Bridge location subject to, but not limited to, the following conditions:

1. A Road Occupancy License be obtained by the applicant from the Transport Management Centre;

2. All affected residents and businesses, including the NSW Police Local Area Commander, Fire & Rescue NSW and the NSW Ambulance Services be notified in writing, by the applicant, of the proposed temporary road closure at least 7 days in advance of the closure with the applicant making reasonable provision for stakeholders; and

3. The occupation of the road carriageway must not occur until the road has been physically closed.

DISCUSSION

Council Officers advised that there was an error in the Traffic Control Plan which showed the diversion through Warren Road in both directions. It was noted that Warren Road has recently become one-way westbound. As such, Council Officers will advise the applicant to modify the diversion so that it uses Renwick Street for eastbound traffic instead.

The Committee members agreed with the Officer's recommendation and the modified diversion.

COMMITTEE RECOMMENDATION

THAT the proposed temporary full road closure of Victoria Road, Marrickville at the Rail overbridge between Charlotte Avenue and Meeks Street, for an 8 day period scheduled for Saturday 2 July to Sunday 10 July 2022 be approved, in order to facilitate the Shutdown Rail Possession activities for Sydney Metro Upgrade works at the Victoria Road Bridge location subject to, but not limited to, the following conditions:

1. **A Road Occupancy License be obtained by the applicant from the Transport Management Centre;**

2. **All affected residents and businesses, including the NSW Police Local Area Commander, Fire & Rescue NSW and the NSW Ambulance Services be notified in writing, by the applicant, of the proposed temporary road closure at least 7 days in advance of the closure with the applicant making reasonable provision for stakeholders;**

3. **The occupation of the road carriageway must not occur until the road has been physically closed; and,**

4. **The applicant be requested to provide an updated Traffic Control Plan to Council showing the diversion being modified to use Renwick Street (westbound direction)**

instead of Warren Road.

For motion: Unanimous

LTC0522(1) Item 3 Albion Lane, St Peters – Proposed One-Way northbound restriction in Albion Lane, St Peters (between Grove Street and Mary Street) and reversal of the current northbound one-way in Rolf Lane, St Peters to southbound (between Mary Street and Grove Street) (Midjuburi-Marrickville Ward / Summer Hill Electorate / Inner West PAC)

SUMMARY

This report deals with the results of a survey of residents regarding a proposal to introduce a "one-way" restriction in a northerly direction in Albion Lane, between Mary Street and Grove Street, St Peters and concurrently, reversing the current one-way northbound restriction in Rolf Lane, St Peters to southbound. It is recommended that due to the level of opposition to the proposal and the potential impact to the residents in the surrounding area, no changes be made to the existing traffic flows at this time.

Officer's Recommendation

THAT:

1. The findings of the resident consultation be received and noted;

2. Given the low current traffic volumes and the low number of reported crashes in the laneways, in addition to the feedback from residents not indicating an overwhelming support for the proposed 'One-way' northbound traffic flow in Albion Lane (from Grove Street to Mary Street) and the reversal of the current one-way northbound to southbound in Rolf Lane (from Mary Street to Grove Street), St Peters the proposal NOT be approved at this time; and

3. The traffic conditions in the subject laneways be revisited and any nominated one-way proposals in the locality be reconsidered as part of wider area review of the Local Area Traffic Management Scheme of the Sydenham area (Area11), as the installation of one-way restrictions generally has major implications on vehicular access for residents and traffic volumes on adjacent streets and intersections.

DISCUSSION

The Committee members agreed with the Officer's recommendation.

COMMITTEE RECOMMENDATION

THAT:

1. **The findings of the resident consultation be received and noted;**

2. **Given the low current traffic volumes and the low number of reported crashes in the laneways, in addition to the feedback from residents not indicating an overwhelming support for the proposed 'One-way' northbound traffic flow in Albion Lane (from Grove Street to Mary Street) and the reversal of the current one-way northbound to southbound in Rolf Lane (from Mary Street to Grove Street), St Peters the proposal NOT be approved at this time; and**

3. **The traffic conditions in the subject laneways be revisited and any nominated one-way proposals in the locality be reconsidered as part of wider area review of the Local Area Traffic Management Scheme of the Sydenham area (Area11), as the installation of one-way restrictions generally has major implications on vehicular access for residents and traffic volumes on adjacent streets and intersections.**

For motion: Unanimous

LTC0522(1) Item 4 Trafalgar Street and Collins Street, Annandale - Proposed Raised Pedestrian Crossings (Gulgadya - Leichhardt Ward/ Balmain Electorate/ Leichhardt PAC)

SUMMARY

The Traffic Committee at its meeting held in March 2022 considered a proposal put forward by Council to upgrade the two (2) existing at-grade pedestrian crossings to new raised pedestrian crossings on Trafalgar Street and Collins Street, Annandale. The works were proposed to improve pedestrian and motorist safety and address concerns about pedestrian and driver behaviour in the area.

The Traffic Committee raised pedestrian safety concerns about the proposed location of the raised pedestrian crossing on Trafalgar Street and resolved that Council consider these issues and the matter be reported back to the Committee.

Officer's Recommendation

THAT the attached revised detailed design plan (Design Plan No.10194) for the proposed installation of the two (2) new raised pedestrian crossings on Trafalgar Street and Collins Street, Annandale be approved.

DISCUSSION

The IWBC representative raised concerns with the existing bicycle logo markings in Collins Street that are in the door zone and requested the markings be moved to the traffic lane. The representative for the Member for Balmain suggested also extending the existing green bike lane in Collins Street into the traffic lane to move cyclists away from parked vehicles. Council Officers will consider these issues separately from the current proposal.

The Committee members agreed with the Officer's recommendation.

COMMITTEE RECOMMENDATION

THAT the attached revised detailed design plan (Design Plan No.10194) for the proposed installation of the two (2) new raised pedestrian crossings on Trafalgar Street and Collins Street, Annandale be approved.

For motion: Unanimous

General Business

LTC0522(1) Item 5 Request to modify island at the intersection of Collins Street and Johnston Street, Annandale

The representative for the Member for Balmain stated that cyclists have been asking for a modification of the island at the intersection of Collins Street and Johnston Street to allow them to travel the length of Collins Street and not be forced onto Johnston Street. It was noted that TfNSW previously raised issues with this proposal. Council Officers will investigate and report back to the Committee.

LTC0522(1) Item 6 Construction of raised pedestrian crossing on Bland Street, Haberfield

The representative for the Member for Summer Hill commented that construction of the raised crossing on Bland Street commenced this week. The concrete pour is scheduled for 21 May 2022 and the representative was concerned with its impacts on traffic as that date is polling day for the federal election. Council Officers will raise this issue with the project officer.

LTC0522(1) Item 7 Bunnings LATM feasibility study

Mayor Bryne requested an update on the Bunnings LATM feasibility study. Council Officers advised that they are currently preparing the brief that will be provided to the consultant undertaking the feasibility study. Council Officers are waiting on advice from TfNSW on the issues that are to be addressed in the feasibility study. Due to the level of community concern over the project, Mayor Darcey requested that the feasibility study be brought to the Committee for information.

LTC0522(1) Item 8 Update on improvements to the Frederick Street, Ashfield crossing

The TfNSW representative provided an update on the crossing on Frederick Street at John Street. The crossing was re-marked on 6 May 2022. The signage upgrade, which includes two more advanced warning signage on both directions and upgrading the size of the pedestrian crossing signage, should be completed this weekend. Speed reviews should be completed this month and any speed changes should be implemented by the end of the financial year. The tender for the safety review of Frederick Street and Henry Street crossings is expected to be awarded this week. The review will take 6-8 weeks to complete.

Mayor Byrne commented that Frederick Street was identified in Council's WestConnex Local Area Improvement Strategy as a road that needed traffic amelioration to address rat running caused by WestConnex Stage 1. The strategy was submitted to the Transport Minister five years ago and Council never received a response. In light of the fatality on Frederick Street, Mayor Byrne requested that the Transport Minister reconsider funding traffic amelioration works in that street. Council Officers will formally request a response from the Transport Minister.

LTC0522(1) Item 9 Update on Waratah Street and City West Link, Haberfield

The IWBC representative asked if there were any updates on the pedestrian crossing on City West Link at Waratah Street. The TfNSW representative advised that the issue is still being investigated and footage from the Transport Management Centre is being obtained to better understand why incidents are occurring at the crossing.

LTC0522(1) Item 10 Improving pedestrian safety at intersection of Norton Street and Holden Street, Ashfield

The TfNSW representative advised that pedestrian protection proposed for all directions of

the Holden Street and Norton Street intersection will be installed by the end of June 2022.

LTC0522(1) Item 11 Request for cyclists excepted on left turn lane on Ramsay Street, Haberfield

The TfNSW representative advised that they are waiting on the TfNSW Network Operations team to determine if it is feasible for cyclists to be excepted on the left turn only lane and the bus lane on Ramsay Street at Wattle Street.

LTC0522(1) Item 12 Vehicle sensor on Mary Street, Lilyfield

In reference to a query raised by the representative for the Member for Balmain at the last meeting, the TfNSW representative advised that there is a vehicle sensor on Mary Street to turn right into Lilyfield Road and to lodge a maintenance request with TfNSW if the sensor is not working.

Meeting closed at 11.30am.

Item No: **LTC0622(1) Item 1**

Subject: **DRAFT PEDESTRIAN CROSSING WARRANT POLICY**

Prepared By: Jason Scoufis - Traffic and Parking Planner

Authorised By: George Tsaprounis - Coordinator – Traffic and Parking Services

SUMMARY

TfNSW Supplements to Australian Standards sets out the warrant for the installation of a pedestrian (zebra) crossing to be used on state roads. Council has prepared a Pedestrian Crossing Warrant Policy as per Attachment 1, to be used when assessing the suitability of locations on local and regional roads.

The Policy aligns with the Strategic Plan Objective 2: Unique, liveable, networked neighbourhoods.

RECOMMENDATION

THAT:

1. **That the Committee support the draft Pedestrian Crossing Warrant Policy in principle; and**
2. **The draft Pedestrian Crossing Warrant Policy be put on public exhibition for a period of 28 days for comment with the results being bought back to the Committee for consideration.**

BACKGROUND

TfNSW Supplements to Australian Standards sets out the warrant for the installation of a pedestrian (zebra) crossing to be used on state roads. A warrant is the minimum criteria that must be met before such a device can be installed. The warrants for a pedestrian (zebra) crossing include the requirements for the number of pedestrians who cross the road at the crossing point and the number of vehicles that travel through the crossing point.

In the absence of a specific TfNSW warrants for roads that are not state roads (ie. local and regional roads), this Policy sets out an interim warrant for the installation of a pedestrian (zebra) crossing on local and regional roads.

The policy includes two types of warrants to be used in the assessment. A 'Normal Warrant' and a 'Reduced Warrant' with the 'Reduced Warrant' being applied at locations where the crossing point is predominantly used by children.

In addition to the numerical warrant, further site assessment is required to determine the suitability of a pedestrian (zebra) crossing include sight distance, road geometry, pedestrian connectivity, speed profile, lighting and proximity to alternate pedestrian crossing facilities.

FINANCIAL IMPLICATIONS

There is no cost associated with the Policy.

PUBLIC CONSULTATION

Not applicable.

ATTACHMENTS

1.⇩ Pedestrian Crossing Warrant Policy

Pedestrian Crossing Warrant Policy

Title	Pedestrian Crossing Warrant Policy
Summary	The Policy outlines the criteria to be used for assessing the suitability of a site for the installation of a pedestrian (zebra) crossings on local and regional roads.
Background	TfNSW Supplements to Australian Standards sets out the state road warrant for the installation of a pedestrian (zebra) crossing. In absence of a specific TfNSW warrant for non-arterial roads, this Policy sets out an interim warrant for the installation of a pedestrian (zebra) crossing on local and regional roads.
Policy Type	Operational
Relevant Strategic Plan Objective	Strategic Direction 2: Unique, liveable, networked neighbourhoods
Relevant Council References	Related Policy Includes: Integrated Transport Strategy
Main Legislative Or Regulatory Reference	Local Government Act 1993 Australian Standards 1742.10 and TfNSW Supplements to Australian Standards and Austroads
Applicable Delegation Of Authority	As per delegations' register
Attachments	Nil.
Record Notes	External available document
Version Control	See last page

Document:	Policy	*Uncontrolled Copy When Printed*	
Custodian:	Manager	**Version #**	Version # 1
Approved By:	Director	**ECM Document #**	
Adopted By:	Council	**Publish Location**	Intranet/ Internet
Adopted Date and Minute #:		**Next Review Date**	

1. PURPOSE

The purpose of this policy is to outline the criteria for assessing the warrant for pedestrian (zebra) crossings on local and regional roads.

2. OBJECTIVE

The policy aims to:

a. Contribute to road safety outcomes.
b. Improve amenity for people walking and cycling.
c. Manage public spaces in the public interest.
d. Allow Council's limited resources to be prioritised.
e. Support the Integrated Transport Strategy of Council
f. Support public domain planning initiatives of Council.
g. Contribute to the fair, transparent and consistent management of traffic for all road users

3. SCOPE

The Policy relates to assessment of traffic calming on local roads and regional roads under the care and control of Inner West Council. Traffic management on State Classified Roads require the approval of Transport for NSW.

This policy may be superseded by TfNSW through amended technical directions or similar.

4. DEFINITIONS

Term	Definition
85th percentile speed	85% percentile speed is used as a design speed, it indicates the speed at which 85 percent of vehicles travel at or less than.
ADT	Acronym for 'Average Daily Traffic'
LATM	Acronym for 'Local Area Traffic Management'
Local Traffic Committee	Committee constituted by Council to enable Council to exercise delegation granted by TfNSW pursuant to S50 Transport Administration Act 1988.
TfNSW	Acronym for Transport for NSW
Traffic management devices	A suite of potential treatments aimed toward the modification of road-user behaviour including but not limited to speed cushions, pedestrian crossings, raised thresholds, movement bans, roundabouts, speed limits and regulatory signage and linemarking.

5. POLICY

5.1. Initiation of Investigations

The development, review and implementation of traffic management devices including pedestrian (zebra) crossings may be commenced through Council initiated LATM studies, through site specific investigations initiated through request or through Government programs such as the Australian Government Blackspot Program.

It is desirable that investigations are undertaken on a precinct wide basis through LATM studies noting that this allows traffic management devices, including pedestrian facilities, to be prioritised and delivered in a manner which maximises the benefit to the community.

5.2. Numerical Warrants

The following warrants have been prepared to assist in assessing the need for pedestrian (zebra) crossings on local and regional roads.

Normal Warrant

A pedestrian (zebra) crossing is deemed to meet the numerical warrant for a pedestrian (zebra) crossing if the crossing point meets the following volumes in three (3) separate one hour periods in a typical day:

a) Pedestrian volumes ≥ 30 AND
b) Vehicle volumes ≥ 200

Reduced Warrant

A pedestrian (zebra) crossing is deemed to meet the numerical warrant for a pedestrian (zebra) crossing if the crossing point is predominately used by children and the crossing point meets the following volumes in two (2) counts of one hour duration immediately before and after school hours:

a) Pedestrian volumes ≥ 30 AND
b) Vehicle volumes ≥ 200

5.3. Other requirements

In addition to the numerical warrant, further site assessment is required to determine the suitability of a pedestrian crossing. This includes consideration of:

- Suitable sight-distance being available for pedestrians and motorists
- Suitable road geometry including suitable horizontal and vertical road grade and suitable camber
- Suitable adjacent footpath connectivity and accessibility
- Suitable speed profile
- Suitable location to achieve lighting requirements
- Proximity to alternate pedestrian facilities

- Proximity to pedestrian generators
- Adverse impact to flooding and drainage conditions
- Consideration of crash history
- Consideration of proportion of heavy vehicle volumes
- Impact to traffic with consideration of the Movement and Place Framework

Design and suitability requirements for the pedestrian (zebra) crossing are to remain the same as detailed in relevant Australian Standards, Austroads Guidelines, and TfNSW technical directions or similar.

It is further noted that pedestrian accidents may not reduce with the installation of a pedestrian crossing in isolation. Therefore, these pedestrian devices should be considered with supporting 'No Stopping' zones, kerb extensions or installed as a raised pedestrian (zebra) crossing to ensure vehicles approach at appropriate speeds and to improve the visibility of pedestrians.

5.4. Alternate pedestrian facilities

Council may also consider the installation of alternate pedestrian facilities in lieu of a pedestrian (zebra) crossing where a strong pedestrian desire line is identified but where a pedestrian (zebra) crossing may otherwise be unsuitable. These devices include, pedestrian refuges, kerb extensions, shared zones, children's crossings and continuous footpath treatments.

5.5. Approvals

Proposals will be assessed for technical compliance through the Local Traffic Committee prior to consideration by Council.

Community engagement will also be undertaken and considered through this approval pathway.

Version Control – POLICY HISTORY:

Governance Use only:

Version	Amended By	Changes Made	Date	ECM Document #
1	Manager	New policy		
2				

Item No: **LTC0622(1) Item 2**

Subject: **DRAFT TRAFFIC MANAGEMENT INVESTIGATION POLICY**

Prepared By: Jason Scoufis - Traffic and Parking Planner

Authorised By: George Tsaprounis - Coordinator – Traffic and Parking Services

SUMMARY

Council has prepared a Traffic Management Investigation Policy to be used when assessing the suitability of locations on local and regional roads for traffic management devices. This policy as detailed in attachment 1 provides guidance regarding when to initiate investigation and assistance in assessing the need for traffic calming measures to control speeding.

The Policy aligns with the Strategic Plan Objective 2: Unique, liveable, networked neighbourhoods.

RECOMMENDATION

THAT:

1. **That the Committee support the draft Traffic Management Investigation Policy in principle; and**
2. **The draft Traffic Management Investigation Policy be put on public exhibition for a period of 28 days for comment with the results being bought back to the Committee for consideration.**

BACKGROUND

Council receives numerous requests for the installation of traffic management measures to control perceived speeding or high vehicle volumes concerns in local streets.

In general, the travelling speed of a vehicle is difficult to quantify from observations, particularly in a narrow road width environment. Speeding by a few vehicles could also give a perception of constant speeding. Similarly, the average volume of traffic is difficult to quantify from observations alone.

These requests may therefore require detailed investigation over several months including data collection in the form of speed and volume tube counts, intersection counts, pedestrian counts, review of crash data and warrant checks prior to concept development, modelling, community engagement and approval through the Local Traffic Committee.

This Policy provides guidance regarding when to initiate investigation, taking into consideration whether a Local Area Traffic Management (LATM) Study has been recently prepared and also the number of resident enquiries received by Council. It also includes guidelines to assist in assessing the need for traffic calming measures to control speeding taking into consideration the number of report crashes, traffic volume and speed data.

Once this assessment is completed, funding will need to be considered on a priority basis.

FINANCIAL IMPLICATIONS

Nil.

PUBLIC CONSULTATION

Not applicable.

ATTACHMENTS

1.⇩ Traffic Management Investigation Policy

INNER WEST

Traffic Management Investigation Policy

Title	Traffic Management Investigation Policy
Summary	This Policy outlines the criteria to be used for assessing requests for traffic management devices on Council controlled streets.
Background	Council receives numerous requests for the installation of traffic management measures to control perceived speeding or high vehicle volumes in local streets. In general, the travelling speed of a vehicle is difficult to quantify from observations, particularly in a narrow road width environment. Speeding by a few vehicles could also give a perception of constant speeding. Similarly, the average volume of traffic is difficult to quantify from observations alone. These requests may therefore require detailed investigation over several months including data collection and warrant checks prior to concept development, modelling, community engagement and approval through the Local Traffic Committee. Once this assessment is completed, funding will need to be considered on a priority basis.
Policy Type	Council
Relevant Strategic Plan Objective	• Strategic Direction 2: Unique, liveable, networked neighbourhoods
Relevant Council References	Related Policy Includes: • Integrated Transport Strategy This Policy supersedes: • Leichhardt Council: Traffic Calming Policy
Main Legislative Or Regulatory Reference	Road Transport Act 2013 Road Transport (General) Regulation 2013 NSW Road Rules Transport Administration Act 1988
Applicable Delegation Of Authority	As per delegations' register
Attachments	Nil

Record Notes	External available document
Version Control	See last page

Document:	Policy	*Uncontrolled Copy When Printed*	
Custodian:	Traffic and Transport Planning Manager	**Version #**	Version # 1
Approved By:	Director	**ECM Document #**	
Adopted By:	Council	**Publish Location**	Intranet/ Internet
Adopted Date and Minute #:		**Next Review Date**	

1. PURPOSE

The purpose of this policy is to outline the criteria for assessing requests for traffic management devices on Council managed roads.

2. OBJECTIVES

The policy aims to:

a) Contribute to road safety outcomes.
b) Improve amenity for people walking and cycling.
c) Manage public spaces in the public interest.
d) Allow Council's limited resources to be prioritised.
e) Support the Integrated Transport Strategy of Council
f) Support public domain planning initiatives of Council.
g) Contribute to the fair, transparent and consistent management of traffic

3. SCOPE

The Policy relates to assessment of traffic management devices on local roads and regional roads under the care and control of Inner West Council. Traffic management on State Classified Roads require the approval of Transport for NSW.

4. DEFINITIONS

Term	Definition
85th percentile speed	85% percentile speed is used as a design speed, it indicates the speed at which 85 percent of vehicles travel at or less than.
ADT	Acronym for 'Average Daily Traffic'
LATM	Acronym for 'Local Area Traffic Management'
Local Traffic Committee	Committee constituted by Council to enable Council to exercise delegation granted by TfNSW pursuant to S50 Transport Administration Act 1988.
TfNSW	Acronym for Transport for NSW
Traffic management devices	A suite of potential treatments aimed toward the modification of road-user behaviour including but not limited to speed cushions, raised thresholds, movement bans, roundabouts, speed limits and regulatory signage and linemarking.

5. POLICY STATEMENT

The safety, sustainability and efficiency of the transport network is crucial to the liveability and prosperity of the Inner West. Local Area Traffic Management (LATM) studies and the subsequent installation of traffic management devices are a key tool used to improve outcomes for the local transport network including improved safety, access and amenity.

6. POLICY

The following guidelines have been prepared to assist in assessing the need for traffic management measures to control vehicle speeds and volumes.

6.1. Initiation of Investigations

The development, review and implementation of traffic management devices may be commenced through Council initiated LATM studies, through site specific investigations initiated because of resident requests or through Government programs such as the Australian Government Blackspot Program.

It is desirable that traffic management investigations are undertaken on a precinct wide basis through LATM studies noting traffic management treatments considered in isolation may result in traffic diverting and impacting adjacent streets.

In instances where a precinct wide LATM study is not scheduled within 3 years, a site-specific investigation can be considered.

Furthermore, should Council have conducted a LATM study or site-specific investigation in the previous 3 years, no further investigation should be taken on the same matter, unless substantial land use change has subsequently occurred, permanently impacting traffic conditions in the neighbourhood.

For site specific investigations to be initiated through resident requests, the number of requests should indicate a reasonable level of resident support for potential changes in the neighbourhood.

Therefore, a minimum of 5 enquiries or a petition signed by 5 or more residents from different properties in the subject section of the street within a year is required to initiate an investigation.

6.2. Guidelines

The following guidelines have been prepared to assist in assessing the need for traffic calming measures to control vehicle speeding:

- There must be three or more TfNSW reported accidents that have occurred in the previous 5 years **or**
- The volume of traffic (bi-directional) must be greater than 500 vehicles per day **and**
- The 85th% speed (in any direction) must be over 44km/h where the speed limit is 40km/h and 55km/h where the speed limit is 50km/h.

The site-specific investigation of traffic management measures to control traffic volumes in a local street, will be considered where peak traffic volumes are more than the environmental

capacity of 300 vehicles per hour on a local street or 500 vehicles per hour on a local collector street.

The site-specific investigation of traffic concerns in laneways will be considered on a case-by-case basis.

Raised traffic calming devices should be avoided in streets which have truck volume compositions higher than 5% due to the noise impacts caused by a high volume of truck traffic.

6.3. Consultation

Given the strong community interest in traffic management, the affected community will be consulted on proposed changes that introduce traffic management devices into a street.

Council will generally not proceed with implementation of traffic management treatments in isolation from a precinct wide LATM study unless at least 60% of respondents, from different households within the subject street section, support the proposal and provided a minimum response rate of 20% of households within the subject street section is achieved to Council's survey.

Proposals will be assessed for technical compliance through the Local Traffic Committee.

6.4. Review of installed traffic management devices

It is acknowledged that following the introduction of traffic management devices by Council or reductions to speed limits by TfNSW, that there will be a transition period during which road users will adjust behaviour to account for the modified conditions by reducing vehicle speeds and/or adopting alternate routes.

In these instances, the consideration of additional traffic management devices will be deferred until traffic conditions have appropriately stabilised. The timeframe for this is expected to be over a period of at least 6-12 months for most physical devices with longer timeframes for signposted speed limit changes.

Once traffic conditions have stabilised, the commencement of a review will be initiated as outlined in this Policy.

Version Control – POLICY HISTORY:

Governance Use only:

Version	Amended By	Changes Made	Date	ECM Document #
1	Traffic and Transport Planning Manager	New policy		
2				

5

Item No: **LTC0622(1) Item 3**

Subject: **ELSWICK STREET NORTH, CHARLES STREET, WILLIAM STREET, LEICHHARDT - PROPOSED TRAFFIC CALMING, ANGLED PARKING AND PEDESTRIAN FACILTIES (GULGDAYA-LEICHHARDT WARD/BALMAIN ELECTORATE/LEICHHARDT PAC)**

Prepared By: David Yu - Engineer - Traffic and Parking Services

Authorised By: George Tsaprounis - Coordinator – Traffic and Parking Services

SUMMARY

A traffic review has been undertaken in Leichhardt North including Elswick Street North, Charles Street, and William Street. The review examined requests from residents of Elswick Street North, who have safety concerns along local streets and laneways as a result of 'rat running' from Darley Road.

RECOMMENDATION

THAT:

1. **A 45-degree angle parking in Elswick Street North, with concrete median island and linemarking between Darley Road and William Street be supported in principle and a detailed design be prepared, and affected residents be consulted;**

2. **A proposed kerb extension on both sides of William Street east of Elswick Street and a continuous footpath on the unnamed lane (between Charles St and Elswick Street North) be supported in principle and a detailed design be prepared, and affected residents be consulted;**

3. **A further report, including the detailed design be brought back to the Traffic Committee for consideration.**

BACKGROUND

Concerns have been received by residents regarding limited parking spaces and pedestrian safety concerns in William Street and Elswick Street North.

The Leichhardt North Precinct Parking Study was reported at the 21 March 2022 Local Traffic Committee. The committee made the following recommendation:

THAT: 90 degree angled parking rear to kerb' in Elswick Street North between William Street and Darley Road be approved subject to a final signposting plan being supported by Traffic Committee.

Traffic conditions in Elswick Street North and adjacent laneways were previously reviewed in the past and traffic speeds and volume did not warrant any intervention.

FINANCIAL IMPLICATIONS

Nil.

OTHER STAFF COMMENTS

In response to resident concerns and based on previous investigations, Council is proposing the following:

- 45-degree angle parking in Elswick Street North, with concrete median island and linemarking between Darley Road and William Street
- Linemarking, Kerb extensions and continuous footpath treatment in William Street near intersection of Elswick Street.

The proposed '45º Angle Parking, Rear to Kerb, Vehicles Under 6m Only' restrictions be signposted on staggered arrangement on both sides of Elswick Street North to increase parking supply and also provide traffic calming measures by narrowing the road carriageway and providing slow points.

The proposed kerb extension on both sides of William Street east of Elswick Street should improve pedestrian safety by reducing the crossing distance at this location. A continuous footpath is also proposed on the unnamed lane (between Charles St and Elswick Street North).

A concept plan has been attached to this report.

Traffic Volumes
A series of traffic count surveys were undertaken during a school week in February 2022. Where available these datasets were compared to historical traffic data undertaken in 2006, 2016 and 2018 for comparison:

Streets	**Former Counts**		**February 2022 counts**	
	7 Day Avg Volume	85th Percentile Speed (km/h)	**Volumes** (7 Day Avg)	7 Day Avg Volume
Falls Street (between Darley Road and William Street)	151 (2006 counts)	NB: 43.6 SB: 47.9 (2006 counts)	136	NB: 34.6 SB: 40.4
Elswick Street North (between Darley Road and William Street)	245 (2018 counts)	NB: 50.6 SB: 48.0 (2018 counts)	227	NB: 47.4 SB: 46.6
Charles Street (between Darley Road and William Street)	429 (2018 counts)	NB: 50.1 SB: 49.1 (2018 counts)	959	NB: 49.8 SB: 49.4
Hubert Street (between Darley Road and William Street)	517 (2016 counts)	NB: 48.3 SB: 49.2 (2016 counts)	405	NB: 44.8 SB: 45.7
Francis Street (between Darley Road and William Street)	327 (2006 counts)	NB: 52.9 SB: 55.8 (2006 counts)	369	NB: 45.9 SB: 45.1
William Street (between Charles Steet and Hubert Street)	2,198 (2018 counts)	EB: 49.1 WB: 53.1 (2018 counts)	2,329	EB: 49.1 WB: 49.8
William Street (between Falls Street and Elswick Street North)	1,140 (2018 counts)	EB: 47.3 WB: 47.6 (2018 counts)	1,140	EB: 40.4 WB: 40.3

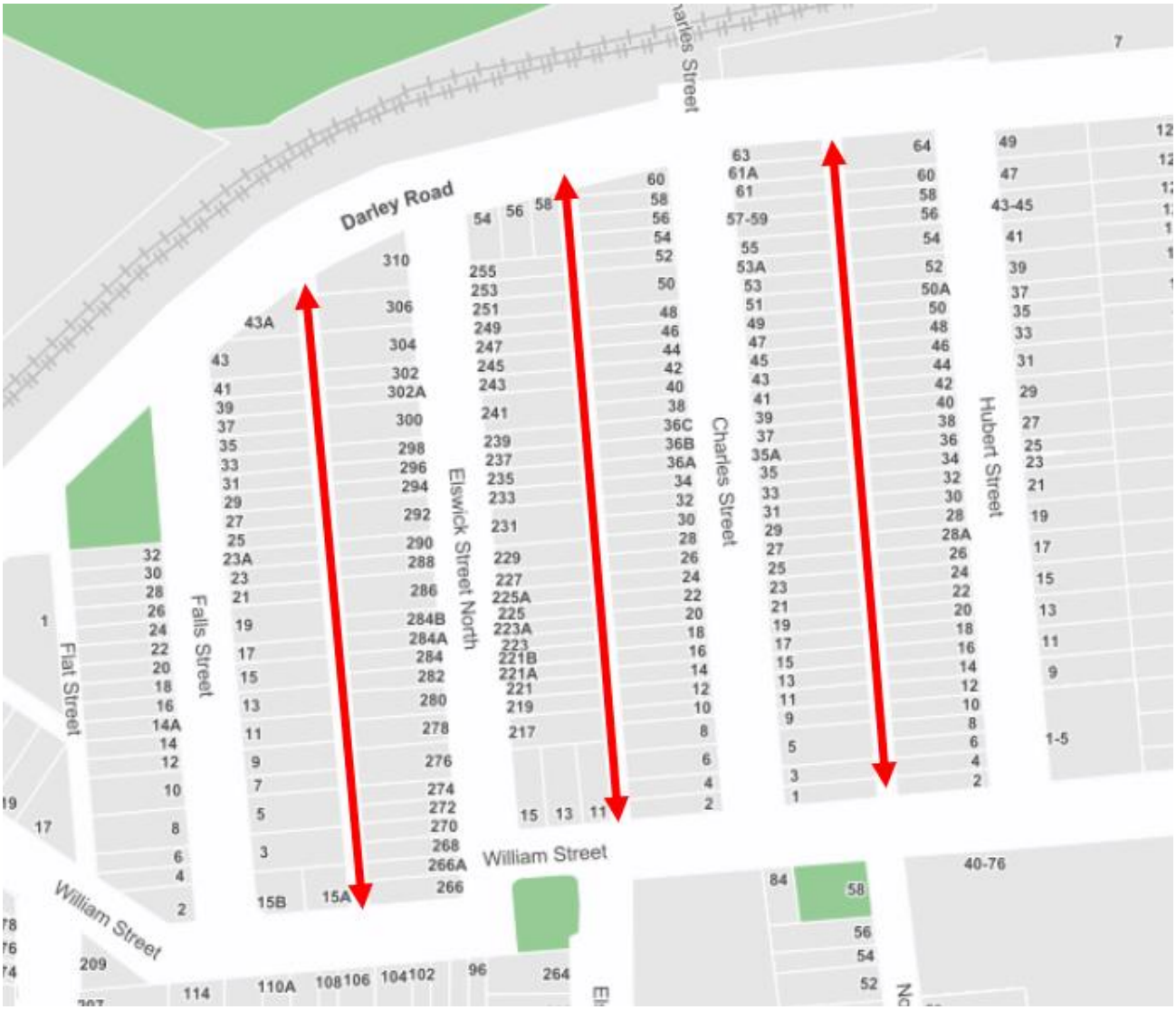
Traffic data collected in February 2022 indicates that there were slightly different traffic and parking conditions induced by the easing Covid-19 restrictions, food and goods delivery, and employees encouraged to work from home. The above comparison indicate that traffic volumes were generally 10-20% lower than the earlier counts which was taken into

consideration during the traffic assessment. The exception to this would be Charles Street, where a roundabout was constructed in 2016 at Darley Road. There were no significant changes in traffic speeds between the recent and former counts and these were considered suitable for use in the assessment.

Peak hour traffic count in Laneways

Traffic counts were undertaken on Tuesday 10 May 2022 during the AM peak hour (7am-10am) to identify any potential 'rat-running' through the service lanes between Darley Road and William Street. Residents reported that 'rat running' was apparent where vehicles queuing was excessive leading to City West Link Road during the AM peak hour. The following information indicates the number of vehicles travelling in the three laneways:

- Unnamed Lane (between Falls Street and Elswick Street North)
- Unnamed Lane (between Elswick Street North and Charles Street)
- Unnamed Lane (between Chares Street and Hubert Street)



Street	Bidirectional Traffic Volume (7am-10am)
Unnamed Lane (between Falls Street and Elswick Street North)	9
Unnamed Lane (between Elswick Street North and Charles Street)	5
Unnamed Lane (between Chares Street and Hubert Street)	0

Laneways provide connections to adjoining streets; access to properties; vehicular access to offstreet parking; pedestrian and cycle routes; on-street parking opportunities; access by service vehicles, waste collection and emergency services.

The above traffic volumes indicate that the level of 'rat-running' through the laneways was not significant and did not warrant any intervention at this time. Although a continuous footpath treatment is proposed for the southern end of the Unnamed Lane between Elswick Street North and Charles Street, this was proposed to facilitate a crossing location for pedestrians as there are currently no crossing facility across William Street.

Pedestrian Assessment

Pedestrian counts were undertaken in February 2022 in William Street (between Charles Street and Elswick Street). The survey results are shown in the table below:

William Street	**Pedestrian Volume**
AM Peak (8:00am to 9:00am)	38
AM Peak (9:00am to 10:00am)	17
PM Peak (2:00pm to 3:00pm)	2
PM Peak (3:00pm to 4:00pm)	11

Based on the pedestrian and vehicle volumes of William Street, the TfNSW warrant for a pedestrian crossing is not met. Therefore, at the time of this report, a kerb extension and a continuous footpath is proposed at this location to reduce the crossing distance and improve safety. The proposed infrastructure is expected to accommodate a pedestrian crossing if the site meets the numerical requirements for a pedestrian crossing in the future.

Future Bike Plan

A future bike plan for the LGA is currently being prepared and William Street is a bike routes from Darley Road to Norton Street and Balmain Road. The road currently is marked with bicycle logos and directional signs. It is expected that a route for William Street may be enhanced by providing an on-road or an off-road bicycle facility. An upgraded bicycle facility could be provided in William Street and as also provide traffic calming benefits.

Future plans by TfNSW

A number of changes to the road network in North Leichhardt was proposed by Transport for NSW (TfNSW) in 2020, including a combined signalised intersection for City West Link Road at Norton Street and James Street, one-way sections, new traffic signals, and removal of on-street parking. The Haberfield, Ashfield and Leichhardt Road Network Improvements proposed significant changes to local streets in this area. Due to high level of feedback and concerns from the community, TfNSW is currently deferring the proposal and is expected to review traffic conditions following the opening of the WestConnex Rozelle Interchange in late 2023.

PUBLIC CONSULTATION

A letter outlining the above proposal was mailed out to the directly affected properties in Elswick Street North, Elswick Street, William Street, and Charles Street and adjacent properties.

Consultation survey results up to the date of 8 June 2022 are summarised as follows:

Total Number of properties consulted - 126

Elswick Street North Proposal (angled Parking)

Number of properties responded - 21 out of 59 properties
Number of properties supported - 14 (24% Elswick Street North)
Number of properties objected - 6 (10% Elswick Street North)

William Street Proposal (kerb extension and continuous footpath)

Number of properties responded - 21

Number of properties supported	-	18 (86% of responses)
Number of properties objected	-	3 (14% of responses)

It should be noted that consultation ends 14 June 2022 and any further responses will be reported at the traffic committee meeting.

The main objections raised during the consultation are summarised below:

- The requirement for traffic calming on Elswick Street is completely unnecessary; It is unclear why a quiet street is being targeted as a street which requires traffic calming.
- Staggering the 45 degree parking on each side makes the street confusing. An alternative would be to have 45 degree angle parking along one side of the street.
- The proposal for William Street is supported excluding the Chevron Island on the corner of William and Elswick; this seems unnecessary.
- For the areas between two blister islands, is this for parallel parking, or would this be a kerb extension and no parking.
- Elswick street north is not wide enough to support pedestrians, two way traffic and angled parking.
- Angled parking on Charles Street in unmarked, some people have difficulty judging 45 degree. Also, request slow points in Charles Street.
- All Service Lanes, between James & Elswick North, should also be designated "Shared Zones" to deter rat-running and increase pedestrian safety.
- Kerb blister islands should be landscaped.
- Painting the parking bays, like outside the church on Elswick St, would indicate a correct 45 degree parking angle.
-

In response to the main comments:

- The staggered arrangement of parking in Elswick Street allows for additional parking spaces while also providing traffic calming measures to reduce speeding in the street.
- The chevron island on the corner of William Street and Elswick Street will deter vehicles from parking at this location and impeding sight visibility lines.
- It is proposed that 45 degree angled parking be provided between the kerb blister islands in Elswick Street North.
- Based on measurements on site, angled parking and two-way traffic movement can be maintained in Elswick Street North with the proposal.
- Request for traffic calming measures in Charles Street is not supported at this time as the 85th percentile speeds did not indicate a speeding issue in the street. This street will be monitored as it carries higher level of traffic from the roundabout in Darley Road.
- Based on traffic count data collected in the service lanes, there are low volumes of vehicles and traffic calming measures are not warranted.
- Landscaping will be considered as part of the detailed design stage of this project.
- Currently Councils limited line marking budget has been prioritised to upgrade safety-related line marking assets (Give way, Stop lines, and pedestrian crossing markings) and where available in the future will consider line marking bays in residential streets.

ATTACHMENTS

1.⇩ Concept Plan - Proposed Elswick Street North Angled Parking and William Street Continous Footpath


ELSWICK STREET AND WILLIAM STREET, LEICHHARDT – PROPOSED ANGLED PARKING AND PEDESTRIAN SAFETY MEASURES
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NOTE: Landscaping on kerb blister islands, kerb extensions and continuous footpath to be considered as part of detailed design.
Proposed Edge line-marking.
Proposed Kerb blister Island (mountable kerb).
Proposed '45° Angle Parking, Rear to Kerb, Vehicle under 6m only'.
Proposed Edge line-marking.
Proposed Kerb blister Island (mountable kerb).
Proposed '45° Angle Parking, Rear to Kerb, Vehicle under 6m only'.
Proposed Kerb blister Island (mountable kerb).
Proposed Edge line-marking.
Proposed '45° Angle Parking, Rear to Kerb, Vehicle under 6m only'.
Elswick Street North
Darley Road
Proposed Edge line-marking.
Proposed 0.3m Width Concrete Median Island (Mountable kerb).
Proposed 0.3m width Concrete Median Island (Mountable kerb).
Proposed Kerb blister Island (mountable kerb).
Proposed '45° Angle Parking, Rear to Kerb, Vehicle under 6m only'.
Proposed Kerb blister Island (mountable kerb).
Prosed Edge line-marking.
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Proposed '45° Angle Parking, Rear to Kerb, Vehicle under 6m only'.
12.8m
4.8m
2.8m
4.9m
Proposed 0.3m width Concrete Median Island (Mountable kerb).
Proposed Kerb blister Island (mountable kerb).
2.8m
7.6m
Proposed Raised Continuous Footpath Treatment.
Proposed Edge line-marking.
Proposed kerb ramp.
Proposed Edge line-marking.
Proposed Line-marking Chevron Island.
Elswick Street North
William Street
Proposed Driveway layback.
Proposed kerb ramp.
Proposed Edge line-marking.
Proposed Edge line-marking.
Proposed Kerb Extension
Proposed Median Island Line-marking (retain existing rumble bars).
Proposed Edge line-marking.
William Street
NOTE: Landscaping on kerb blister islands, kerb extensions and continuous footpath to be considered as part of detailed design.
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Item No: **LTC0622(1) Item 4**

Subject: **TOBRUK AVENUE, BALMAIN - TEMPORARY FULL ROAD CLOSURE FOR EXCAVATION WORKS (BALUDARRI - BALMAIN/ BALMAIN ELECTORATE/ LEICHHARDT PAC)**

Prepared By: Vinoth Srinivasan - Engineer - Traffic and Parking Services

Authorised By: George Tsaprounis - Coordinator – Traffic and Parking Services

SUMMARY

Council has received an application from Domain Pools for the approval of a temporary full road closure of Tobruk Avenue, between Ennis Street and Reynolds Street, Balmain from Monday, 15 August 2022 at 8.00am to Thursday, 18 August 2022 at 11.00pm and Wednesday, 31 August 2022 from 8.00am to 11.00pm to facilitate excavation works on site at No.56 Mullens Street, Balmain

RECOMMENDATION

THAT the proposed temporary full road closure of Tobruk Avenue, between Ennis Street and Reynolds Street, Balmain from Monday 15 August 2022 at 8.00am to Thursday, 18 August 2022 at 11.00pm and Wednesday, 31 August 2022 from 8.00am to 11.00pm (contingency period 4 weeks) be approved for the proposed excavation works on site at No.56 Mullens Street, Balmain subject to, but not limited to the following conditions:

1. **A Road Occupancy License be obtained by the applicant from the Transport Management Centre;**

2. **All affected residents and businesses, including NSW Police Area Command, Fire & Rescue NSW and the NSW Ambulance Services be notified in writing, by the applicant, of the proposed temporary full road closure at least 7 days in advance of the closure with the applicant making reasonable provision for stakeholders; and**

3. **The occupation of the road carriageway must not occur until the road has been physically closed.**

BACKGROUND & STAFF COMMENTS

Council has received an application from Domain pools for approval of a temporary full road closure of Tobruk Avenue, between Ennis Street and Reynolds Street, Balmain from Monday, 15 August 2022 at 8.00am to Thursday, 18 August 2022 at 11.00pm and Wednesday, 31 August 2022 from 8.00am to 11.00pm to facilitate excavation works on site at No.56 Mullens Street, Balmain

This road closure application is sought for the excavation and installation of a concrete swimming pool at No.56 Mullens Street, Balmain.

The Traffic Management Plan (TMP) and Traffic Control Plan (TCP) submitted with the application is attached.

FINANCIAL IMPLICATIONS

Under Council's Fees & Charges, the applicant is to pay a fee for the temporary full road closure.

PUBLIC CONSULTATION

The applicant is to notify all affected residents and businesses in writing at least 7 days prior to the commencement of works.

The proposed road closure is currently advertised on Council's website in accordance with the Roads Act 1993.

ATTACHMENTS

1.⇩ Tobruk Avenue, Balmain - Traffic Management Plan and Traffic Control Plan

CONSTRUCTION TRAFFIC MANAGEMENT PLAN

DOMAIN POOLS

Excavation of a swimming pool

APRIL, 2022

DARREN LINDSAY- SYDNEY TRAFFIC CONTROL
Unit 50, 45-51 Huntley Street, ALEXANDRIA NSW 2015

1 Table of Contents

2 ABOUT THE PROJECT.

2.1 Background

The project undertaken by Domain Pools will consist of the Excavation of swimming pool at 56 Mullens Rd, Balmain. To do so, a temporary road closure at Toburk Ave, Balmain will be in effect during DA approved hours and work dates.

Company Responsible for the Construction:	Domain Pools
Company address:	119 Willoughby Rd, Crows Nest
Email:	bill@domainpools.com.au
Contact:	Bill Banovic
Phone:	0407555600
DA Number:	DA/2021/0742
Revision number:	
Revision date:	

This CTMP has been prepared by an engineer who holds the Roads and Maritime Services Prepare a Work Zone Traffic Management Plan (PWZTMP) accreditation, detailed as follows:

Darren Lindsay

Certificate No:
0040346794

2.2 Location

(Image 1, source Google Maps)

2.3 Purpose

The purpose of this Construction Pedestrian Traffic Management Plan (CTMP) is to satisfy The Inner West Council requirements and describes how Domain Pools propose to manage traffic and pedestrian movement safely whilst carrying out their respective activities. It is also to ensure public safety and minimize any impact to the adjoining pedestrian and vehicular traffic systems. Confirming appropriate measures have been considered for site access, storageand the operation of the site during all phases of the construction process in a manner that respects adjoining owner's property rights and projects amenity in the locality, without unreasonable inconvenience to the community. The CTMP is intended to minimize impact of construction activities on the surrounding community, in terms of vehicle traffic (including traffic flow and parking) and pedestrian amenity adjacent to the site.

2.4 Objectives

The key objectives of this CTMP are:
To satisfy the key legal requirements related to Traffic, Transport and Access;

- To ensure no one is injured on the project and there is no property damage;
- To maximise the value and outcomes of traffic monitoring activities;
- To minimise delays to traffic and consider the needs of all road users; and
- To ensure compliance with relevant specifications and the RMS's – 'Traffic Control at Work Sites' Handbook Version 6

2.5 Responsibilities

The development requires highly coordinated efforts from several agencies:

2.5.1 Enhance Building & Developments:

- Co-ordinates the logistics for holding the works, Marshalling/ Programming,
- Arranges advertising for road closure locations, times, other traffic disruptions / delays and alternative route information via letterbox drop.
- Provides traffic information signposting as identified in the CTMP and associated Traffic Guidance Scheme(s) (TGSs).
- Provides resources and traffic management infrastructure for traffic control and road closures as identified in the CTMP

2.5.2 Sydney Traffic control:

- Prepares the Construction Traffic Management Plan and Traffic Guidance Schemes
- Monitor's traffic and pedestrians on all roads and footpath(s) approaching the work location to minimize pedestrian/traffic congestion on the day.
- Provides traffic information signposting as identified in the TMP and associated Traffic Guidance Scheme(s) (TGSs).
- Provides resources and traffic management infrastructure for traffic control and road closures as identified in the CTMP.

3 CONSTRUCTION

3.1 Construction Activities

STAGE	*ESTIMATED DURATION*
Excavation	15th August 2022- 18th August 2022
Concerting	31st August 2022

3.2 Working Hours

Toburk Avenue LANE closure will be in effect 24 hours during the allocated work dates.

All work, including demolition, excavation and building work must comply with the Inner West Council Code of Practice for Construction Hours/Noise 1992 and Australian Standard 2436-2010 Guide to Noise Control on Construction, Maintenance and Demolition Sites.

Works May be undertaken outside these hours where;

- It is required in an emergency to avoid the loss of life, damage to property and/or to prevent environmental harm;
- A variation is approved in advance in writing by Council.

3.3 Work Zones

A construction work zone has been considered for the development. A work zone approximately 50m in length will be in effect at Tobruk Ave, Balmain to allow for the standing of a crane during the lane closure.

All loading/unloading will be conducted on Toburk Ave, Balmain. Authorsied traffic controllers will be on site to control the safety of pedestrians and vehicles.

3.4 Ingress/Egress of Vehicles/ Access Route

Adequate advanced warning and directional signage will be placed upon entry and exit of the site.

All vehicles will enter / exit site in a forward motion.

All exiting trucks will be loaded to their prescribed weight limits. All trucks will be covered by tarpaulin or like prior to exiting as required. All vehicles leaving the site must be free of mud or any other debris. Drivers of vehicles that exit the site must check their vehicles are clean prior to exiting. It is the responsibility of each driver to confirm their vehicles are clean prior to exiting site. Vehicles are to give way to traffic, pedestrians and cyclists already on the road when exiting.

This CTMP and all plans associated with it should be given to all drivers visiting the site prior to arrival.

Given the low levels of work, frequency and more specifically the size of vehicles, unrestricted movements to and from site will apply. The routes outlined below serve as a guideline rather than a necessity.

ACCESS ROUTE

Access to the site will take place at one location. Tobruk Avenue will be used as the access route. The access is from Ennis St, Balmain with all trucks/vehicles entering in a forward direction. The road willbe managed by authorized traffic controllers to assist residents and pedestrians around the job site.

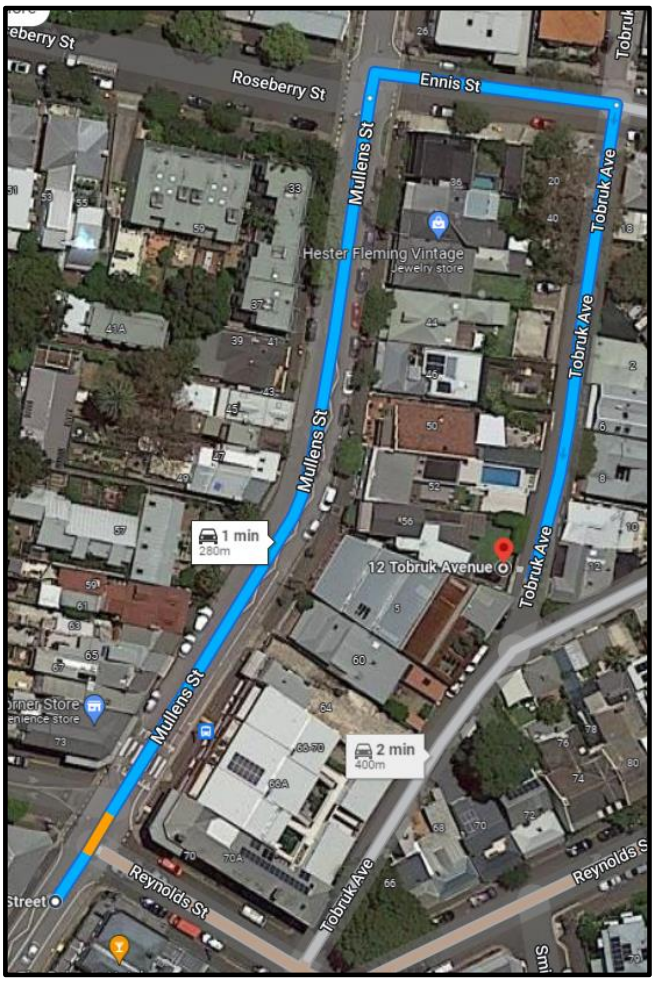
3.4.1 Ingress route 1

Mullens St
Balmain NSW 2041

Head north-east on Mullens St towards Reynolds St
150 m
Turn right onto Ennis St
47 m

Turn right at the 1st cross street onto Tobruk Ave
Destination will be on the right
83 m

12 Tobruk Ave
Balmain NSW 2041



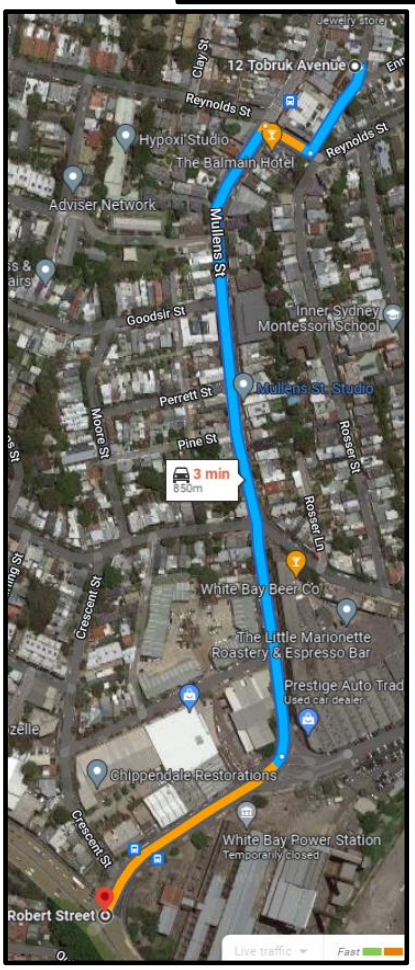
3.4.2 Egress route 1

12 Tobruk Ave
Balmain NSW 2041

↑ Head south on Tobruk Ave towards Ennis Ln
80 m
↱ Turn right onto Reynolds St
42 m

↰ Turn left onto Mullens St
500 m
↱ Mullens St turns right and becomes Robert St
190 m

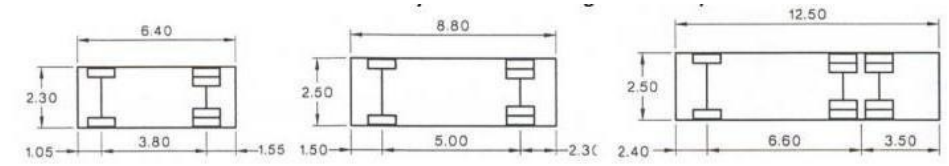
Robert St
Rozelle NSW 2039



Document Set ID: 36226808
Version: 1, Version Date: 27/04/2022

3.5 Transport Vehicles

Domain Pools will have an active and ongoing involvement in the management and monitoring of works during the construction phase. They will ensure, as previously mentioned, that no vehicle will make deliveries outside Council's approved DA times, as well as that all delivery vehicles will arrive at pre-arranged times to site. All vehicles approaching the work site will adhere to the road rules and observe any signage in place.



(a) Small rigid vehicle
Clearance height 3.50
Design turning radius 7.1

(b) Medium rigid vehicle
Clearance height 4.50
Design turning radius 10.0

(c) Heavy rigid vehicle
Clearance height 4.50
Design turning radius 12.5

STAGE	MOVEMENTS AT PEAK	RANGE OF VEHICLES DURING STAGE	LARGEST VEHICLES
Excavation	1-2	HRV	HRV
Concreting	4	MRV. HRV	HRV

The largest vehicle expected to site is a T0 Tonne Bogies – 12.5m x 2.5m & a concrete supply truck – 12.5m x 2.5m .

No Articulated vehicles (AV) have been deemed necessary throughout the development

3.6 Hoisting Devices

No tower crane/Mobile cranes/ Hoisting devices have been considered for the development.

3.7 Removal and Storage of Rubbish or Spoil

All waste/materials will be stored within the site boundaries **at all times.** As previously described, all materials that are removed from site will have the load covered by tarpaulin or other means to secure load.

4 IMPACTS AND MANAGEMENT

4.1 Road/Lane Closures

A full lane closure will be in effect at Toburk Ave, Balmain. (Refer to TCP).

4.2 Pedestrians and Cyclists

A full lane closure will be in effect at Toburk Ave, Sydney during DA approved times and dates. No Pedestrian access will be maintained during these times.

All works, specifically during ingress/egress of construction will take into consideration pedestrians and cyclists.

Advanced warning/Directional signage will be installed (according to approved TCP) to warn pedestrian and cyclists of the works.

Only authorized personnel will be permitted within the building site unless accompanied by site management, if not inducted to the site. Whist within the confines of the building site, all personnel will attire in correct PPE to ensure that they are visible to moving traffic.

4.3 Public Transport

No impact to the public transport network is anticipated throughout the development.

4.4 Parking

No designated parking will be provided during the development. All site staff related with the works are to park in the surrounding designated parking spaces or be encouraged to use public transport. It is suggested that approx. 6 staff related vehicles will be required to attend site at any given moment.

4.5 Emergency Vehicles

Emergency services will not be affected by the proposed works. If the case, emergency vehicles are required for the site or surrounding properties, unimpeded access along the surrounding road network will be maintained and priority to emergency services given

4.6 Access to Properties and Noise

The works will not affect access to properties. Regarding noise impacts, Domain Pools will strive to keep all noise associated with the works is kept to a minimum. Likewise, no noise will be made outside the approved hours for site.

All reasonable and feasible steps must be undertaken to ensure that the work, including demolition, excavation and building comply with the Protection of the Environmental Operations (Noise Control) Regulation 2000.

4.7 Environmental

A range of measures will be in place to manage and minimize any possible impact on the environment regarding dust control and air emissions. Such measures will include, but not limit to:

- Containment and removal of any hazardous materials in accordance with EPA regulations;
- Regular cleaning of street
- Noise pollution will be minimized through a range of measures such as:
    - Control of noise at source where practicable (e.g., using screenings, shielding);
    - Use of noise suppression covers when plant and machinery is operational;
    - Use of electrically powered plant where possible;
    - Where possible, noisy plant equipment will be kept away from sensitive noise boundaries or alternatively within enclosures.

5 TRAFFIC GUIDANCE SCHEME (TGS)

A TCP is defined in the RMS's TCWS Manual as a diagram showing signs and devices arranged to

warn traffic and guide it around, past or, if necessary, through a work site or temporary hazard. The proposed TCP is located in Appendix B.

5.1 Objectives

The provision of a safe environment for road users and works staff is a key objective of Domain Pools. The TCP was developed with the aim to:

- Warn drivers of changes to the usual road conditions;
- Inform drivers about changed conditions;
- Guide drivers through the work site, and
- Ensure the safety for workers, motorists, pedestrians and cyclists

5.2 Context

The TCP's prepared were based on the principles and measures outlined in this CTMP, which details the road safety and traffic principles, strategies and measures that will be applied to enable Domain Pools fulfil its obligations and the requirements of relevant authorities.

The TCPs were designed to address the following issues where applicable:

- Use of traffic control devices;
- Speed limit requirements;
- Provision for pedestrian traffic and their safety.
- Provision for cyclists and their safety;
- Provision for vehicle and plant movements
- Parking restrictions and parking facilities
- Provision for trade vehicles and plant movements
- Informing all site personnel of any high-risk areas; and
- Providing adequate signage within the Construction Site for access and egress

5.3 Traffic Controllers

Certified Traffic controllers will attend site where activity that disrupts the flow of vehicular and pedestrian traffic is in effect. The placement of signs will be done so by a qualified holder of the Traffic Control Plan Implementer Ticket as per the Australian Standards 1742.3.

5.4 TGS Monitoring and Reporting

Specific measures for TCP reporting will be taken. These will include, but not be limited to the following:

- The traffic control plan will be numbered and a register maintained as a part of the CTMP;
- All traffic control devices and traffic control arrangements will be inspected daily to ensure the adequacy of such devices and arrangements as per the TCWS Manual issue 6;
- Traffic Management records and plans will be maintained as well as record/log;
- Domain Pools may be required to provide records in the following event instances:
    - That a breach imposed by the NSW Police Service, on a motorist who does not comply with a regulatory sign is challenged in courts; or

- In the event of an accident is alleged to have occurred when temporary traffic control is in place.

5.5 Credentials

The CTMP was prepared by Darren Lindsay, RMS Prepare a Work Zone Traffic Management Plan Number 0040346794.

5.6 Traffic Control signs & devices

Traffic control devices are an important tool for influencing safety for road users, where temporary traffic controls are implemented at work sites. During the construction of thisproject an RMS accredited traffic controller will assess the warrant for traffic control devices in accordance with the relevant guides/standards such as: RMS's – TCWS Manual issue 6, Australian Standard – AS1742 Manual of uniform traffic control devices, and any relevant documents listed on the 'RMS Guide to Signs and Marketing reference list' to make sure that all the traffic control devices are installed and maintained correctly.

The provision of timely, clear and consistent messages to road users is essential. An RMS accredited traffic controller will ensure all signs and devices installed during the construction of this project are:

- Assessed for use in accordance with the appropriate warrants
- Manufactured in accordance with the requirements of the Australian Standards;
- Installed in accordance with the relevant guides and standards;
- Not contradictory to existing signs or markings;
- When unwarranted, covered or removed; and
- Regularly maintained and repaired / replaced when damaged.

All signposting installed throughout the project will comply with the requirements outlined in the RMS's TCWS Manual issue 6, AUSTROADS Guide to Traffic Engineering Practice, Part 8 – Traffic Control Devices and the relevant parts of Australian Standard 1742.3

6 APPENDICES

- Appendix A- Route to nearest Medical Centre
  Route to nearest Medical Centre
- Appendix B- Traffic Control Plan
- Appendix C- RMS Road Limits and Special Signage

Appendix A

Nearest Medical Centre

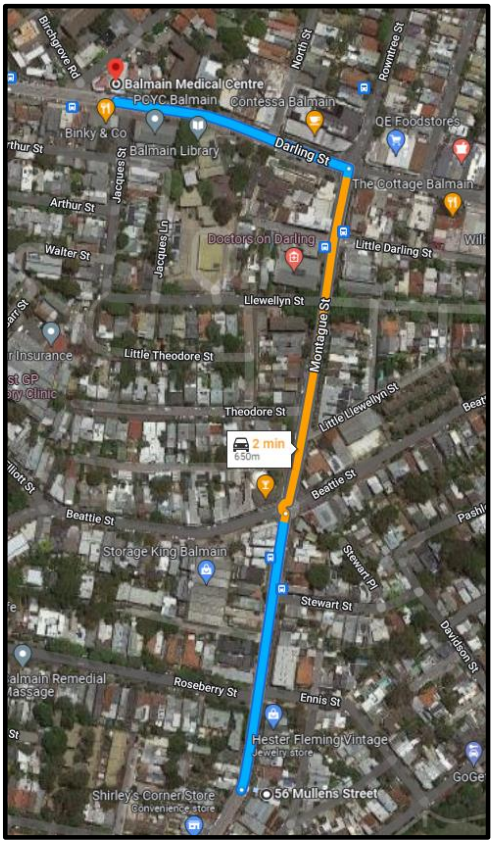
56 Mullens St
Balmain NSW 2041

↑ Head north on Mullens St towards Roseberry St
210 m

↰ At the roundabout, continue straight onto Montague St
270 m

↰ Turn left onto Darling St
ⓘ Destination will be on the right
180 m

Balmain Medical Centre
407 Darling St, Balmain NSW 2041



Nearest Hospital

56 Mullens St
Balmain NSW 2041

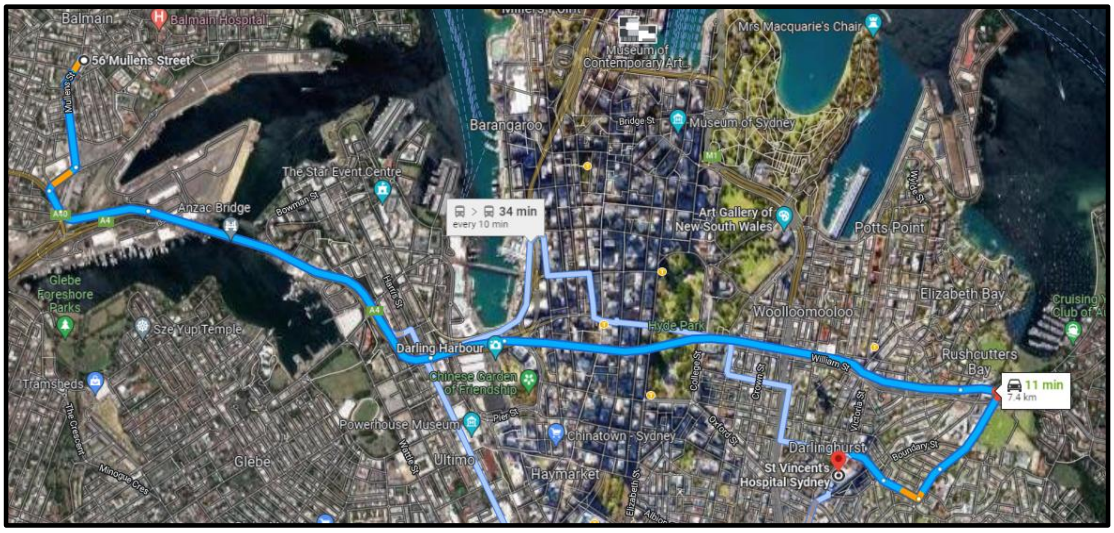
Take Western Distributor/A4 and Cross City Tunnel to Brown St in Paddington

10 min (6.8 km)

Take MacDonald St to Burton St in Darlinghurst

2 min (650 m)

St Vincent's Hospital Sydney
390 Victoria St, Darlinghurst NSW 2010



Appendix B

Traffic Control Plan 1

Date: 12/4/2022 **Author:** Ali Fayad **Project:** 56 Mullens St, Balmain NSW 2041
Client: Domain Pools **Contact:** Bill Banovic **Plan #:** RC.TW01.22
PWZTMP: 1011477 **Number:** 0407 555 600

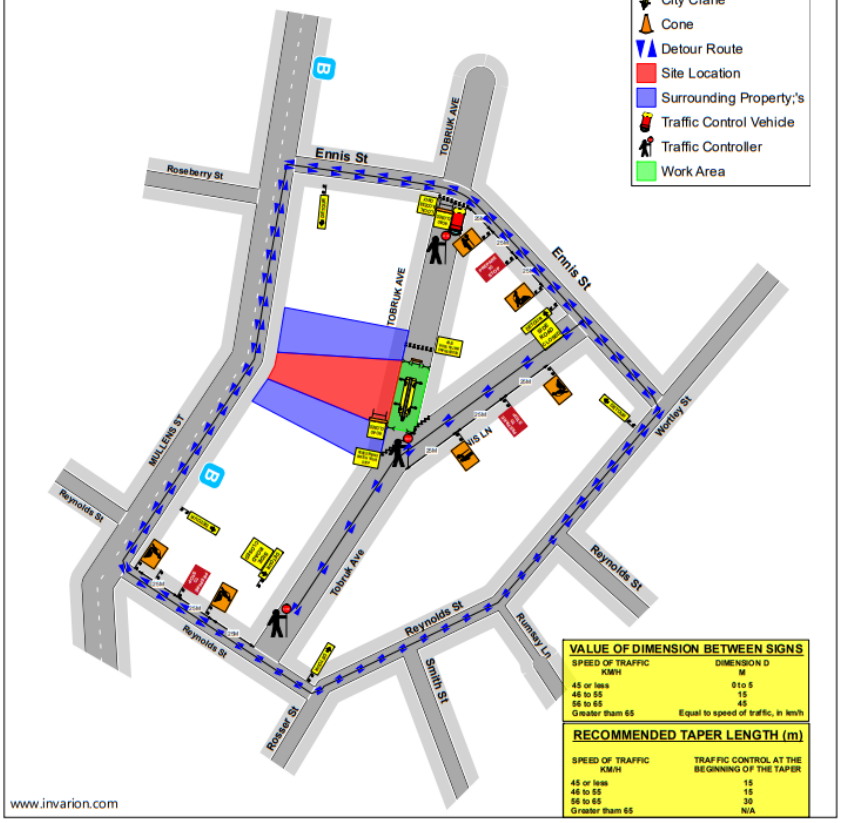
Comments:

This plan has been designed by Ali Fayad of Sydney Traffic Control in accordance with Australian Standards outlined in the RMS's Traffic Control on Worksites Handbook which complies with AS1742.3 and Transport for NSW's "Traffic Control at Worksites" manual.
The plan is designed for the Road Closure of Tobruk Ave and to stand a Crane for the Lift of a pool into the rear of property 56 Mullens St, Balmain NSW 2041.
Certified traffic controllers will be on site to implement and monitor this TCP. If you have any questions please contact Ali Fayad on 8068-1844 or 0451 153 044.

ALL SIGNS AND SPACING MUST BE IN ACCORDANCE WITH AUSTRALIAN STANDARD1742-3

Legend

- Active Bus Stop
- City Crane
- Cone
- Detour Route
- Site Location
- Surrounding Property;'s
- Traffic Control Vehicle
- Traffic Controller
- Work Area



VALUE OF DIMENSION BETWEEN SIGNS

SPEED OF TRAFFIC KM/H	DIMENSION D M
45 or less	0 to 5
46 to 55	15
56 to 65	45
Greater tham 65	Equal to speed of traffic, in km/h

RECOMMENDED TAPER LENGTH (m)

SPEED OF TRAFFIC KM/H	TRAFFIC CONTROL AT THE BEGINNING OF THE TAPER
45 or less	15
46 to 55	15
56 to 65	30
Greater tham 65	N/A

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Appendix C: RMS Road Limits and Special Signage

5

LIGHT TRAFFIC ROADS

You must not use any road with a load limit sign if the total weight of your vehicle is the same as, or heavier than, the weight shown on the sign.

You may use a light traffic road when that road is your destination for a pick-up or delivery and there is no alternative route.

LOAD LIMIT SIGN

You must not drive past a BRIDGE LOAD LIMIT (GROSS MASS) sign or GROSS LOAD LIMIT sign if the total of the gross mass (in tonnes) of your vehicle, and any vehicle connected to it, is more than the gross mass indicated in the sign.

NO TRUCKS SIGN

Drivers of long or heavy vehicles except buses must not drive past a NO TRUCK sign unless the vehicle is equal to or less than the mass or length specified on the sign.

When the sign does not provide detailed information, no truck (ie GVM greater than 4.5 tonnes) is permitted to drive past the sign, unless the drivers' destination lies beyond the sign and it is the only route.

TRUCKS MUST ENTER SIGN

Heavy vehicle drivers must enter the area indicated by information on or with this sign.

WHERE HEAVY VEHICLES CAN STAND OR PARK

Heavy vehicles (GVM of 4.5 tonnes or more) or long vehicles (7.5 metres long or longer) must not stop on a length of road outside a built up area, except on the shoulder of the road. In a built up area they must not stop on a length of road for longer than one hour (buses excepted). For more information on where vehicles can stand or park, refer to the Road Users' Handbook.

CTMP R:

Item No: **LTC0622(1) Item 5**

Subject: **SEVEN BRIDGES WALK - SPECIAL EVENT (GULGADGA - LEICHHARDT & BALUDARRI - BALMAIN WARD/ BALMAIN ELECTORATE/ LEICHHARD PAC)**

Prepared By: Vinoth Srinivasan - Engineer - Traffic and Parking Services

Authorised By: George Tsaprounis - Coordinator – Traffic and Parking Services

SUMMARY

The Cancer Council NSW Seven Bridges Walk event will be held on Sunday, 23 October 2022 at various locations in Sydney, including areas within the Inner West Council. The Event is in its seventh year of operation and the applicant seeks approval again in 2022.

RECOMMENDATION

THAT the Cancer Council NSW Seven Bridges Walk to be held on Sunday, 23 October 2022 be approved, subject to a current Public Liability Insurance Policy which includes the Inner West Council being an interested party being submitted by the event organiser prior to the event.

BACKGROUND & OTHER STAFF COMMENTS

The Cancer Council NSW Seven Bridges Walk concept was created and developed by the Pedestrian Council of Australia (PCA) who will remain the owner of the event. The PCA has engaged Mothership Events to deliver the Event Operations and manage the marketing of the Event on behalf of PCA. The Cancer Council NSW Seven Bridges Walk can be regarded as an active opportunity to further enhance the councils' and stakeholders' charter toward promoting walking as a healthy activity and as an increasingly important means of active transport. In addition, the event will provide a significant contribution to the Cancer Council NSW (CCNSW).

The course of CCNSW Seven Bridges Walk will open at 7:00am, and close at 4:30pm and it is estimated that it may attract up to 15,000 participants. The walking route is approximately 27km in length and is a closed loop circuit that utilises pathways around the inner metropolitan region of Sydney that skirts the Sydney Harbour and includes the crossing of seven bridges. Special event buses will operate in both directions around the course and will be provided free of charge to everyone holding an ‘event passport’.

Course Description:

The walking route is approximately 27km in length and is a closed loop circuit that utilises pathways around the inner metropolitan region of Sydney that skirts the Sydney Harbour and includes the crossing of Seven Bridges.
The Seven Bridges are:

1. Sydney Harbour Bridge
2. Pyrmont Bridge
3. ANZAC Bridge
4. Iron Cove Bridge
5. Gladesville Bridge
6. Tarban Creek Bridge
7. Fig Tree Bridge

Village Locations:

Event 'Villages' are located around the course and will be used as check-in locations, First Aid points, drink stations, light catering and entertainment.

The 6 villages are:

1. Milsons Point Village (Burton Street at Alfred Street, Milsons Point)
2. Pyrmont Village (at Pyrmont Bay Park, Pirrama Rd, opposite The Star Casino)
3. Rozelle Village (at Waterfront Drive Sporting Ground - Callan Park)
4. Hunters Hill Village (at Hunters Hill Scout Hall, Durham St near the Church St overpass on Burns Bay Road, Hunters Hill)
5. Lane Cove Village (Blaxlands Corner – Central Park, William Edward St and Kenneth St, Lane Cove)
6. Wollstonecraft Village (at Brennan Park, Hazelbank St at King St, Wollstonecraft)

Impact on the Inner West LGA

The route through the Inner West LGA is via:

- ANZAC Bridge to Victoria Road
- Pedestrian bridge over Victoria Road
- Lilyfield Road
- Burt Street
- Denison Street
- Cheltenham Street
- O'Neill Street
- Cecily Street
- Through Callan Park to King George Park
- Byrnes Street to Victoria Road

Traffic and Pedestrian Management Plan (TMP)

This event does not require closure of any roads in the Inner West LGA. As the participants will be using footpaths and crossing the street network with assistance of traffic controllers, the Event does not cause significant impacts on traffic and transport systems. Therefore, the Event can be considered as Class 3. Hence, Council's approval for the Traffic & Transport Management Plan is adequate.

The attached Pedestrian and Traffic Management Plan (TMP), when approved by the relevant authorities, becomes the prime document detailing with the traffic and transport arrangements under which this event is to proceed.

In case of emergencies, or for the management of incidents, the Police are not subject to the conditions of the TMP but will make every effort to inform the other agencies of the nature of the incident and the Police response.

The route for the proposed Seven Bridges Walk and the Traffic Control Plans (TCP) and Traffic Management Plan for Inner West Council LGA are attached.

FINANCIAL IMPLICATIONS

All costs associated with the Seven Bridges Walk are funded by the event organisers.

ATTACHMENTS

1.⇩ Traffic Management Plan - Seven Bridges Walk 2022
2.⇩ Traffic Control Plan - Seven Bridges Walk 2022

TRAFFIC MANAGEMENT PLAN

Version 1.0

Prepared By: **Pedr Danks**
Managing Director
SafeWork NSW Certified Planner No: **PWZTMP 0057732**
Traffic Plan Professionals Pty Ltd
4/11 Billbrooke Cl, Cameron Park NSW 2285
P: 1300 544 843 D: 02 4072 2330
Form 1.TMP.1.5-2020.TPP.PD

SEVEN BRIDGES WALK

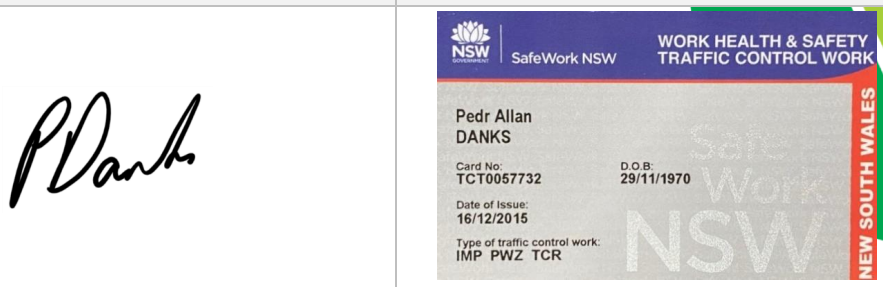
23rd OCTOBER 2022
VARIOUS LOCATIONS

Traffic Plan
Professionals Pty Ltd

CONTENT

Traffic Plan
Professionals Pty Ltd

1 DOCUMENT AUTHOR

Prepared By	Pedr Danks, Lead Traffic Planner
Signature	
Date	22 April 2022

2 DOCUMENT HISTORY

Reviewed By	Version	Date	Comments

3 DISTRUBUTION

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Traffic Plan
Professionals Pty Ltd

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6 TERMS AND DEFINITIONS

Terms	Definitions
RMS	Roads & Maritime Services
PAX	Persons Amount X
ADT	Average Daily Traffic
AS/NZS	Australian Standards/New Zealand Standards
PAC	Police Area Command
LGA	Local Government Area
PWZ/TMP	Prepare Work Zone Traffic Management Plan
VMS	Variable Message Sign
TGS	Traffic Guidance Scheme
TMP	Traffic Management Plan
HVA	Hostile Vehicle Attack
HVMP	Hostile Vehicle Mitigation Plan
THD	Target Hardening Device

7 EXECUTIVE SUMMARY

The purpose of the TMP is to provide an overview of the Traffic operation that will require to be implemented for the 16th annual Seven Bridges Walk to be held on Sunday 24th October 2021 at various locations in Sydney.

The walk is promoted as “not a race and everyone is a winner”. You can start at any of the seven event Villages and walk clockwise around as much or little of the 27km (approx.) closed loop circuit as you like. As part of the offerings for the Cancer Council NSW Seven Bridges Walk, there will be food, music and activities at each of the seven Villages. The TMP has been updated based on feedback from previous years events.

8 SCOPE

This plan addresses traffic management for the proposed works only and the document has been prepared following consultation and assessments from the respective stakeholders listed within this document.

The document includes the provision for the safe movement of vehicular and pedestrian traffic, the protection of workers from passing traffic, the design, installation and removal of any necessary temporary detours, the provision of traffic controllers, the installation of temporary advance warning signs and safety barriers.

Where possible road closures have been minimised to maintain regular traffic flow.

Various traffic control devices/measures have been used whilst creating the relevant Traffic Control Plan.

This document should be read in conjunction with the following:

#	Document	Version
1	RMS Guide to Transport & Management for Special Events	3.5
2	RMS Traffic Control at Worksites Manual	6.0
3	AS/NZS	2890.6-2009.
4	Local Government Act 1993	No 30
5	Roads Act 1993	No 33
6	Australian Standard	1742
7	The Use of Variable Message Sign (VMS) RMS Policy	10.408
8	Safework Australia – Traffic Management: Guide for events	April 2021
9	Safework Information Sheet – Traffic Management	April 2021
10	Risk Management - Guidelines	ISO31000:2018

9 OBJECTIVES

The core objectives with respect to the Traffic Management Plan are to:

1. Ensure the safety of its employees, contractors, the general public, RMS personnel, pedestrians, cyclists and traffic,
2. Keep traffic delays to a minimum,
3. Maintain satisfactory property access,
4. Minimise disruption to businesses,
5. For works near speed cameras, traffic lights & traffic counters etc:
   a) Inform the RMS Representative and
   b) Not damage the equipment,
   c) Make suitable arrangements where required.
   d) When required, obtain approvals and licenses such as Road Occupancy, Direction to Restrict (DTR for Speed Limit Sign Authorisation) and Traffic Signals,
6. Minimise disturbance to the environment,
7. Design temporary roadways and detours in accordance with TfNSW Road Design Guide and
8. Meet the requirements of TfNSW Traffic Control at Worksites Manual.

10 MANAGEMENT OF THE TMP

Traffic Plan Professionals Pty Ltd has undertaken that it will provide both the Traffic Management Plans & Traffic Controllers for this event.

It is required by Council/TfNSW and/or consenting authorities that all traffic control works to be carried out by SafeWork NSW certified and accredited personnel.

11 IMPLEMENTATION

Traffic Management for work and/or events sites will be in accordance with the TfNSW Traffic Control at Work Sites Manual as modified to site conditions.

The implementation of these plans is the responsibility of Traffic Plan Professionals and shall be carried out by SafeWork NSW certified and accredited personnel.

12 PLANNING STRATEGIES

Following preparation of the final draft plans, assessment and approvals is required by the following:

Agency	**Area**
NSW Police	PAC
Council	Various
Roads & Maritime Services	TMC
Event Promoter	Mothership Events

13 EVENT DETAILS

Event Name	**Seven Bridges Walk**
Event Owner/Promoter	Cancer Council NSW
Event Date(s)	23rd October 2022
Event Time(s)	07:00 – 16:30hrs
Bump In/Out Date(s)	22nd October – 24th October
Venue(s)	Various locations/bridges throughout Sydney
Pax	10 - 15,000 Walkers throughout the day
Demographic	Mixed ages & Families

14 TRAFFIC MANAGMENT

During the event traffic safety will be managed by the implementation of specifically tailored TGSs that have been designed to meet with event specific operations. This plan has been prepared to safely manage traffic with minimal impact on non-event stakeholders as recommended in the TfNSW Guide to Traffic and Transport Management for Special Events.

In the risk management context, the TfNSW Guide to Traffic and Transport Management for Special Events reads that a TGS be a Risk Management Plan for traffic, however a TGS shall not be an acceptable form of risk management and the event organiser should seek a separate risk review.

At its core the prepared TGSs implement various short-term road closures to safety manage vehicular and pedestrian flow within the precinct.

14.1 Road Closures

Short term roads closures and control points shall be implemented at the following locations.

1) Burton Street, Milsons Point
2) Durham Street, Hunters Hill
3) Central Ave, Callan Park
4) Waterfront Drive, Callan Park
5) North Crescent, Callan Park
6) Military Drive, Callan Park

The road closures shall commence on the 23rd October from 06:00hrs through to 16:00hrs (exact times please refer to TGS's)

Callan Park Closures will commence 05:00am on 23rd October and run through to 16:30hrs at the latest.

14.2 Village Locations

There will be six Villages around the course that participants must pass through to complete the circle walk, each of the Villages will provide information, registration, first aid and toilets plus food, refreshments and entertainment.

The locations for the Villages will be clearly marked on the course map and can be found at:

1. Milsons Point Village - Burton Street, Milsons Point
2. Pyrmont Village - Pyrmont Bay Park, Pyrmont
3. Rozelle Village – Waterfront Drive Sporting Ground, Rozelle
4. Hunters Hill Village - Hunters Hill Scout Hall, Hunters Hill
5. Lane Cove Village – Central Park, Blaxland's Corner, Lane Cove
6. Wollstonecraft Village - Brennan Park, Wollstonecraft

Toilet facilities in between villages will be marked on the course map.

14.3 Bridge Locations

There are the 7 bridge locations that we will cross as part of the course:

1.	Sydney Harbour Bridge	5.	Gladesville Bridge
2.	Pyrmont Bridge	6.	Tarban Creek Bridge
3.	Anzac Bridge	7.	Figtree Bridge
4.	Iron Cove Bridge		

14.4 COURSE INFORMATION

Participants can register and start at any Village, where they can pick up their Event Passport which includes a course map and official event wristband.

The course/facilities will be open from 7.00am - 4.30pm on event day and all participants are held at each stamp point until 07:00hrs to ensure a managed exit from the Village, all participants must travel on the course in a CLOCKWISE direction only, this will assist with reducing overcrowding at any crossing point. This is how the event has operated in the past without issue.

There is water available at stations in each Village for participants to fill up their own water bottles, participants are also reminded to utilise existing pathways for this walk and that they should abide by normal road rules.

Site map available from Event Organiser, on event day same will be available online.

14.5 EVENT TRANSPORT INFORMATION

A free event bus service traveling around the course will be available on event day only for event participants. To be able to use this free transport system you will need to show your Event Passport. No dogs are allowed on free event transport, except for guide and companion dogs.

The FREE event bus service will run from Milsons Point in both a clockwise (c) and anti-clockwise (a) directions around the course, so look out for a bus stop on either side of the road. The first buses will leave Milsons Point at approximately 8.30am and the last at approximately 4.30pm. Buses will be available from each bus stop approximately every 20 minutes in the morning and every 15 minutes in the afternoon.

Clockwise Bus Stops (C)

Bus Stop 1	Milsons Point	Outside Milsons Point Village on Alfred St South outside Milsons Point Train Station
Bus Stop 9	Pirrama Rd, Pyrmont	Pirrama Rd opposite Pyrmont Village, outside the Star Casino
Bus Stop 8	Victoria Rd, Rozelle	Victoria Rd near Toelle
Bus Stop 7	Drummoyne	Victoria Rd near Lyons Rd, opposite the Drummoyne Post Office
Bus Stop 6	Burns Bay Rd, Hunters Hill	On the north bound exit ramp to Church St, Hunters Hill
Bus Stop 5	Burns Bay Rd, Linley Point	On Western side of Burns Bay Rd opposite intersection of View St
Bus Stop 4	River Rd West, Blaxlands Corner	On Northern side of River Rd, near William Edward St
Bus Stop 3	Bus Stop River Rd, Greenwich	On Northern side of River Rd, opposite Greenwich Hospital
Bus Stop 2	King St, Wollstonecraft	King St, opposite side of the road to Wollstonecraft Village (Brennan Park)

Anti-Clockwise Bus Stops (A)

Bus Stop 1	Milsons Point	Alfred St South opposite side of the road to Milsons Point Trains
Bus Stop 2	King St, Wollstonecraft	King St, outside Wollstonecraft Village (Brennan Park)
Bus Stop 3	River Rd, Greenwich	On Southern side of River Rd, outside Greenwich Hospital
Bus Stop 4	River Rd West, Blaxlands Corner	On Southern side of River Rd, near William Edward St
Bus Stop 5	Burns Bay Rd, Linley Point	On Eastern side of Burns Bay Rd, south of intersection of View St
Bus Stop 6	Burns Bay Rd, Hunters Hill	On the south bound exit ramp to Church St, Hunters Hill
Bus Stop 7	Victoria Rd, Drummoyne	Victoria Rd near Lyons Rd, outside the Drummoyne Post Office
Bus Stop 8	Victoria Rd, Rozelle	Victoria Rd at Terry St
Bus Stop 9	Pirrama Rd, Pyrmont	Pirrama Rd outside Pyrmont Village

NB: there are bus stops located near to 6 of the 7 villages as well as 3 additional bus stops (points 5, 7 & 9) on both sides of the road and in some cases, they are not directly opposite each other. Further information is available at each of the villages re same.

For a clockwise bus service, please use the Bus Stop number with a 'c' after the number.

For an anti-clockwise bus service please use the Bus Stop number with an 'a' after the number.

On the day if you are unsure please see the Information Point at the nearest village.

14.6 Vehicle Emergency Access

Due to the minimal closures involved for this event emergency vehicle access entry/exit points have been maintained.

14.7 Public Parking

Public Parking shall be in located local streets and carparks in and around the event course.

14.8 Taxi Zone(s)

No additional Taxi Zones are proposed for this event. Taxi's will operate as normal.

14.9 Public Drop Off Zone(s)

No dedicated Public Drop Off Zones have been implemented for this event.

14.10 Regulatory Signage
No additional regulatory signage shall be implemented for this event.

14.11 Speed Zones
No Temporary Speed Reduction Zones will be implemented for this event.

14.12 Target Hardening
See the Hostile Vehicle Mitigation Plan (HVMP) for further information.

14.13 Public Notifications
Public notifications shall be undertaken as part of the Event DA from each respective Council, this will be organised by Mothership Events and/or a third-party provider to the impacted residents/business affected by the closures via a letter box drop 7 days prior to the event.

14.14 TGS's

TGS NO:	DESCRIPTION
7344	Burton St / Alfred St Sth Milsons Point
7345	Alfred St Sth Milsons Point
7346	Sydney Harbour Bridge Stairs Cumberland St The Rocks
7347	Watson St Millers Point
7348	Argyle St Millers Point
7349	High St Millers Point
7350	Kent St Millers Point
7351	Naploeon St / Kent St Millers Point
7352	Erskine St Sydney
7353	Pirrama Rd Pyrmont
7354	Bowman St Pyrmont
7355	Anzac Bridge Ramp Pyrmont
7356	James Craig Rd off ramp Pyrmont
7357	James Craig Rd Pyrmont
7358	James Craig Rd / The Crescent Lilyfield
7359	Lilyfield Rd / Victoria Rd Lilyfield
7360	Lilyfield Rd / Gordon St Lilyfield
7361	Denison St / Cheltenham St Rozelle

7362	O'Neill St / Cecily St Rozelle
7363	Cecily St / Balmain Rd Lilyfield
7364	Callan Park (Internal)
7365	Victoria Rd Drummoyne
7366	Victoria Rd Drummoyne
7367	Victoria Rd / Park Ave Drummoyne
7368	Lyons Rd / Wrights Rd Drummoyne
7369	Wolseley St Drummoyne
7370	Durham St / Church St Hunters Hill
7371	Burns Bay Rd off ramp walking access to The Avenue Linley Point
7372	Haughton St Linley Point
7373	View St Linley Point
7374	Riverview St / Kooyong Rd Riverview
7375	Riverview St Riverview
7376	Riverview St / Tambourine Bay Rd Riverview
7377	Flamount Ave / Roman Ave Riverview
7378	Warraroon Rd / Yallambee Rd Riverview
7379	William Edward St River Rd West Longueville
7380	Kenneth St / Northwood Rd Lane Cove
7381	Northwood Rd / Fleming St Lane Cove
7382	River Rd Lane Cove (Installed by RMS).
7383	River Rd Lane Cove (Greenwich Hospital)
7384	Gore St Greenwich
7385	Greenwich Rd / Oscar St Greenwich
7386	Glenview St Greenwich
7387	Milner Cr Greenwich
7388	Newlands St / Morton St Wollstonecraft
7389	Hazelbank Rd / Morton St Wollstonecraft
7390	King St / Carr St Wollstonecraft
7391	Carr St / Crows Nest Rd Waverton
7392	Carr St / Euroka St / Woolcott St Waverton
7393	Blues Point Rd / Union St North Sydney
7394	Lavender St / Walker St Lavender Bay
7395	Alfred St South / Lavender St Lavender Bay

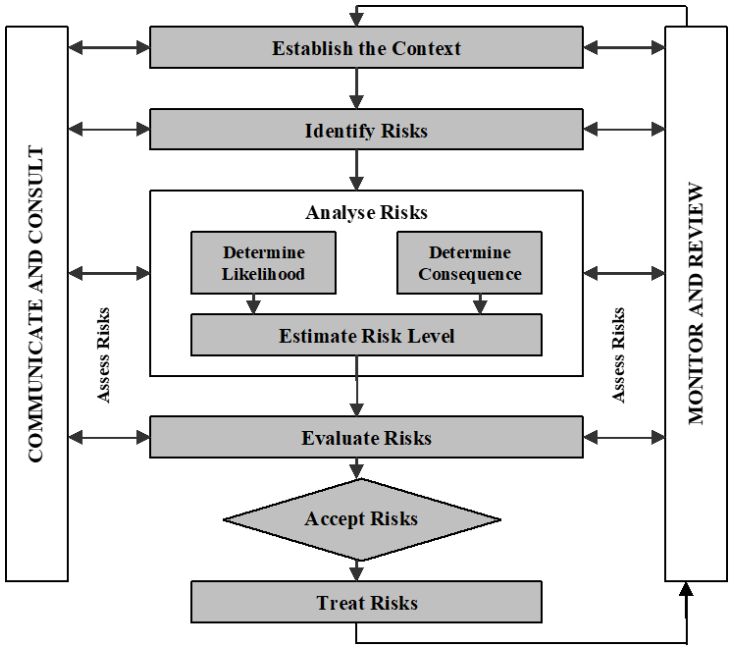
15 RISK MANAGEMENT

15.1 RISK ASSESSMENT PLAN (RISK REGISTER)

A Master risk assessment has been created for the event, included within that document are the respective traffic risks and as part of the process we have updated/reviewed same.

15.2 RISK MANAGEMENT PROCESS

Throughout the Risk Management process, we will link activities to the Australian Standards (AS/NZS 31000:2018). These standards provide a systematic approach to the Risk Management.



15.3 RISK TOLERANCE

A risk rating determined to be higher than a “low” or a “moderate” level (see: “Risk Assessment Tool” below for descriptions of these terms) should result in senior management assessing the viability of implementing the suggested additional control measures.

Even where a residual risk of a “low” or moderate” level exists, senior management should evaluate, where it is viable, to further reduce the likelihood or consequences of that stated risk.

15.4 Risk Assessment Tool

The risk assessment tool acts as a guide to determine an appropriate rating for each risk. It is important to note that risk is subjective and therefore any ratings applied should be considered in this context.

Likelihood	Consequences				
	Insignificant (1) *(Minor problem easily handled by normal day to day processes)*	**Minor (2)** *(Some disruption possible, e.g. damage equal to $500k)*	**Moderate (3)** *(Significant time/resources required, e.g. damage equal to $1 million)*	**Major (4)** *(Operations severely damaged, e.g. damage equal to $10 million)*	**Catastrophic (5)** *(Business survival is at risk damage equal to $25 million)*
Rare (1) *(e.g. <3% chance)*	**2**	**3**	**4**	**5**	**6**
Unlikely (2) *(e.g. between 3% and 10% chance)*	**3**	**4**	**5**	**6**	**7**
Moderate (3) *(e.g. between 10% and 50% chance)*	**4**	**5**	**6**	**7**	**8**
Likely (4) *(e.g. between 50% and 90% chance)*	**5**	**6**	**7**	**8**	**9**
Almost certain (5) *(e.g. >90% chance)*	**6**	**7**	**8**	**9**	**10**

15.5 Risk Score Evaluation

Risk Score	Risk Level	Response
2-4	Low	Manage through routine procedures
5-6	Moderate	Specific procedures and monitoring required, specify management responsibility
7-8	High	Action plan required, specific senior management attention and specify responsibility
9-10	Extreme	Immediate action required, senior management required with detailed plan and Senior Management responsibility noted

15.6 RISK TREATMENTS

Treatment of the risks associated with hazards identified will involve appropriately selecting a treatment option as indicated below.

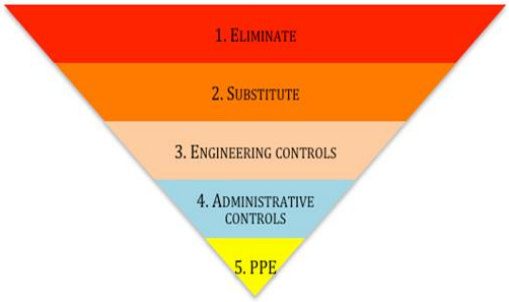
The Hierarchy of Hazard Controls is recommended as the best-practice approach to addressing the source of real/safety risks and thus eliminating of minimising such risks. When a hazard is identified it shall be:

1. Eliminated (designed out, eliminated),
2. Substituted (i.e. if a hazardous work practice exists it should be replaced with non-hazardous or less hazardous work practice),
3. Isolated (if nothing could be done in short term the hazard should be isolated, so it does not impose a risk to a person),
4. Controlled through engineering methods (guarded away using covers etc.),
5. Controlled through Administrative means (procedures/practices, inductions, instructions, workplace training etc.),
6. Persons protected by PPE (Personal Protective Equipment).

The controls should be used in order as indicated - starting from Eliminate as the best approach and then working down the options. A combination of hazard controls from the list above could be used to address any one hazard at one time - a hazard control on its own is not exhaustive and can be used in a combination with one or more other controls.

The primary aim of risk control is to eliminate the risk; the best way of achieving this is to eliminate the hazard. If this is not possible the risk must be minimised by utilising the ALARP principle.

Nomination	Multiplier	Outcome
A	=	As
L	=	Low
A	=	As
R	=	Reasonably
P	=	Practicable



SA/SNZ HB 205:2017 states that the most effective form of risk control is to eliminate the hazard, however if this is not reasonably practicable to eliminate the hazard, the risk must be minimised to the lowest reasonably practicable level by taking the following measures in the order and as determined by the risk assessment (Hierarchy of Controls).

If no single control is appropriate, a combination of the above controls will be taken to minimised the risk to the lowest reasonably practicable level.

16 CONSULTATION & CONTACT LIST

The below list are the practitioners consulted as documents owners, stakeholders and/or approval authorities for this document.

NAME	ORGANISATION
Pedr Danks	Traffic Plan Professionals Pty Ltd
Drew Ferguson-Tait	Traffic Plan Professionals Pty Ltd
Graham Lugsdin	Cancer Council NSW
Justin Nyker	Mothership Events
Craig Tyson	Mothership Events
Alexander Weissel	Police
	Buses
Sinisa Mrdalj	TMC
Heather Palmisani	Innerwest Council
Brooke Morris	Callan Park
Jason Craig	SHFA

17 APPENDIX

The below appendices form part of the TMP and should be read in part or/and in whole when reviewing the above information.

#	Document Name
1	RMS/TMC Format
2	Traffic Control Plan set

APPENDIX 1

TMP FORMAT

A. Description or detailed plan of proposed measures.

Is a detailed plan of the proposed measures necessary? YES refer to TGS's that show the changed road conditions and detours etc.

B. Identification and assessment of impact of proposed measures.

Is a detailed assessment required? NO – There is minimal delay for traffic and only in several locations that are within local council area.

C. Measures to ameliorate the impact of re-assigned traffic

Is an assessment required? NO, this is an annual event and has occurred for many years without any traffic flow issues.

D. Assessment of public transport services affected.

Is an assessment required? NO. Bus services are engaged as part of the event to assist participants with reaching the various locations if they choose not to walk.

E. Details of provision made for emergency vehicles, heavy vehicles, cyclists and pedestrians.

Are these details required? Not applicable.

F. Assessment of effect on existing and future developments with transport implications in the vicinity of the proposed measures.

Is an assessment required? Not applicable.

G. Assessment of effect of proposed measures on traffic movements in adjoining Council areas.

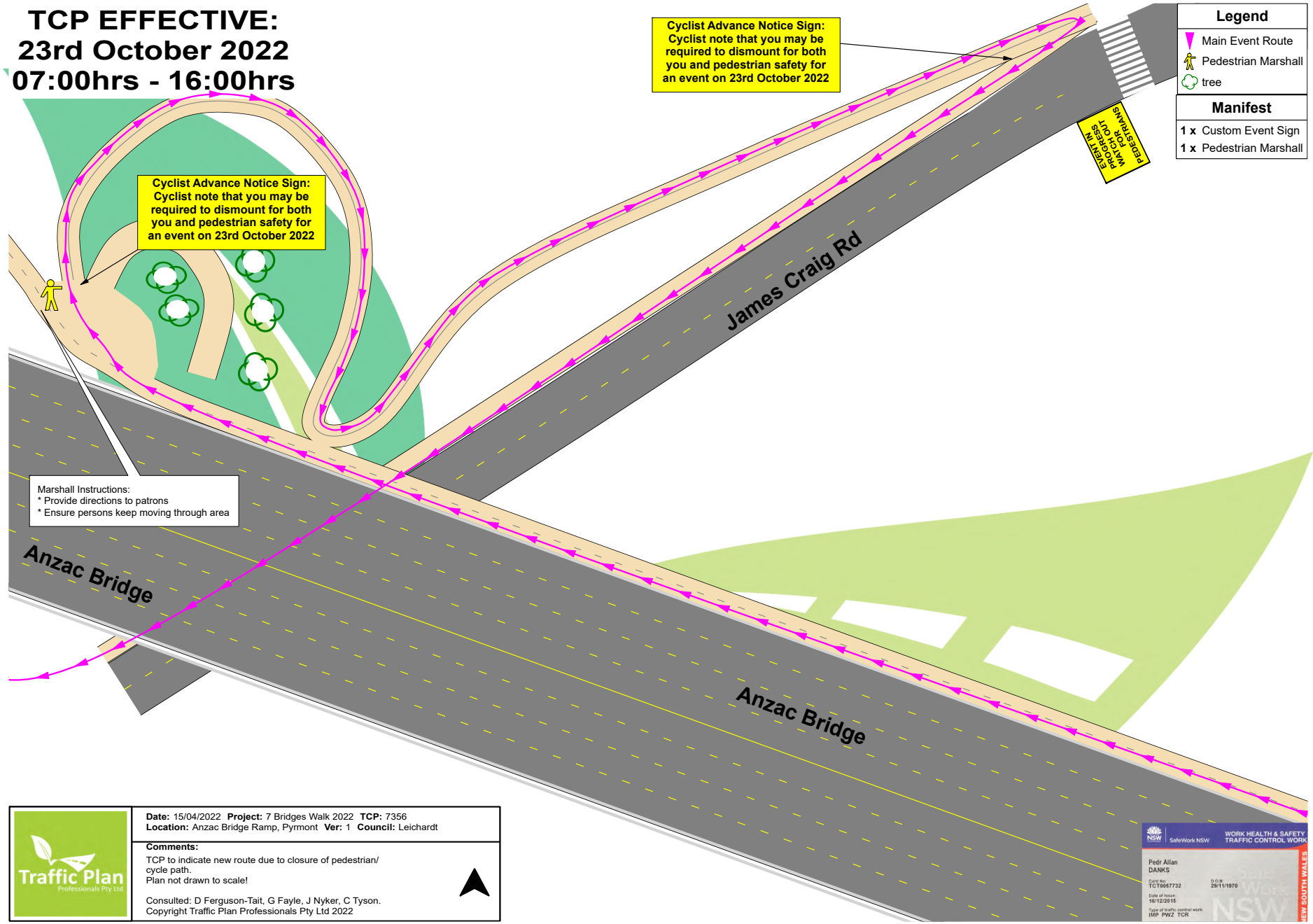
Is an assessment required? NO, event has been operating for many years without issue.

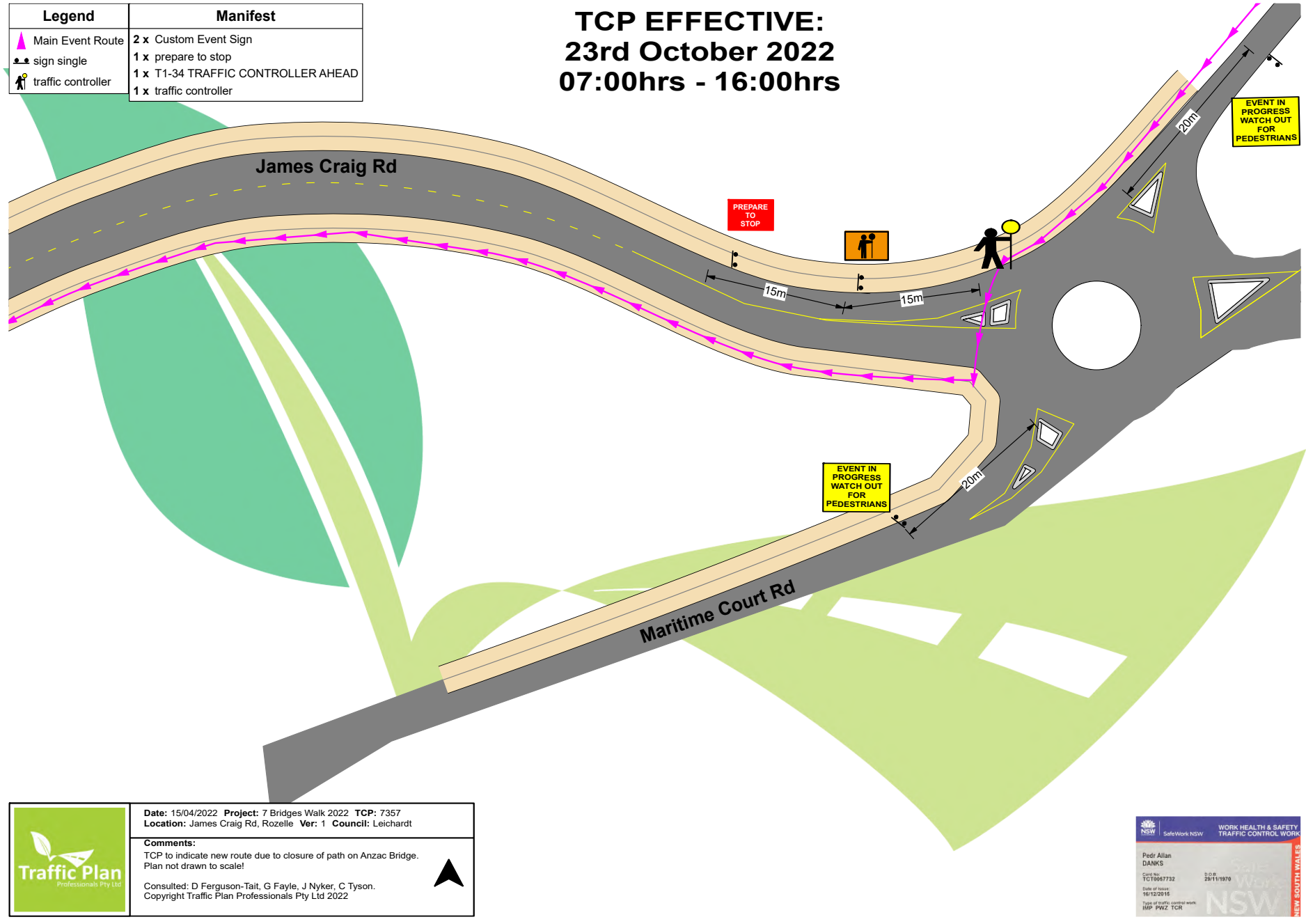
H. Public consultation process

Is a public consultation process required? NO, event has been assessed by Council's Planning previously.

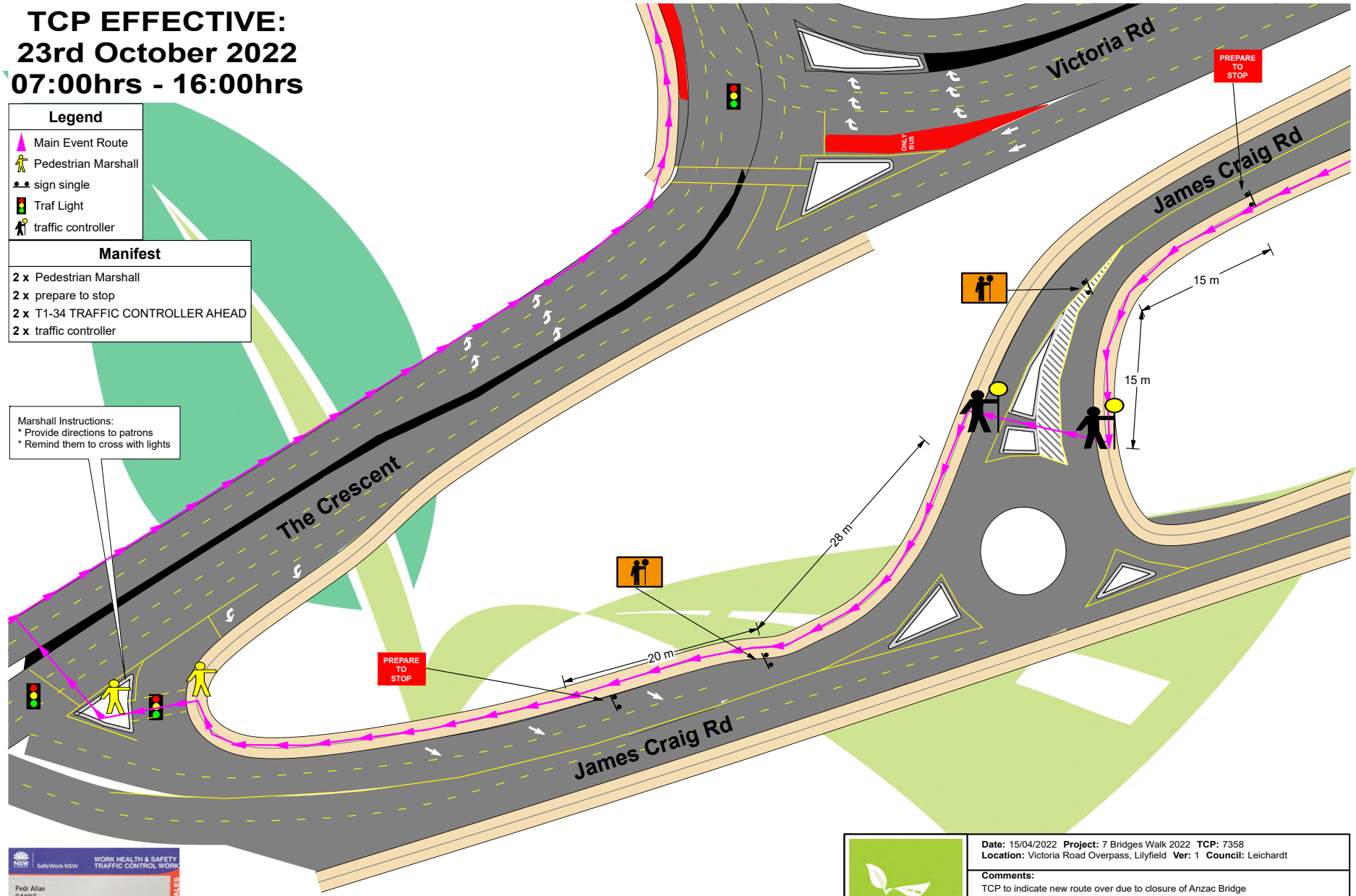
APPENDIX 2 – TRAFFIC CONTROL PLANS


Traffic Plan
Professionals Pty Ltd


TCP EFFECTIVE:
23rd October 2022
07:00hrs - 16:00hrs
Cyclist Advance Notice Sign: Cyclist note that you may be required to dismount for both you and pedestrian safety for an event on 23rd October 2022
Cyclist Advance Notice Sign: Cyclist note that you may be required to dismount for both you and pedestrian safety for an event on 23rd October 2022
EVENT IN PROGRESS WATCH OUT FOR PEDESTRIANS
James Craig Rd
Marshall Instructions:
* Provide directions to patrons
* Ensure persons keep moving through area
Anzac Bridge
Anzac Bridge
Legend
Main Event Route
Pedestrian Marshall
tree
Manifest
1 x Custom Event Sign
1 x Pedestrian Marshall
Traffic Plan
Professionals Pty Ltd
Date: 15/04/2022 Project: 7 Bridges Walk 2022 TCP: 7356
Location: Anzac Bridge Ramp, Pyrmont Ver: 1 Council: Leichardt
Comments:
TCP to indicate new route due to closure of pedestrian/ cycle path.
Plan not drawn to scale!
Consulted: D Ferguson-Tait, G Fayle, J Nyker, C Tyson.
Copyright Traffic Plan Professionals Pty Ltd 2022
WORK HEALTH & SAFETY TRAFFIC CONTROL WORK
SafeWork NSW
Pedr Allan
DANKS
TCT0067732
29/11/1970
16/12/2016
IMP PWZ TCR


Legend
Main Event Route
sign single
traffic controller
Manifest
2 x Custom Event Sign
1 x prepare to stop
1 x T1-34 TRAFFIC CONTROLLER AHEAD
1 x traffic controller
TCP EFFECTIVE:
23rd October 2022
07:00hrs - 16:00hrs
James Craig Rd
PREPARE TO STOP
15m
15m
20m
EVENT IN PROGRESS WATCH OUT FOR PEDESTRIANS
EVENT IN PROGRESS WATCH OUT FOR PEDESTRIANS
20m
Maritime Court Rd
Traffic Plan
Professionals Pty Ltd
Date: 15/04/2022 Project: 7 Bridges Walk 2022 TCP: 7357
Location: James Craig Rd, Rozelle Ver: 1 Council: Leichardt
Comments:
TCP to indicate new route due to closure of path on Anzac Bridge.
Plan not drawn to scale!
Consulted: D Ferguson-Tait, G Fayle, J Nyker, C Tyson.
Copyright Traffic Plan Professionals Pty Ltd 2022
WORK HEALTH & SAFETY TRAFFIC CONTROL WORK
SafeWork NSW
Pedr Allan DANKS
TCT0067732
28/11/1970
16/12/2015
IMP PWZ TCR

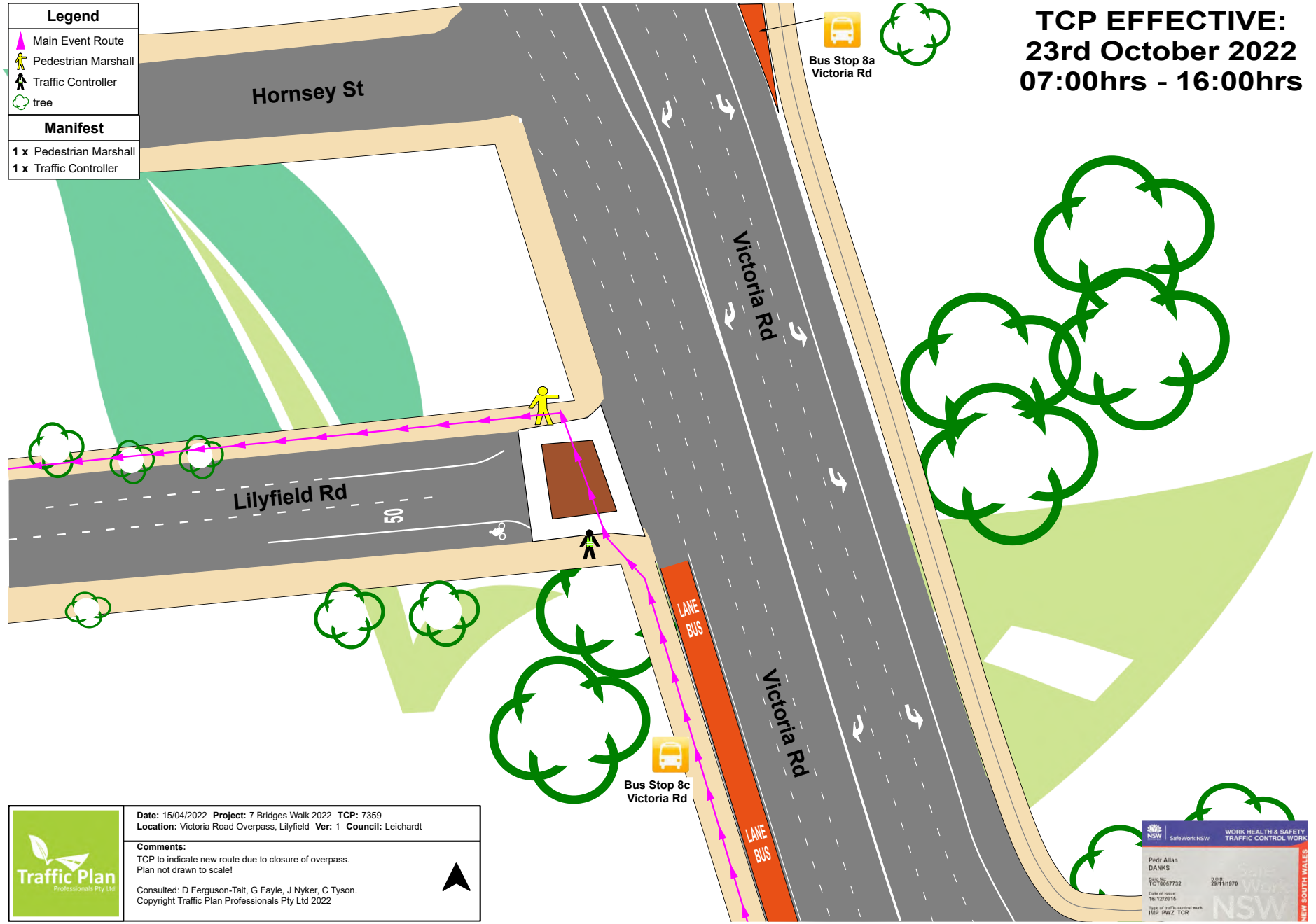
TCP EFFECTIVE:
23rd October 2022
07:00hrs - 16:00hrs

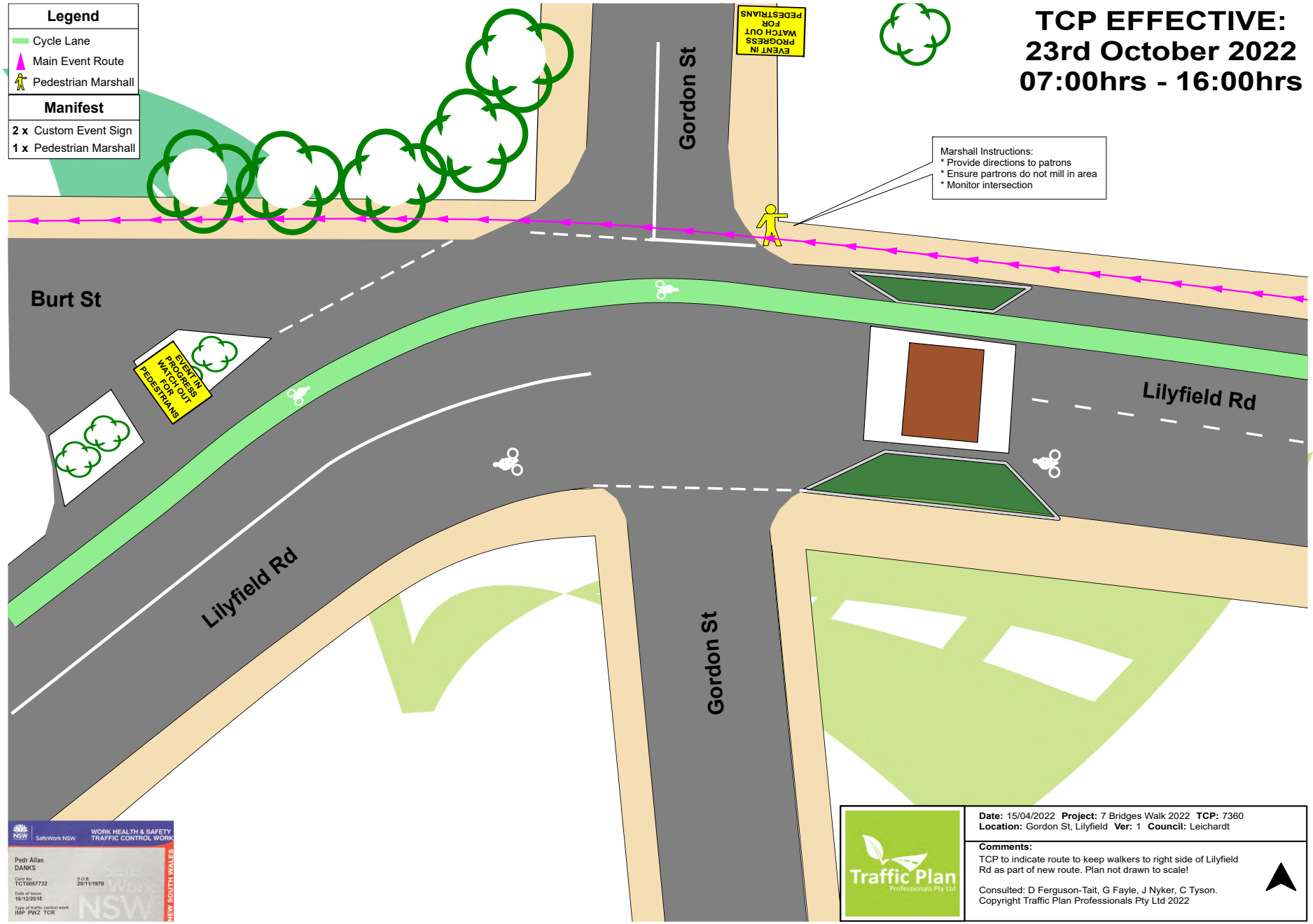


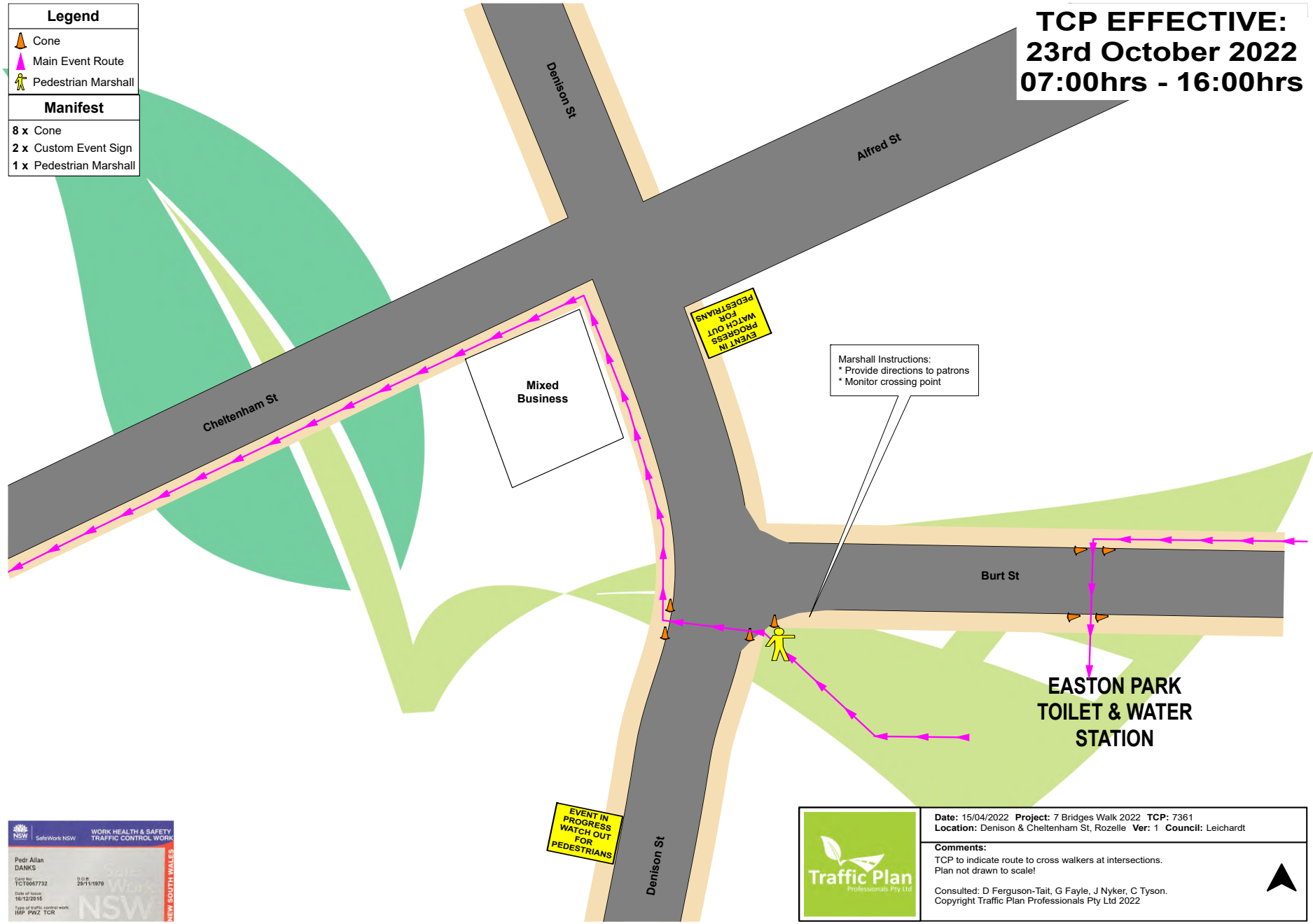
Date: 15/04/2022 **Project:** 7 Bridges Walk 2022 **TCP:** 7358
Location: Victoria Road Overpass, Lilyfield **Ver:** 1 **Council:** Leichardt

Comments:
TCP to indicate new route over due to closure of Anzac Bridge pedestrian pathway.
Plan not drawn to scale!

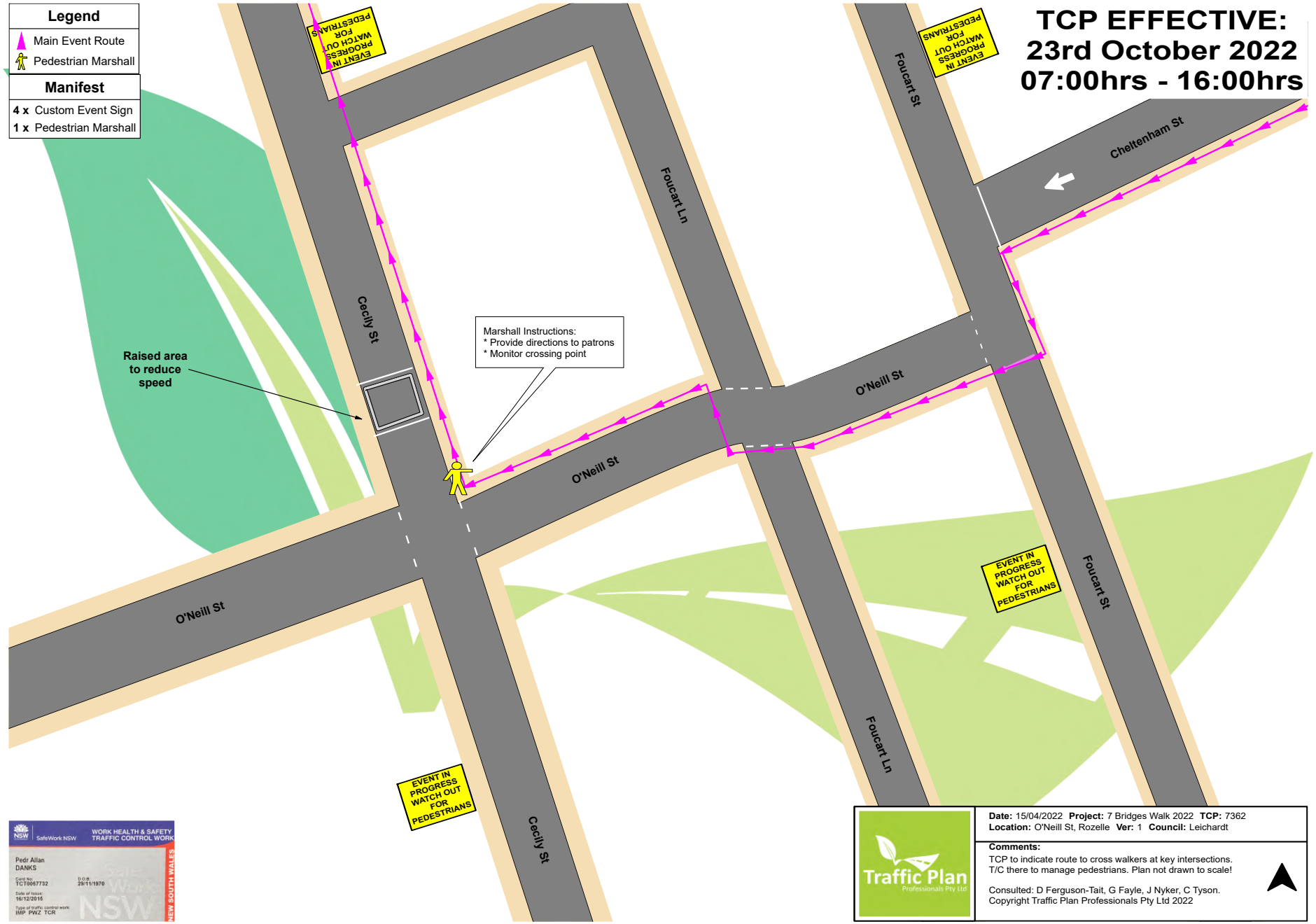
Consulted: D Ferguson-Tait, G Fayle, J Nyker, C Tyson.


Legend
Main Event Route
Pedestrian Marshall
Traffic Controller
tree
Manifest
1 x Pedestrian Marshall
1 x Traffic Controller
TCP EFFECTIVE:
23rd October 2022
07:00hrs - 16:00hrs
Hornsey St
Lilyfield Rd
50
Victoria Rd
Victoria Rd
LANE BUS
LANE BUS
Bus Stop 8a
Victoria Rd
Bus Stop 8c
Victoria Rd
Traffic Plan
Professionals Pty Ltd
Date: 15/04/2022 Project: 7 Bridges Walk 2022 TCP: 7359
Location: Victoria Road Overpass, Lilyfield Ver: 1 Council: Leichardt
Comments:
TCP to indicate new route due to closure of overpass.
Plan not drawn to scale!
Consulted: D Ferguson-Tait, G Fayle, J Nyker, C Tyson.
Copyright Traffic Plan Professionals Pty Ltd 2022
WORK HEALTH & SAFETY
TRAFFIC CONTROL WORK
SafeWork NSW
Pedr Allan
DANKS
TCT0067732
16/12/2015
IMP PWZ TCR


Legend
Cycle Lane
Main Event Route
Pedestrian Marshall
Manifest
2 x Custom Event Sign
1 x Pedestrian Marshall
TCP EFFECTIVE:
23rd October 2022
07:00hrs - 16:00hrs
Gordon St
EVENT IN PROGRESS WATCH OUT FOR PEDESTRIANS
Marshall Instructions:
* Provide directions to patrons
* Ensure partrons do not mill in area
* Monitor intersection
Burt St
EVENT IN PROGRESS WATCH OUT FOR PEDESTRIANS
Lilyfield Rd
Lilyfield Rd
Gordon St
WORK HEALTH & SAFETY
TRAFFIC CONTROL WORK
Pedr Allan
DANKS
TCT0067732
28/11/1970
16/12/2015
IMP PWZ TCR
NEW SOUTH WALES
Traffic Plan
Professionals Pty Ltd
Date: 15/04/2022 Project: 7 Bridges Walk 2022 TCP: 7360
Location: Gordon St, Lilyfield Ver: 1 Council: Leichardt
Comments:
TCP to indicate route to keep walkers to right side of Lilyfield Rd as part of new route. Plan not drawn to scale!
Consulted: D Ferguson-Tait, G Fayle, J Nyker, C Tyson.
Copyright Traffic Plan Professionals Pty Ltd 2022


Legend
Cone
Main Event Route
Pedestrian Marshall
Manifest
8 x Cone
2 x Custom Event Sign
1 x Pedestrian Marshall
TCP EFFECTIVE:
23rd October 2022
07:00hrs - 16:00hrs
Denison St
Alfred St
Cheltenham St
Mixed Business
EVENT IN PROGRESS WATCH OUT FOR PEDESTRIANS
Marshall Instructions:
* Provide directions to patrons
* Monitor crossing point
Burt St
EASTON PARK TOILET & WATER STATION
EVENT IN PROGRESS WATCH OUT FOR PEDESTRIANS
Denison St
Traffic Plan Professionals Pty Ltd
Date: 15/04/2022 Project: 7 Bridges Walk 2022 TCP: 7361
Location: Denison & Cheltenham St, Rozelle Ver: 1 Council: Leichardt
Comments:
TCP to indicate route to cross walkers at intersections.
Plan not drawn to scale!
Consulted: D Ferguson-Tait, G Fayle, J Nyker, C Tyson.
Copyright Traffic Plan Professionals Pty Ltd 2022

WORK HEALTH & SAFETY
TRAFFIC CONTROL WORK
SafeWork NSW
Pedr Allan
DANKS
NEW SOUTH WALES

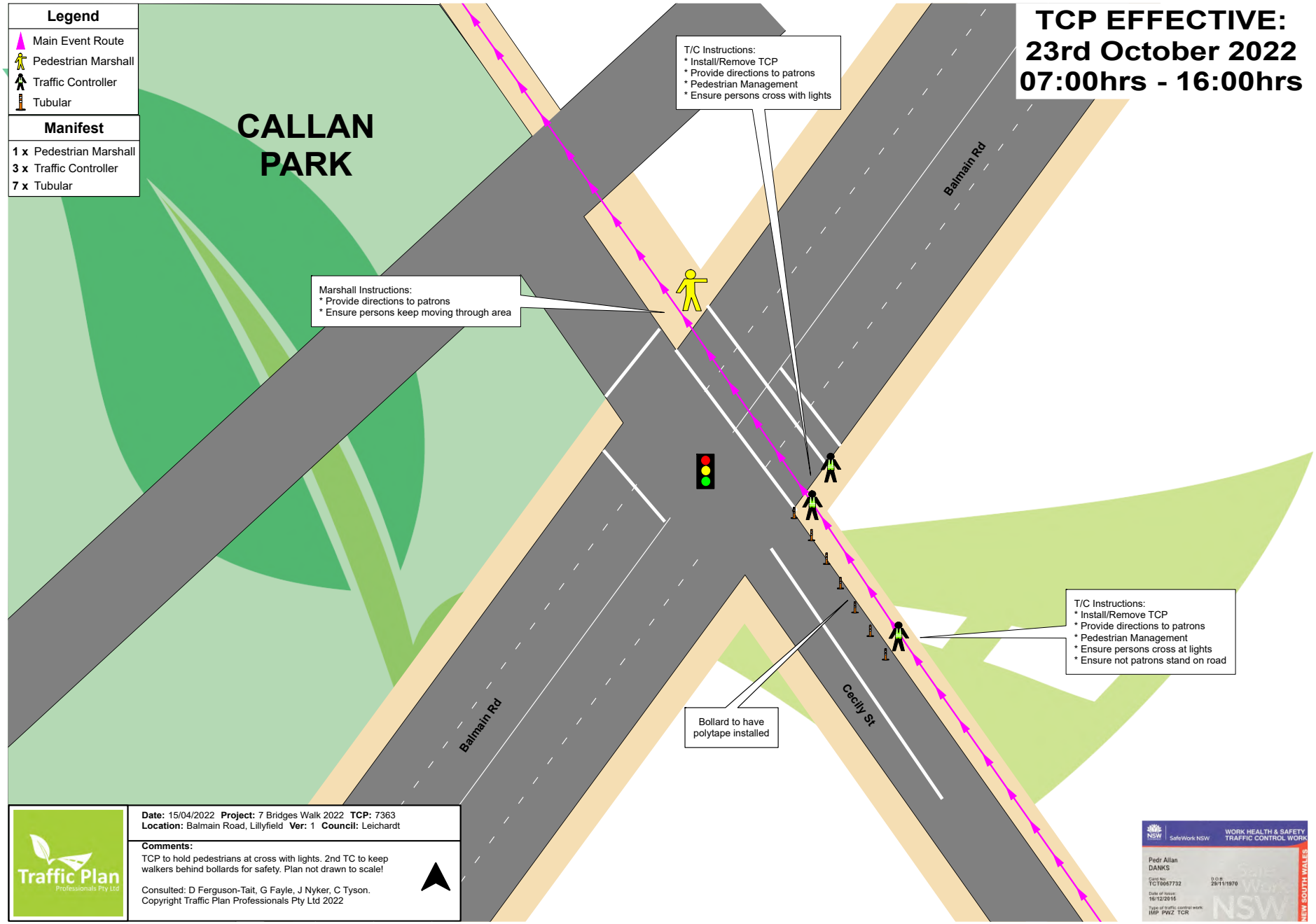


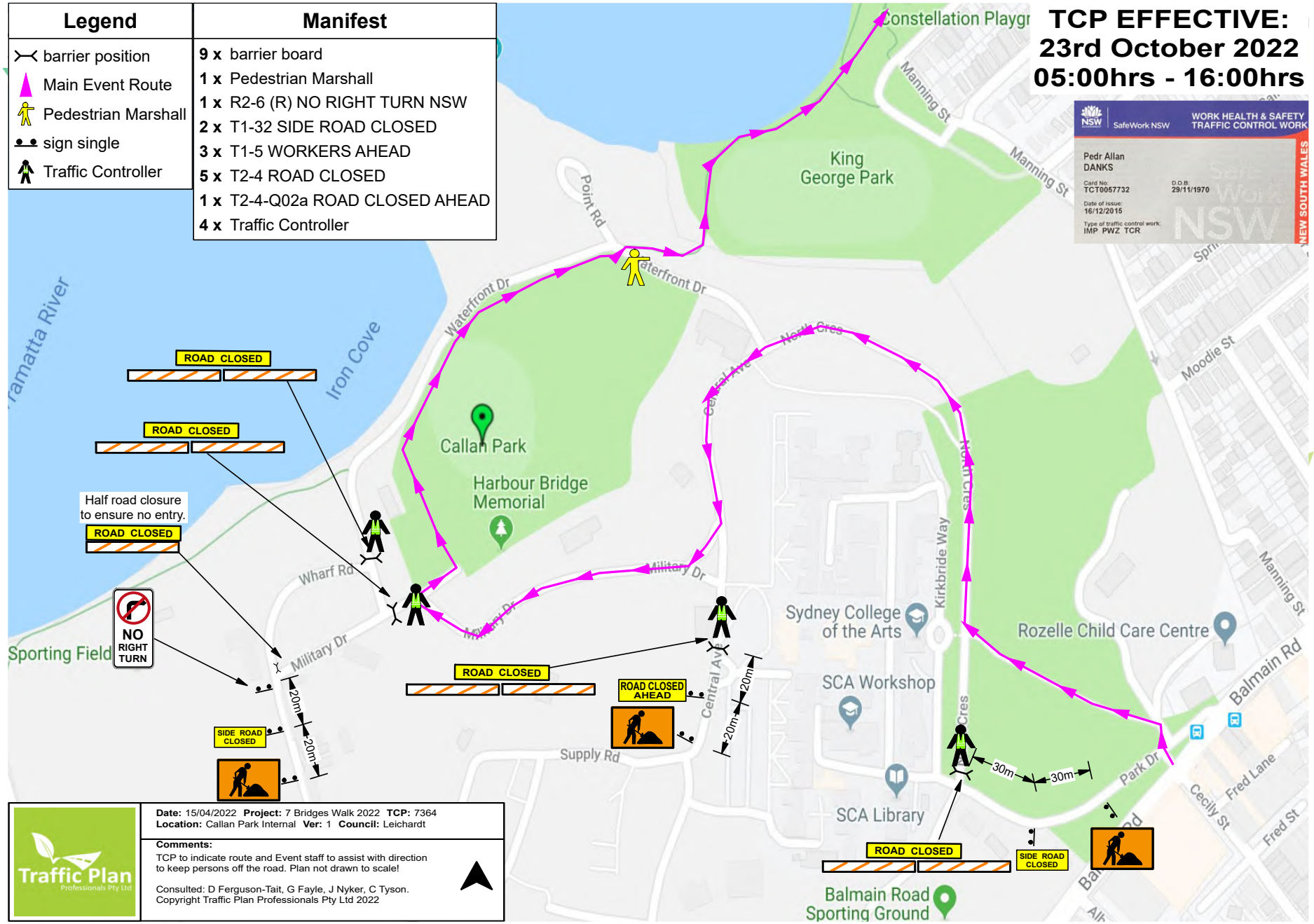
Traffic Plan Professionals Pty Ltd

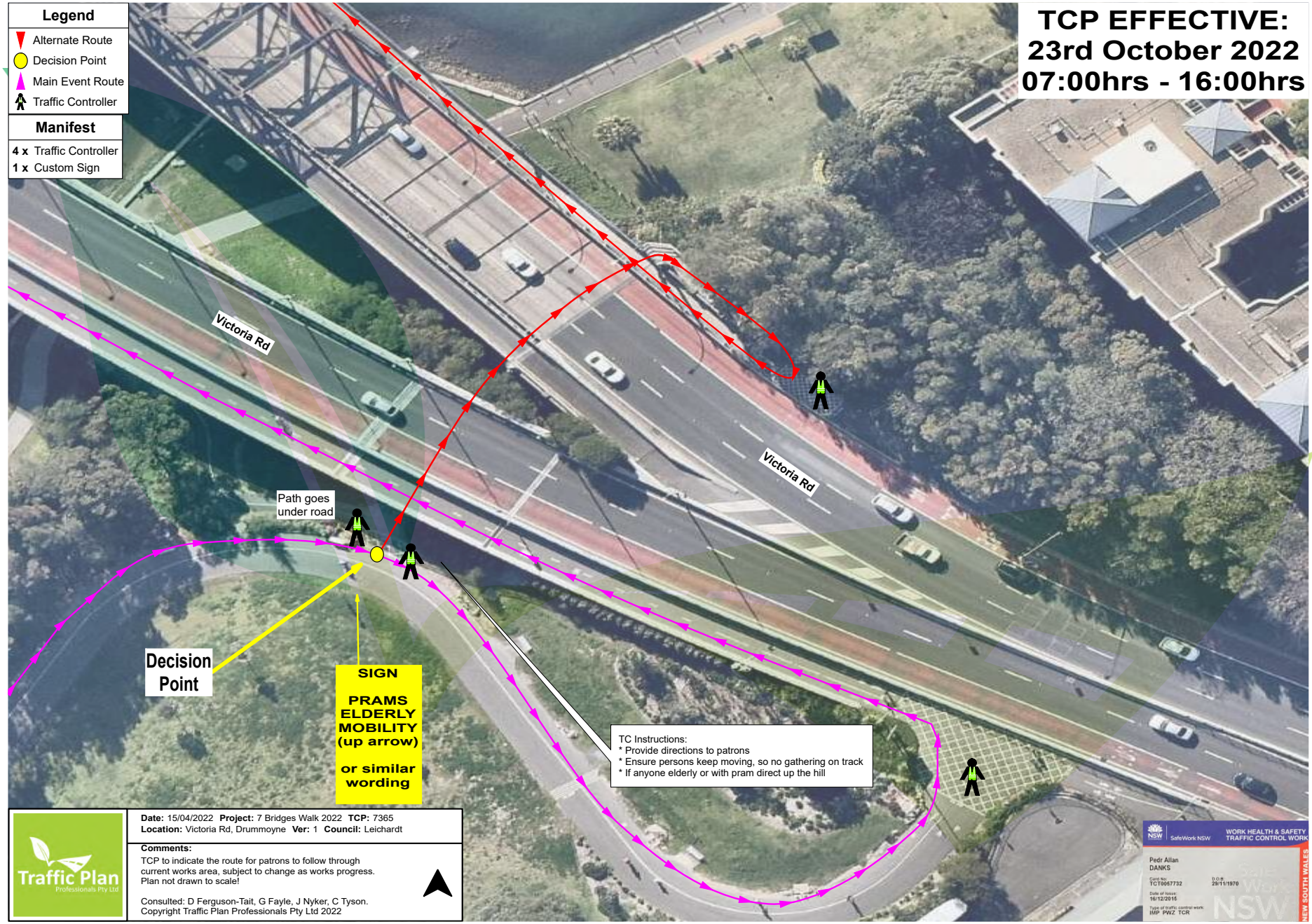
Date: 15/04/2022 **Project:** 7 Bridges Walk 2022 **TCP:** 7362
Location: O'Neill St, Rozelle **Ver:** 1 **Council:** Leichardt

Comments:
TCP to indicate route to cross walkers at key intersections.
T/C there to manage pedestrians. Plan not drawn to scale!

Consulted: D Ferguson-Tait, G Fayle, J Nyker, C Tyson.


Legend
Main Event Route
Pedestrian Marshall
Traffic Controller
Tubular
Manifest
1 x Pedestrian Marshall
3 x Traffic Controller
7 x Tubular
CALLAN PARK
TCP EFFECTIVE:
23rd October 2022
07:00hrs - 16:00hrs
T/C Instructions:
* Install/Remove TCP
* Provide directions to patrons
* Pedestrian Management
* Ensure persons cross with lights
Marshall Instructions:
* Provide directions to patrons
* Ensure persons keep moving through area
Balmain Rd
Balmain Rd
Cecily St
T/C Instructions:
* Install/Remove TCP
* Provide directions to patrons
* Pedestrian Management
* Ensure persons cross at lights
* Ensure not patrons stand on road
Bollard to have polytape installed
Traffic Plan
Professionals Pty Ltd
Date: 15/04/2022 Project: 7 Bridges Walk 2022 TCP: 7363
Location: Balmain Road, Lillyfield Ver: 1 Council: Leichardt
Comments:
TCP to hold pedestrians at cross with lights. 2nd TC to keep walkers behind bollards for safety. Plan not drawn to scale!
Consulted: D Ferguson-Tait, G Fayle, J Nyker, C Tyson.
Copyright Traffic Plan Professionals Pty Ltd 2022
SafeWork NSW
WORK HEALTH & SAFETY
TRAFFIC CONTROL WORK
Pedr Allan
DANKS
Card No TCT0067732
D.O.B. 28/11/1970
Date of issue: 16/12/2015
Type of traffic control work: IMP PWZ TCR
NEW SOUTH WALES


Legend
barrier position
Main Event Route
Pedestrian Marshall
sign single
Traffic Controller
Manifest
9 x barrier board
1 x Pedestrian Marshall
1 x R2-6 (R) NO RIGHT TURN NSW
2 x T1-32 SIDE ROAD CLOSED
3 x T1-5 WORKERS AHEAD
5 x T2-4 ROAD CLOSED
1 x T2-4-Q02a ROAD CLOSED AHEAD
4 x Traffic Controller
TCP EFFECTIVE:
23rd October 2022
05:00hrs - 16:00hrs
ROAD CLOSED
ROAD CLOSED
Half road closure to ensure no entry.
ROAD CLOSED
NO RIGHT TURN
SIDE ROAD CLOSED
20m
20m
ROAD CLOSED
ROAD CLOSED AHEAD
20m
20m
30m
30m
ROAD CLOSED
SIDE ROAD CLOSED
Callan Park
Harbour Bridge Memorial
King George Park
Sporting Field
Sydney College of the Arts
SCA Workshop
SCA Library
Rozelle Child Care Centre
Balmain Road Sporting Ground
Waterfront Dr
Military Dr
Wharf Rd
Supply Rd
Manning St
Moodie St
Balmain Rd
Park Dr
Fred Lane
Fred St
Cecily St
Kirkbride Way
Central Ave
Point Rd
Iron Cove
Pedr Allan
DANKS
Card No: TCT0057732
D.O.B: 29/11/1970
Date of issue: 16/12/2015
Type of traffic control work: IMP PWZ TCR
WORK HEALTH & SAFETY TRAFFIC CONTROL WORK
Traffic Plan Professionals Pty Ltd
Date: 15/04/2022 Project: 7 Bridges Walk 2022 TCP: 7364
Location: Callan Park Internal Ver: 1 Council: Leichardt
Comments:
TCP to indicate route and Event staff to assist with direction to keep persons off the road. Plan not drawn to scale!
Consulted: D Ferguson-Tait, G Fayle, J Nyker, C Tyson.
Copyright Traffic Plan Professionals Pty Ltd 2022


Legend
Alternate Route
Decision Point
Main Event Route
Traffic Controller
Manifest
4 x Traffic Controller
1 x Custom Sign
TCP EFFECTIVE:
23rd October 2022
07:00hrs - 16:00hrs
Victoria Rd
Victoria Rd
Path goes under road
Decision Point
SIGN
PRAMS
ELDERLY
MOBILITY
(up arrow)
or similar wording
TC Instructions:
* Provide directions to patrons
* Ensure persons keep moving, so no gathering on track
* If anyone elderly or with pram direct up the hill
Traffic Plan
Professionals Pty Ltd
Date: 15/04/2022 Project: 7 Bridges Walk 2022 TCP: 7365
Location: Victoria Rd, Drummoyne Ver: 1 Council: Leichardt
Comments:
TCP to indicate the route for patrons to follow through current works area, subject to change as works progress. Plan not drawn to scale!
Consulted: D Ferguson-Tait, G Fayle, J Nyker, C Tyson.
Copyright Traffic Plan Professionals Pty Ltd 2022
SafeWork NSW
WORK HEALTH & SAFETY
TRAFFIC CONTROL WORK
Pedr Allan
DANKS
TCT0067732
16/12/2015
IMP PWZ TCR

Item No: **LTC0622(1) Item 6**

Subject: **TRAFALGAR STREET, ANNANDALE - PROPOSED RAISED PEDESTRIAN CROSSING (GULGADYA - LEICHHARDT WARD/ BALMAIN ELECTORATE/ LEICHHARDT PAC)**

Prepared By: Vinoth Srinivasan - Engineer - Traffic and Parking Services

Authorised By: George Tsaprounis - Coordinator – Traffic and Parking Services

SUMMARY

Council is planning to improve pedestrian safety in Trafalgar Street, Annandale outside No. 27 Trafalgar Street by upgrading the existing at-grade pedestrian crossing to a raised pedestrian crossing. The proposed works will improve pedestrian and motorist safety in the area. As part of the works, the two existing speed humps on either side of the existing pedestrian crossing will be removed.

RECOMMENDATION

THAT the attached detail design plan (Design Plan No.10211) for the proposed installation of a new raised pedestrian crossing on Trafalgar Street, Annandale be approved.

BACKGROUND & OTHER STAFF COMMENTS

The detailed design plan shown in **Attachment 1** outlines the proposed works on Trafalgar Street, Annandale and includes the following treatments:

- Installation of a new concrete raised Pedestrian Crossing in place of the existing at-grade pedestrian crossing;
- Construction ‘gutter bridges’ with heel safe grating to provide safe access over existing kerb and guttering to the new raised pedestrian crossing;
- Removal of the two existing asphalt speed humps on either side of the proposed raised pedestrian crossing;
- Reconstruction of some of damaged sections of concrete footpath with new concrete footpath on both sides of the proposed pedestrian crossing, including removal of some existing grass verge and replacing with new concrete footpath;
- Adjustment of some of the existing “No Parking” and “No Stopping” zones and signage, without impacting the existing car parking spaces; and
- Installation of associated pavement line marking and signage as required.

FINANCIAL IMPLICATIONS

Funding of $70,000 has been allocated to this project for construction in the 2021/2022 Federal Stimulus Program.

PUBLIC CONSULTATION

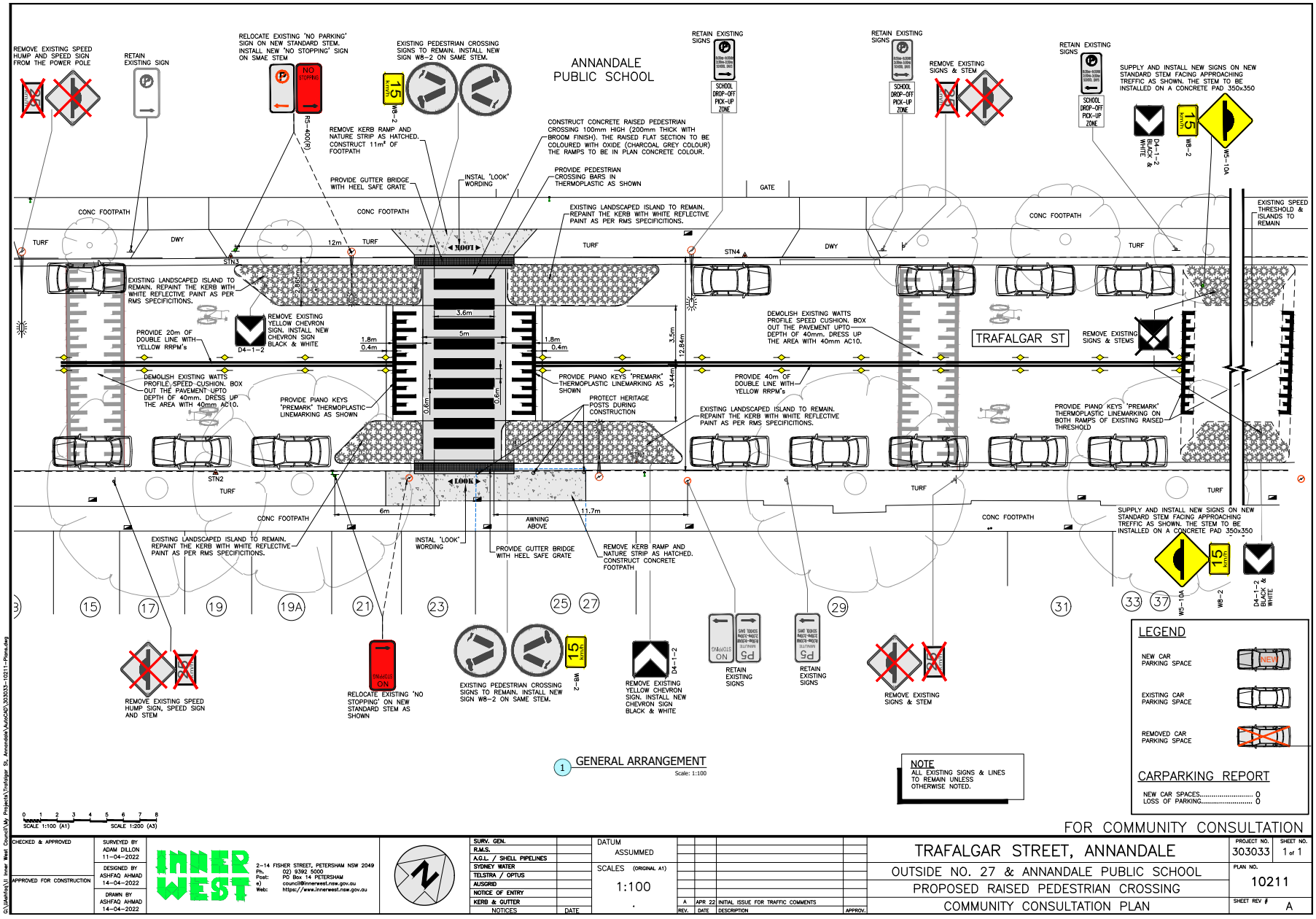
A letter outlining the proposal was mailed out to 67 properties in Trafalgar Street, Annandale requesting residents’ views regarding the proposal. 2 responses were received with one (1) in general support with request for changes and one (1) in objection.

The main traffic and parking related concerns raised by the residents are outlined in the below table:

Residents' Comments	Officer Comments
The proposal will create safety concerns for residents exiting the driveway of No.33 Trafalgar Street. A convex mirror should be installed on the opposite side of the street.	The installation of a convex mirrors are not warranted as they are only installed on narrow streets with low travel speeds. Additionally, mirrors are installed to benefit the general public, not to serve an individual property.
Do not support the removal of the of the existing asphalt speed humps.	The removal of the existing speed humps on either side of the pedestrian crossing is required as it would result in three speed humps in close proximity to one another.
The proposal will result in drivers overtaking parked cars on the pedestrian crossing during school drop-off and pick-up times.	Overtaking on a pedestrian crossing is against the NSW Road Rules as it is linemarked with double centre lines on both approaches.
The surrounding car spaces will not be able to be utilised when the proposed works are taking place.	There will be a temporary impact on the existing car spaces during construction only.

ATTACHMENTS

1.⇩ Detailed Design Plan - Trafalgar Street, Annnandale - Proposed Raised Pedestrian Crossing


ANNANDALE
PUBLIC SCHOOL
TRAFALGAR ST
REMOVE EXISTING SPEED HUMP AND SPEED SIGN FROM THE POWER POLE
RETAIN EXISTING SIGN
RELOCATE EXISTING 'NO PARKING' SIGN ON NEW STANDARD STEM. INSTALL NEW 'NO STOPPING' SIGN ON SAME STEM
EXISTING PEDESTRIAN CROSSING SIGNS TO REMAIN. INSTALL NEW SIGN W8-2 ON SAME STEM.
REMOVE KERB RAMP AND NATURE STRIP AS HATCHED. CONSTRUCT 11m² OF FOOTPATH
CONSTRUCT CONCRETE RAISED PEDESTRIAN CROSSING 100mm HIGH (200mm THICK WITH BROOM FINISH). THE RAISED FLAT SECTION TO BE COLOURED WITH OXIDE (CHARCOAL GREY COLOUR) THE RAMPS TO BE IN PLAN CONCRETE COLOUR.
PROVIDE GUTTER BRIDGE WITH HEEL SAFE GRATE
INSTAL 'LOOK' WORDING
PROVIDE PEDESTRIAN CROSSING BARS IN THERMOPLASTIC AS SHOWN
EXISTING LANDSCAPED ISLAND TO REMAIN. REPAINT THE KERB WITH WHITE REFLECTIVE PAINT AS PER RMS SPECIFICITIONS.
RETAIN EXISTING SIGNS
SCHOOL DROP-OFF PICK-UP ZONE
REMOVE EXISTING SIGNS & STEM
SUPPLY AND INSTALL NEW SIGNS ON NEW STANDARD STEM FACING APPROACHING TREFFIC AS SHOWN. THE STEM TO BE INSTALLED ON A CONCRETE PAD 350x350
D4-1-2 BLACK & WHITE
W8-2
W5-10A
EXISTING SPEED THRESHOLD & ISLANDS TO REMAIN
CONC FOOTPATH
TURF
DWY
GATE
STN3
STN4
STN2
12m
3.6m
5m
1.8m
0.4m
3.5m
12.84m
3.44m
0.6m
6m
11.7m
EXISTING LANDSCAPED ISLAND TO REMAIN. REPAINT THE KERB WITH WHITE REFLECTIVE PAINT AS PER RMS SPECIFICITIONS.
REMOVE EXISTING YELLOW CHEVRON SIGN. INSTALL NEW CHEVRON SIGN BLACK & WHITE
D4-1-2
PROVIDE 20m OF DOUBLE LINE WITH YELLOW RRPM's
DEMOLISH EXISTING WATTS PROFILE SPEED CUSHION. BOX OUT THE PAVEMENT UPTO DEPTH OF 40mm. DRESS UP THE AREA WITH 40mm AC10.
PROVIDE PIANO KEYS 'PREMARK' THERMOPLASTIC LINEMARKING AS SHOWN
PROTECT HERITAGE POSTS DURING CONSTRUCTION
PROVIDE 40m OF DOUBLE LINE WITH YELLOW RRPM's
PROVIDE PIANO KEYS 'PREMARK' THERMOPLASTIC LINEMARKING ON BOTH RAMPS OF EXISTING RAISED THRESHOLD
REMOVE EXISTING SIGNS & STEMS
AWNING ABOVE
INSTAL 'LOOK' WORDING
PROVIDE GUTTER BRIDGE WITH HEEL SAFE GRATE
REMOVE KERB RAMP AND NATURE STRIP AS HATCHED. CONSTRUCT CONCRETE FOOTPATH
REMOVE EXISTING SPEED HUMP SIGN, SPEED SIGN AND STEM
RELOCATE EXISTING 'NO STOPPING' ON NEW STANDARD STEM AS SHOWN
EXISTING PEDESTRIAN CROSSING SIGNS TO REMAIN. INSTALL NEW SIGN W8-2 ON SAME STEM.
REMOVE EXISTING YELLOW CHEVRON SIGN. INSTALL NEW CHEVRON SIGN BLACK & WHITE
RETAIN EXISTING SIGNS
REMOVE EXISTING SIGNS & STEM
3
15
17
19
19A
21
23
25
27
29
31
33
37
1 GENERAL ARRANGEMENT
Scale: 1:100
NOTE
ALL EXISTING SIGNS & LINES TO REMAIN UNLESS OTHERWISE NOTED.
LEGEND
NEW CAR PARKING SPACE
EXISTING CAR PARKING SPACE
REMOVED CAR PARKING SPACE
CARPARKING REPORT
NEW CAR SPACES..... 0
LOSS OF PARKING..... 0
SCALE 1:100 (A1)
SCALE 1:200 (A3)
FOR COMMUNITY CONSULTATION
CHECKED & APPROVED
APPROVED FOR CONSTRUCTION
SURVEYED BY ADAM DILLON 11-04-2022
DESIGNED BY ASHFAQ AHMAD 14-04-2022
DRAWN BY ASHFAQ AHMAD 14-04-2022
INNER WEST
2-14 FISHER STREET, PETERSHAM NSW 2049
Ph. 02) 9392 5000
Post: PO Box 14 PETERSHAM
e) council@innerwest.nsw.gov.au
Web: https://www.innerwest.nsw.gov.au
SURV. GEN.
R.M.S.
A.G.L. / SHELL PIPELINES
SYDNEY WATER
TELSTRA / OPTUS
AUSGRID
NOTICE OF ENTRY
KERB & GUTTER
NOTICES
DATE
DATUM ASSUMED
SCALES (ORIGINAL A1)
1:100
A APR 22 INITIAL ISSUE FOR TRAFFIC COMMENTS
REV. DATE DESCRIPTION APPROV.
TRAFALGAR STREET, ANNANDALE
OUTSIDE NO. 27 & ANNANDALE PUBLIC SCHOOL
PROPOSED RAISED PEDESTRIAN CROSSING
COMMUNITY CONSULTATION PLAN
PROJECT NO. 303033
SHEET NO. 1 of 1
PLAN NO. 10211
SHEET REV # A

Item No: **LTC0622(1) Item 7**

Subject: **SMIDMORE STREET, MARRICKVILLE – ENRC/2022/0022 - TEMPORARY FULL ROAD CLOSURE FOR TWO MARRICKVILLE METRO EVENTS THE FRINGE FESTIVAL 8-12 SEPTEMBER 2022 AND 10-12 DECEMBER 2022 MARKETS AND RELATED TEMPORARY CHANGES TO VICTORIA ROAD KERBSIDE PARKING RESTRICTIONS TO ACCOMMODATE RELOCATION OF COMMUNITY BUS (MIDJUBURI – MARRICKVILLE WARD / HEFFRON ELECTORATE / INNER WEST PAC)**

Prepared By: Jennifer Adams - Engineer – Traffic and Parking Services

Authorised By: George Tsaprounis - Coordinator – Traffic and Parking Services

SUMMARY

Council has been notified by MLA Transport Planning, on behalf of Marrickville Metro Shopping Centre, about two proposed temporary full road closures of Smidmore Street, between Murray Street and the Centre's Smidmore Street car park access, Marrickville for the Fringe Festival 8-12 September and for the 10-12 December 2022 Marrickville Metro Market event. The closures will involve related temporary changes to Victoria Road kerbside parking restrictions to accommodate relocation of the community bus stop. It is recommended that the proposed temporary road closures be approved subject to **all standard Council conditions for a temporary full road closure. The** related changes to kerbside signage be approved also subject to all works and costs associated with the signage changes for the relocated 'Community Bus zone' and reinstatement of Council's original parking restrictions is to be borne by the applicant.

RECOMMENDATION

1. **THAT the proposed temporary full road closure of Smidmore Street, between Murray Street and the Smidmore Street car park access, Marrickville for a four day period 6am Saturday 8 September to midnight Monday 12 September 2022 and for a two day period 6am Saturday 10 December to midnight Sunday 11 December 2022 for the purpose of holding two different Marrickville Metro Shopping Centre events (the Fringe Festival and the second weekend December markets) be APPROVED, subject to the applicant complying with, but not limited to, the following conditions:**

    a. **A Road Occupancy License application be obtained by the applicant from the Transport Management Centre;**

    b. **All affected residents and businesses, including NSW Police Local Area Commander, Transit Systems, Fire and Rescue NSW and NSW Ambulance Services, shall be notified in writing by the applicant of the proposed temporary road closure at least 7 days prior to the event, with the applicant making reasonable provision for residents and businesses;**

    c. **The occupation of the road carriageway must not occur until the road has been physically closed; and**

    d. **A clear unobstructed 4-metre-wide path of travel throughout the site is recommended to be maintained at all times for emergency vehicle access, in order to provide safe egress in case of fire or other emergency.**

2. **THAT the proposed short-term temporary changes to parking restrictions in Victoria Road, Marrickville as per plans submitted by MLA Transport Planning (20008ppt05A-**

220225 Community Bus Stop Relocation Plan (002)) be approved subject to the following conditions:

a. **All works and cost of the supply, installation and removal of the signage associated with the temporary community bus relocation is to be borne by the applicant;**
b. **The temporary removal and reinstatement of any Council assets will be at the applicants cost and to Council's Traffic Engineers satisfaction; and Notification of surrounding properties be undertaken at least 7 Days prior to installation of the temporary changes and relocated 'Bus Zone'.**

BACKGROUND

Marrickville Metro Shopping Centre is proposing to host a Fringe Festival on Smidmore Street between Murray Street and the shopping car park access. The Fringe Festival is proposed to be held over four days from Thursday 8th September 2022 to Sunday 11th September 2022 (inclusive).

It is proposed to close Smidmore Street (between Murray Street and the car park access) to vehicular traffic from 6:00am Thursday to 12:00am the following Monday when the Fringe Festival is being held.

In addition to the above Fringe Festival event, it is also proposed to close the same section of Smidmore Street for the purpose of holding market stalls in the second weekend of December 2022 i.e., Saturday 10th December 2022 to Sunday 11th December 2022. During the market event, the road is proposed to be closed from 6:00am on Saturday and re-opens to the public again 12:00am the following Monday.

The location of the proposed road closure is shown in the diagram below.

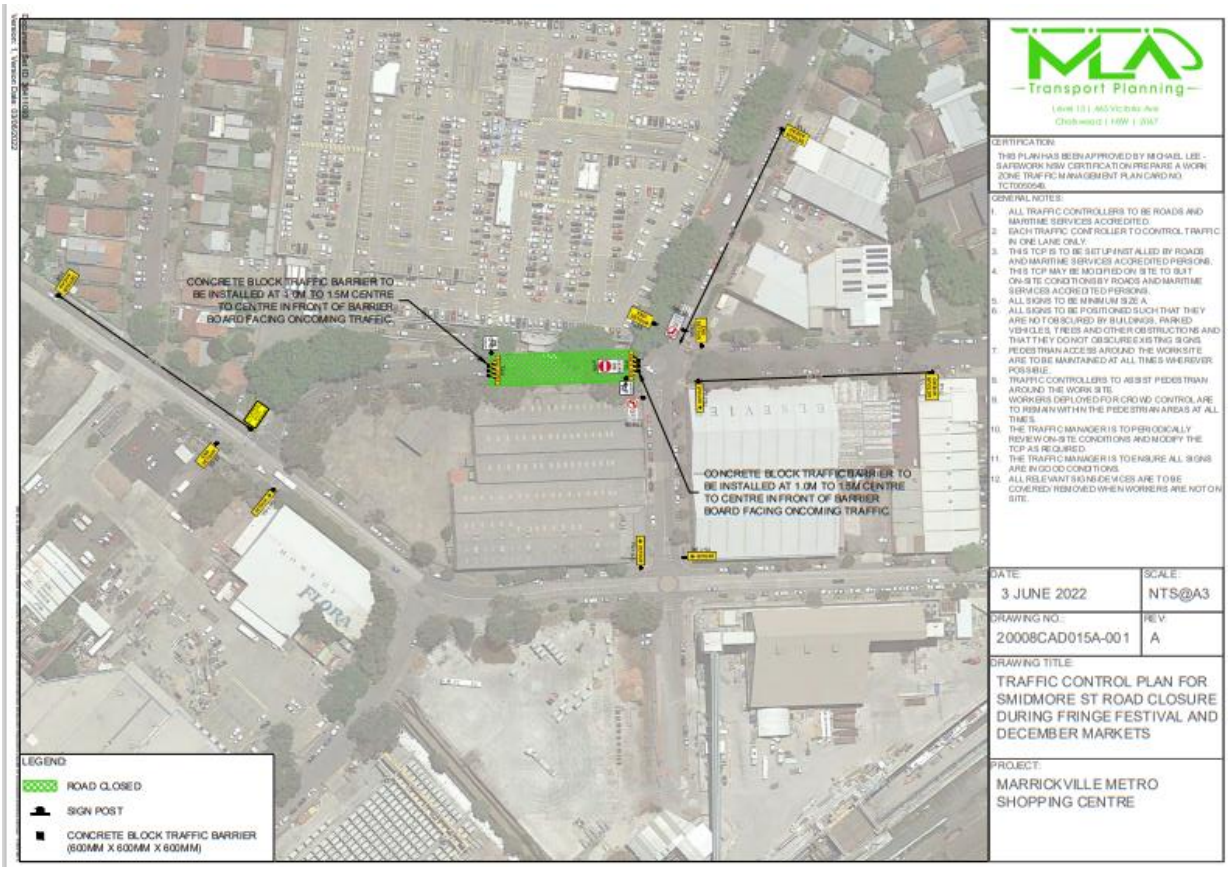
For both proposed road closures, it is also proposed to relocate the community bus stop to Victoria Road in front of the main pedestrian entrance to the existing Centre as shown below.

The proposed road closure of Smidmore Street will result in some traffic being rediverted to alternate traffic routes as shown below.

The section of Smidmore Street between Edinburgh Road and the car park access will remain open to continue to permit access to the car park and the taxi rank on the southern side of Smidmore Street. Through traffic along Smidmore Street to/from Murray Street will not be permitted except for cyclists. However, cyclists will be required to dismount from their bicycle whilst using the closed section of Smidmore Street.

The taxi rank on Smidmore Street (near Edinburgh Road) will continue to operate as per normal. Bus services in the area will not be affected by the proposed closures as buses do not require to access the section of Smidmore Street that is proposed to be closed.

The supplied TCP is reproduced below and the TMP is attached at the end of this report.



FINANCIAL IMPLICATIONS

Under Council's Fees & Charges, the applicant is to pay a fee for the temporary full road closure along with any other required road occupancy and/or road opening permit fees.
All works and costs of implementation works associated with the recommended temporary relocation of the Community Bus Zone relocations will be borne by the applicant as will the reinstatement of any of Council approved signage at the end of the temporary relocation period.

PUBLIC CONSULTATION

The applicant is to notify all affected residents and businesses in writing at least 7 days prior to the commencement of works. A copy of the notification is attached at the end of this report.
The proposed road closure has been advertised on Council's website in accordance with the Roads Act 1993.
In relation to the relocation of the community bus the applicant is to notify all affected residents and businesses in writing at least 7 days prior to the commencement of works

MARRICKVILLE
METRO

20 Smidmore Street
Marrickville NSW 2204 Australia
Telephone: (02) 9519 1066
Email: marrickville.metro@ampcapital.com

Dear Neighbour,

Marrickville Metro will host two events on the paved pedestrian areas and closed off road way of Smidmore Street for:

- Fringe Festival: 8-11 September (Thursday to Sunday)
- December Christmas Markets: Saturday 10th and Sunday 11th December

The Markets will feature a line up of local established and emerging artists and creatives, food and drink stalls, fresh produce and specialty grocery. The Fringe Festival events will include performances by local musicians and entertainers, along with family activities.

Part of Smidmore Street will be closed to vehicular traffic from:

- 6:00am Thursday 8th September to 12:00am the following Monday 12th September
- 6:00am on Saturday 10th December to 12:00am the following Monday 12th December

Kind regards,
The Centre Management Team
Ph: 9519 1066

Document Set ID: 36411091
Version: 1, Version Date: 03/06/2022

ATTACHMENTS

1.⇩ ECM_36411093_v1_ - - Traffic Management Plan

MLA Transport Planning

Smidmore St, Marrickville Proposed Road Closure for Fringe Festival and December Markets

Traffic Management Plan

Smidmore St, Marrickville Proposed Road Closure for Fringe Festival and December Markets

Traffic Management Plan

Report Version: Draft

Report Date: 3 June 2022

Report Reference: 20008r07A-220603

Client: AMP Capital Pty Ltd

Document Set ID: 36411093
Version: 1, Version Date: 03/06/2022

Table of Contents

List of Figures

Appendices

1 Introduction

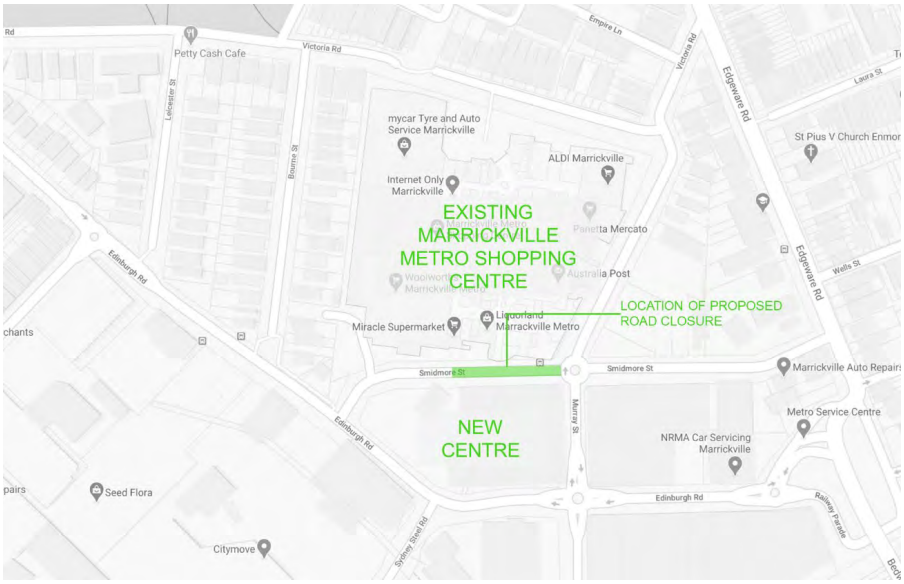
Marrickville Metro Shopping Centre (Centre) is proposing to host a Fringe Festival on Smidmore Street between Murray Street and the shopping car park access. The Fringe Festival is proposed to be held over four days from Thursday 8th September 2022 to Sunday 11th September 2022 (inclusive).

It is proposed to close Smidmore Street (between Murray Street and the car park access) to vehicular traffic from 6:00am Thursday to 12:00am the following Monday when the Fringe Festival is being held.

In addition to the above Fringe Festival event, it is also proposed to close the same section of Smidmore Street for the purpose of holding market stalls in the second weekend of December 2022 i.e. Saturday 10th December 2022 to Sunday 11th December 2022. During the market event, the road is proposed to be closed from 6:00am on Saturday and re-opens to the public again 12:00am the following Monday.

Figure 1.1 shows the location of proposed road closure.

Figure 1.1: Location of Proposed Road Closure



For both proposed road closures, it is also proposed to relocate the community bus stop as shown in Figure 1.2.

Figure 1.2: Proposed Community Bus Stop Relocation

This traffic management plan (TMP) has been prepared by MLA Transport Planning (MLA) to accompany an application to Inner West Council for the proposed road closure.

2 Detailed Plan of Proposed Measures

Is a detailed plan of the proposed measures necessary?	
Yes	☑
No	☐

Traffic management measures to manage traffic during the proposed road closure are presented in the traffic control plan contained in Appendix A.

3 Identification and Assessment of Impact of Proposed Measures

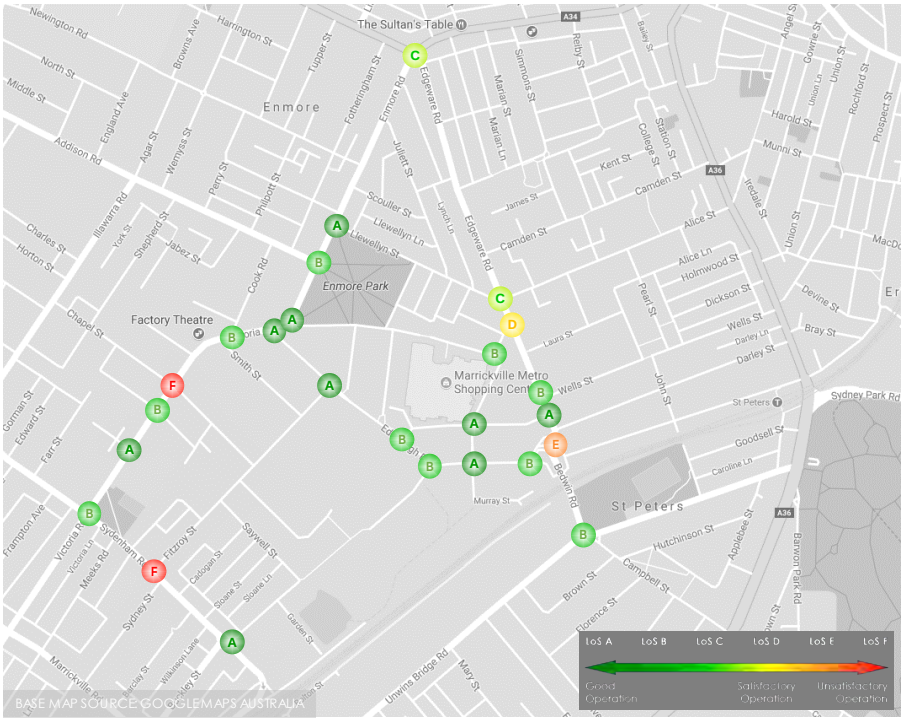
Is a detailed assessment necessary?	
Yes	☐
No	☑

The proposed road closure of Smidmore Street will result in some traffic being re-diverted to alternate traffic routes as shown in Figure 3.1.

Figure 3.1: Diverted Traffic Routes During Proposed Road Closure

It is noted that traffic modelling has been conducted as part of the project application for the proposed expansion of Marrickville Metro Shopping Centre. The traffic modelling takes in account the road closure of Smidmore Street between Murray Street and the car park access in the eastbound. The traffic modelling indicates that the surrounding intersections immediately adjacent to Smidmore Street where the proposed road closure is located, namely the Edinburgh Road intersections with Smidmore Street, Sydney Steel Road and Murray Street will have good intersection operation in the future i.e. Level of Service B or better – see Figure 3.2.

Figure 3.2: Post Development VISSIM Traffic Modelling Results



Source: TTPP

In the light of the above, the proposed road closure of Smidmore Street is not expected to create any traffic impacts in the local road network.

4 Measures to Ameliorate the Impact of Re-Assigned Traffic

Is an assessment required?	
Yes	☐
No	☑

As discussed in Section 3, the proposed road closure will not create any traffic impacts. As such, traffic measures to ameliorate the traffic impacts will not be required.

5 Assessment of Affected Public Transport Services

Is an assessment required?	
Yes	☐
No	☑

The proposed road closure will not have any impacts to public transport services as the section of Smidmore Street that is proposed to be closed is not used by bus services serving the local area.

Notwithstanding the above, bus operators and the NSW Taxi Council have been consulted and their feedback sought for the proposed road closure and relocation of the community bus stop. At the time of preparing this TMP, Transit Systems and Transdev John Holland have advised that the proposed road closure and community bus stop relocation will not affect their operation and as such they raise no objections to the proposed road closure and the relocation of the community bus stop.

Feedback from NSW Taxi Council was not yet available at the time of preparing this TMP. MLA will continue to liaise with the NSW Taxi Council and communicate their feedback to Council as soon as it is available.

6 Details of Provision Made for Emergency Vehicles, Heavy Vehicles, Cyclists and Pedestrians

Are these details required?	
Yes	☐
No	☑

No special provisions for emergency vehicles will be required as emergency vehicles will have the use of alternative routes in the local road network such as Edinburgh Road and Murray Street. If emergency vehicles need to attend to an issue within the closed section of Smidmore Street, the emergency vehicle will be let through.

Provision for heavy vehicles will not be required since the heavy vehicles will have available other alternative routes in the local road network. See traffic control plan in Appendix A for details.

The proposed road closure will not affect pedestrians as pedestrians will continue to be permitted to use the closed section of Smidmore Street.

Similarly, cyclists will be requested to dismount from the bicycle in order to use the closed section of Smidmore Street. Alternatively, cyclists can use other alternative routes. See traffic control plan in Appendix A for details.

7 Assessment of Effect on Existing and Future Developments with Transport Implications in the Vicinity of the Proposed Measures

Is an assessment required?	
Yes	☐
No	☑

The proposed road closure of Smidmore Street will not have any impacts on the access to existing and future developments in the vicinity.

8 Assessment of Effect of Proposed Measures on Traffic Movements in Adjoining Council Areas

Is an assessment required?	
Yes	☐
No	☑

The proposed road closure will not affect traffic movements in adjoining Council areas.

9 Public Consultation Process

Is a public consultation process required?	
Yes	☐
No	☑

The Centre's Management Team has undertaken public consultation with the local community in relation to the proposed market. The community consultation includes door knocking and letter box drops for local residents, hosting special briefing events for local residents, development of a local residents Facebook page to share information, face to face surveys of Marrickville Metro shoppers, a tailored public relations program to communicate with the broader community, signage at the centre and provision of family programs including kid's activities and school activities to build connections with families in the area.

Additional consultation will be undertaken with the local community prior to the Fringe Festival being held. Centre Management will conduct a letter box drop and advise the community about the proposed road closure at least three weeks prior to the closing the road. Any feedback received from the community will be provided to Council.

Appendix A

Traffic Control Plan

Appendix B

Bus Operators Consultation

Michael Lee

From: Rino Mucciacciaro <Rino.Mucciacciaro@transdevjohnholland.com.au>
Sent: Friday, 3 June 2022 8:32 AM
To: Adrian Prichard; Michael Lee; Richard Burnhill
Subject: RE: Marrickville Metro - Proposed Smidmore St Temporary Road Closure

Hi all.

TJHB not affected.

PS: Bushara is back, will have details next week.
Regards

Rino Mucciacciaro
Traffic and Events co-ordinator
M: 0407 402 551
Transdevjohnholland.com

From: Adrian Prichard <APrichard@transitsystems.com.au>
Sent: Friday, 3 June 2022 8:09 AM
To: Michael Lee <michael.lee@mlatp.com.au>; Rino Mucciacciaro <Rino.Mucciacciaro@transdevjohnholland.com.au>; Richard Burnhill <operations@nswtaxi.org.au>
Subject: Re: Marrickville Metro - Proposed Smidmore St Temporary Road Closure

Hi Michael

Transit Systems raise no objections to you road closure proposal and relocation of community bus stop.
STA no longer exists so Bushara will no longer be involved Buses in this area have been taken over by Transdev John Holland I have included Rino for their response.

Regards

Adrian Prichard

A/Area Manager Business Support Services

M: 0490 121 539 Hours: 07:00 - 15:00

E: APrichard@transitsystems.com.au
A: Lot 2 Airfield Drive, LEN WATERS ESTATE NSW 2171

www.transitsystems.com.au

From: Michael Lee <michael.lee@mlatp.com.au>
Sent: Wednesday, June 1, 2022 11:36 AM
To: Bushara Gidies <Bushara_Gidies@sta.nsw.gov.au>; Adrian Prichard <APrichard@transitsystems.com.au>; Richard Burnhill <operations@nswtaxi.org.au>
Subject: Marrickville Metro - Proposed Smidmore St Temporary Road Closure

Hi Bushara/Adrian/Richard,

I trust you are well. We have being requested by Inner West Council to liaise with you in relation to the above proposed temporary road closure. Apologies for the long email.

By way of background, Centre Management at Marrickville Metro Shopping Centre is proposing to close Smidmore Street between the shopping centre car park access and Murray Street for the purposes of holding market stalls during the first weekend of each month. On each occasion, the road closure will be effective from 6:00am Friday to 12midnight the following Monday.

We note that the proposed closed section Smidmore Street is not being used by buses. The taxi rank on Smidmore Street (near Edinburgh Road) will not be affected as this section of Smidmore Street will remain open. However, it will require the community bus stop (not used by STA/Transit Systems buses) on Smidmore Street to be relocated to Victoria Road in front of the shopping centre in the same area that was previously used for the same purpose.

On this basis, we have submitted a temporary road closure application to Inner West Council. The road application was accompanied by a TCP and TMP prepared by MLA – see attached. The road closure application was subsequently approved by Inner West Council – see attached approval. The road closure has been approved for a 6-month period (May 2022 to October 2022) together with a condition requiring the TCP/TMP to be reviewed after the initial three months. Due to various reasons, the market has been delayed. As such, the first market event (together with the road closure) has been scheduled for July 2022.

In anticipation of this, we have scheduled to conduct traffic monitoring in either the July or August market event to comply with Condition 1e) in the road closure approval which may require the TCP/TMP to be amended depending on the findings from the traffic monitoring. The traffic monitoring will include on-site observations (12noon to 5:00pm for one event day) on Smidmore Street for any traffic issues in particular relating to cyclists.

In addition to the above, Centre Management is also proposed to hold the Fringe Festival in September (Thursday 8 to Sunday 11). This will require a separate and additional temporary road closure application.

In light of the above, could you please provide your feedback whether the proposed road closure and/or the relocation of the community bus stop will create any operational issues for your buses and taxis. Please note that due to the Local Traffic Committee (LTC)/Council meetings only occurring once a month, we will need to submit the road closure for the Fringe Festival in September for the June LTC Meeting (20 June). Therefore, it would be greatly appreciated if you could provide us any feedback you may have before 20 June.

If you have any questions and/or require further information, please do not hesitate to reach out to me. As always, appreciate your assistance on this. Many thanks.

Regards,

Michael Lee
Director
m: 0403 107 146 t: 02 8287 1217

MLA Transport Planning
a: Level 13 | 465 Victoria Ave
Chatswood | NSW | 2067
e: michael.lee@mlatp.com.au
w: www.mlatp.com.au

Document Set ID: 36411093
Version: 1, Version Date: 03/06/2022

MLA Transport Planning

Level 13 | 465 Victoria Avenue
Chatswood | NSW | 2067

PO Box 628 | Chatswood | NSW | 2057

www.mlatp.com.au

Item No: **LTC0622(1) Item 8**

Subject: **YEO PARK, SUMMER HILL-FORMALISATION OF OFF-ROAD SHARED BICYCLE-PEDESTRIAN PATH, BETWEEN VICTORIA STREET AND PROSPECT ROAD.**

(DJARRAWUNANG-ASHFIELD WARD/SUMMER HILL ELECTORATE/ASHFIELD PAC)

Prepared By: Boris Muha - Engineer – Traffic and Parking Services

Authorised By: George Tsaprounis - Coordinator – Traffic and Parking Services

SUMMARY

Council at its meeting on the 10 May 2022 approved safer road crossing treatments for pedestrians and bicyclists at the intersections of Harland Street/Victoria Road, and Prospect Road/Old Canterbury Road, Summer Hill. Bicyclist movements are linked east to west between the two intersections via an off-road shared pedestrian-bicycle path through Yeo Park, which has not been formalised as of this moment to the required guidelines.

This report deals with the formalisation of the shared pedestrian-bicycle path through Yeo Park in treatment with signs and line marking between Harland/Victoria Street and Prospect Road.

RECOMMENDATION

THAT the formalised treatment of the (off-road) shared pedestrian-bicycle path through Yeo Park, Summer Hill, with signs and line marking as shown in the plan and notations of ATTACHMENTS 2 and 3, be APPROVED.

BACKGROUND

The pathway across Yeo Park is designated as an off-road bicycle route under the *Inner West Council Cycling Map and Guide,* and the route is shown on plan **ATTACHMENT 1.**

The physical treatments to the intersections are part of the approved development expansion of the Trinity Grammar School for improved traffic and pedestrian safety in the area. The devices have also been designed to cater for cyclists to come off from Harland Street (on-road) across Victoria Street onto Yeo Park (off-road) and then back on road to Prospect Road and visa-versa.

-See **ATTACHMENT 2.**

FINANCIAL IMPLICATIONS

The proposed sign and line marking works are estimated around $8500 and will be funded under Council's general signs and line marking budget.

OTHER STAFF COMMENTS

The following is noted with discussions made with the TfNSW representative.

- Signs and marking are in reference to the NSW bicycle guidelines and the Sydney City Council shared pathway pavement markings guidelines-**See Attachments 2 and 3.**
- TfNSW accepts the use of pavement symbols and lines (identified as notations 4-7 in Attachment 3) in conjunction with other signage in formalisation of the shared path. These are extracted from Sydney City Council shared pathway pavement marking guidelines.
- The pram ramp to the western corner of Prospect Road at Old Canterbury Road is to be made at 2.1 m wide (as per Council standard) for the combined use of pedestrians, and cyclists coming off and onto Prospect Road.
- The pram ramp to the eastern corner of Prospect Road will be widened to 1.8m (instead of the standard 1.2m) for pedestrians crossing to and from the refuge in Prospect Road as requested by the TfNSW representative.
- Designed guidance/way finding signs are incorporated to direct bicyclists from on-road to off-road and visa-versa.
- Advanced warning signage is provided on both approach side of Old Canterbury Road to Prospect Road to warn motorists of pedestrian and cyclist activity in the side street (being Prospect Road).

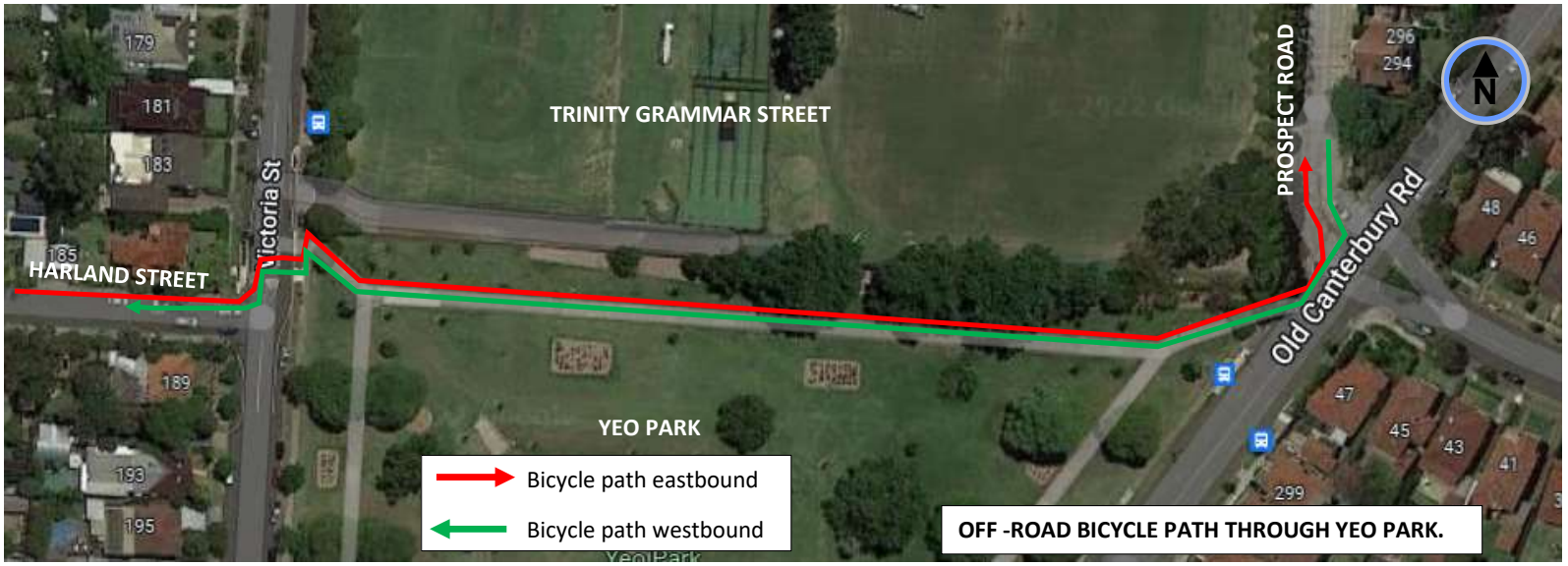
The physical intersection (device) treatments are programmed to be constructed within the next 1-2 years by the Trinity Grammar School developer. The shared path works in Yeo Park, and in connection between the two intersection devices will be carried out by Council in conjunction with or separately following the completion of the intersection devices done by the developer.

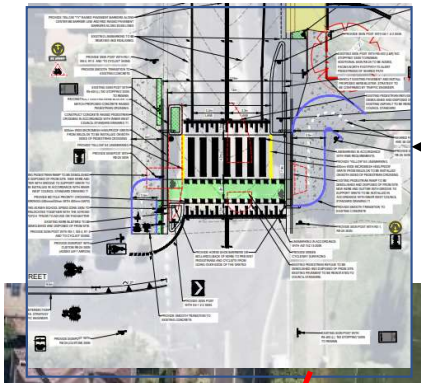
PUBLIC CONSULTATION

Not required. No changes are made to traffic and parking.

ATTACHMENTS

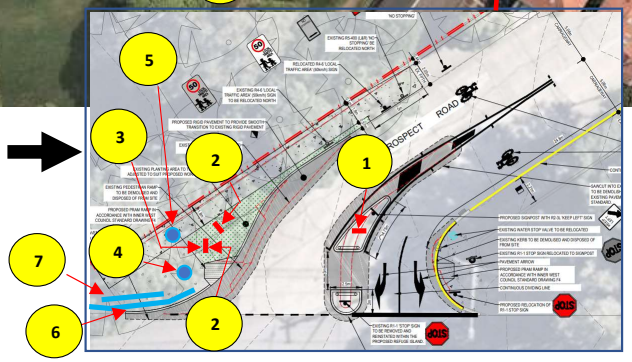
1.⇩ Off-road bicycle route through Yeo Park
2.⇩ Formalisation of shared path with signs and markings
3.⇩ Notation-details for shared path signs and markings.


TRINITY GRAMMAR STREET
HARLAND STREET
Victoria St
PROSPECT ROAD
Old Canterbury Rd
YEO PARK
N
179
181
183
185
189
193
195
296
294
48
46
47
45
43
41
299
Bicycle path eastbound
Bicycle path westbound
OFF -ROAD BICYCLE PATH THROUGH YEO PARK.



Replace existing pedestrian refuge with combined pedestrain/cycle crossing -Victoria Street, just north of Harland Street

New pedestrian refuge -intersection of Old Canterbury Road and Prospect Road.



See notations **Attachment 3**

NOTATIONS:

1

2

3

4

5

6

7

A → bicycle wayfinding sign to ASHFIELD

SH → bicycle wayfinding sign to SUMMER HILL

Place to both approaches sides on Old Canterbury Road leading up to Prospect Road.

Arrow right from the east approach.

Note : Markings 4-7 are extracted and adopted from the *Sydney City Council shared pathway pavement markings* guidelines.

Item No: **LTC0622(1) Item 9**

Subject: **TEMPE SOUTH LOCAL AREA TRAFFIC MANAGEMENT STUDY - REVISED REPORT (MIDFUBURI-MARRICVILLE WARD/HEFFRON ELECTORATE/INNER WEST PAC)**

Prepared By: Sunny Jo - Coordinator Traffic Engineering Services (North)

Authorised By: George Tsaprounis - Coordinator – Traffic and Parking Services

SUMMARY

Council is proposing to re-exhibit the Tempe South Local Area Traffic Management (LATM) study having noted the final version dated 6 July 2021. The Tempe South LATM study was deferred several times due to community concerns and impact to residential streets.

The Tempe South LATM study was last reported to the Traffic Committee on 16 August 2021 and was developed to mitigate the impacts associated with the proposed development, influencing incoming and outgoing routes. The LATM study was solely assessed based on the original approved vehicle access locations and was not intended to examine alternate access arrangements.

During the Public Exhibition of the LATM study, community action groups, businesses and individuals raised objections and concerns on the development and the study on safety and amenity grounds.

On April 2022, the Sydney Eastern City Planning Panel deferred the Modification application from the applicant to delete the condition requiring the adoption of the LATM study by Council's Local Traffic Committee prior to the issue of any Construction Certificate.

It is noted that Council is currently organizing a comprehensive feasibility study of traffic signals at the Princes Highway driveway, and this is expected to be completed and considered by Transport for NSW for a decision on the matter.

The study will also evaluate design changes within the Bunnings site to facilitate the amended vehicular entry and exit arrangements. The results of the Traffic Signals Feasibility Study will be submitted to Transport for NSW for consideration.

RECOMMENDATION

THAT:

1. **The Tempe South Local Area Traffic Management Study – Final Report dated 6 July 2021 be endorsed for a second public exhibition, based on the original approved vehicle access arrangements for 728-750 Princes Highway, Tempe (Determination No. 201700185).**
2. **The Public Exhibition be undertaken on the proposed scheme for 28 days with the outcomes being reported back to the Local Traffic Committee.**
3. **It be noted that a feasibility study of traffic signals at the driveway of Princes Highway is currently in progress, with input from Transport for NSW and the developer. This study will be undertaken as a separate process and when complete will be submitted to Transport for NSW for consideration.**

BACKGROUND

The following table outlines the relevant history of the Tempe South LATM and the Tempe Bunnings development:

Date	Action
November 2020-January 2021	Public Exhibition of the draft Tempe South LATM study
19 April 2021	The Local Traffic Committee on 19 April 2021 deferred the Tempe South LATM study and proposed treatments '…until a determination regarding the signalized exit from Bunnings is received from the Minister for Transport'.
16 August 2021	Council held meetings with Transport for NSW (TfNSW) and Bunnings regarding vehicular access arrangements for the Tempe Bunnings site, including the feasibility of traffic signals at the driveway in Princes Highway between Brooklyn Street and Foreman Street. This option was not supported by TfNSW due to safety and network efficiency reasons, with Bunnings also indicating that they do not intend to modify their development consent and the approved layout design. TfNSW also did not support the provision of banning traffic from Smith Street into Union Street by signage as there is insufficient space to install a physical island to block travel. The Tempe South LATM report dated 6 July 2021 included two additional proposals, including: • Soft closure of Union Street by signage 'No Entry' from Smith Street to Union Street at the existing traffic signals, including a 10km/h Shared Zone in Union Street. If TfNSW does not approve the soft closure and Shared Zone, a second option for Union Street be obtained including At-grade contrasting pavement entrance treatment, installation of mountable kerbs, marking parking bays on both sides of the road between Princes Highway and Edwin Street, a 40km/h speed limit be established in Union Street, subject to approval from TfNSW. • A partial road closure of Brooklyn Street (exit only to Princes Highway) to mitigate traffic diverted from Union Street. The Local Traffic Committee on 16 August 2021 deferred the Tempe South LATM study and the proposed treatments and recommended to refer this matter to the State Government for intervention on the grounds of safety and unnecessary impact on local residents, businesses and Tempe Primary School.
10 September 2021	Bunnings submitted MOD/2021/0376 seeking a modification to delete condition 68A '…requiring the adoption of the LATM study by Council's Local Traffic Committee' prior to the issue of any Construction Certificate, including other changes.
12 October 2021	Council Notice of Motion on 12 October 2021 resolved to undertake a campaign to lobby Bunnings and NSW Minor for Roads seeking approval of traffic signals installation on Princes Highway to provide controlled access to Bunnings.
3 March 2022	Transport for NSW has provided a response to a community action group stating that they '…would support further risk assessment being undertaken by either Bunnings or Council of the Princes Highway access and a feasibility review of traffic lights'

12 April 2022	Councill Notice of Motion on 12 April 2022 resolved to 'urgently conducts a new and independent risk assessment and feasibility review of proposed traffic lights on the Princes Hwy to determine if safety and network impacts previously raised by Transport for NSW could be effectively mitigated, funded from the next Quarterly Budget Review'
13 April 2022	The Sydney Eastern City Planning Panel on 13 April 2022 resolved to defer MOD/2021/0376 '…until all the necessary notification and assessments under the relevant parts of the Act have been completed. The Panel requested that '…the LTC conclude, as soon as possible, its consideration of that study in order not to circumvent the consent already grated to this development'

FINANCIAL IMPLICATIONS

Nil

OTHER STAFF COMMENTS

The intention of re-exhibiting the final Tempe South LATM is to finalise the treatments based on community feedback received from the initial public exhibition of the draft Tempe South LATM Study held in November 2020 to January 2021. The main changes since the last public exhibition comprised of the following proposals adopted from the community responses:

- Soft closure 'No Entry' and supplementary 'From Smith Street', custom 'Left and Right only' symbolic sign, supplementary 'to Princes Highway' sign at the signalized intersection of Smith Street and Princes Highway
- 10km/h Shared Zone in Union Street from Princes Highway to School Lane, including contrasting pavement threshold, installation of mountable kerbs
- Partial road closure of Brooklyn Street (exit only at Princes Highway), which would only be required to complement the No Entry closure at Union Street traffic signals.

It is noted that the soft closure proposal would require some traffic diversions for residents located south of Princes Highway those seeking to access Tempe Public School or Tempe High School will need to detour to Holbeach Avenue, which will add to travel times for those impacted.

A finalised LATM scheme will be essential as there will be a fallback option for the Tempe community should the traffic signals at Princes Highway not be feasible.

As resolved by Council's Notice of Motion on 12 April 2022, an independent study is expected to be underway examining the provision of traffic signals allowing direct connections from the Bunnings site to Princes Highway. The proposal would change the vehicle access arrangements for the site, allowing an entry only from Smith Street, whilst allowing right and left turns to and from the Princes Highway driveway positioned near the northern end of the site.

The study will also evaluate design changes within the Bunnings site to facilitate the amended vehicular entry and exit arrangements. The results of the Traffic Signals Feasibility Study will be submitted to Transport for NSW for consideration.

PUBLIC CONSULTATION

The last public exhibition held for the Tempe South LATM was in November 2020 to January 2021.

A Tempe Bunnings Community Meeting was also held on 6.00pm-7.30pm Wednesday 9 March 2022 at St Peters Library, 39 Unwins Bridge Road, Sydenham outlining the MOD/2021/0376 submitted by Bunnings, as well as the traffic matters including the Tempe South LATM study.

ATTACHMENTS

1.⇩ Recommended Treatments
2.⇩ Tempe South LATM Study - Final Report
3.⇩ Final Report Appendices A to C
4.⇩ Final Report Appendices D to E

Tempe South Local Area Traffic Management Study

Recommended Treatments

Street	Treatment	Location	Estimated Cost[1]
Smith Street	Road Narrowing & Contrasting Pavement	Between Princess Highway and Wood Street	$135,058
Holbeach Avenue	Speed cushions & road narrowing	Adjacent to No.14 Holbeach Avenue	$17,090
Stanley Street	Flat top road hump	Adjacent to No.14 Stanley Street and No.32 Stanley Street	$85,841
Wentworth Street	Wentworth Street Flat top road hump	Adjacent to No.6 Wentworth Street, approximately 20m south of Princess Highway	$91,211
Union Street	Shared zone, with contrasting pavement threshold and 'soft' road closure	Between Princess Highway and School Lane	$20,934
Edwin Street	Flat top road hump	Adjacent to No.23 Edwin Street	$45,170
Tramway Street	Contrasting pavement threshold and flat top road hump	Approximately 30m south of Unwins Bridge Road	$81,170
Barden, Fanning, Hart and Station Streets	Contrasting pavement threshold	Approximately 10m south of Princess Highway	$90,000
Brooklyn Street	Partial road closure (No entry, exit only at Princess Highway)	At Princess Highway	$30,900
		Total	$595,374

1. Estimated costs include 10% contingency and 10% design costs

Tempe South LATM Study

Final Report

Inner West Council

6 July 2021

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Document Issue History

Report File Name	Prepared	Reviewed	Issued	Date	Issued to
P4533.001R Tempe South LATM Study – Draft Report_DRAFT	C. Mak / G. Yin	SP. Power	C. Mak	24/07/2020	Sunny Jo <sunny@innerwest.nsw.gov.au>
P4533.002R Tempe South LATM Study – Draft Report	C. Mak / G. Yin	G. Yin / SP. Power	G. Yin	25/09/2020	Sunny Jo <sunny@innerwest.nsw.gov.au>
P4533.003R Tempe South LATM Study – Final Report	C. Mak / G. Yin	SP. Power	C. Mak	29/03/2021	Sunny Jo <sunny@innerwest.nsw.gov.au>
P4533.004R Tempe South LATM Study – Final Report	C. Mak	G. Yin	G. Yin	06/04/2021	Sunny Jo <sunny@innerwest.nsw.gov.au>
P4533.005R Tempe South LATM Study – Final Report	C. Mak	G. Yin	G. Yin	06/07/2021	Sunny Jo <sunny@innerwest.nsw.gov.au>

EXECUTIVE SUMMARY

Background

As part of the conditions of consent for an approved Bunnings Warehouse at 728-750 Princes Highway, the Eastern City Planning Panel has conditioned that a Local Area Traffic Management (LATM) study to be undertaken for the Tempe South area, in order to manage the impacts of the proposed development.

Study Area

The study area for the LATM study consists of local roads in Tempe South, which are Barden Street, Edwin Street, Fanning Street, Foreman Street, Hart Street, Holbeach Avenue, Smith Street, South Street, Stanley Street, Station Street, Tramway Street, Union Street, Wentworth Street and Zuitton Lane. Data analysed and concept designs developed during the study are limited to these roads.

At the beginning of the study, background information and documents relating to the proposed Bunnings development were reviewed, providing information on future proposed traffic and road changes in the area. This included a desktop study of existing site conditions and review of surrounding land uses and road network information.

Data Review

Crash history, traffic and parking data were analysed as part of the study. Traffic and parking surveys were conducted to capture the levels of traffic and parking demand within the study area. This included tube counts, parking occupancy surveys and intersection counts

Crash history data between January 2014 and December 2018 were analysed. It was found that 12 crashes occur within the study area, with two (2) involving vehicles at intersections with Princes Highway. Five (5) of the crashes occurred along Holbeach Avenue, two (2) occurred along Smith Street and two (2) occurred along Edwin Street. Out of the five (5) Holbeach Avenue crashes, four (4) involved Vulnerable Road Users (VRU), which included motorcyclists, pedal cyclists and pedestrians.

Traffic surveys were undertaken on 19 March 2020, Thursday and 21 March 2020, Saturday, recording relevant data such as traffic volumes, heavy vehicle volumes and 85th percentile speeds. The surveys were undertaken during the early stages of the COVID-19 pandemic, therefore, the surveys may not have accurately reflected typical traffic conditions. However, Council decided to proceed with the LATM study and the traffic survey data was subsequently deemed suitable for the study.

From the traffic surveys, it was found that some of the local roads have relatively higher average daily traffic volumes than other roads in the study area. The 85th percentile speeds on these roads are also relatively higher than the other roads, with speeds of more than 40 km/h but lower than the speed limit of 50 km/h. Some roads with a truck load limit were also found to be used by heavy vehicles.

The crash history and traffic survey data analysed helped to identify roads that require LATM devices in order to provide traffic calming and reduce vehicle speeds, reduce general traffic volumes by deterring traffic, reduce heavy vehicle volumes and reduce crash Parking occupancy and duration surveys were undertaken for Barden Street, Fanning Street, Smith Street and a section of South Street on 19 March 2020, Thursday and 21 March 2020, Saturday. The parking surveys were also undertaken during the early stages of the COVID-19 pandemic, and may not accurately reflect typical parking conditions. The parking data showed that on average, Smith Street had 18 vacant spaces on Thursday and 27 vacant spaces on Saturday.

It is understood that up to 13 parking spaces along Smith Street will be removed as part of the Bunnings development. The parking survey data was used to determine the number of available kerbside parking spaces on a typical Thursday and Saturday and assess the impact of removing spaces due to Bunnings. These numbers then influenced the LATM treatment options proposed along Smith Street, as different LATM devices may also require removal of some kerbside parking spaces. It was found that Smith Street will have very few or no available parking spaces left when excluding parking that was removed due to the

Bunnings and the LATM devices. This may result in any parking overflow onto surrounding streets. The existing parking occupancy of around 50% along the surrounding Barden and South Streets mean that these roads are able to absorb any of the Smith Street parking overflow.

Site Audits

Site audits of existing traffic and parking signage, bicycle and pedestrian facilities, LATM devices and refuse collection issues were undertaken on Wednesday 4 March 2020. Audits for Edwin and Tramway Streets were undertaken on Tuesday 15 September 2020, including site observations of current school traffic operations.

A finding of the audit was the lack of truck load limit signage on the northern end of Wentworth Street near Princes Highway, which is peculiar due to the presence of such signage on the southern end of Wentworth Street and other local roads in the study area. This finding was taken into consideration when developing the LATM concept designs.

Traffic Generation and Impact

Approximated traffic generation rates and traffic volumes from previous studies were reviewed and adjusted to better represent potential traffic using local streets north of Princes Highway, namely Union Street. It was determined that Union Street could accommodate up to approximately 30% of Bunnings generated traffic leaving the site, based on acceptable performance limits of a local road.

The closure of Union Street was also explored and was determined as not feasible due to the effects to other local streets and required alternative routes.

Risk Priority Scoring Assessment

A scoring system was developed to determine streets that require LATM treatments. This was based on the crash history and traffic data analysed, and other factors such as existing road width, availability of existing LATM devices, distance to schools and existing and future land use. Points were allocated to each road or road section based on the level of risk. The higher the points, the higher the risk for future crashes, and hence the higher the need for LATM devices.

Based on the scoring criteria, seven (7) streets (priority streets), being Smith Street, Edwin Street, Holbeach Avenue, Stanley Street, Union Street, Wentworth Street and Tramway Street, had relatively higher scores than other roads in the study area. Therefore, LATM devices are recommended to be implemented on these roads.

Proposed Treatments Justification

A detailed selection criteria and list of suitable LATM measures were developed based on existing devices in the area and typical LATM devices presented in *Austroads Guide to Traffic Management Part 8 - Local Area Traffic Management*.

Treatment options were then proposed for each of the four priority streets to address the specific issue(s) identified:

- **Smith Street Option 1:** Road narrowing using kerb blisters to slow down traffic, with contrasting pavement to highlight the change in road environment
- **Smith Street Option 2:** Mountable concrete median to provide a horizontal deflection and slow down traffic
- Other Smith Street treatments: on-road and off-road bicycle transitions, extension of shared path and angled on-ramp for cyclists, along with a widened footpath on the western side of Smith Street. An optional landscaped verge may also be provided between the widened footpath and roadway, which will result in the removal of kerbside parking.
- **Holbeach Avenue Option 1**: A set of four speed cushions at mid-block to provide a vertical deflection and slow traffic down
- **Holbeach Avenue Option 2**: A set of two speed cushions at mid-block to provide a vertical deflection and road narrowing using kerb blisters, with the aim of slowing down traffic

- **Stanley Street Option 1**: Flat top road humps at two mid-block locations to provide a vertical deflection and slow traffic down
- **Stanley Street Option 2**: Road narrowing using kerb blisters at two mid-block locations to slow traffic down
- **Wentworth Street Option 1**: Road narrowing using kerb blisters at both ends of the road to slow traffic down, with contrasting pavement to highlight the change in road environment
- **Wentworth Street Option 2**: Flat top road humps at both ends of the road to provide a vertical deflection and slow traffic down
- Other Wentworth Street treatment: Truck restriction signage at the northern end of Wentworth Street where there is no existing signage.
- **Union Street Option 1**: Flat top road humps at two mid-block locations to provide a vertical deflection and slow traffic down
- **Union Street Option 2**: A 10 km/h shared zone between Princes Highway and School Lane to slow down traffic and providing priority to pedestrians
- **Edwin Street**: A flat top road hump west of Stanley Street to slow traffic and deter non-local traffic
- **Tramway Street**: Contrasting Pavement Threshold at Unwins Bridge Road and Edwin Street to act as a visual gateway and deter non-local traffic
- Other Union Street treatments: A contrasting pavement at the entry of Union Street at Princes Highway to deter non-local traffic from using these streets.

Where possible, landscaping is proposed to improve the aesthetics of the street environment and enhance sense of place.

Additionally, contrasting thresholds have also been proposed for Barden Street, Fanning Street, Hart Street and Station Street to visually separate the local streets and the Princes Highway. This assists in highlighting the local road environment and deter non-local traffic from using these streets. This treatment can also be used to support a reduction in speed limit in the future, subject to discussion and approval by Transport for NSW.

The existing bus stop along Princes Highway outside the site of the development may be impacted by the development. The provision of replacement bus stops would be a matter for Transport for NSW and is outside the scope of this study

The traffic movements in and out of Bunnings site via Princes Highway and Smith Street have been considered during the Development Application (DA) stage of the development. Any changes to traffic movements to Bunnings cannot be changed during the development of this LATM study.

Infrastructure Itemisation

Each option was broken down into individual components including signage. Treatments requiring signage include bicycle infrastructure at Smith Street, speed cushions and flat top road humps.

Cost Estimation

Indicative costs for each component were estimated based on average standard costs provided by Inner West Council, as well as rates presented within *Local Infrastructure Benchmark Costs (IPART NSW).* Naturally, the highest cost treatments include those requiring substantial civil works, such as flat top road humps, footpath widening, and kerb blisters.

Estimated costs for each option and measure ranges from $18,000 to $190,000, with the lowest cost treatment being the contrasting pavement, and the highest cost being the Smith Street treatment options.

Community Engagement and Further Tasks

A draft version of the LATM report was released for exhibition online between 3rd November 2020 and 12th January 2021.

On the Your Say Inner West website, participants could undertake a survey to vote for their most preferred treatment option. They could also provide additional comments. The community could also submit the feedback via email to Council.

Comments from the community engagement were collated and have been summarised into themes. Many of the comments were concerned with the effectiveness of the proposed treatments in deterring non-local traffic.

The following tasks were undertaken after reviewing the comments and survey results:

- Analysis of tube count surveys undertaken in February 2021
- Recalculation traffic volumes generated by Bunnings using more conservative trip generation rates
- Changes to concept designs based on community feedback
- Adoption of treatment options as preferred design based on survey results
- Recalculation of cost estimate based on updated concept designs

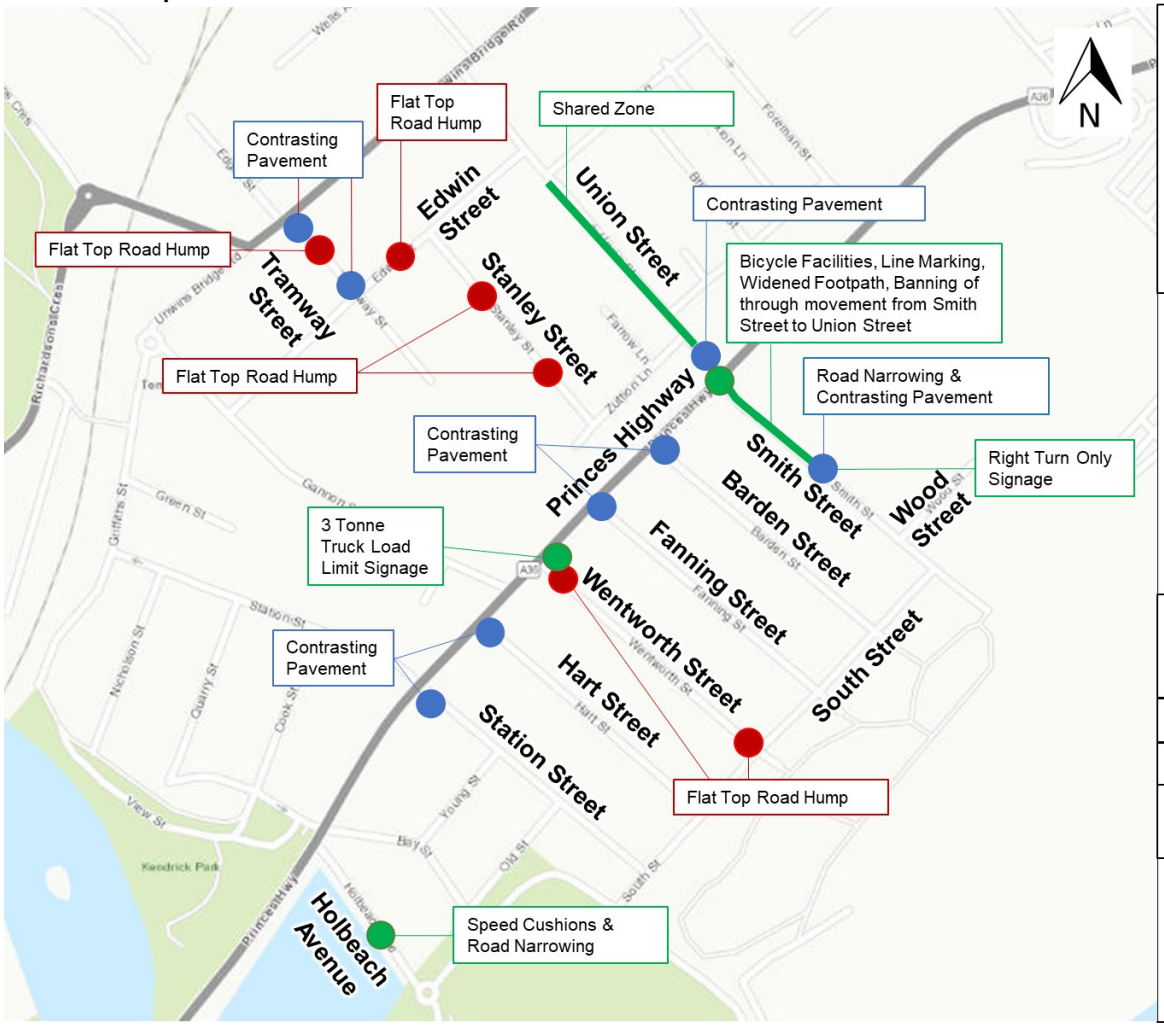
Adopted Treatments

The adopted treatments are:

- **Smith Street:**
  - Road narrowing using kerb blisters
  - Contrasting pavement
  - On-road and off-road bicycle transitions
  - Extension of shared path and angled on-ramp for cyclists
  - Widened footpath on the western side of Smith Street between Princes Highway and Bunnings access
- **Holbeach Avenue**: A set of two speed cushions at mid-block and road narrowing using kerb blisters
- **Stanley Street:** Flat top road humps at two mid-block locations
- **Wentworth Street**: Flat top road humps at both ends of the road
- **Union Street**:
  - A 10 km/h shared zone between Princes Highway and School Lane
  - A 'soft' road closure at Union Street and Princes Highway to ban northbound through traffic travelling from Smith Street to Union Street (subject to further community consultation)
  - A contrasting pavement at the entry of Union Street at Princes Highway
- **Edwin Street**: A flat top road hump west of Stanley Street
- **Tramway Street**: Contrasting pavement thresholds at Unwins Bridge Road and Edwin Street, and a flat top road hump in mid-block outside 404 Unwins Bridge Road
- **Barden Street, Fanning Street, Hart Street and Station Street**: Contrasting pavement threshold at Princes Highway

The estimated costs for the adopted treatments, including contingency and design costs, range from **$18,000** to **$135,000**.

Proposed Treatment Locations



Legend

- Flat Top Road Humps
- Contrasting Pavement Threshold
- Other Types of Treatments

Title:
Proposed LATM Treatments Map

Date: 29/03/2021

Project Number: P4533

Project:
Tempe South LATM Study

CONTENTS

Tables

Figures

Appendices

1. INTRODUCTION

1.1 Background

As part of the conditions of consent for an approved Bunnings Warehouse at 728-750 Princes Highway, the Eastern City Planning Panel has conditioned that a Local Area Traffic Management (LATM) study to be undertaken for the Tempe South area, in order to manage the impacts of the proposed development.

Inner West Council (Council) has commissioned Bitzios Consulting to undertake this LATM study.

1.2 Study Area

The LATM study area includes the local roads adjoining Princes Highway and Unwins Bridge Road in the Tempe South precinct, namely:

- Barden Street
- Edwin Street
- Fanning Street
- Foreman Street
- Hart Street
- Holbeach Avenue (excluding the Tempe Recreation Reserve access road)
- Smith Street
- South Street
- Stanley Street
- Station Street (between Princes Highway and South Street)
- Tramway Street
- Union Street
- Wentworth Street
- Zuitton Lane

The study area and the proposed development (728-750 Princes Highway) are illustrated in Figure 1.1.

Adapted from ESRI Maps

Figure 1.1: Study Area

1.3 Purpose and Scope

This report details the assessment of the traffic conditions within the Tempe South study area and its findings. The study included:

- Review of existing conditions, including:
  - Surrounding Land Uses
  - Road Hierarchy
  - Public Transport and Active Transport
  - Garbage Collection
  - Parking Controls
- Review of Future developments, including proposed developments and traffic generation
- Crash Data Analysis
- Traffic and Parking Data Analysis, including:
  - Intersection traffic counts
  - Vehicle tube count speed and volume data
  - Heavy vehicle proportions
  - Parking occupancy data
- On site audit, including:

  - Traffic and parking signs
  - LATM and traffic calming devices
  - Bicycle and pedestrian facilities
  - Waste management
- Development of a scoring system and identification of priority streets for treatment
- Development of potential LATM treatments
- Recommendation and assessment of LATM treatments and locations
- Development of an infrastructure schedule based on treatment options
- Cost estimation of each type of the recommended treatment
- Methodology and assumptions used for cost estimation.

1.4 Local Area Traffic Management

1.4.1 What is Local Area Traffic Management

According to Austroads Guide to Traffic Management Part 8 – Local Area Traffic Management (AGTM08-16) (summarised):

LATM is concerned with the planning and management of the usage of road space within a local traffic area. It involves the use of physical devices, streetscaping treatments and other measures (including regulations and other non-physical measures) to influence vehicle operation, in order to create safer and more pleasant streets in local areas.

LATM is essentially system-based and area-wide. It considers neighbourhood traffic-related problems and their proposed solutions in the context of the local area or a group of streets within it, rather than only at isolated locations. In addition, it requires that physical traffic measures be seen as a sequence of interrelated devices rather than individual treatments.

The primary target of LATM is to change driver behaviour, both directly by physical influence on vehicle operation, and indirectly by influencing the driver's perceptions of what is appropriate behaviour in that street. The objective is to reduce traffic volumes and speeds in local streets to increase amenity, liveability, and improve safety and access for all road users.

The need for LATM usually arises from:

- an intent to reduce traffic-related problems
- orderly traffic planning and management
- a need to modify 'transport' behaviour
- a desire to improve the community space and sense of place
- a desire to improve environmental, economic and social outcomes
- traffic interventions associated with new development or the implementation of pedestrian and bicycle plans and other local policies (e.g. RTA 2002).

1.4.2 Stages of a LATM

The general stages involved in preparing a LATM study, as per *AGTM08-16*, are outlined in Table 1.1. This study primarily covers Stage 2 of the LATM process, with partial coverage of Stage 3 items.

Table 1.1: Stages of a LATM

Tasks	Status in this study
Stage 1: Initiating an LATM program (completed)	
▪ Decide that action is needed ▪ Define study area, precincts and functional hierarchy of roads ▪ Develop study plan, including type of treatments and study costs ▪ Develop consultation strategy ▪ Council decision ▪ Prepare brief for consultant, if required	Completed by Council prior to start of the study
Stage 2: Data collection and problem identification	
▪ Define and collect required data ▪ Identify problems ▪ Identify potential solutions ▪ Define and confirm objectives	▪ Section 2 outlines the existing condition of the study area. ▪ Sections 3 to 5 outlines the data analysis and identification of problems. ▪ Section 6 outlines future conditions to be considered in the development of LATM plans. ▪ Section 9 outlines potential solutions that can be used in the study.
Stage 3: Development of plans	
▪ Clarify suitable strategies (including confirmation of LATM as an appropriate response) ▪ Develop outline schemes and supporting arterial improvements ▪ Consult on draft plans ▪ Assess and refine alternatives ▪ Select, present to council for adoption	▪ Section 9 outlines treatment options proposed
Stage 4: Scheme design	
▪ Location and design of treatments ▪ Consult with nearby owners/occupiers ▪ Prepare contract documents	▪ Section 9 outlines the location of treatment options ▪ Section 10 lists the rationale for the location and design ▪ Section 11 outlines the components of treatments ▪ Section 12 outlines the estimated cost of the treatments
Stage 5: Implementation	
▪ Confirm timing and staging ▪ Conduct additional 'before' studies as required ▪ Community information ▪ Construct/install ▪ Safety audit	▪ Section 13 outlines a summary of feedback from community engagement ▪ Construction will be undertaken after approval by Local Traffic Committee and detailed design
Stage 6: Monitoring and review	

Tasks	Status in this study
▪ After' data collection, observation and reports ▪ Identify unanticipated impacts or outcomes ▪ Review technical and community assessment of scheme ▪ Revise as needed and feasible ▪ Record and report process and outcomes	Not undertaken yet

Source: Austroads Guide to Traffic Management Part 8: Local Area Traffic Management

1.5 Referenced Documents

The following documents have been reviewed and referenced as part of this LATM study.

- Draft Integrated Transport Strategy 2019
- Marrickville Bicycle Strategy August 2007
- Marrickville Pedestrian Access and Mobility Plan (PAMP) 2009
- Draft Inner West Council Public Domain Parking Policy 2019
- Crash database provided by Council
- Local Traffic Committee Report and Correspondence relating to traffic and development issues in the study area
- Development Consent conditions in relation to 728—750 Princes Highway, Tempe
  - Joint Regional Planning Panels (JRPP) report
  - Initial and revised traffic assessment reports by Transport and Traffic Planning Associates (TPPA)
  - Peer review of traffic assessment report by GTA Consultants
  - Other assessments
- Austroads Guide to Road Design, Part 6A Pedestrian and Cyclist Paths (AGRD06A-17)
- Austroads Guide to Traffic Management, Part 8 Local Area Traffic Management (AGTM08-16)
- RTA/RMS/Transport for NSW Technical Directions & Guidelines, including:
  - RTA NSW Bicycle Guidelines 2003
  - RTA Guide to Traffic Generating Development, 2002
  - Transport for NSW – Safer Speed policy and Guidelines Version 1 July 2012
  - RMS Permit Parking Guidelines 2005
- Australian Standards AS1742 - Manual of uniform traffic control devices:
  - AS1742.10 – 2009: Part 10: Pedestrian control and protection
  - AS1742.13 – 2009: Part 13: Local area traffic management
- Other RMS/Austroads Guidelines or Australian Standards

1.5.1 Previous LATM Studies

An LATM study was previously conducted by GTA Consultants (for Inner West Council) of the St Peters and Tempe area in 2010 (*St Peters/Tempe LATM Study 2010*). Details on this study are provided in Section 2.10.

2. EXISTING CONDITIONS

2.1 Geographic Location

The study area is located within the suburb of Tempe, approximately 7km south-east of the Sydney CBD (the City). Tempe is the southernmost suburb within the Inner West LGA.

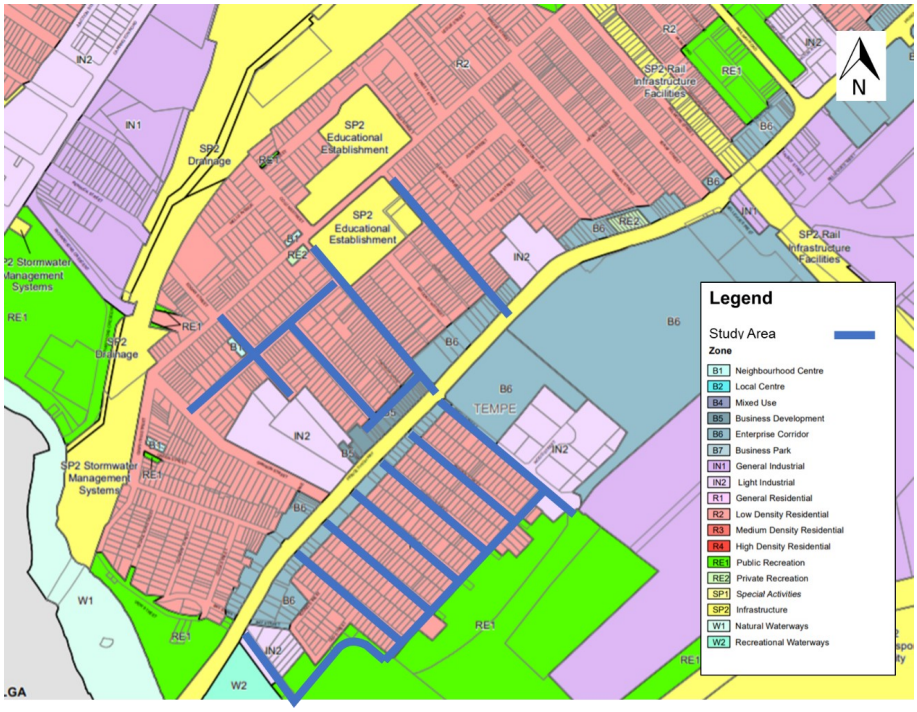
Cooks River and Alexandria Canal run along the western and southern boundaries of Tempe. Wolli Creek is located across Cooks River to the west and Sydney Airport land located across Alexandria Canal to the south.

2.2 Land Use

Based on the Marrickville Council LEP 2011, the study area is primarily comprised of the following land uses:

- R2 – Low Density Residential
- B6 – Enterprise Corridor (Commercial)
- IN2 – Light Industrial
- SP2 – Infrastructure (Educational Establishment i.e. schools)

The land zoning map is shown in Figure 2.1.



Source: Marrickville Local Environment Plan 2011, NSW Legislation

Figure 2.1: Tempe Land Zoning Map

2.2.1 Residential

The study area and roads listed in Section 1.1, mostly access low density residential lots, with some service access to commercial lots fronting Princes Highway and Wood Street.

2.2.2 Non-Residential

2.2.2.1 Commercial

Commercial lots are primarily located along the Princes Highway corridor, including tyre repair shops, motorcycle workshops, cafes, service stations, medical and dental clinics, a pub, a bus depot and other small retail. No large retail developments are located within the study area.

The larger commercial lots occupied by the IKEA Tempe and Decathlon sports stores are located towards the north east of the study area.

2.2.2.2 Industrial

Industrial land uses are located along the Princes Highway corridor, the eastern side of Smith Street, and Wood Street. As such, heavy vehicles access these lots using Smith Street and Wood Street.

The Tempe Bus Depot is located to the west of the study area on Princes Highway towards Gannon Street.

2.2.2.3 Schools

Two schools are located to the north of the study area along Unwins Bridge Road. Tempe Public School is bounded by Union Street, Foreman Street and Unwins Bridge Road.

2.2.3 Parks & Reserves

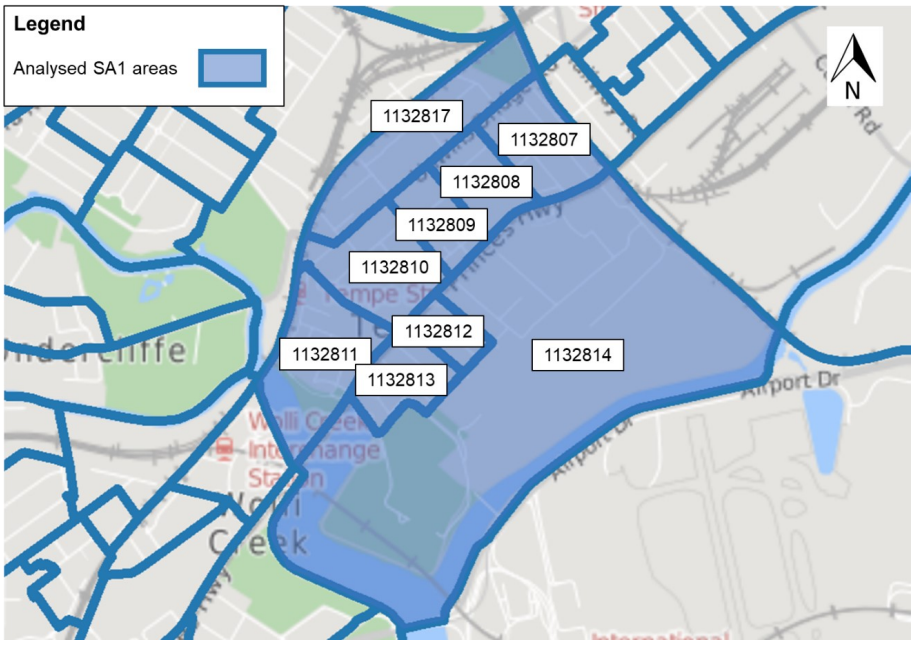
Located towards the south of the study area are large recreation spaces, including Tempe Lands, Tempe Dog Park, Tempe Golf Range, Tempe Recreation Reserve and Tempe Reserve. They are accessed via Holbeach Avenue and South Street.

2.3 Garbage Collection

Council garbage collection occurs on Fridays between 5:00 AM and 12:00 PM. Previous information indicates that 10.5m refuse collection vehicles are used. There are no fixed garbage collection routes.

2.4 Area Demographics

The 2016 Census data was reviewed to identify travel trends to and from the study area. Nine (9) SA1 level statistical areas (codes 1132807-1132814 and 1132817) cover majority of the suburb of Tempe including the study area, shown in Figure 2.2.



Source: Australian Bureau of Statistics (ABS)

Figure 2.2: Analysed SA1 areas

Census data, including Journey to Work data, for the nine (9) SA1 areas were compared to the Greater Sydney average shown in Table 2.1.

Table 2.1: Tempe Demographic Data

Category	Tempe SA1 Areas	Greater Sydney Average
Age		
Young population between age 20 and 34	21%	23%
Aged population over age 65	12%	14%
Vehicle Ownership		
Vehicle ownership of one (1) motor vehicles or more	85%	88%
Vehicle ownership of two (2) motor vehicles or more	36%	50%
Mode of Travel to Work		
Public transport as mode of travel to work	41%	26%
Private vehicles as mode of travel to work	50%	67%
Bicycle riders as mode of travel to work	3%	1%
Walking only as mode of travel to work	4%	5%

A comparison of statistics reveals:

- The study area features a slightly higher proportion of younger residents and lower proportion of older residents than the Greater Sydney average
- Vehicle ownership in Tempe is less than the Greater Sydney average

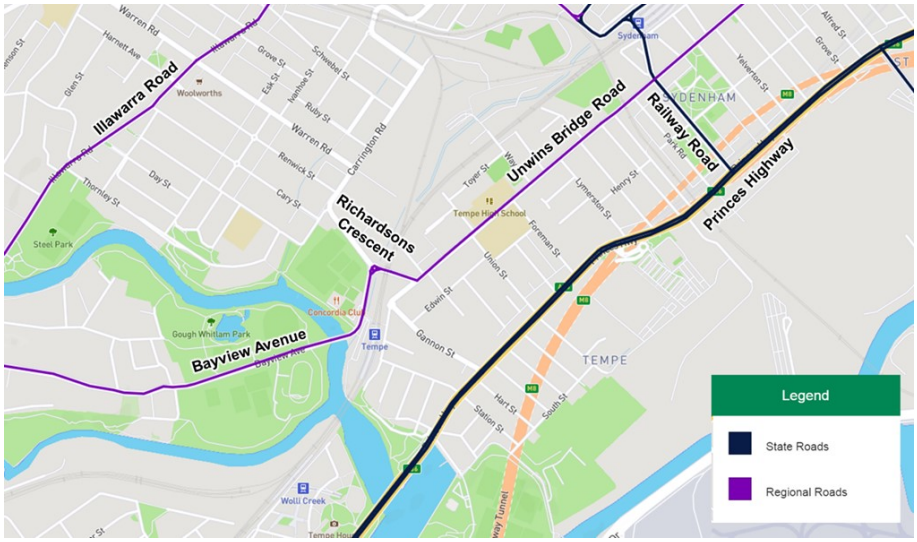
- Consistent with the lower vehicle ownership rate, a high proportion of Tempe residents use public transport to travel to work
- Proportion of residents cycling to work is higher than the Sydney average

Journey to work patterns are likely attributed to the number of public transport services available, including both buses and trains (detailed in Section 2.6) and active transport facilities (including cycling routes) nearby.

2.5 Road Classification

Road Classification in Tempe and surrounds is shown in Figure 2.3, featuring:

- State Road - Princes Highway within Tempe is a state road (HW1), while
- Regional Road – Unwins Bridge Road from Richardsons Crescent to Campbell Street, and Richardson Crescent from Cooks River to Unwins Bridge Road
- Local Roads - all other roads



Source: Transport for NSW – Road Classification Map

Figure 2.3: Road Classification in Tempe and Surrounds

2.6 Public Transport

2.6.1 Trains

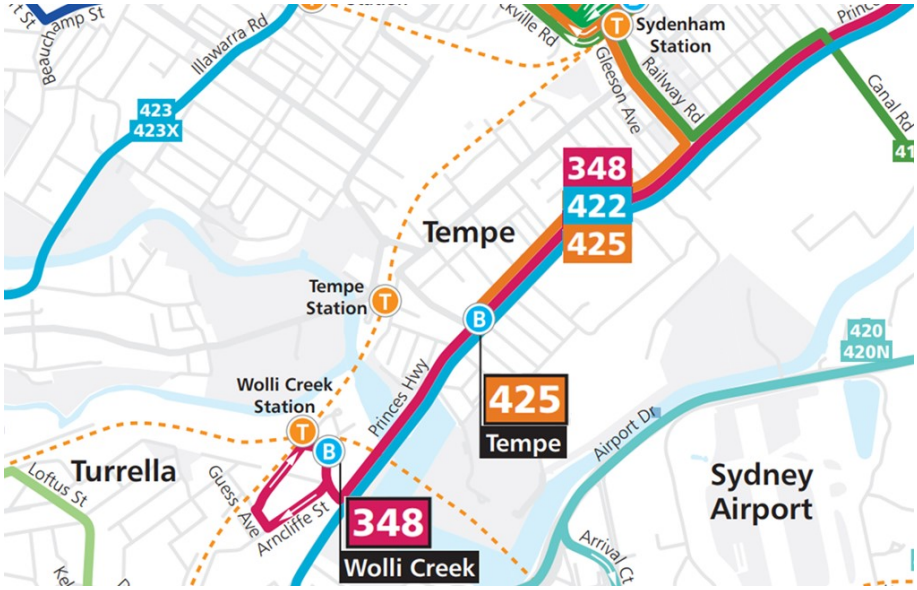
The nearest train station to the study area is Tempe railway station in the west, serviced by the T4 (Eastern Suburbs & Illawarra Line), with services running every 10 minutes per direction on weekdays off-peak. The next nearest station is Wolli Creek railway station located approximately 1km west of the study area and is within walking distance. Wolli Creek is services by both the T4 and T8 (Airport & South Line) services. Both T4 and T8 services stop at stations within the City.

2.6.2 Buses

Three public bus routes operate in the Tempe area along Princes Highway. The public bus network is shown in Figure 2.4. Additionally, there is one school bus route servicing Tempe High School students, which runs along Unwins Bridge Road.

The Tempe bus depot is located at the corner of Princes Highway and Gannon Street, accessed via Princes Highway.

The public and school bus services in Tempe are summarised in Table 2.2.



Source: Transit Systems

Figure 2.4: Public Bus Services in Tempe

Table 2.2: Bus Routes

Route Number	Route Description	Roads Serviced	Weekday Off-peak Frequency (min)
348	Bondi Junction to Wolli Creek	Princes Highway	30
422	Kogarah to Central Pitt Street	Princes Highway	15
425	Tempe to Dulwich Hill	Princes Highway	60
700S (School bus)	Earlwood to Tempe High School	Richardsons Crescent, Unwins Bridge Road, Collins Street	One AM service towards school, one PM service from school

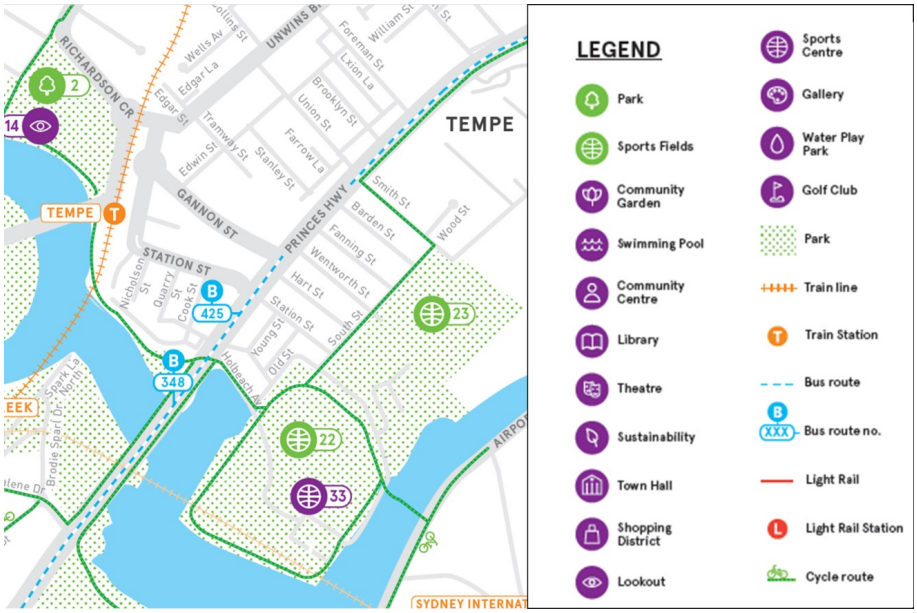
2.7 Other Transport

2.7.1 Bicycles

The local bicycle network (based on the Stay Active in Marrickville Map) is shown in Figure 2.5, and the (previously) proposed bicycle network in the Marrickville Bicycle Strategy 2007 is shown in Figure 2.6.

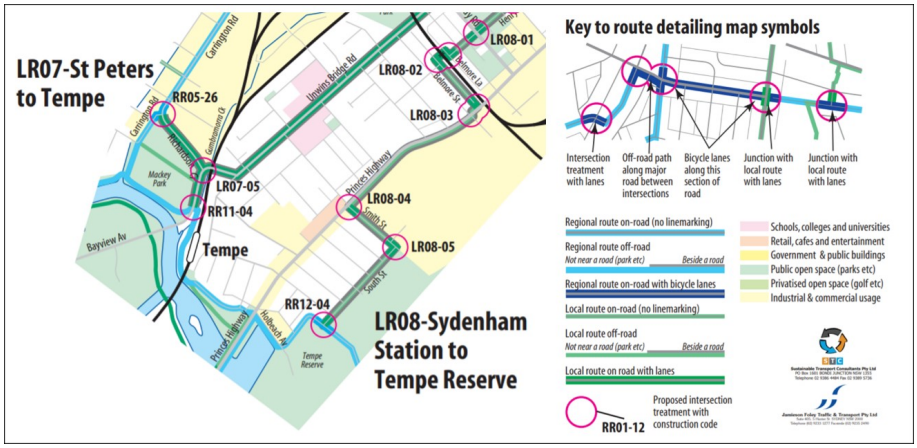
Two routes are present within the study area:

- Local Route L13 (shown as LR08 in Figure 2.6) – following Holbeach Avenue, South Street and Smith Street
- Alexandra Canal cycleway - following Holbeach Avenue, through Tempe Reserve and along Airport Drive on the southern bank of Alexandria Canal



Source: Staying Active in Marrickville Map (Inner West Council)

Figure 2.5: Existing Bicycle Routes in Tempe



Source: Marrickville Bicycle Strategy 2007

Figure 2.6: Proposed Bicycle Network in Tempe

Additionally, there are unpaved off-road paths within Tempe Lands that are used for walking and cycling. Entry points to Tempe Lands are located at the Smith Street cul-de-sac and at various points along South Street.

2.7.1.1 Bicycle Detour

As part of the Sydney Gateway Environment Impact Statement (November 2019), volumes were recorded on the cycleway on the southern bank of Alexandra Canal in March 2019. The average volumes on the cycleway were 600 cyclists and 100 pedestrians per day. During the morning and afternoon peaks, the volumes were 90 cyclists and 10 pedestrians.

Due to the permanent removal of the current shared path along Airport Drive as part of the Sydney Gateway project, a bicycle detour is proposed to follow the road through Tempe Recreation Reserve, to Tempe Wetlands near South Street and through the industrial lands to the east. Details of the detour are described in Section 6.3.2.

2.7.2 Pedestrians

The local footpath network is well connected through and surrounding the study area, with footpaths located along both sides of most roads. Signalised crossings are also provided at intersections and mid-block on Princes Highway and mid-block on Unwins Bridge Road. A pedestrian (zebra) crossing is also located on Union Street outside Tempe Public School.

2.7.3 Carshares

The use of carshare services has been increasingly popular in recent years. Popular carshare services used in Sydney include Car Next Door and GoGet, which operate in the study area and surrounds.

2.7.3.1 Car Next Door

Car Next Door is a carshare service that allows private car owners to rent their vehicles to other registered users on an hourly or daily service. As of March 2020, six (6) vehicles within or surrounding the study area have been signed up for Car Next Door, shown in Figure 2.7. It is important to note that the shown locations are approximate only.

2.7.3.2 Go Get

Go Get is another carshare service, where members are able to rent GoGet vehicles from their pods on an hourly or daily basis. As of March 2020, there are no GoGet pods within the study area; however, there are seven (7) nearby car pods within walking distance from the study area, including two (2) within the IKEA Tempe carpark. Additionally, IKEA Tempe has 12 van pods, with vans available to be rented. It is important to note that the pods in IKEA Tempe are located within its carpark and therefore can only be rented during the carpark's opening hours.

The location of GoGet car and van pods around the study area are shown in Figure 2.7.

Source: GoGet & Car Next Door, Adapted from GoogleMaps

Figure 2.7: GoGet Pod Locations in Tempe

2.7.3.3 Bunnings Car Share

As part of the Bunnings development application Consent Condition No.5 four (4) car share spaces are to be provided within the Bunnings development.

2.8 Parking Controls

Kerbside parking controls within the study area are shown in Figure 2.8). Most of the kerbside parking available is unrestricted on-street parallel parking with some time limited parking (one hour) along Union Street and Foreman Street. Due to the narrow nature of the roads in the study area, many vehicles were observed partially parking on the footpath (See Section 5).

Angled parking is provided along Holbeach Avenue near Bay Street. It provides unrestricted parking for residents as well as users of Tempe Recreation Reserve.

Persons with a disability (PWD) spaces are located along Edwin Street, Union Street, Foreman Street, Wentworth Street and Union Street.

There are 'No Parking' restrictions along Zuitton Lane and Farrow Lane due to their narrow widths. No Stopping restrictions are found along Union Street where kerb blisters are located.

Adapted from ESRI Maps

Figure 2.8: Existing Parking Restrictions

2.9 Truck Load Limits

A 3-tonne truck load limit is implemented in the study area and surrounds, covering local side roads near or connecting to Princes Highway, shown in Figure 2.9.

Wentworth Street was identified to maintain an inconsistent truck restriction, with signage only present at South Street (see traffic sign audit, section 5.1.2). It was confirmed the truck restriction applied along Wentworth street with signage missing at Princes Highway.

Another inconsistency of signage was at Tramway Street facing Unwins Bridge Road, where a “Gannon Street” tag plate was affixed to the truck limit sign. With the tag plate, it gives an indication that the truck limit applies to Gannon Street but not Tramway Street. It is possible that the tag plate was wrong affixed to this sign and should have been affixed to another sign on Unwins Bridge Road.

A 3-tonne truck load limit does not apply to Holbeach Avenue, South Street, Smith Street, Wood Street, Princes Highway and most of Unwins Bridge Road

Adapted from ESRI Maps

Figure 2.9: Truck Load Limit in Tempe

2.10 Previous LATM Study in Tempe

Planning approval of 630-726 Princes Highway (IKEA Tempe development) was granted by the NSW Department of Planning in July 2009. A condition of the approval required an LATM study to

be undertaken by Council "to identify the traffic and transport impacts of the proposed development and recommend ways in which any potential adverse impacts on local residential streets could be mitigated." GTA Consultants was commissioned by the then-Marrickville Council to undertake the study which was completed in October 2010. IKEA Tempe opened in November 2011.

The study identified:

- Smith Street, South Street, Union Street and Wentworth Street have higher 85th percentile speeds compared to the other roads in the areas, ranging between 40 and 50 km/h on Thursdays and Saturdays, with 85th percentile speeds along Smith Street exceeding 50 km/h on Saturdays.
- One 'fixed object' crash occurred on Station Street near South Street.
- Speed humps on South Street and Union Street, median island rumble bars at Edwin Street, and the pedestrian crossing on Union Street outside Tempe Public School required repainting of line marking
  - It is important to note that the school crossing on Union Street was not a raised crossing as of 2010, and the nearby speed hump had since been replaced by a pair of kerb blisters with contrasting pavement.
  - The rumble bar at Edwin Street at Union Street had since been replaced by contrasting pavement
- Recommendation to introduce further LATM devices

The devices and measures implemented included:

- speed cushions on Smith Street
- the right turn ban from Princes Highway to Union Street
- the right turn ban from Gannon Street to Edwin Street
- the median island rumble strips at Edwin Street and Tramway Street
- closing the median gap at Station Street
- raised thresholds on Foreman Street, only at Unwins Bridge Road and Princes Highway

The speed cushions on Smith Street were eventually removed in 2012 and 2017 respectively, as a result of resident complaints about the noise produced by trucks driving over the speed cushions.

2.11 Existing LATM Devices & Measures

Existing LATM devices and traffic controls were identified during site audits, detailed in Section 5.1.

3. CRASH DATA ANALYSIS

3.1 Crash History Data

The NSW Speed Zoning Guidelines recommend a minimum of three years of crash data for a statistical crash analysis. For the purpose of this assessment, crash data between 1 January 2014 and 31 December 2018 was sourced from Council representing five (5) years of data. The data included reported crash events within the entire Inner West Council LGA and were filtered to include crashes within the study area. Crashes along Princes Highway within 15 metres from intersections of the study area roads were also included.

As per Rule 287 (3) of the NSW Road Rules 2014, crashes are only recorded if they are reported to police and when one of the following occurs:

- Any person is killed or injured
- Drivers involved in the crash do not exchange particulars
- When a vehicle involved in the crash is towed away.

The crash history between the five (5) years of data within and surrounding the study area were analysed, and a total of 12 crashes were recorded along streets within the study area. Out of the 12 crashes in the study area, two (2) involved vehicles at intersections with Princes Highway.

3.2 Crash Statistics

3.2.1 Crash History

Figure 3.1 shows the crash history between January 2014 and December 2018.

There is an overall trend of steady number of crashes per year, with less than 4 crashes happening each year. Most of the crashes involve an injury.

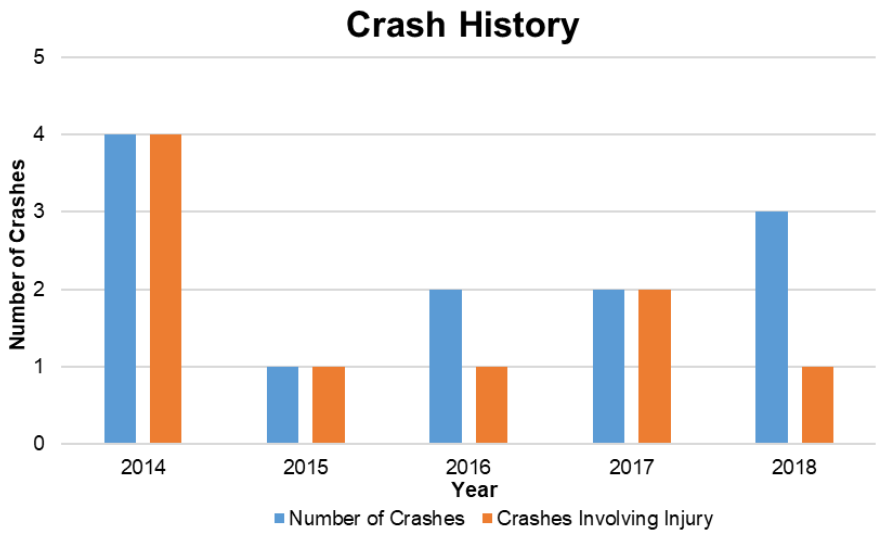


Figure 3.1: Crash History between January 2014 and December 2018

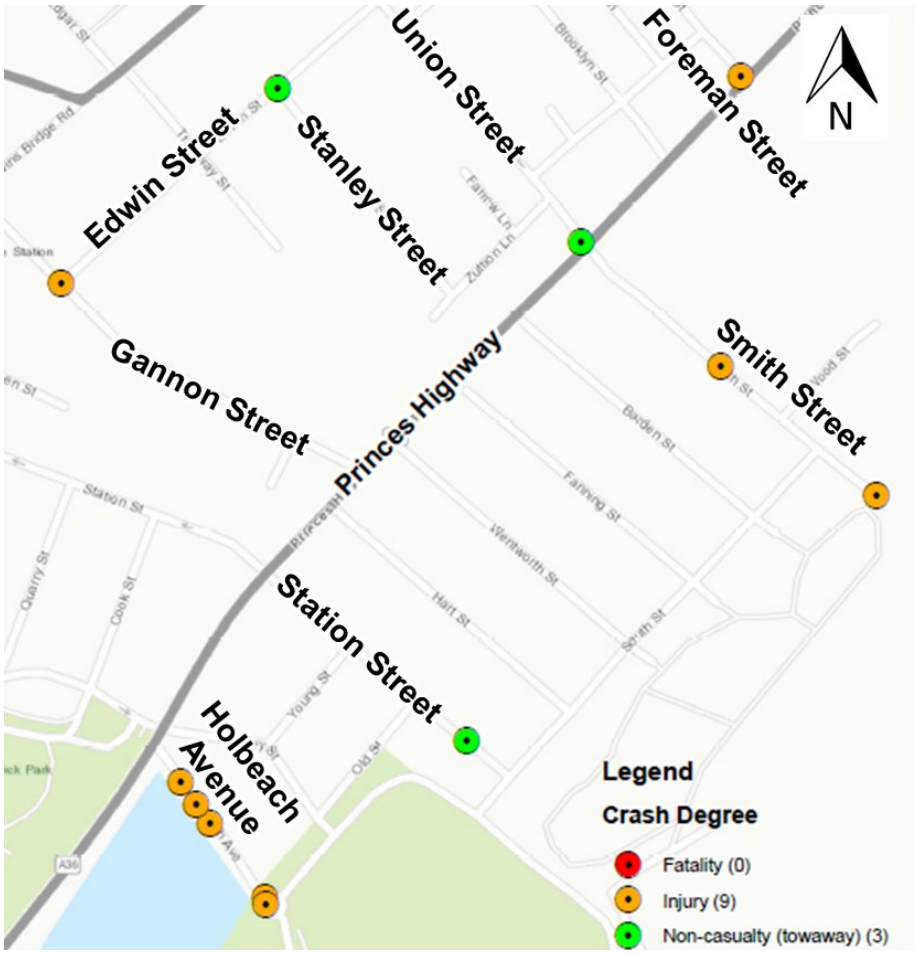
3.2.2 Crash Severity

Table 3.1 summarises the number of crashes within the 5 years of crash data based on crash severity.

Table 3.1: Number of Crashes Based on Crash Severity

Crash Severity	Number of Crashes	Percentage
Fatal	0	0%
Injury	9	75%
Non-casualty (towaway)	3	25%
Total	**12**	**100%**

The crash data shows that the majority of crashes within the study area were not fatal but resulted in injury (75%). The locations of the crashes are shown in Figure 3.2. They are also shown in **Appendix A**.



Adapted from ESRI Maps

Figure 3.2: Crash Degree Severity

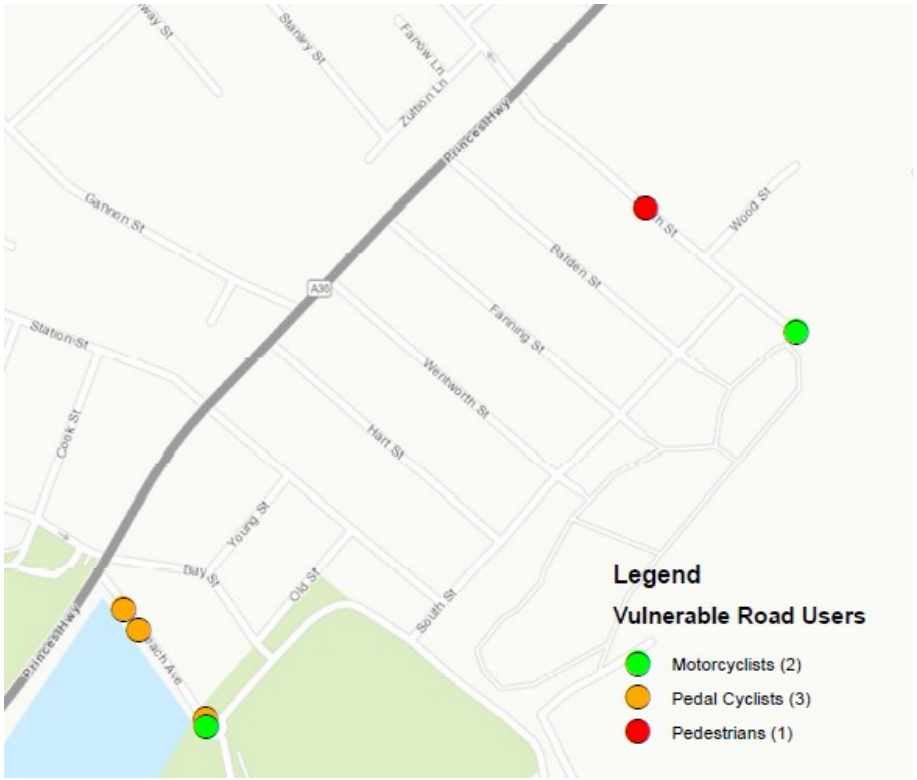
3.2.3 Vulnerable Road Users

Table 3.2 summarises the number of vulnerable road user (VRU) crashes within the 5 years of crash data based on crash severity. VRUs are classified into motorcyclists, pedal cyclists and pedestrians.

Table 3.2: Number of Vulnerable Road User Crashes Based on Crash Severity

Crash Severity	Vulnerable Road User			Total
	Motorcyclist	Pedal Cyclist	Pedestrian	
Fatal	0	0	0	**0**
Injury	2	3	1	**6**
Non-casualty (towaway)	0	0	0	**0**
Total	**2**	**3**	**1**	**6**
Percentage	**33%**	**50%**	**17%**	**-**

The crash data shows that all crashes involving vulnerable road users were not fatal, however, resulted in an injury. There were six (6) vulnerable road user crashes out of the total of 12 crashes, which is a relatively high percentage (50%). Pedal cyclists were recorded to have the highest percentage of vulnerable road user crashes (50%). The location of crashes involving VRU are shown in Figure 3.3. They are also shown in **Appendix A**.



Adapted from ESRI Maps

Figure 3.3: Vulnerable Road Users

3.3 Analysis of Trends and Contributing Factors

3.3.1 Crash Type

The 12 crashes were classified into road user movement (RUM) codes, as shown in Table 3.3. The crashes are also further detailed in Table 3.4, ordered by crash severity.

Table 3.3: Crash Summary by Crash Type

Crash Type	RUM Codes	Number of Crashes	Percentage of Total
Crashes involving pedestrians	00 – 09	1	8
Crashes involving vehicles from adjacent directions	10 – 19	3	25%
Crashes involving vehicles from opposing directions	20 – 29	0	0%
▪ Crashes involving vehicles from the same direction	30 – 39	1	8%
Crashes involving manoeuvring vehicles	40 – 49	4	33%
Crashes involving vehicles overtaking	50 – 59	0	0%
Crashes involving vehicles on path – vehicles hitting parked vehicles or objects on the roadway (e.g. animals, temporary objects)	60 – 69	0	0%
Crashes involving vehicles leaving the roadway on a straight length of road	70 – 79	2	17%
Crashes involving vehicles leaving the roadway on a curve	80 – 89	1	8%
Crashes involving vehicle passengers and miscellaneous crashes	90 – 99	0	0%
Total		**10**	**100%**

From Table 3.3, the majority of the crashes resulted from manoeuvring issues (33%).

Holbeach Avenue has the highest number of crashes, recording five (5) out of 12 crashes (42%). Out of the five crashes, three (3) crashes involved pedal cyclists (60%), and four (4) crashes resulted from manoeuvring issues (80%).

Considering this, this analysis will identify any trending issues and/or contributing factors that may have contributed to the likelihood of the aforementioned crash types.

Table 3.4: Crash Details by Road

Road	Crash Severity	Crash Type	Specific RUM Code	Vulnerable Road User
Holbeach Avenue	Injury	Involving manoeuvring vehicles	RUM 48: From footpath	Pedal Cyclist
Holbeach Avenue	Injury	Involving manoeuvring vehicles	RUM 47: Emerging from driveway	-
Holbeach Avenue	Injury	Involving manoeuvring vehicles	RUM 48: From footpath	Pedal Cyclist
Holbeach Avenue at South Street	Injury	Involving vehicles from adjacent directions	RUM 10: Cross traffic	Motorcyclist
Holbeach Avenue	Injury	Involving manoeuvring vehicles	RUM 49: Other Manoeuvring	Pedal Cyclist
Smith Street	Injury	Involving vehicles leaving the roadway on a straight length of road	RUM 74: Out of control on carriageway	Motorcyclist
Smith Street	Injury	Involving pedestrians	RUM 3: Playing, working, lying, standing on carriageway	Pedestrian
Princes Highway at Foreman Street	Injury	Involving vehicles from adjacent directions	RUM 13: Right near	-
Station Street	Non-casualty (towaway)	Involving vehicles leaving the roadway on a straight length of road	RUM 71: Left off carriageway into object / parked vehicle	-
Princes Highway at Smith Street	Non-casualty (towaway)	Involving vehicles from adjacent directions	RUM 10: Cross traffic	-
Edwin Street	Injury	Involving vehicles from the same direction	RUM 30: Rear end	-
Edwin Street at Stanley Street	Non-casualty (towaway)	Involving vehicles leaving the roadway on a curved length of road or when turning	RUM 85: Right off left bend into object / parked vehicle	-

3.3.2 Crash Casualty Rates

Typical casualty crash rates for urban and rural roads are provided within the NSW Speed Zoning Guidelines. A table of typical urban casualty rates from the NSW speed zoning guidelines is shown in Table 3.5.

Table 3.5: Typical Urban Casualty Rates

URBAN TYPICAL CASUALTY RATE *(casualties per km per year)*							
Road category	Speed zones						
	50	60	70	80	90	100	110
Motorway / freeway	–	–	0.049	0.039	0.463	0.148	1.219
State highway	0.014	0.450	0.827	0.217	0.177	0.101	0.177
Other classified road	0.102	1.351	1.361	0.360	0.253	0.111	0.007
Unclassified road	0.446	0.874	0.376	0.154	0.077	0.064	0.008

NOTE :
- Discretion is needed in comparing these rates to the rate on a particular section of road. A specific road section may not fall comfortably into any single category.
- The values do not suggest an acceptable level.

Source: Transport for NSW Centre for Road Safety - NSW Speed Zoning Guidelines (Section 3)

The typical urban casualty rate for a 50km/h unclassified road is 0.446 casualties per km per year.

Table 3.6 summarises the number of crashes per year and calculated casualty rate (casualties per year per km) for each section of road. Princes Highway was excluded as all other crashes along the road were not analysed. Station Street was also excluded as its only crash had no casualties.

Table 3.6: Crash Casualty Rate by Road

Road	Length (km)	Casualties						Rate	
		2014	2015	2016	2017	2018	Total	Per year	Per km per year
Holbeach Avenue (south of Princes Highway, between Princes Highway & roundabout)	0.15	3	1	0	1	0	**5**	1	6.7
Smith Street	0.30	0	0	0	1	1	**2**	0.4	1.3
Edwin Street	0.34	1	0	0	0	0	**1**	0.2	0.6
Total		**4**	**1**	**0**	**2**	**1**	**8**	-	-

From the crash casualty rate results calculated in Table 3.6, it can be seen that Holbeach Avenue, Smith Street and Edwin Street present a rate exceeding the typical urban casualty rate of 0.446 casualties per km per year.

3.4 Crash Data Analysis Summary

Based on the crash analysis results, the majority of the crashes resulted from manoeuvring issues. Most of them also involved a vulnerable road user. Holbeach Avenue has the highest number of crashes, the highest number of crashes involving vulnerable road users, and the highest crash casualty rate in the study area.

4. TRAFFIC SURVEY DATA ANALYSIS

4.1 Environmental Capacity and Speed Performance Standards

The *RTA Guide to Traffic Generating Developments 2002* (GTGD) provides justification for an acceptable environmental limit for each road classification, listed in Table 4.1.

Table 4.1: Environmental Capacity Performance Standards

Road Class	Type	Maximum Speed (km/h)	Max Peak Hour Volume (veh / hour)
Local	Access way	25	100
	Street	40	200 goal 300 maximum
Collector	Street	50	300 goal 500 maximum

The *GTGD* also recommends that a typical residential street should ideally exhibit a flow of traffic less than 2,000 vehicles per day (vpd), with a design objective of less than 1,500 vpd to maintain a comfortable traffic environment for local residents.

4.2 Traffic Surveys

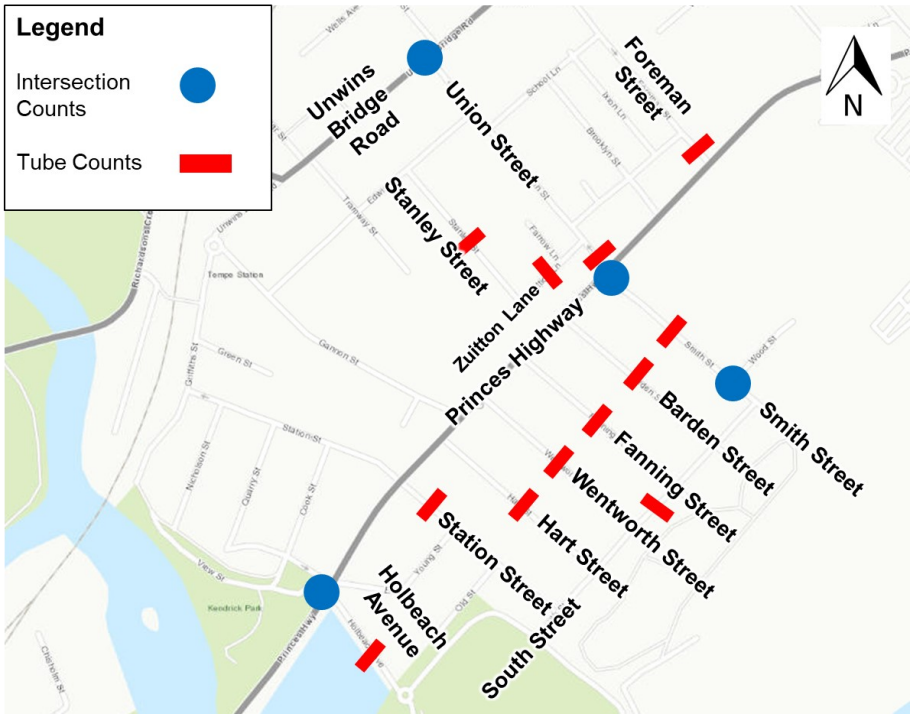
4.2.1 Data List

In March 2020, Council has commissioned Austraffic to undertake traffic surveys as part of the study and provided the surveys to Bitzios Consulting for analysis. In September 2020, Bitzios Consulting commissioned Matrix Data Collection to undertake further traffic survey for analysis. The traffic surveys undertaken are listed in Table 4.2. The data collected were analysed to provide information about traffic operation in the study area, such as volumes and speed.

Table 4.2: Traffic Survey Data

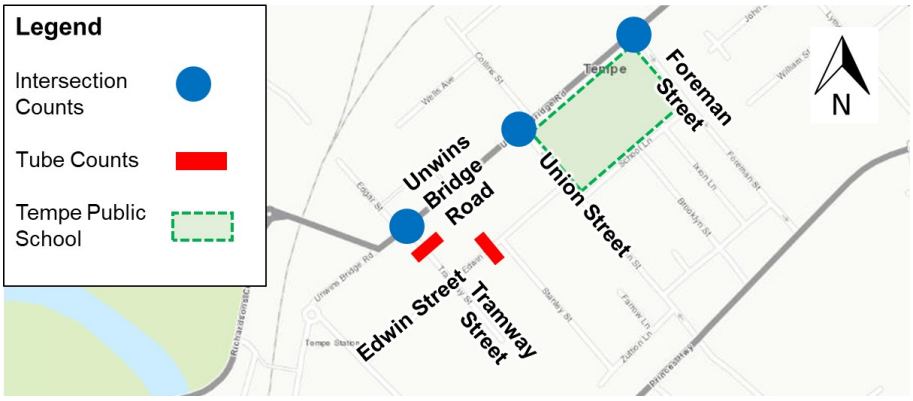
Survey	Date(s)	Time	Locations
Intersection Counts	19 March 2020, Thursday	16:00 PM to 18:00 PM	At four locations, shown in Figure 4.1: ▪ Princes Highway / Union Street / Smith Street ▪ Smith Street / Wood Street ▪ Unwins Bridge Road / Union Street ▪ Princes Highway / Holbeach Avenue
	21 March 2020, Saturday	11:00 AM to 13:00 PM	
	8 September 2020, Tuesday	7:30 AM to 9:30 AM 14:00 PM to 16:00 PM	At three locations, shown in Figure 4.2: ▪ Unwins Bridge Road / Union Street ▪ Unwins Bridge Road / Foreman Street ▪ Unwins Bridge Road / Tramway Street
Tube Counts (Volumes & Speed)	19 March 2020, Thursday to 25 March 2020, Wednesday	24-hour	At multiple locations shown in Figure 4.1
	9 September 2020, Wednesday to 15 September 2020, Tuesday	24-hour	At Edwin Street and Tramway Street, shown in Figure 4.2

Survey	Date(s)	Time	Locations
Parking Occupancy & Duration	19 March 2020, Thursday	7:00 AM to 7:00 PM	At locations shown in Figure 4.3
	21 March 2020, Saturday	7:00 AM to 7:00 PM	



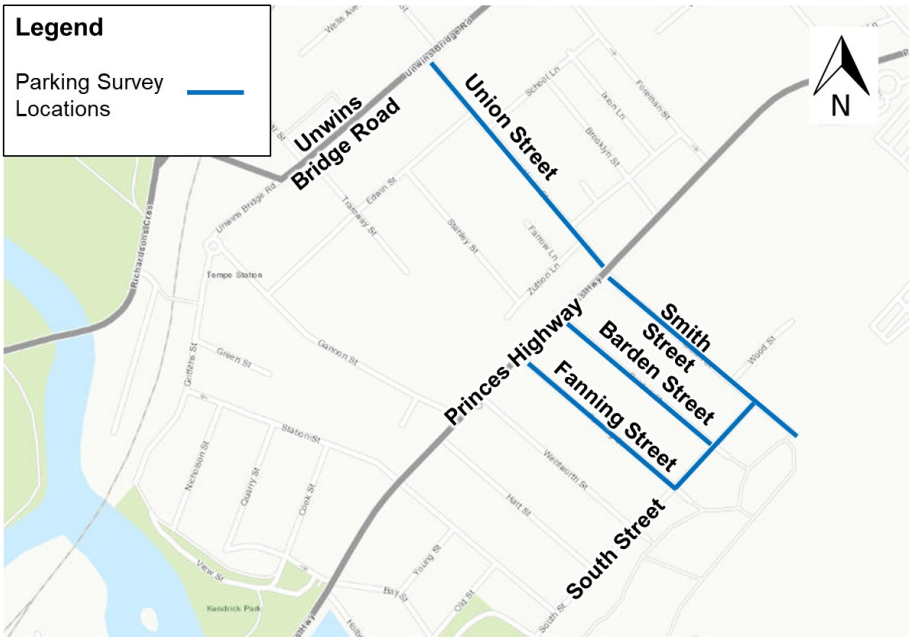
Adapted from ESRI Maps

Figure 4.1: Intersection Count & Tube Count Locations (March 2020)



Adapted from ESRI Maps

Figure 4.2: Intersection Count & Tube Count Locations (September 2020)



Adapted from ESRI Maps

Figure 4.3: Parking Survey Locations

It is important to note that the surveys in March were undertaken shortly after the start of the COVID-19 pandemic in New South Wales, when limits to gatherings have started to be imposed. The surveys in September were also undertaken in the midst of the COVID-19 pandemic. As such, some workers would be working from home during the survey dates. Therefore, the surveys may not accurately reflect the usual traffic operation or parking condition before the pandemic. Schools were not closed and were operating as usual on both surveys.

Despite the potential inaccuracies in the data, Council made the decision to proceed with the LATM study with these volumes. This is acceptable as no traffic modelling is involved and hence volumes do not have to be accurate. **Any traffic volumes obtained are to be compared relative to other streets in the study area.** Streets with relatively higher volumes or heavy vehicle compositions than other streets would be identified as a potential location for LATM devices. This will likely be the same using pre-COVID or post-COVID traffic data. Vehicular speed is a representative of driver behaviour which is not influenced by changes in traffic volumes.

A comparison of the intersection counts data to previous traffic assessments or surveys are shown in Table 4.3.

4.2.2 Intersection Counts

In March 2020, intersection count surveys were undertaken on a Thursday afternoon and Saturday weekday, for the four intersections listed in Table 4.2. The peak hour intersection counts for the intersections for the Thursday and Saturday are shown in Figure 4.4 and Figure 4.5. It is important to note that there is a No Right Turn restriction from Princes Highway (southwest bound) to Union Street.

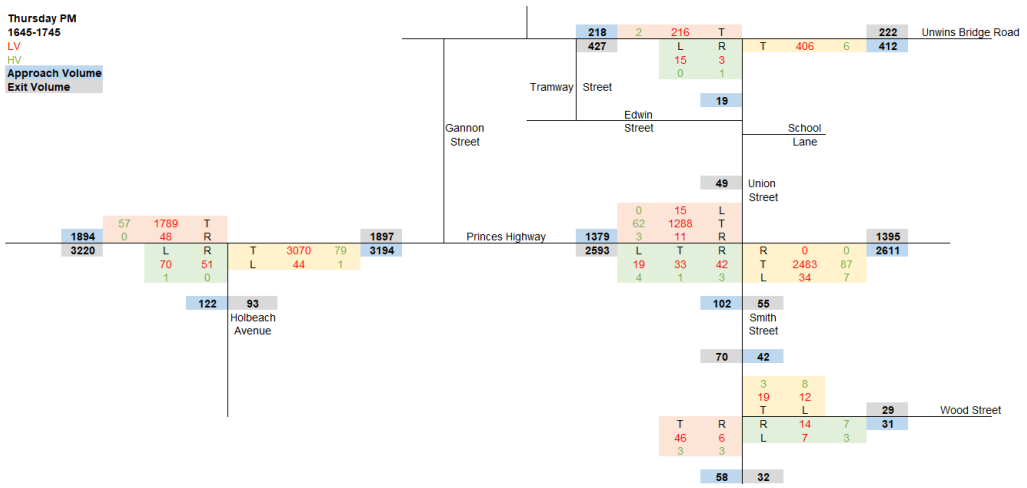


Figure 4.4: Thursday PM Peak Hour Intersection Counts (March 2020)

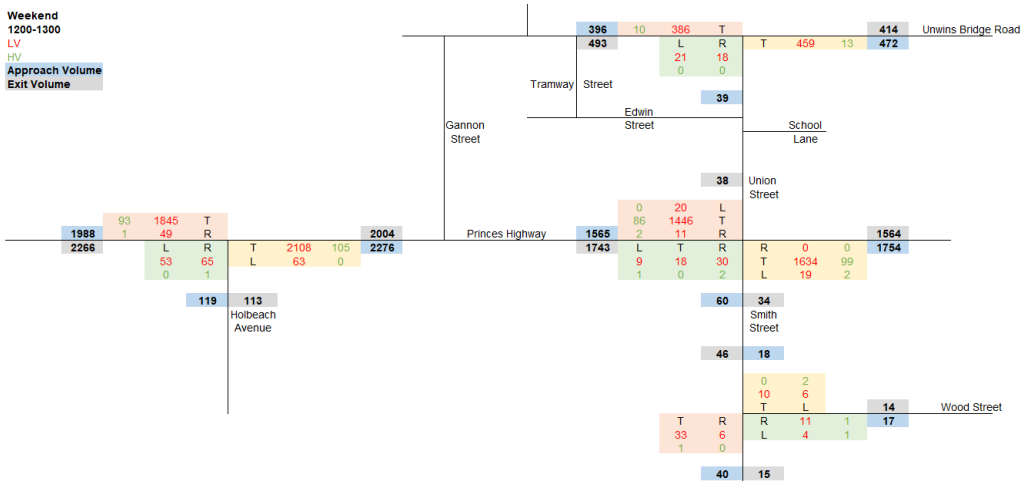


Figure 4.5: Saturday Peak Hour Intersection Counts (March 2020)

In September 2020, further intersection count surveys were undertaken on a Tuesday morning and afternoon, for the three intersections listed in Table 4.2. The surveys were undertaken to understand the traffic operations surrounding Tempe Public School before and after school hours. The peak hour intersection counts for the intersections for the Thursday and Saturday are shown in Figure 4.6 and Figure 4.7. It is important to note that there is a No Right Turn restriction from Unwins Bridge Road (eastbound) to Foreman Street, and a peak-hour only No Right Turn restriction from Unwins Bridge Road (eastbound) to Tramway Street.

It can be seen that the major vehicular routes are along Princes Highway and along Unwins Bridge Road for the Thursday and Saturday. This is expected as Princes Highway and Unwins Bridge Road are state and regional roads respectively.

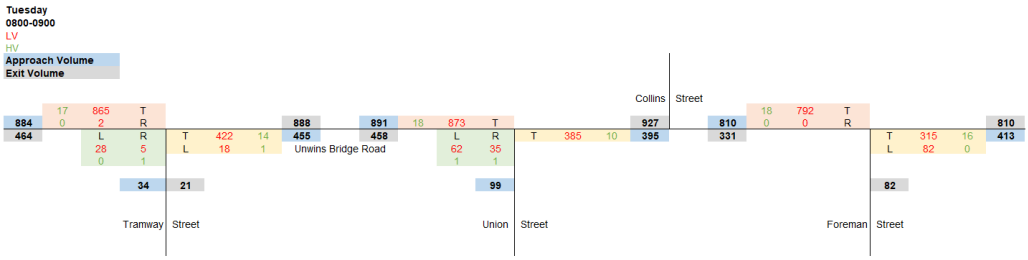


Figure 4.6: Tuesday AM Peak Hour Intersection Counts (September 2020)

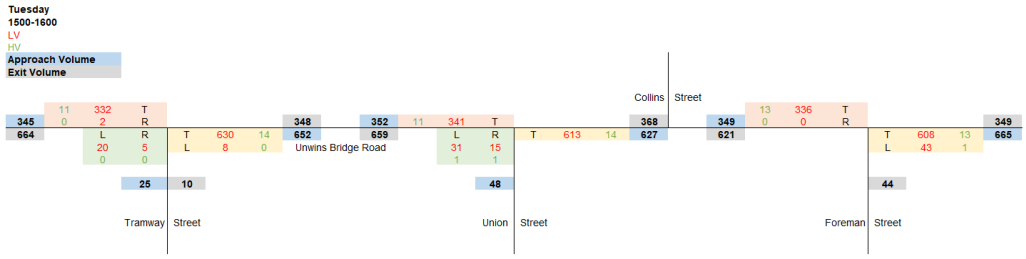


Figure 4.7: Tuesday PM Peak Hour Intersection Counts (September 2020)

As for heavy vehicular movement, due to the truck load limits in the Tempe area (see Section 2.9), heavy vehicles are only found along roads without any truck load limit, such as Princes Highway, Smith Street, Wood Street and Unwins Bridge Road. With the exception of Princes Highway, the number of heavy vehicles is not high, with at most 15 heavy vehicles per hour.

There are occasional heavy vehicles turning in and out of Holbeach Avenue and Union Street but the numbers are very low (less than 2 per movement). This shows that the existing truck load limit is well implemented and is effective in the Tempe area.

The existing No Right Turn restriction from Princes Highway to Union Street, introduced as part of the previous LATM study (Section 2.10), has also proven effective, with no vehicles observed to be turning right into Union Street.

From the intersection counts, less than 50 vehicles per hour use Union Street. However, tube count surveys will provide a better understanding on the utilisation of Union Street.

4.2.2.1 Comparison with pre-COVID data

A comparison of the intersection count data with previous traffic assessments and surveys in the area is shown in Table 4.3.

Table 4.3: Comparison of traffic volumes with pre-COVID surveys (Union Street / Smith Street / Princes Highway)

Traffic Assessment / Data	Survey Date(s)	Smith Street		Union Street
		Southbound volumes	Northbound volumes	Northbound volumes
Thursday PM				
TTPA Bunnings TIA	2017 or before (exact date unknown)	47	133	37
GTA peer review of the TIA	6 December 2018	46	131	72
This LATM study	19 March 2020	55	102	49
Saturday midday				
TTPA Bunnings TIA	2017 or before (exact date unknown)	33	50	22
GTA peer review of the TIA	8 December 2018	58	85	81
This LATM study	21 March 2020	34	60	38

The intersection counts are consistent with counts undertaken by Transport and Traffic Planning Associates (TTPA) as part of the Traffic Impact Assessment (TIA) for the Bunnings Development (published October 2017) (see Section 6.2 for details of the development). However, they are lower than the counts undertaken by GTA Consultant for their peer review of the TIA (published January 2019), particularly for vehicles entering Union Street.

4.2.3 Tube Counts

24-hour tube counts were collected for seven days for all the study area roads. Information such as volumes, heavy vehicle composition, and speed data were recorded for both directions of the road.

From the data, the average daily traffic (ADT) volumes, the 85th percentile speeds, and daily heavy vehicle percentage and volumes were extracted for all directions of the locations, shown in Table 4.4. The directions stated were the directions on surveys. Relatively higher values are highlighted **orange.**

Maps showing the values of ADT, 85th percentile speeds, and heavy vehicle percentage and volumes are shown in **Appendix B**.

4.2.3.1 Traffic Volumes

All local streets in the study area have a VPD of less than 1,500, the comfortable limit for a local residential traffic environment as according to *GTGD*. Moderately high volumes of more than 500 vpd can be observed on Smith Street, South Street and Holbeach Avenue. Union Street and Edwin Street have volumes of between 400 to 500 vehicles. This is expected for Union Street as it is one of the more direct routes between Princes Highway and Unwins Bridge Road

Table 4.4: Tube Count Data Summary

Street	Location	Direction	ADT Volumes	85th Percentile Speed (km/h)	Heavy Vehicle Composition	
					%	Volumes
Barden Street	Between Princes Highway & South Street	EB	71	30.5	4.9%	3
		WB	74	32.8	8.2%	6
Fanning Street	Between Princes Highway & South Street	EB	108	35.5	6.7%	7
		WB	112	34.4	4.3%	5
Foreman Street	Between Princes Highway and Brooklyn Lane	EB	261	34.1	5.7%	15
Hart Street	Between Princes Highway & South Street	EB	273	30.3	3.0%	8
		WB	63	30.4	9.5%	6
Holbeach Avenue	Between Princes Highway & Roundabout	NB	505	44.1	8.9%	45
		SB	551	40.9	4.9%	27
Smith Street	Between Princes Highway & Wood Street	EB	320	46.5	36.0%	115
		WB	604	38.8	25.0%	151
South Street	Between Smith Street & Station Street	NB	510	28.3	6.0%	31
		SB	182	30	25.0%	46
Stanley Street	Between Edwin Street & Zuitton Lane	EB	164	45.5	7.7%	13
		WB	120	41.9	7.8%	9
Station Street	Between Princes Highway & Young Street	EB	85	30.6	3.7%	3
		WB	20	31.7	7.0%	1
Union Street	Between Princes Highway & Zuitton Lane	WB	487	26.9	3.4%	17
Wentworth Street	Between Princes Highway & South Street	EB	72	32.1	6.7%	5
		WB	151	36.1	6.7%	10
Zuitton Lane	Between Union Street & Stanley Street	NB	123	22	5.6%	7
		SB	82	19.9	2.8%	2
Edwin Street	Between Stanley Street & Tramway Street	EB	290	31.1	6.9%	20
		WB	439	38.1	1.8%	8
Tramway Street	Between Unwins Bridge Road & Edwin Street	NB	253	19	2.8%	7
		SB	318	23.6	1.9%	6

4.2.3.2 85th Percentile Speeds

All local streets in the study area have an 85th percentile speed of less than the posted speed limit of 50 km/h. Most recorded 85th percentile speeds are less than 40 km/h, with Holbeach Avenue, Stanley Street and Smith Street having speeds between 40 and 50 km/h. It is important to note that on these roads, LATM devices aimed at reducing speeds and narrowing road widths are not present.

4.2.3.3 Heavy Vehicle Composition

Many of the streets in the study area with the 3-tonne truck load limit have heavy vehicle volumes of 10 or less. However, roads such as Stanley Street, Union Street, Foreman Street, Wentworth Street and Edwin Street have volumes of around 10 to 20 heavy vehicles per day.

Roads without the truck load limit have relatively higher heavy vehicle volumes per day, such as Holbeach Avenue, South Street and Smith Street. In particular, Smith Street has heavy vehicle volumes of more than 100 per day in each direction, justified by the commercial and industrial land use along Smith Street and Wood Street.

In terms of heavy vehicle percentages, most of the roads have a heavy vehicle percentage of more than 5%. In particular, Smith Street and South Street have relatively higher heavy vehicle percentages.

4.2.4 Parking Occupancy & Duration

Parking occupancy and duration surveys were undertaken on a Thursday and a Saturday in March 2020. The surveys were conducted in hourly periods between 7:00 AM to 7:00 PM. Roads surveyed are highlighted in Figure 4.3.

The surveys recorded a total of 291 spaces on the roads surveyed. 57% of these spaces were occupied on the Thursday while 54% of the spaces were occupied on the Saturday.

The parking occupancies by time of day and parking durations for the Thursday and Saturday are summarised in Table 4.5 to Table 4.8.

A map showing the average parking occupancy rates is provided in **Appendix B**.

Table 4.5: Thursday Parking Occupancy Rate by Hourly Period

Road	Side	Section	Restriction	Parking Capacity	0700-0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	Average
Fanning Street	West	Entire Section	Unrestricted	34	59%	47%	44%	47%	47%	41%	50%	44%	47%	59%	62%	59%	50%
	East	Entire Section	Unrestricted	29	76%	72%	76%	69%	69%	76%	72%	69%	76%	72%	76%	90%	74%
Barden Street	West	Entire Section	Unrestricted	30	50%	50%	53%	60%	50%	40%	43%	50%	53%	60%	63%	47%	52%
	East	Entire Section	Unrestricted	33	52%	42%	45%	48%	45%	45%	45%	58%	58%	45%	48%	52%	49%
South Street	North	Between Fanning St & Barden St	Unrestricted	9	44%	22%	33%	33%	33%	33%	56%	33%	44%	44%	44%	33%	38%
		Between Barden St & Smith St	Unrestricted	10	40%	40%	40%	40%	40%	40%	40%	40%	50%	50%	50%	70%	45%
	South	Entire Section	Unrestricted	16	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Smith Street	West	Between Princes Hwy & South St	Unrestricted	31	61%	65%	74%	81%	77%	77%	84%	77%	87%	81%	77%	61%	75%
		Between South St & cul-de-sac	No Parking	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Cul-de-sac	-	No Parking	0	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%	300%[2]	0%	100%[2]

Road	Side	Section	Restriction	Parking Capacity	0700-0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	Average
	East	Between cul-de-sac & Wood St	Unrestricted	3	33%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0%	86%
		Between Wood St & Princes Hwy	Unrestricted	27	59%	59%	63%	63%	63%	63%	70%	67%	63%	67%	63%	56%	63%
Union Street	East	Between Princes Hwy & Brooklyn Ln	No Parking	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Between Brooklyn Ln & School Ln	Unrestricted	7	86%	43%	71%	71%	57%	71%	57%	71%	57%	71%	71%	71%	67%
			PWD	1	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	100%	58%
			Unrestricted	15	80%	80%	67%	67%	73%	67%	87%	80%	67%	80%	80%	80%	76%
			No Stopping	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Between School Ln & Unwins Bridge Rd	No Stopping	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
			Unrestricted	8	0%	25%	25%	25%	25%	25%	25%	25%	25%	25%	12%	12%	21%
	West	Between Unwins Bridge Rd & Edwin St	No Stopping	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
			No Parking	0	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100% [2]

Road	Side	Section	Restriction	Parking Capacity	0700-0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	Average
			Unrestricted	7	86%	86%	86%	86%	86%	86%	86%	100%	100%	86%	71%	100%	88%
			No Stopping	0	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%	0%	100%[2]
		Between Edwin St & Zuitton Ln	No Stopping	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
			Unrestricted	27	78%	63%	52%	56%	59%	56%	56%	59%	59%	59%	67%	56%	60%
		Between Zuitton Ln & Princes Hwy	No Stopping	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
			1P[1]	4	75%	75%	75%	75%	75%	75%	25%	50%	50%	75%	50%	25%	60%
			No Stopping	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total				**291**	**57%**	**53%**	**55%**	**57%**	**55%**	**54%**	**56%**	**57%**	**58%**	**60%**	**61%**	**56%**	**57%**

Notes:
1. 1P restriction during 8:30 AM - 6:00 PM Mon-Fri
2. A percentage of 100% for a No Stopping or No Parking restriction means there is a vehicle that is illegally stopping or parked. A percentage of 300% means there are three (3) vehicles that are illegally stopping or parked

Table 4.6: Saturday Parking Occupancy Rate by Hourly Period

Road	Side	Section	Restriction	Parking Capacity	0700-0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	Average
Fanning Street	West	Entire Section	Unrestricted	34	50%	50%	41%	44%	41%	53%	62%	56%	59%	56%	50%	59%	52%
	East	Entire Section	Unrestricted	29	90%	93%	97%	93%	93%	90%	100%	83%	72%	69%	86%	90%	88%
Barden Street	West	Entire Section	Unrestricted	30	60%	53%	57%	50%	47%	57%	53%	53%	50%	47%	50%	40%	51%
	East	Entire Section	Unrestricted	33	61%	55%	42%	48%	45%	55%	55%	55%	55%	48%	55%	61%	53%
South Street	North	Between Fanning St & Barden St	Unrestricted	9	33%	22%	22%	33%	33%	33%	67%	67%	78%	67%	67%	67%	49%
		Between Barden St & Smith St	Unrestricted	10	50%	60%	50%	40%	50%	40%	40%	40%	40%	30%	40%	30%	43%
	South	Entire Section	Unrestricted	16	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	6%	1%
Smith Street	West	Between Princes Hwy & South St	Unrestricted	31	71%	61%	65%	55%	61%	68%	71%	71%	71%	65%	68%	65%	66%
		Between South St & cul-de-sac	No Parking	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Cul-de-sac	-	No Parking	0	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100% [2]

Road	Side	Section	Restriction	Parking Capacity	0700-0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	Average
	East	Between cul-de-sac & Wood St	Unrestricted	3	0%	0%	0%	33%	0%	0%	0%	0%	33%	33%	33%	33%	14%
		Between Wood St & Princes Hwy	Unrestricted	27	48%	48%	48%	44%	48%	41%	52%	52%	56%	59%	52%	56%	50%
Union Street	East	Between Princes Hwy & Brooklyn Ln	No Parking	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Between Brooklyn Ln & School Ln	Unrestricted	7	71%	57%	71%	71%	43%	43%	71%	71%	71%	71%	71%	71%	65%
			PWD	1	100%	100%	100%	100%	100%	0%	0%	0%	0%	100%	100%	100%	67%
			Unrestricted	15	80%	80%	73%	80%	73%	53%	60%	80%	80%	80%	93%	73%	76%
			No Stopping	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Between School Ln & Unwins Bridge Rd	No Stopping	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
			Unrestricted	8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	12%	1%
	West	Between Unwins Bridge Rd & Edwin St	No Stopping	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
			No Parking	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Road	Side	Section	Restriction	Parking Capacity	0700-0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	Average
			Unrestricted	7	71%	71%	71%	71%	57%	43%	43%	71%	86%	86%	71%	0%	62%
			No Stopping	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Between Edwin St & Zuitton Ln	No Stopping	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
			Unrestricted	27	67%	67%	56%	52%	70%	59%	48%	44%	52%	48%	56%	59%	56%
		Between Zuitton Ln & Princes Hwy	No Stopping	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
			1P[1]	4	75%	75%	75%	50%	50%	75%	50%	50%	25%	25%	75%	75%	58%
			No Stopping	0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total				**291**	**58%**	**55%**	**53%**	**51%**	**52%**	**52%**	**56%**	**55%**	**56%**	**53%**	**57%**	**55%**	**54%**

Notes:
1. 1P restriction during 8:30 AM-12:30 PM Sat
2. A percentage of 100% for a No Stopping or No Parking restriction means there are cars that are illegally stopping or parked.

Table 4.7: Thursday Parking Duration Proportions

Road	Side	Section	Restriction	Total Vehicles	Parking Duration											
					1 hour	2 hours	3 hours	4 hours	5 hours	6 hours	7 hours	8 hours	9 hours	10 hours	11 hours	12 hours
Fanning Street	West	Entire Section	Unrestricted	47	26%	15%	19%	6%	4%	2%	11%	0%	2%	2%	2%	11%
	East	Entire Section	Unrestricted	51	25%	14%	12%	4%	6%	4%	8%	2%	2%	10%	0%	14%
Barden Street	West	Entire Section	Unrestricted	43	23%	28%	9%	7%	7%	5%	0%	0%	2%	2%	5%	12%
	East	Entire Section	Unrestricted	40	30%	15%	5%	10%	10%	0%	3%	3%	5%	0%	5%	15%
South Street	North	Between Fanning St & Barden St	Unrestricted	9	44%	11%	0%	11%	0%	0%	11%	0%	0%	0%	0%	22%
		Between Barden St & Smith St	Unrestricted	8	38%	0%	0%	13%	0%	0%	0%	0%	0%	0%	13%	38%
	South	Entire Section	Unrestricted	1	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Smith Street	West	Between Princes Hwy & South St	Unrestricted	42	19%	12%	5%	5%	2%	5%	5%	5%	7%	5%	5%	26%
		Between South St & cul-de-sac	No Parking	0	-	-	-	-	-	-	-	-	-	-	-	-
	Cul-de-sac	-	No Parking	4	75%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	East	Between cul-de-sac & Wood St	Unrestricted	3	0%	0%	0%	0%	0%	0%	0%	0%	0%	67%	33%	0%
		Between Wood St & Princes Hwy	Unrestricted	29	17%	14%	3%	3%	0%	7%	3%	3%	10%	3%	0%	34%

Road	Side	Section	Restriction	Total Vehicles	Parking Duration											
					1 hour	2 hours	3 hours	4 hours	5 hours	6 hours	7 hours	8 hours	9 hours	10 hours	11 hours	12 hours
Union Street	East	Between Princes Hwy & Brooklyn Ln	No Parking	0	-	-	-	-	-	-	-	-	-	-	-	-
		Between Brooklyn Ln & School Ln	Unrestricted	14	43%	7%	14%	7%	0%	0%	0%	7%	14%	0%	0%	7%
			PWD	2	50%	0%	0%	0%	0%	50%	0%	0%	0%	0%	0%	0%
			Unrestricted	30	20%	30%	13%	3%	3%	7%	0%	0%	3%	3%	0%	17%
			No Stopping	0	-	-	-	-	-	-	-	-	-	-	-	-
		Between School Ln & Unwins Bridge Rd	No Stopping	0	-	-	-	-	-	-	-	-	-	-	-	-
			Unrestricted	2	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	50%	0%
	West	Between Unwins Bridge Rd & Edwin St	No Stopping	0	-	-	-	-	-	-	-	-	-	-	-	-
			No Parking	1	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
			Unrestricted	12	42%	0%	0%	0%	0%	17%	0%	0%	8%	0%	0%	33%
			No Stopping	1	0%	100 %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Between Edwin St & Zuitton Ln	No Stopping	0	-	-	-	-	-	-	-	-	-	-	-	-
			Unrestricted	38	34%	16%	5%	0%	5%	3%	8%	3%	0%	3%	0%	24%

Road	Side	Section	Restriction	Total Vehicles	Parking Duration											
					1 hour	2 hours	3 hours	4 hours	5 hours	6 hours	7 hours	8 hours	9 hours	10 hours	11 hours	12 hours
Union Street		Between Zuitton Ln & Princes Hwy	No Stopping	0	-	-	-	-	-	-	-	-	-	-	-	-
			1P[1]	9	44%	11%	11%	11%	11%	0%	0%	0%	0%	0%	11%	0%
			No Stopping	0	-	-	-	-	-	-	-	-	-	-	-	-
Total				**386**	**28%**	**16%**	**9%**	**5%**	**4%**	**4%**	**4%**	**2%**	**4%**	**4%**	**3%**	**18%**

Notes:
1. 1P restriction during 8:30 AM - 6:00 PM Mon-Fri

Table 4.8: Saturday Parking Duration Proportions

Road	Side	Section	Restriction	Total Vehicles	Parking Duration											
					1 hour	2 hours	3 hours	4 hours	5 hours	6 hours	7 hours	8 hours	9 hours	10 hours	11 hours	12 hours
Fanning Street	West	Entire Section	Unrestricted	52	37%	13%	15%	4%	6%	4%	0%	2%	4%	2%	2%	12%
	East	Entire Section	Unrestricted	60	25%	17%	10%	3%	7%	7%	2%	3%	7%	2%	0%	18%
Barden Street	West	Entire Section	Unrestricted	40	23%	13%	13%	8%	13%	10%	5%	3%	3%	0%	3%	10%
	East	Entire Section	Unrestricted	45	29%	16%	7%	11%	9%	4%	4%	0%	0%	0%	2%	18%
South Street	North	Between Fanning St & Barden St	Unrestricted	9	22%	11%	0%	11%	0%	22%	0%	0%	11%	0%	0%	22%
		Between Barden St & Smith St	Unrestricted	10	30%	10%	20%	0%	0%	0%	0%	20%	0%	0%	0%	20%
	South	Entire Section	Unrestricted	1	0%	100 %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Smith Street	West	Between Princes Hwy & South St	Unrestricted	39	18%	13%	10%	5%	5%	3%	8%	5%	0%	0%	3%	31%
		Between South St & cul-de-sac	No Parking	0	-	-	-	-	-	-	-	-	-	-	-	-
	Cul-de-sac	-	No Parking	2	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	East	Between cul-de-sac & Wood St	Unrestricted	2	50%	0%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%
		Between Wood St & Princes Hwy	Unrestricted	32	22%	6%	13%	13%	16%	6%	3%	3%	0%	0%	0%	19%

Road	Side	Section	Restriction	Total Vehicles	Parking Duration											
					1 hour	2 hours	3 hours	4 hours	5 hours	6 hours	7 hours	8 hours	9 hours	10 hours	11 hours	12 hours
Union Street	East	Between Princes Hwy & Brooklyn Ln	No Parking	0	-	-	-	-	-	-	-	-	-	-	-	-
		Between Brooklyn Ln & School Ln	Unrestricted	9	11%	0%	0%	22%	22%	22%	0%	0%	0%	0%	0%	22%
			PWD	2	0%	0%	50%	0%	50%	0%	0%	0%	0%	0%	0%	0%
			Unrestricted	29	24%	10%	10%	14%	17%	3%	0%	0%	3%	3%	0%	14%
			No Stopping	0	-	-	-	-	-	-	-	-	-	-	-	-
		Between School Ln & Unwins Bridge Rd	No Stopping	0	-	-	-	-	-	-	-	-	-	-	-	-
			Unrestricted	1	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	West	Between Unwins Bridge Rd & Edwin St	No Stopping	0	-	-	-	-	-	-	-	-	-	-	-	-
			No Parking	0	-	-	-	-	-	-	-	-	-	-	-	-
			Unrestricted	8	0%	13%	0%	38%	13%	0%	0%	0%	0%	0%	38%	0%
			No Stopping	0	-	-	-	-	-	-	-	-	-	-	-	-
		Between Edwin St & Zuitton Ln	No Stopping	0	-	-	-	-	-	-	-	-	-	-	-	-
			Unrestricted	46	35%	22%	4%	9%	4%	7%	2%	2%	0%	2%	0%	13%

Road	Side	Section	Restriction	Total Vehicles	Parking Duration											
					1 hour	2 hours	3 hours	4 hours	5 hours	6 hours	7 hours	8 hours	9 hours	10 hours	11 hours	12 hours
Union Street		Between Zuitton Ln & Princes Hwy	No Stopping	0	-	-	-	-	-	-	-	-	-	-	-	-
			1P[1]	6	17%	33%	17%	0%	0%	0%	0%	17%	0%	0%	0%	17%
			No Stopping	0	-	-	-	-	-	-	-	-	-	-	-	-
Total				**393**	**26%**	**14%**	**10%**	**8%**	**9%**	**6%**	**3%**	**3%**	**2%**	**1%**	**2%**	**16%**

Notes:
1. 1P restriction during 8:30 AM-12:30 PM Sat

4.2.4.1 Parking Data Summary

The parking occupancy data shows that

- Out of the 291 spaces, about 50 to 60% of the spaces are occupied at any one time on both days.
- There are little differences in parking occupancy between Thursday and Saturday, except for Smith Street.
- For Smith Street, the occupancy rate is higher on the Thursday and lower on Saturday.
  - The occupancy rates for the section of Smith Street southeast of South Street (up to the cul-de-sac) are significantly different between Thursday and Saturday. This is because of the low number of spaces resulting in high fluctuations of occupancy rates.
- For Fanning Street the occupancy rate on the eastern side is higher than the western side on both days, with occupancy rates of 74% and 88% on Thursday and Saturday respectively.
- On the Thursday, there are occasional vehicles parking or stopped at each section with No Stopping or No Parking restrictions. These restrictions are along Smith Street and Union Street.
- The southern side of South Street is rarely occupied, which is consistent with site observations and Street View. This is due to the narrow width of South Street which is only wide enough for a parking lane and a trafficable lane.
- All other roads have parked vehicles on both sides of the road, if allowed
- Parking occupancy is relatively higher on Union Street near the school on Thursdays, with the western and eastern sides having occupancy rates of 88% and 76% respectively.
- The parking duration data shows that:
- Almost 400 vehicles parked during the surveyed time period.
- On both Thursday and Saturday:
  - about 27% of all users park less than an hour
  - about 15% park less than 2 hours
  - about 17% of users park for at least 12 hours, i.e. potentially residents

The parking occupancy and duration data will be considered when determining locations and suitability of LATM devices. This data also sets a base line for the parking demand in the study area. This can be used for a comparative study to identify changes in parking demand after any new developments have been built.

An assessment of the Smith Street on-street parking availability considering changes to Smith Street as a result of the proposed Bunnings development is detailed in Section 6.2.

5. SITE INSPECTIONS

5.1 Site Audits

A site inspection and audit within the study area was undertaken, on Wednesday 4 March 2020, to gain an understanding of the current conditions of the streets within the study area (including parking behaviour), and identify existing LATM devices and traffic control infrastructure. Details on traffic and parking signage were also recorded.

The site audit covered the following traffic items and are detailed in the sections below:

- LATM Devices
- Traffic Signs
- Parking Signs
- Bicycle Facilities
- Pedestrian Facilities
- Waste Management/Collection Issues

The signage audit included the following items:

- Type of Sign (and relevant codes) or device
- Direction of sign control
- Restrictions and times of operation
- Condition
- Location (GPS co-ordinates)
- Applicable direction of traffic

Bicycle and Pedestrian Facilities

- Cycle related signage / road markings and their location
- Wayfinding signage and their location
- Kerb ramps and crossings

Waste Management

- Evidence of issues with road geometry or surfaces that can affect waste collection

A database of the audit findings was developed including photographs of signs and infrastructure, located in **Appendix C**.

5.1.1 LATM Audit

An audit of existing LATM devices within the study area was conducted, covering the following aspects:

- LATM type
- Location (including road name)
- Line marking and physical condition

A total of 16 LATM devices were identified within the study area, presented in Table 5.1 and Figure 5.1.

Table 5.1: Existing LATM Devices & Controls

Road	Traffic Calming or Treatment	Treatment Type
Union Street	Yes	▪ Road Hump (Watts Profile) ▪ Road Hump (Flat Top) – Raised Thresholds ▪ Kerb Blisters ▪ Contrasting Pavement ▪ Raised Pedestrian Crossing (Wombat Crossing) ▪ One-way restriction
Foreman Street	Yes	▪ Road Hump (Watts Profile) ▪ Road Hump (Flat Top) - Raised Thresholds ▪ Kerb Blisters ▪ One-way restriction
Edwin Street	Yes	▪ Road Hump (Flat Top) ▪ Contrasting Pavement ▪ Median Island (Splitter Rumble Strips)
Tramway Street	Yes	▪ Median Island (Splitter Rumble Strips)
South Street	Yes	▪ Road Hump (Watts Profile)
Holbeach Avenue	Yes	▪ Roundabout (with Pedestrian Refuge Islands)

A number of these devices are in addition to those proposed as part of the previous *St Peters/Tempe LATM Study*. This includes:

- Raised thresholds, kerb blisters, raised pedestrian crossing and contrasting pavement on Union Street
- An additional Watts Profile hump on South Street
- Roundabout at Holbeach Avenue.

Signage associated with the LATM devices are covered under the Traffic Sign Audit in Section 5.1.2.

Adapted from ESRI Maps

Figure 5.1: Existing LATM Devices

5.1.2 Traffic Sign Audit

The traffic sign audit covered all traffic signs along each roadway, including regulatory, warning and wayfinding signage. Signage associated with LATM devices (such as directional hazard markers or speed hump warning sign) were included in the traffic signage audit. The audit covered:

- Sign type & associated RMS code
- Road and location (including road name and co-ordinates)
- Applicable direction of traffic
- Sign condition
- Visibility obstruction (if any)

A total of 153 traffic signs were recorded within the study area. A database of traffic signs identified in the audit is provided in **Appendix C**. A summary list of the types of traffic signs recorded are shown in Table 5.2.

Majority of the signs were found to be in a good condition with unobstructed visibility. Some signs were found to be vandalised with stickers or graffiti, or faded, however, were still mostly legible. A number of signs were also found to be dislocated or facing the wrong way. Some signs were also obstructed by trees, or covered by another sign immediately above or below the obstructed sign.

A large proportion of the traffic signs are speed hump and speed hump ahead signs (with relevant tag plates), one-way, and the 3-tonne truck load limit signs. The speed hump related signage are mostly along South Street, Union Street and Foreman Street, while the 3-tonne truck load limit signage are located on the entry to roads with the load limit restriction (see Section 2.9).

Table 5.2: Traffic Signs Audit

Traffic Sign Recorded	Sign Code	Locations
No Through Road	G9-18	Holbeach Avenue, Smith Street, Wood Street, Tramway Street
Stop	R1-1	Holbeach Avenue, School Lane, Edwin Street
Roundabout Give Way	R1-13	Holbeach Avenue
Give Way	R1-2	Holbeach Avenue, Station Street, Union Street, Foreman Street, Tramway Street
Traffic Signal Stop	R1-4	Holbeach Avenue, Smith Street
All Traffic Left Only	R2-14_L	Station Street, Fanning Street
All Traffic Right Only	R2-14_R	School Lane
One Way Left	R2-2_L	Princes Highway, Zuitton Lane, Unwin's Bridge Road, Edwin Street
One Way Right	R2-2_R	School Lane, Princes Highway, Brooklyn Lane, Unwins Bridge Road
Two Way	R2-223	Holbeach Avenue
Keep Left	R2-3	Holbeach Avenue
No Entry	R2-4N	Foreman Street
No Right Turn	R2-6_R	Unwins Bridge Road, Gannon Street
Pedestrian Crossing	R3-1	Union Street
Speed Limit Sign (25 km/h)	R4-1	Holbeach Avenue

Traffic Sign Recorded	Sign Code	Locations
School Zone Sign (including illuminated)	R4-230 & R4-230-1	School Lane, Foreman Street, Union Street, Edwin Street
End School Zone	R4-231	Foreman Street, Edwin Street
Local Traffic Area (50 km/h)	R4-240 (50 km/h)	Fanning Street, Barden Street, Smith Street
End Local Traffic Area (50 km/h)	R4-241	Fanning Street, Barden Street, Smith Street
Trucks Prohibited 3-tonne & over	R6-222, R6-10-2 and R9-221	Old Street, Bay Street, Union Street, Fanning Street, Barden Street, Station Street, Hart Street, Edwin Street
"6AM-10AM 3PM-7PM Mon-Fri" Tag Plate	R9-1-2	Unwins Bridge Road
"When Signals Black Out or Flashing" Tag Plate	R9-201	Smith Street
Hazard Warning Marker	T5-5	Union Street, Foreman Street, Holbeach Avenue
Roundabout Warning	W2-7	Holbeach Avenue
Speed Hump Ahead	W3-4	South Street, Union Street, Edwin Street, Foreman Street
Speed Hump	W5-10	South Street, Union Street, Edwin Street, Foreman Street
Pedestrian Warning	W6-1	Holbeach Avenue, Union Street
Pedestrian Crossing Ahead / Left	W6-2 & W6-2-1	Union Street, Edwin Street
Children Crossing	W6-3	Union Street
"School" Tag Plate	W8-14	Union Street
Speed Tag Plates for Speed Hump signs (various speeds)	W8-2	South Street, Union Street, Edwin Street, Foreman Street
"Refuge Island" Tag Plate	W8-211	Holbeach Avenue

5.1.3 Parking Sign Audit

The parking sign audit captured any signage associated with kerbside and parking controls, including 'No Stopping' and 'No Parking' areas. The audit covered (where applicable):

- Location (road name and co-ordinates)
- Sign type & associated RMS sign code
- Direction of arrow
- Time restrictions and operation days/times
- Applicable traffic direction
- Sign Condition
- Any visibility obstructions

As most of the study area has unrestricted on-street parking, there are very few parking signs with timed or conditional restrictions. The rest of the signs, particularly, those close to intersections, are No Stopping and No Parking signs. A total of 89 parking signs were recorded.

Majority of signs are legible, with some signs heavily faded and illegible (including wording and arrow).

Parking zones associated with the parking signs was previously presented in Figure 2.8. A map of parking signs recorded is provided in **Appendix C**.

5.1.4 Bicycle Facilities Audit

The bicycle facilities audit covered both physical and visual treatments provided for cyclists, such as ramps or crossings and cycle route pavement markings and signage. The audit included:

- Any bicycle-related route-finding signage
- Any shared paths and cycleways
- Any shared bicycle/pedestrian signalised crossing
- Location of bicycle facility (including road name)

Most bicycle facilities are located along the bicycle routes shown in Section 2.7.1, which include Holbeach Avenue, South Street and Smith Street. This includes shared paths and associated signage and bicycle route signage. Signalised shared pedestrian / bicycle crossings are also located at the intersections of Princes Highway / Holbeach Avenue and Princes Highway / Smith Street.

A bicycle on-ramp is also present near the Holbeach Avenue approach to Princes Highway. This allows cyclists along the roadway of Holbeach Avenue to join the shared path along Holbeach Avenue and Princes Highway.

A map of bicycle facilities is provided in **Appendix C**.

5.1.5 Pedestrian Facilities Audit

The pedestrian facilities audit identified features providing accessible pedestrian connectivity within the study area. This included:

- Any kerb ramps
- Any pedestrian refuges
- Any signalised pedestrian crossing or shared bicycle/pedestrian crossings
- Any pedestrian (zebra) crossings

The study area is well-connected by footpaths, with the exception of laneways such as Farrow Lane and Zuitton Lane and were therefore not included as part of the pedestrian facilities audit.

Kerb ramps are present at crossing points at most intersections in the study area.. In most circumstances, the kerb ramps occur in pairs; one on each side of the road. Where pairs of kerb ramps are not present, this creates a break in footpath connectivity, presenting accessibility issues for low mobility pedestrians, such as wheelchair users.

These issues should be further explored and addressed as part of a different study such as a Pedestrian Accessibility Mobility Plan.

5.1.6 Waste Management Audit

The waste management audit focussed on identifying evidence of issues or potential issues affecting waste collection. This may include items such as insufficient geometry, damage to kerbs/corners or other evidence of manoeuvring issues.

Very few issues were found that may affect residential waste collection in the study area.

A kerb runover was noted at the corner of Farrow Lane and Zuitton Lane, shown in Figure 5.2. These roadways feature narrow road widths which would be expected to be restrictive for waste collection vehicles.

Figure 5.2: Kerb Runover at Farrow Lane

5.2 Tempe Public School Observations

5.2.1 Overview

A site visit was also undertaken on Tuesday 15 and Wednesday 16 September 2020, to observe traffic patterns and behaviours related to Tempe Public School. The site observations focussed on student pickup and drop off operations, parking and pedestrian routes. School hours were observed between 09:00 AM and 3:00 PM.

5.2.1.1 Access Points

The school has a number of pedestrian access gates along it's perimeter, with the school's main building entrance located along Unwins Bridge Road west of the signalised crossing, shown in Figure 5.3.

Adapted from ESRI Maps

Figure 5.3: School Access Locations

5.2.1.2 AM School Peak Observations

The following was observed during the AM peak period:

- School traffic peak extends between 8:30am and 9:00am with little traffic prior to 8:20am.
- Pedestrian access gates on Union Street, School Lane and Foreman Street open from approximately 8:30am
- Parents were observed to
- Drop off students near access gates without leaving their vehicle, stationary for up to 30 seconds
- Park on Edwin Street and walk up to the gate on Union Street
- Vehicles stopped to give way to one another along Edwin Street, causing some congestion
- Queues on Union Street at Unwins Bridge Road occasionally extended to Edwin Street
- Pedestrians approach school primarily along Union Street, Edwin Street and Unwins Bridge Road
- Traffic along School Lane was primarily westbound as vehicles circulate around the school

5.2.1.3 PM School Peak Observations

The following was observed during the PM peak period:

- School traffic peak extends between 2:30pm and 3:15pm

- Most parents arrived via Foreman Street, Edwin Street and Brooklyn Street
- Parents parked and waited in their vehicles along Union Street, Brooklyn Street, School Lane and Edwin Street
- vehicles were observed to circulate westbound from Foreman Street via School Lane, Union Street and Edwin Street, before exiting the area
- Blockages due to vehicles travelling in opposite directions along Edwin Street, giving way to one another
- Pedestrian movements primarily along Edwin Street, Union Street, Foreman Street and Unwin's Bridge Road.
- Large groups of students along Unwins Bridge Road towards Tempe and Sydenham Station directions.

5.2.1.4 Pedestrian Areas

The areas shown in Figure 5.4 featured large volumes of pedestrians as parents picked up and dropped off students, or travelled between parked vehicles and the school. These areas are primarily focussed around access gates, including Union Street and Edwin Street.

Adapted from ESRI Maps

Figure 5.4: Pedestrian Areas

6. FUTURE CONDITIONS

6.1 Future Residential Development

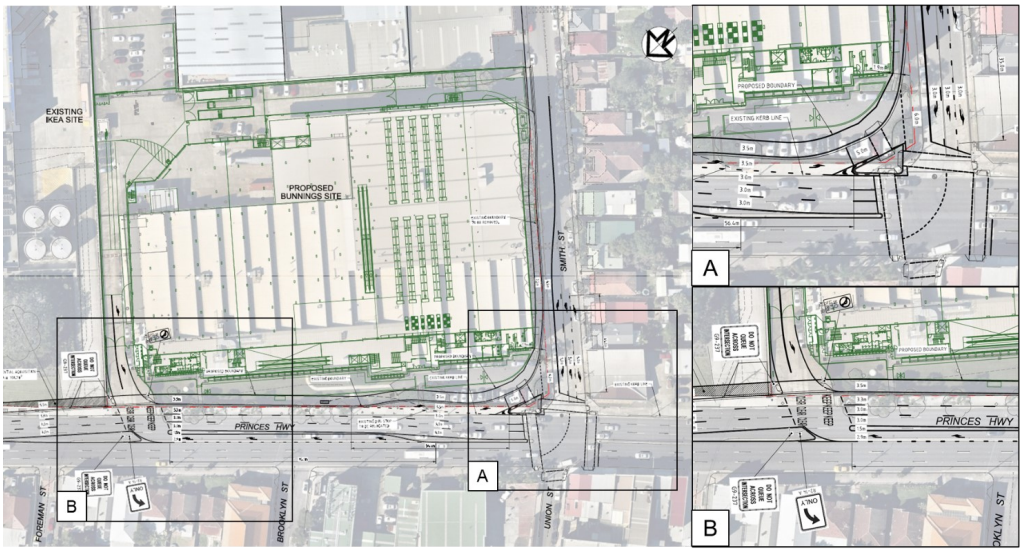
There are not any known high impact residential developments, such as medium or high-density developments, currently pending within Tempe and the study area.

Based on population forecasts provided by Forecast ID (using Census data from 2006 to 2016), Tempe is expected to experience a negative population growth until 2031. As such, it is expected that there will be very little traffic growth in traffic volumes in Tempe for the next 10 years. This excludes traffic along major through roads and connectors such as Princes Highway or Unwins Bridge Road.

6.2 Future Bunnings Development

The proposed Bunnings Development is to be located at the south-east corner of Princes Highway and Smith Street, with vehicular access to be provided via Smith Street and Princes Highway. A Traffic Impact Assessment (TIA) was undertaken by Transport and Traffic Planning Associates (TTPA) in October 2017, indicating the following proposed road changes (also shown in Figure 6.1):

- A new left turn slip lane from Princes Highway to Smith Street
- Removal of parking on the eastern side of Smith Street and a reduction to one departure lane on Smith Street
- Widening of Smith Street approach to Princes Highway to three lanes
- Customer and delivery access (“Smith Street access”) to Bunnings from Smith Street at existing driveway location
- Access to Bunnings from Princes Highway to be located north-east of the Smith Street intersection
- A new unsignalised right turn bay from Princes Highway eastbound to Bunnings Warehouse Princes Highway access
- Only left turns permitted from the Bunnings Princes Highway access
- Relocation of the southwest-bound bus stop on Princes Highway, currently located on the approach to Smith Street.



Source: Bunnings Warehouse Tempe – Proposed Road Layout General Arrangement Plan 2 – AT&L 2017

Figure 6.1: Proposed Road Changes

6.2.1 Smith Street On-Street Parking Assessment

It is understood that up to 13 spaces of on-street parking of Smith Street are proposed to be removed as part of the Bunnings development. To mitigate the loss of on-street parking, as part of the Bunnings development application consent conditions (condition number 6), 13 of the car spaces within Bunnings warehouse are to be dedicated as public car parking spaces available to local residents to offset the loss of on street parking. However, these public car spaces are intended to be available during Bunnings trading hours only. This removes the flexibility of parking at any time of the day for any duration. Given that most residents are expected to park overnight or outside business hours, as a worst-case scenario, these spaces will not be considered as part of the assessment. Further, Bunnings customers are assumed to not use on-street parking on Smith Street as 424 on-site parking spaces are provided.

Based on parking occupancy data, Table 6.1 shows the average number of occupied spaces and vacant spaces along Smith Street on the Thursday and Saturday. There are on average 18 vacant spaces along Smith Street on Thursday and 27 vacant spaces on Saturday. The removal of 13 on-street spaces result in an estimated 5 and 14 vacant spaces remaining on Thursday and Saturday respectively. Therefore, Smith Street will be able to cope with the loss of 13 on-street spaces, and residents do not have to seek other on-street parking elsewhere.

Table 6.1: Parking Occupancy on Smith Street

Side	Section	Parking Capacity	Occupied Spaces (Average)	Vacant Spaces
Thursday				
West	Between Princes Highway & South Street	31	23	8
East	Between cul-de-sac & Wood Street	3	3	0
	Between Wood Street & Princes Highway	27	17	10
Total		61	43	18
Saturday				
West	Between Princes Highway & South Street	31	20	11
East	Between cul-de-sac & Wood Street	3	0	3
	Between Wood Street & Princes Highway	27	14	13
Total		61	34	27

Any proposed treatments resulting in the removal of further parking spaces on Smith Street (mainly the western side) may further reduce the number of vacant spaces along Smith Street.

6.2.2 Traffic Generation

It is expected that there will be an increase in traffic along Smith Street due to traffic generated by the proposed Bunnings Development. The increase in volumes along Smith Street will be limited to the section of Smith Street between Princes Highway and the proposed Bunnings access. Generated trips by the Bunnings development are not expected to use Smith Street south of the Bunnings access and subsequently South Street.

A further assessment of impacts on surrounding local streets from the generated traffic is discussed in Section 7.

Traffic generation had previously been determined by the Traffic Impact Assessment (TIA) developed by TTPA at the DA stage of the Bunnings Proposal and within GTA Consultant's peer review of the TIA. In the draft version of this LATM report, the traffic volumes calculated by GTA were used for analysis. However, following community consultation between November 2020 and January 2021, traffic generation was recalculated using more conservative traffic generation rates and are outlined in Section 13.4.2.

6.2.2.1 Previous Traffic Generation

A summary of key assumptions by TTPA and GTA is provided in Table 6.2.

On review of the previously calculated traffic volumes, it was determined that the volumes presented by GTA Consultants provide a better representation of expected traffic volumes based on:

- Higher weekend traffic generation rate – based on existing survey data and trend
- Exclusion of existing on site traffic – Existing site was (and remains) non-operational
- 50:50 split of in/out trips. – customers generally spend less than an hour at Bunnings Warehouse

As such, the total in/out volumes calculated by GTA consultants a outlined in Table 6.3, and was used in the draft version of this LATM report.

Table 6.2: Previous Traffic Generation – Key Assumptions

Item	TTPA Consultants	GTA Consultants
Traffic Generation Rates (veh/100m² GFA)	▪ 1.56 (PM peak) ▪ 4.5 (weekend peak)	▪ 1.56 (PM peak) ▪ 4.7 (weekend peak)
Existing Traffic Reduction	90 vph (PM Peak)	Nil
Passing Trade Traffic Reduction	▪ 27% (PM peak) ▪ 28% (weekend peak)	▪ 28% (PM peak) ▪ 28% (weekend peak)
In / Out Split	40% In / 60% Out	50% In / 50% Out
Distribution at Princes Highway / Smith Street / Union Street	▪ 45% East (Princes Highway) ▪ 45 % West (Princes Highway) ▪ 10% North (Local Streets)	

Table 6.3: Traffic Generation Volumes

Peak	Total Trips (veh / hour)	Directional Split		Volumes (veh / hour)	
		In	Out	In	Out
PM	226	50%	50%	113	113
Saturday	670			335	335

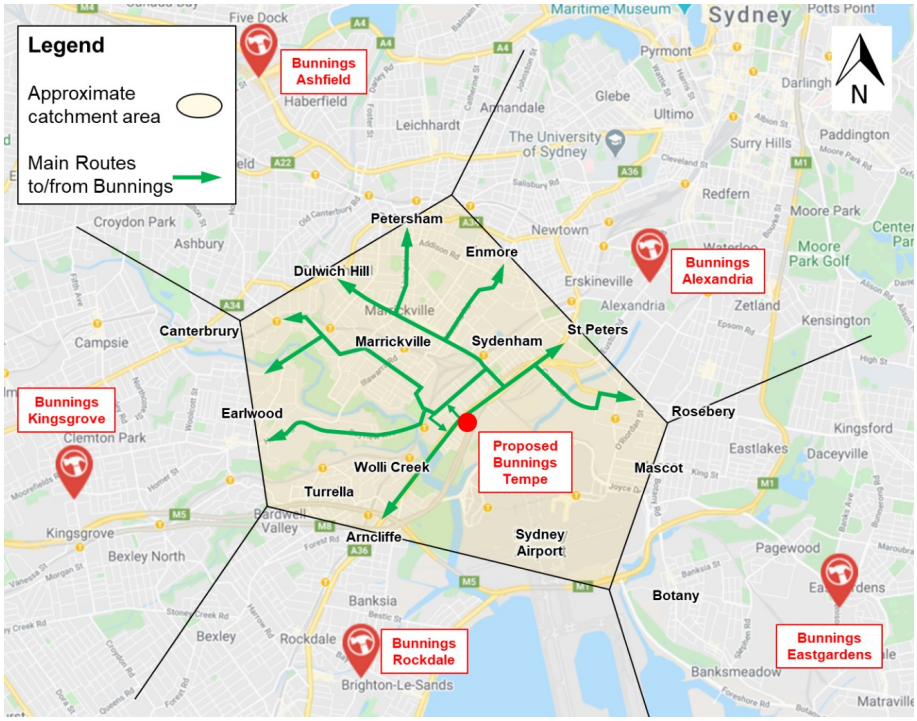
6.2.2.2 Adjusted Traffic Distribution

The previously adopted 45 / 45 / 10 split of traffic (based on previous studies conducted at the IKEA site, located to the east) was determined as an under representation to the potential split of traffic accessing and leaving the proposed Bunnings Warehouse site.

Using the locations of adjacent Bunnings Warehouse stores, a potential catchment area was estimated, shown in Figure 6.2. This area covers suburbs extending from Canterbury to the west, Roseberry to the east, Petersham to the north and Arncliffe to the south. Key roads leading to and from the proposed Tempe Bunnings Warehouse are also shown (details on routes are provided in Section 7).

Based on the location and density of suburbs to the north of the proposed Bunnings Site, a substantial amount of traffic is expected to travel to and from these areas. As such, it would be more realistic to assign a greater proportion of this traffic heading north using local streets, particularly as these streets provide a more direct route to the rail bridge on Richardson Crescent (at Tempe) or Gleeson Avenue (at Sydenham) via Unwins Bridge Road.

Volumes as a result of adjusted / greater distribution of Bunnings traffic (up to 30%) using local streets north of Princes Highway are provided in Table 6.4. A large majority of traffic will still be expected to use Princes Highway to access routes to the north of the area.



Adapted from Google Maps

Figure 6.2: Approximate Catchment Area of Proposed Bunnings Warehouse

Table 6.4: Adjusted Traffic Distribution (Using Local Streets)

Peak	Total Trips (veh / hour)	Vehicle Volumes			
		10%	20%	25%	30%
PM	113	11	23	28	34
Saturday	335	34	67	84	101

6.2.3 Other Changes

It is understood that the existing bus stop along Princes Highway outside of the development site may be impacted by the development. The provision of replacement bus stops is outside the scope of this study.

6.3 Future Road Network

6.3.1 WestConnex

The new M8 tunnel, opened in July 2020, runs underneath the study area as part of the WestConnex project. There will be no connections or changes to study area roads. The St. Peters interchange, located approximately 2km northeast of Tempe, connects the M8 with roads towards the eastern suburbs such as Mascot and Kingsford, and the City's inner south such as Alexandria and Waterloo.

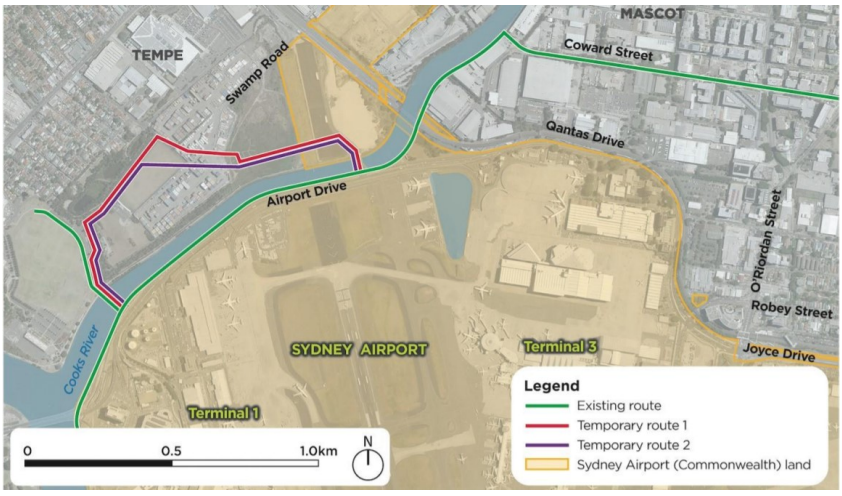
Currently, traffic from the M5 exit at Arncliffe runs via Princes Highway, through Tempe, then via Canal Road or Sydney Park Road to get to the inner south and eastern suburbs respectively. The opening of the new M8 and St Peters interchange may provide an alternative route from the existing M5 to these suburbs, bypassing the Tempe area and is expected to reduce traffic along Princes Highway through Tempe. However, it is not expected to influence traffic along the side roads such as Union Street, Holbeach Avenue and Smith Street.

The M8, though open, is counted as future road network as it opened after the traffic surveys were undertaken.

6.3.2 Sydney Gateway

Sydney Gateway is a future motorway connection between the St Peters interchange and Sydney Kingsford Smith Airport, scheduled to be completed by 2023. The proposed alignment is located adjacent to between Tempe Golf Range and the Alexandria Canal, and does not pass through the study area. However, a construction site is proposed to be located within Tempe Lands on the sites of the Tempe Golf Range and Tempe Dog Park. It is expected for up to 100 light vehicles to access the site via Holbeach Avenue, to be undertaken between 2021 and 2023. Construction vehicle trucks will not be allowed to use Holbeach Avenue to access the Tempe Lands construction site.

Additionally, the current Alexandria Canal shared path will be closed and relocated as part of the project, a temporary active transport link is proposed to run adjacent to Tempe Recreation Reserve and Tempe Lands, shown in Figure 6.3, serving as a temporary detour of the closed shared path. As such, a greater number of cyclists and pedestrians expected towards the south of the study area.



Source: Sydney Gateway Environmental Impact Assessment

Figure 6.3: Sydney Gateway - Temporary Active Transport Link

7. BUNNINGS IMPACTS TO LOCAL TRAFFIC

The increased traffic generated from Bunnings will have a flow on impact onto surrounding local residential roads in the study area. This can lead to an increase of traffic issues such as excessive volumes and speeds on the local roads, which is not desirable. Any LATM devices proposed will aim to mitigate these impacts.

7.1 Routes to and from Bunnings

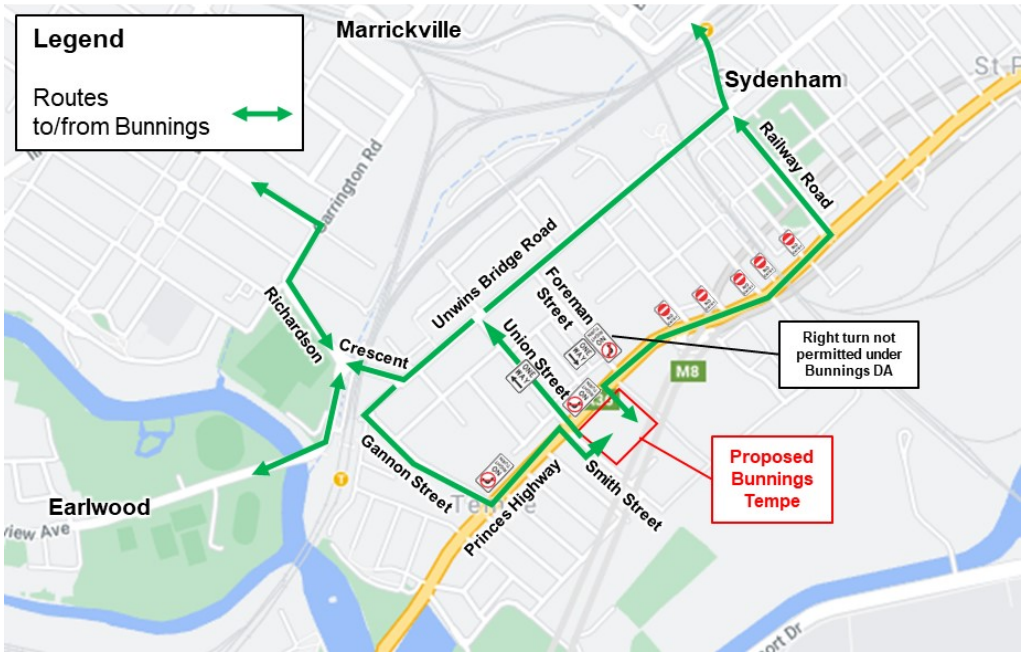
As shown in Figure 6.2, the expected catchment area of the proposed Tempe Bunnings Warehouse covers a broad area of Sydney's Inner West. Key routes and roads identified to access these areas include those outlined in Table 7.1:

Table 7.1: Summary of Routes

Direction	Roads
North	Princes Highway, Railway Street, Sydenham Road, Marrickville Road, Unwins Bridge Road, Richardson Crescent, Warren Road
East	Princes Highway, Gardeners Road
West	Princes Highway, Unwins Bridge Road, Richardson Crescent, Bayview Avenue, Wardell Road
South	Princes Highway

As a result of local rail crossings, there is potential for Bunnings customers to utilise local streets north of the Princes Highway, which provide a more direct route from Princes Highway to the rail bridge on Richardson Crescent (at Tempe) or Gleeson Avenue (at Sydenham) via Unwins Bridge Road.

Due to existing traffic management measures already in place, the most likely local roads used include Gannon Street and Union Street, with Union Street being the most direct northbound route available from Smith Street. The right turn from Foreman Street to Princes Highway will not be permitted due to the extension of the central median as part of the Bunnings DA, and therefore cannot be used as a route into Bunnings. These expected access routes between Unwins Bridge Road and Princes Highway are shown in Figure 7.1.



Adapted from GoogleMaps

Figure 7.1: Expected Access Routes between Unwins Bridge Road and Princes Highway

7.2 Impacts to Union Street

As a result, it can be expected that Union Street experiences an increase in traffic during peak periods. This is less than favourable due to the narrow geometry, the residential environment of the street and location of Tempe Public School to the north.

The increase in traffic as a result of the proposed Bunnings Warehouse is previously outlined in Table 6.4. A comparison of potential traffic volumes on Union Street is provided in Table 7.2.

Table 7.2: Comparison of Potential Traffic Volumes on Union Street

Peak	Traffic Volumes (veh / hour)	Total Traffic on Union Street				Acceptable Environmental Limit
		10%*	20%*	25%*	30%*	Local Road
March 2020 Counts						< 200 vph
PM	51	62	74	79	85	
Saturday	41	75	108	125	142	
December 2018 Counts						
PM	72	83	95	100	106	
Saturday	81	115	148	165	182	

** by proportion split of Bunnings Warehouse traffic, see Table 6.4*

While an assessment of up to 30% of the expected traffic generated by Bunnings Warehouse more than doubles the existing traffic volumes along Union Street (in comparison to both 2018 and 2020 volumes), the increase in traffic can be accommodated by Union Street and does not exceed the acceptable environmental limit (200 vehicles per hour) previously outlined in Table 4.1 (*RTA Guide to Traffic Generating Developments 2002*).

7.3 Impacts to School Operations

Based on Bunnings Warehouse visitation pattern information (made available by *Google*), the highest visitation typically occurs:

- Weekday – between 10am and 4pm
- Weekends – between 9am and 6pm

With this in mind, traffic generated by the proposed Bunnings is more likely to have an impact on school operations during the PM School peak (typically between 2:30pm and 3:30pm). This may include:

- Increased vehicle volumes along Union Street
- Increased congestion and queueing at the intersection with Unwins Bridge Road
- Potential 'rat-running' using Edwin Street and Tramway Street
- Increased congestion with vehicles parked along Union Street and Edwin Street

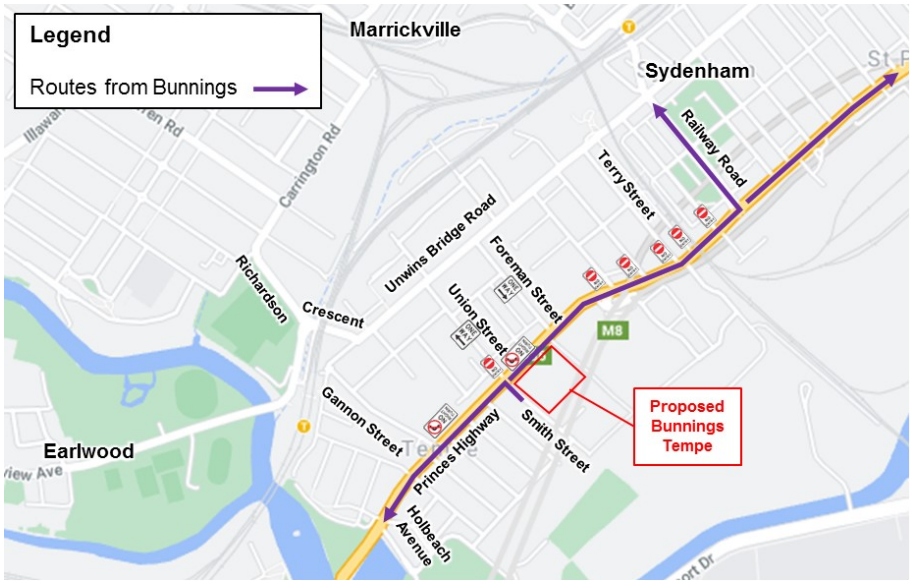
Traffic associated with Bunnings trade customers will typically occur before peak traffic periods and is not expected to impact the AM school peak.

7.4 Closure of Union Street

7.4.1 Traffic re-direction

To prevent non-local traffic from using Union Street, the concept of a road closure has been considered at Princes Highway. We understand that this is supported by the local community members in Union Street. This closure aims to re-direct Bunnings related traffic emerging from Smith Street, to utilise the Princes Highway and other higher order roads to access Unwins Bridge Road and beyond, as shown in Figure 7.4 . This would result in the following routes:

- Right turn from Smith Street onto Princes Highway, then left turn onto Railway Road or Campbell Road
- Left turn from Smith Street onto Princes Highway, U-turn using the Holbeach Avenue roundabout, then right turn onto Princes Highway, then left turn onto Gannon Street



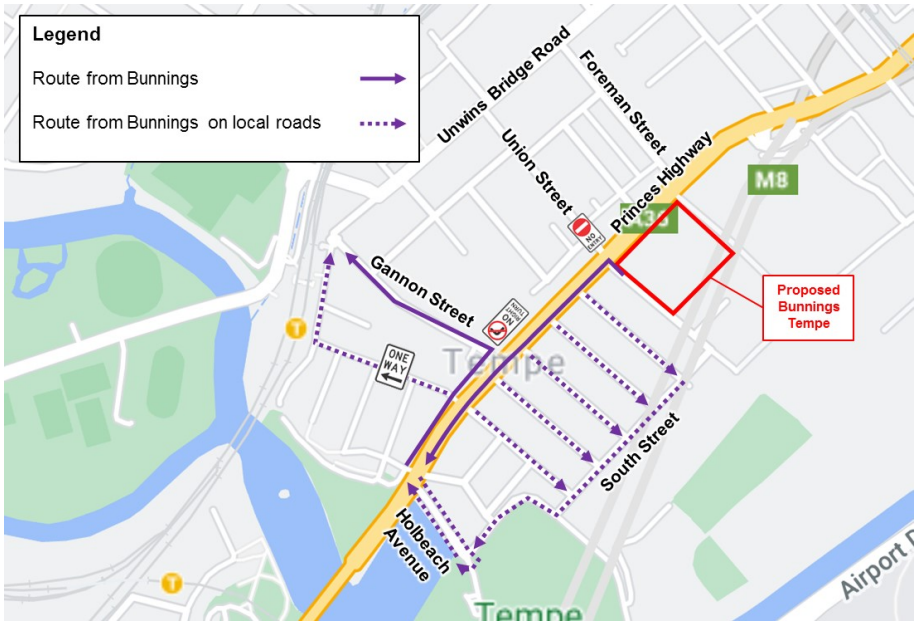
Adapted from GoogleMaps

Figure 7.2: Routes with Union Street Closure

7.4.2 Impact to other Local Streets

Due to the no right turn currently in place for westbound traffic on Princes Highway at Gannon Street, drivers may utilise alternative routes along local streets south of Princes Highway to turn around and access Gannon Street via a left turn, as shown in Figure 7.3.

These streets may experience a greater volume of vehicles turning from Princes Highway, which is not favourable due to the limited available carriageway and residential environment of the street. Most vehicles would be expected to use Holbeach Avenue to perform the u-turn manoeuvre.



Adapted from GoogleMaps

Figure 7.3: Access to Gannon Street using Local Streets

7.4.3 Impact on Access for Residents

Due to the no right turn currently in place for westbound traffic on Princes Highway at Union Street, access to Union Street is currently gained by:

- Left turn from Princes Highway
- Through from Smith Street

The closure of Union Street would restrict access to the left turn from Princes Highway only (under a partial closure), or remove access altogether (with a full closure).

The alternative route for local residents on Union Street would then include the left turn from Princes Highway to Brooklyn Street, then left at Brooklyn lane or School Lane to access Union Street, as shown in Figure 7.4. It would be expected most residents would utilise Brooklyn Lane as it provides best access to properties along Union Street.

While Brooklyn Street is a wider street and capable of accommodating the increase in local traffic, Brooklyn Lane is a narrow bi-directional laneway (also shown Figure 7.4) which would not accommodate such traffic. Particularly during the AM peak where local residents are likely to access Princes Highway via Brooklyn Lane as well as school traffic.

Further, despite being undesirable, vehicles leaving Bunnings via Smith Street may also attempt to take this route, which will exacerbate traffic issues arising from using narrow lane ways as a main access route.

Adapted from GoogleMaps

Figure 7.4: Local Routes with Union Street Closure

In consideration of the potential outcomes due to a closure of Union Street at Princes Highway, in the draft version of the report, a closure was not recommended and other treatments to deter vehicles from using Union Street was preferred. However, a ban of through traffic from Smith Street to Union Street is now proposed following feedback from community engagement (See Section 13.4.4).

8. RISK PRIORITY ASSESSMENT

8.1 Methodology

Each study area road was assessed against criteria to determine its risk for future crashes based on the data collected. Criteria included:

- Crash history
- 24-hour vehicle volumes (existing)
- 85th percentile vehicle speeds
- Heavy vehicle volumes (existing)
- Road width
- Availability of existing LATM devices
- Proximity to schools
- Existing land use
- Future traffic volumes, taking into consideration traffic generated from Bunnings

Points were allocated to each road or road section based on the level of risk. The higher the points, the higher the risk for future crashes, and hence the higher the need for LATM devices.

Crash history (max 4)

- 4 points for crash casualty rates of more than the typical urban casualty rate of 0.446, as listed in Table 3.6.

The points are applied to Edwin Street, Holbeach Avenue and Smith Street.

24-hour vehicle volumes (max 4)

- 2 points (per direction) for ADT of more than 400, as listed in Table 4.4.

The points are applied to Edwin Street, Holbeach Avenue, Smith Street, South Street and Union Street.

85th percentile vehicle Speeds (max 4)

- 2 points (per direction) for 85th percentile speeds of more than 40 km/h, as listed in Table 4.4.

The points are applied to Holbeach Avenue, Smith Street and Stanley Street.

Heavy vehicle volumes (max 4)

- For roads without a truck load limit
  - 1 point (per direction) for daily heavy vehicle volumes of more than 50, as listed in Table 4.4; and
  - 1 point (per direction) for daily heavy vehicle percentages of more than 10%, as listed in Table 4.4.

The points are applied to Smith Street and South Street.

- For roads with the 3-tonne truck load limit
  - 1 point (per direction) for daily heavy vehicle volumes of more than 10, as listed in Table 4.4; and
  - 1 point (per direction) or daily heavy vehicle percentages of more than 5%, as listed in Table 4.4.

The points are applied to all roads with the load limit except Tramway Street.

Road width (max 4)

- 4 points where the available trafficable road width is more than two car widths – high potential/incentive to speed up and collide with pedestrians, adjacent parked vehicles or vehicles travelling in opposite direction

The points are applied to Holbeach Avenue and Smith Street only, which have wider roads than the other roads in the study area.

- 2 points where the available trafficable road width is equal or less than two car widths – low potential/incentive to speed up and collide with pedestrians, adjacent parked vehicles or vehicles travelling in opposite direction

The points are applied to all other roads accessed.

Existing LATM devices

- -1 (negative one) point for each set of LATM devices located on that road.
  - Multiple LATM devices at the same location are counted as one set (e.g. A flat top road hump with kerb blisters and contrasting pavement)
  - The three median rumble strips at the intersection of Edwin Street and Tramway Street are counted as one set on Edwin Street and one set on Tramway Street
  - Roundabouts are excluded, but any pedestrian refuge islands or median islands are included.

Proximity to schools (max 4)

- 4 points if the roads are within 100 metres from a school and/or have school zones, and frequently have children walking around.

The points are applied to Union Street, Foreman Street and Edwin Street, which are in close proximity to Tempe Public School.

Existing land use (max 4)

- 4 points for local traffic and residential streets. While this does not directly contribute to crash risk, safety is more paramount in a local traffic areas, and residential roads should be given some priority for implementation of LATM schemes.

The points are applied to all roads except Holbeach Avenue and Zuitton Lane, which are not predominantly residential.

Future traffic volumes (max 4)

- 4 points where additional Bunnings Warehouse generated traffic may flow onto, based on the evaluation in Section 7, assuming no changes in turning restrictions or accesses; or
- 4 points for local streets forecasted to have daily volumes are to exceeding 1,500

The points are applied to Smith Street, Union Street, Edwin Street and Tramway Street, which are potential routes for Bunnings traffic. No streets are forecasted to have more than 1,500 daily volumes.

8.2 Assessment

Based on the above scoring criteria, Table 8.1.presents the accumulated scores of each roadway.

Table 8.1: Risk Score by Road

Road	Criteria									
	Crash	Volume	Speed	Heavy Vehicle	Width	Existing LATM	Schools	Existing Land Use	Future Traffic	Total score
Barden Street	-	-	-	1	2	-	-	4	-	7
Edwin Street	4	2	-	2	2	-5	4	4	4	17
Fanning Street	-	-	-	1	2	-	-	4	-	7
Foreman Street	-	-	-	2	2	-5	4	4	-	7
Hart Street	-	-	-	1	2	-	-	4	-	7
Holbeach Avenue (Princes Highway to roundabout)	4	4	4	-	4	-1	-	-	-	15
Holbeach Avenue (roundabout to South Street)	-	-	-	-	4	-	-	-	-	4
Smith Street	4	2	2	4	4	-	-	-	4	20
South Street	-	2	-	1	2	-3	-	4		6
Stanley Street	-	-	4	3	2	-	-	4	-	13
Station Street	-	-	-	1	2	-	-	4	-	7
Union Street	-	2	-	1	2	-5	4	4	4	12
Tramway Street	-	-	-	-	2	-1	-	4	4	9
Wentworth Street	-	-	-	3	2	-	-	4	-	9
Zuitton Lane	-	-	-	1	2	-	-	-	4	3-7

Based on the above assessment, Smith Street exhibits the highest score, followed by Edwin Street and Holbeach Avenue (between Princes Highway and the roundabout), then Stanley Street and Union Street. Wentworth Street and Tramway Street also achieved relatively high scores for local residential roads.

Other local streets, including Barden, Fanning, Hart and Station Streets, have an accumulated score of 7 points. Given the lack of crash history, low vehicle speeds and heavy vehicle composition, these roads do not require any LATM treatments. However, other treatments may be proposed to further deter non-local traffic from using these roads.

8.3 Summary

From the risk priority assessment, LATM devices are recommended to be implemented on, in the order of priority:

- Smith Street – to deal with traffic volume, speed and heavy vehicle issues
- Edwin Street – to deal with traffic volume, heavy vehicle issues and potential future traffic from Bunnings
- Holbeach Avenue (between Princes Highway and the roundabout) – to deal with crash risks, traffic volume and speed issues
- Stanley Street – to deal with speed issues
- Union Street – to deal with traffic volume issues and potential future traffic from Bunnings
- Wentworth Street – to deal with heavy vehicle issues
- Tramway Street – to deal with potential future traffic from Bunnings
- These priority streets are shown in Figure 8.1.

Figure 8.1: Priority Streets for Treatment

9. PRELIMINARY ROAD TREATMENTS

9.1 Traffic Calming and Local Area Traffic Management

Road treatments, including Local Area Traffic Management (LATM) Schemes and traffic calming measures can be implemented to change traffic conditions and speed environments, such that driver behaviour and perception of the road environment would be more appropriate along local residential streets and activity areas.

The primary objectives in introducing LATM schemes as part of this study is to address the following:

- Vehicle speeds
- Vehicle volumes
- Heavy vehicle volumes
- Reducing potential for traffic using local roads (with the exception of Smith Street) to access Princes Highway
- Improving amenity along Smith Street

9.2 Existing Road Treatments

As detailed in Section 2.11, the numerous LATM devices already in use within the study area include:

- Road humps (Watts profile & flat top), including raised thresholds
- Kerb blisters
- Contrasting pavement
- Raised pedestrian (wombat) crossing
- Roundabouts
- Pedestrian refuge islands

The majority of LATM devices are located along Union Street and Foreman Street in the vicinity of Tempe Public School.

9.3 Preliminary Road Treatment Options

To address the issues identified, a wide range of traffic calming devices can be implemented. LATM devices presented in *Austroads Guide to Traffic Management Part 8 – Local Area Traffic Management* were used as a basis for developing a list of suitable devices that could be used.

To create safer local road environments, the key targets for any proposed treatment options include:

- Reducing vehicle speeds
- Minimising traffic levels, including non-resident traffic in local streets
- Deterring heavy vehicles
- Reducing crash risk
- Improving local amenity, including walking and cycling options.

The following traffic calming treatments may potentially be implemented across the study area:

- Entry thresholds
- Flat top road humps

- Raised Pedestrian Crossings
- Speed cushions
- Slow points
- Road narrowing / Kerb blisters
- Pedestrian refuge / Median / Splitter islands
- Line marking (edge line and/or centreline)
- Shared zones.

Descriptions of each of these treatments are provided in Table 9.1.

Table 9.1: Road Treatment Types

Name	Type	Description
Entry Threshold	Physical / Visual	▪ Provides a physical and visual gateway to a local street ▪ May control vehicle speeds in both directions ▪ Design can be varied to accommodate different traffic types and road geometries (such as bicycles) ▪ Include raised platforms, medians and kerb blisters ▪ Opportunity to introduce landscaping elements to enhance streetscape ▪ Commonly used throughout study area ▪ May impact large vehicle movements near intersections
Flat Top Road Hump	Physical	▪ Wide raised platform type 'speed hump' ▪ Controls vehicle speeds by vertical deflection and may reduce traffic volumes ▪ More visually appealing than typical speed humps (such as Watts Profile) ▪ Typically 75-150mm high, 2-6m long ▪ Fullwidth designs control speeds in both directions ▪ Design can be varied to adapt to different road geometries and traffic, including medians and kerb blisters ▪ Can be misconstrued as a pedestrian crossing without roadside barriers (fence, landscaping or other) ▪ Typically low cost
Raised Pedestrian Crossing (Wombat Crossing)	Physical	▪ Flat Top Road Hump combined with marked Pedestrian Crossing ▪ Controls vehicle speeds and provides pedestrian crossing location ▪ Improves pedestrian safety by raising walkway (for better visibility) and calming traffic vehicles ▪ Allows for pedestrian priority
Speed Cushions	Physical	▪ Small plastic or rubber 'cushion' in centre of travel lane (or series across travel lanes) ▪ Controls vehicle speeds by vertical deflection ▪ Smaller and narrower than speed humps or flat top road humps ▪ Slows light vehicles with little impact to heavy vehicles (such as buses) ▪ Can be combined with a median and kerb blisters for further control ▪ Low cost and quick installation

Name	Type	Description
Slow Points	Physical	▪ Controls vehicles by horizontal deflection ▪ Uses series of kerb extensions or blisters on alternating sides of road to create an angled travel lane ▪ Opportunity to introduce landscaping elements to enhance streetscape ▪ Requires considerable length of road to install and potentially high cost ▪ Must consider local driveway access ▪ May impact kerbside parking
Road Narrowing	Physical	▪ Kerb extensions or blisters to reduce available road width at a single point ▪ Use of kerb blisters may allow for kerbside drainage ▪ Often used in conjunction with other treatments (such as entry thresholds and road humps) ▪ Opportunity to introduce landscaping elements to enhance streetscape
Pedestrian Refuge / Median / Splitter Islands	Physical	▪ Raised or flush island positioned at the intersection or the centreline of a street ▪ Narrows lanes ▪ Provide pedestrians with a refuge ▪ Used in areas where there is a need to reduce entry speed of vehicles to a residential street ▪ May not be used on narrow two-lane streets, and where there is insufficient sight distance ▪ Must consider local driveway access ▪ May impact kerbside parking
Line Marking	Visual	▪ May be used where physical treatments are not appropriate ▪ Can provide a visual narrowing of the roadway such that drivers perceive a narrower travel lane and reduce speed ▪ Assists in delineating road components such as cycle lanes and kerbside parking ▪ Available roadway width through bends is visually narrowed when combined with centreline marking ▪ May not be effective along considerably wide roadways
Contrasting Pavement	Visual	▪ Highlight the change in road conditions to drivers ▪ Colour and texture can be designed to fit with local area context ▪ Typically located at start of traffic areas (such as High Pedestrian Activity Areas) ▪ Textured pattern (such as Embossed Hex) can also provide a tactile and audible warning to drivers ▪ Typically low cost
Shared Zone	Regulatory	▪ Located along a road section ▪ Vehicles must give way to all pedestrians ▪ Suitable for a high-pedestrian area ▪ 10 km/h speed limit ▪ Parking can be retained but bays must be marked

It is understood that the Bunnings development may also bring about traffic impacts onto streets just outside of the study area such as Edwin Street and Tramway Street. These impacts have been considered, however, no treatments are proposed on these streets

9.4 Standard LATM Treatments

Based on existing LATM devices found and the types presented by Austroads, a number of potential standard treatment options are proposed for installation across the study area, presented in Table 9.2.

These devices are identified as being appropriate for the context of the study area and address the issues identified on local roads.

Table 9.2: Proposed Standard LATM Treatments

Infrastructure	Description
Flat-top Road Hump	Standard flat top road hump
Speed Cushion	Standard speed cushion(s)
Road Narrowing	Kerb blisters (landscaping)
Median Treatments	Median Island (standard or low-profile)
Line marking	Edge and centre line marking
Contrasting Pavement	Standard at-grade contrasting pavement
Shared Zone	10 km/h shared zone with marked parking bays

Examples of some of these treatments are provided in Figure 9.1 below.

Left to Right: Flat top road hump, road narrowing (kerb blisters with landscaping)

Figure 9.1: Examples of Treatments

There are other treatments that may be implemented or installed additionally, complementing the proposed LATM treatments. Treatments identified as suitable for the study area include:

- Bicycle facilities, including bicycle ramps, shared paths and bicycle markings
- Signage, to complement the LATM treatments
- Footpath widening

9.5 Treatment Criteria

As there is a large range of available LATM devices available, the selection and location of these devices is important to address the specific issues along each street. A range of factors and considerations are to be given in the selection process to determine suitable and appropriate LATM treatments. As such, a treatment selection criteria was developed to inform the selection and location of proposed LATM devices.

9.5.1 Austroads LATM Selection Toolkit

The selection of an appropriate LATM is greatly dependent on the overall objective for the particular roadway, the local context of the road environment and the needs of local road users.

Austroads Guide to Traffic Management Part 8 – Local Area Traffic Management provides a toolkit and selection rubric, which outlines the relative use of different LATM devices based on previous research and practice within Australia and New Zealand. The Austroads Toolkit which provides a description and use of LATM devices is provided in Table 9.3.

Table 9.3: Austroads LATM Toolkit

Measure		Reduce speeds	Reduce traffic volume	Reduce crash risk	Increase pedestrian safety	Increase bicycle safety
Vertical deflection devices (Section 7.2)	Road humps	✓	✓	✓	–	–
	Road cushions	✓	✓	✓	–	✓
	Flat-top road humps	✓	✓	✓	–	✓
	Wombat crossings	✓	✓	✓	✓	✓
	Raised pavements	✓	✓	✓	–	✓
Horizontal deflection devices (Section 7.3)	Lane narrowings/kerb extensions	✓	–	–	✓	–
	Slow points	✓	✓	–	–	–
	Centre blister islands	✓	✓	–	✓	–
	Driveway links	✓	✓	–	✓	✓
	Mid-block median treatments	✓	–	✓	✓	✓
	Roundabouts	✓	✓	✓	–	–
Diversion devices (Section 7.4)	Full road closure	–	✓	✓	✓	✓
	Half road closure	–	✓	✓	✓	✓
	Diagonal road closure	–	✓	✓	✓	✓
	Modified T-intersection	✓	✓	✓	✓	✓
	Left-in/left-out islands	–	✓	✓	✓	–
Signs, linemarking and other treatments (Section 7.5)	Speed limit signs	✓	–	✓	✓	✓
	Prohibited traffic movement signs	–	✓	✓	–	✓
	One-way (street) signs	–	✓	✓	✓	–
	Give-way signs	✓	✓	✓	✓	✓
	Stop signs	✓	✓	✓	✓	✓
	Shared zones	✓	✓	–	✓	✓
	School zones	✓	–	✓	✓	✓
	Threshold treatments	✓	✓	✓	–	✓
	Tactile surface treatments	✓	–	–	–	–
	Bicycle facilities	–	–	✓	–	✓
	Bus facilities	–	✓	–	–	–

9.5.2 Treatment Criteria

The information presented within the Austroads LATM selection toolkit and consideration of other road environment elements was used to develop a specific treatment selection criteria and is presented in Table 9.4.

The criteria include considerations of the following:

- Speed and traffic volume reduction
- Crash risk reduction
- Relative traffic volumes
- Deterrence against non-local traffic
- Pedestrians, bicycles and buses
- Kerbside parking
- Road and traffic noise generation
- Roadway width requirements.

Table 9.4: Proposed Treatment Selection Criteria

Type	Details	Reduce Speed	Reduce Traffic Volumes	Reduce Crash Risk	Suitable for High Traffic Volumes	Deter Non-Local Traffic	Accommodate Pedestrians	Bicycle Friendly	Bus Route friendly	Parking friendly	Noise Considerations	Wide Road required	Other remarks
LATM Treatments													
Road hump	Flat top road hump	Yes	Yes	Yes	Yes	Yes	No	Yes[3]	Yes[4]	Yes	Yes	No	Preferred for lower traffic volumes
Speed Cushion	Speed Cushion	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes[10]	Yes	No[7]	Preferred for lower traffic volumes
Road narrowing	Kerb blisters (landscaping)	Yes	No	No	Yes	Yes	No	No	No[5]	No	No	Yes	Not to be used on bus routes on a one-way street
Median Treatment	Median Island (standard or low-profile)	Yes	No	Yes	Yes	Yes	No	No[5]	Yes[6]	No	No	Yes	Must conform to Transport for NSW standards
Line-Marking	Edge, centre and lane line marking	Yes[1]	No	Yes[2]	Yes	Yes	-	-	Yes	Yes	No	Yes[8]	Parking lane width may vary, minimum 2.1m
Contrasting Pavement	Standard Contrasting Pavement	Yes	No	No	Yes	Yes	-	-	Yes	Yes	Yes[9]	No	Visual and tactile treatment only
Shared zone	10 km/h shared zone with marked parking bays	Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	No	No[10]	Not to be used on heavy vehicle or bus routes

Type	Details	Reduce Speed	Reduce Traffic Volumes	Reduce Crash Risk	Suitable for High Traffic Volumes	Deter Non-Local Traffic	Accommodate Pedestrians	Bicycle Friendly	Bus Route friendly	Parking friendly	Noise Considerations	Wide Road required	Other remarks
Other Treatments													
Bicycle Facilities	Bicycle ramps, shared paths and bicycle markings	-	-	-	-	-	No	Yes	-	-	No	No	
Signage	Signage to complement LATM treatments	varies					-	-	-	-	No	No	
Footpath widening	Widened footpath	-	-	-	-	-	Yes	Yes	-	No	No	Yes	

Notes:

1. *If travel lane is sufficiently narrowed*
2. *May effectively reduce kerbside crashes*
3. *Ramps can be designed to be bicycle friendly*
4. *Flat top road humps can be designed to bus friendly specifications (ref. STA guidelines)*
5. *Bus routes require 3.2m to 3.5m wide travel lane, which will not be an effective road narrowing for regular traffic*
6. *If 3.5m travel lane is maintained*
7. *More effective on narrow roads. Installation on bus routes require 3.5m travel lane*
8. *Generally applied to wide road*
9. *Noise to be considered if using textured surface treatment (such as embossed pattern or similar)*
10. *A minimum trafficable width of 2.8m is required to meet shared zone warrants*

9.6 Proposed Treatment and Locations

Based on the selection criteria, a number of proposed treatment options were developed for the priority roads identified in Section 8.3. Additional proposed treatments for other roads in the study area were also developed. The proposed treatments are outlined in Table 9.5.

Table 9.5: Proposed Treatment and Locations

Road	Option	Type	Location	Features
Smith Street	1	Road Narrowing & Contrasting Pavement	Immediately south of proposed Bunnings access,	▪ Landscaped kerb blisters with low height shrubs ▪ At-grade contrasting pavement treatment (embossed text pattern)
	2	Mountable Concrete Median Treatment		▪ Mountable low-profile concrete median with contrasting pavement
	Addition to both options	Right Turn Only Signage	Opposite and facing Bunnings access	▪ R2-14_R (Right Turn Only) sign
		Line Marking	Between Princes Highway and Bunnings Access	▪ Edge and centre line markings to provide a visual narrowing of the roadway ▪ Road environment would appear distinctively different to the southern section of Smith Street ▪ Delineation of adjusted lane arrangement near Princes Highway
		Bicycle Facilities	Between Princes Highway and Bunnings Access	▪ Extend shared path for a short distance from Princes Highway along both sides of Smith Street ▪ Inclusion of an angled bicycle ramp for southbound cyclists to transition between the shared path and Smith Street ▪ Signage and marking to indicate transitions between shared path and on-road cycling

Road	Option	Type	Location	Features
		Widened Footpath	Western side of road, between No. 48 and South Street	Option a (Option 1a or Option 2a): ▪ Widen western footpath ▪ Retain existing kerbside parking on the western side of Smith Street ▪ Shift centreline to suit road width Option b (Option 1b or Option 2b): ▪ Widen western footpath with adjacent landscaped verge ▪ Removal of existing kerbside parking on the western side of Smith Street ▪ Some paved parking bays within the landscaped area to offset loss of parking ▪ Turning pocket to allow vehicles to turn right out of No.1 Smith Street
Holbeach Avenue	1	Speed Cushions	Between driveways of 14 and 18 Holbeach Avenue ▪	▪ Set of four speed cushions of 100mm height, across roadway
	2	Speed Cushions & Road Narrowing		▪ Set of two speed cushions of 100mm height in travel lanes ▪ Landscaped kerb blisters with low height shrubs
Stanley Street	1	Flat Top Road Hump	Near streetlight outside 14 Stanley Street Near streetlight outside 37 Stanley Street	▪ Concrete flat top road hump of 100mm height, across road width ▪ Contrasting surface treatment ('terracotta' colour surface of similar) ▪ Landscaped barriers (kerbside)
	2	Road Narrowing		▪ Landscaped kerb blisters with low height shrubs
Wentworth Street	1	Road Narrowing & Contrasting Pavement	At entry from Princes Highway (specifically south of Tempe Tyre Centre vehicular access) At entry from South Street (specifically north of the drainage pit)	▪ Landscaped kerb blisters with low height shrubs ▪ At-grade contrasting pavement treatment (embossed text pattern)
	2	Flat Top Road Hump		▪ Concrete flat top road hump of 100mm height, across road width ▪ Contrasting surface treatment ('terracotta' colour surface of similar) ▪ Bollard and chain barriers (kerbside)

Road	Option	Type	Location	Features
	Addition to both options	3 Tonne Truck Limit Signage	Outside 846 Princes Highway Outside 45 Wentworth Street	▪ R6-10-2 and R9-231 (Truck Load Limit) signs ▪ W8-245N_L (Left Arrow) Signage, only on Princes Highway
Union Street	1	Flat Top Road Hump	Outside 2D Union Street Outside 46 Union Street	▪ Concrete flat top road hump of 100mm height, across road width ▪ Contrasting surface treatment ('terracotta' colour surface of similar) ▪ Bollard and chain barriers (kerbside)
	2	Shared Zone[1]	Between Princes Highway and School Lane	▪ "10" Speed Markers ▪ Marked parking bays, with some overlapping with footpath ▪ R4-4 (Shared Zone), R2-10 (Give Way to Pedestrians) and R5-65 (Park in Bays Only) signs at the start of shared zone and entry points at Zuitton Lane and Brooklyn Lane ▪ R4-5 (End Shared Zone) signs at the end of shared zone and exit points at Zuitton Lane and Brooklyn Lane
	Addition to both options	Contrasting Pavement Threshold	At entry from Princes Highway	▪ At-grade contrasting pavement treatment (embossed text pattern)
Edwin Street	1	Flat Top Road Hump	Outside No. 14 Union Street	▪ Concrete flat top road hump of 100mm height, across road width ▪ Contrasting surface treatment ('terracotta' colour surface of similar) ▪ Landscaped barriers (kerbside)
Tramway Street	1	Contrasting Pavement Threshold	At entries (Unwins Bridge Road and Edwin Street)	▪ At-grade contrasting pavement treatment (embossed text pattern)
Barden, Fanning, Hart and Station Streets	-	Contrasting Pavement Threshold[2]	At entry from Princes Highway	▪ At-grade contrasting pavement treatment (embossed text pattern)

1. Assessment against the shared zone criteria is detailed in Section 10.6.3. Shared zones are subject to Transport for NSW review and approval
2. Subject to a 40km/h Local Traffic Area proposal and/or Transport for NSW review and approval

The following considerations were given when locating each of the above treatments:

- Spacing: a maximum spacing between 80m and 120m was adopted (following *Austroads LATM Guidelines*)
- Presence of existing street lighting and light posts
- Kerb ramps
- Property accesses and driveways
- Road gradients
- Driver sight distances and visibility.

Assessment of the different treatments are further detailed in Section 10.

The locations of the proposed treatments options, contrasting pavement thresholds and additional Smith Street treatments are shown in Figure 9.2. Sample concepts of the proposed treatment types are presented in Figure 9.3.

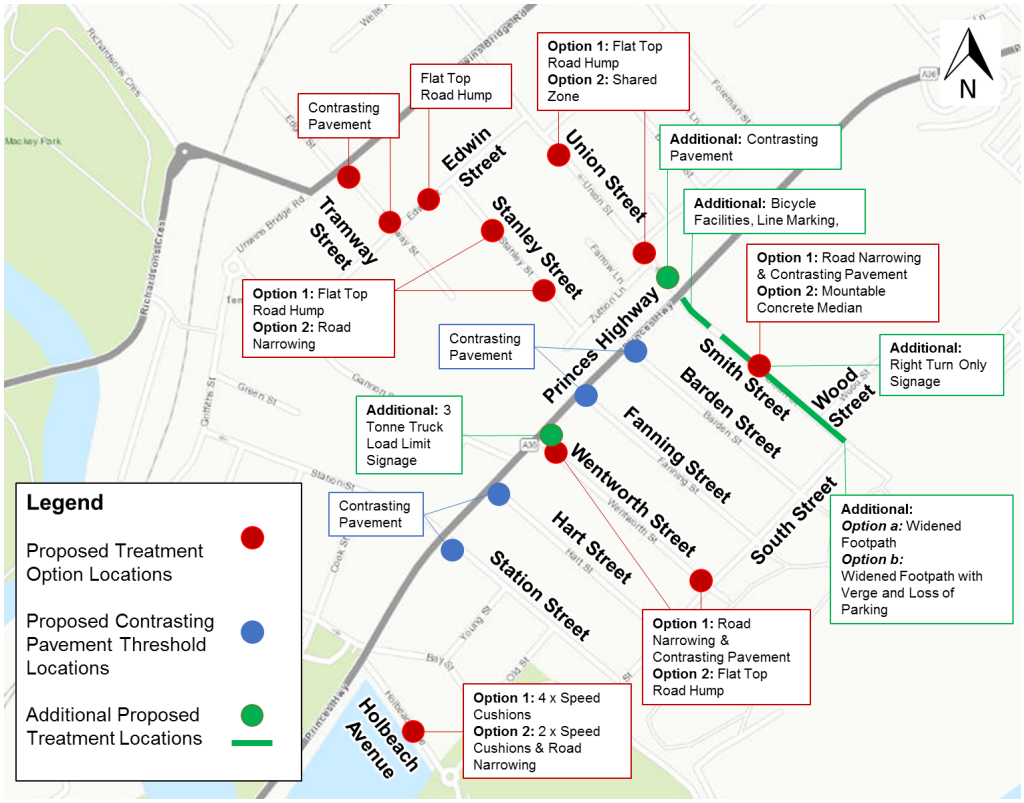
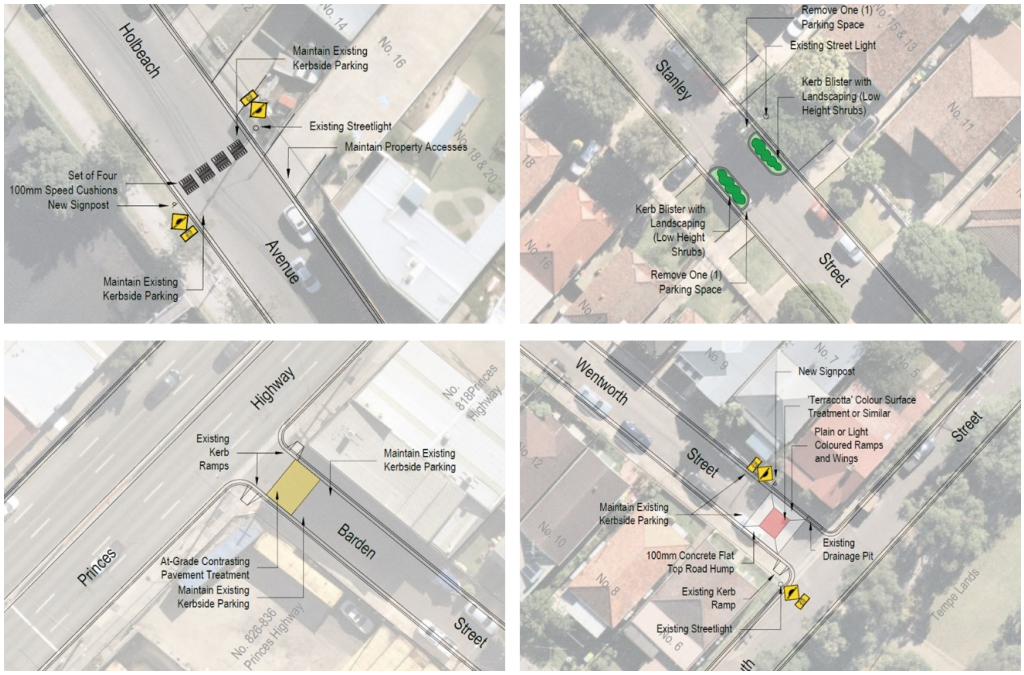


Figure 9.2: Proposed Treatment Locations and Options



Clockwise from top: Speed Cushions, Road Narrowing (kerb Blisters), Flat Top Road Hump, Kerb Blisters and Contrasting Pavement

Figure 9.3: Sample Concepts of Proposed Treatments

10. PROPOSED TREATMENT JUSTIFICATION

10.1 Overview

This section describes each treatment option in detail by street and discusses its merits and potential impacts to the road environment such as property access and kerbside parking. The merits and impacts are summarised at the end of this section in Table 10.3 and Table 10.4 respectively.

Any LATM measures proposed may have an impact on the travel time of emergency service vehicles through the area. However, in consideration of the existing road environment along these local streets, any additional proposed LATM measures are not expected to have a significant impact to emergency service vehicle access. Additionally, the treatments proposed are not located along public or school bus routes, therefore, there are no anticipated impacts to buses.

10.2 Smith Street

10.2.1 Issues

As discussed in previous sections, the issues present on Smith Street are:

- Smith Street has relatively high average daily traffic (ADT) volumes, up to 600 vehicles per day in each direction, compared to other local roads in the study area.
- Smith Street has relatively high 85th percentile speeds of up to 46 km/h per direction compared to other local roads.
- Due to industrial land use located along Smith Street and its adjoining Wood Street, heavy vehicles are common along Smith Street. From the tube count data, on average, between 100 and 150 heavy vehicles travel along Smith Street daily in each direction, and make up 25 to 36% of the total daily traffic.
- Based on crash history, three (3) crashes occurred along Smith Street between January 2014 and December 2018, with two (2) crashes resulting in injuries.
- The proposed Bunnings development will be mainly accessed via Smith Street. There are concerns that the development will generate both light and heavy vehicle traffic, not just on Smith Street, but on other local roads such as Barden Street, South Street and Holbeach Avenue.
- Speed cushions were installed along Smith Street, as part of a previous LATM study, were removed in 2012 and 2017 respectively. This was due to resident complaints about the noise produced by trucks driving over the speed cushions. As such, vertical deflection devices such as speed humps were not considered as treatment options on Smith Street.

10.2.2 Location of Treatment Options

Treatment options for Smith Street will be located between the Bunnings access and access to No.1 Smith Street. The placement of treatment options mid-block on Smith Street breaks up the long straight section of the roadway, preventing drivers from gathering speed along the length of the road.

10.2.3 Option 1: Road Narrowing & Contrasting Pavement

This option involves landscaped kerb blisters on each side of the road, and an at-grade embossed text pattern as contrasting pavement between the kerb blisters. Additional measures to Smith Street regardless of Options 1 or 2 are described separately in Section 10.2.5.

10.2.3.1 Merits

Road narrowing will provide a narrow travel width, similar to existing treatments on neighbouring streets like Barden or Fanning Streets, which have an 85th percentile speed of less than 40 km/h. Therefore, providing road narrowing will strongly encourage traffic to slow down. Lower speeds will in turn increase travel time and may deter non-local traffic from utilising Smith Street.

Landscaping on the kerb blisters will also improve the aesthetics of the roadway and enhance sense of place. It may also provide clearer changes in road geometry for vehicles approaching the treatment.

The contrasting pavement will highlight the entry to a local traffic area by providing a physical and visual gateway treatment to the south section of Smith Street. The differentiation of road environment may be able to deter vehicles from turning left from the proposed Bunnings access onto Smith Street southbound. Combined with road narrowing, the reduced geometry may also be less favourable to heavy vehicles.

Road narrowing will result in a loss of parking along Smith Street. However, the removal of parking will improve sightlines for vehicles exiting the driveways from Bunnings and No.1 Smith Street. It also improves manoeuvrability of these turns as there is a reduced likelihood of parked vehicles obstructing the access points.

10.2.3.2 Impacts to Parking

The Bunnings development will result in the proposed removal of up to 13 spaces of on-street parking along Smith Street. These spaces are compensated with 13 spaces within Bunnings warehouse, which are open to access during Bunnings trading hours only. This removes the flexibility of parking at any time of the day for any duration. Given that most residents are expected to park overnight or outside business hours, as a worst-case scenario, these spaces will not be considered as part of the assessment.

From the parking surveys conducted on 19th and 21st March 2020, on a Thursday and Saturday respectively, it was deduced that on average, Smith Street has 18 vacant spaces on Thursday and 27 vacant spaces on Saturday. With the loss of 13 parking spaces due to the Bunnings development, this will result in an estimated 5 and 14 vacant spaces remaining on Thursday and Saturday respectively.

Road narrowing will result in a loss of up to two (2) parking spaces on the western side and one (1) space on the eastern side, a total of three (3) spaces. The remaining availability of on-street parking on Smith Street will therefore be able to cope with the further removal of spaces due to road narrowing.

10.2.3.3 Other Impacts

The kerb blisters will be built between the Bunnings access and the access to No.1 Smith Street. There are no property accesses on the western side at the proposed location. As such, there will be no impacts of the treatments on the accesses along Smith Street.

The at-grade contrasting pavement also means that there will be no additional noise generated as compared to vertical deflection devices such as speed cushions. An at-grade pavement also provides minimal or no impacts to cyclists riding along Smith Street.

The treatment option may have an impact on the travel time of emergency service vehicles through the area. However, in consideration of the existing road environment along these local streets, any additional proposed LATM measures are not expected to have a significant impact to emergency service vehicle access.

10.2.4 Option 2: Mountable Concrete Median

This option is a mountable low-profile concrete median. The pavement on the top of the median will also be contrasted against the road surface. Additional measures to Smith Street regardless of Options 1 or 2 are described separately in Section 10.2.5.

10.2.4.1 Merits

The change in road geometry highlights local traffic area by providing a physical and visual gateway treatment to the south section of Smith Street. The reduction in geometry also aid in the differentiation of road environment and may deter vehicles turning left from proposed Bunnings access onto Smith Street southbound.

The treatment is a horizontal deflection device and will be able to slow traffic by diverting vehicles around the island, particularly heavy vehicles due to their larger turn radius.

The median island will result in a loss of parking along Smith Street (see next section). Similar to option 1, the removal of parking may improve sightlines of vehicles turning out from the accesses onto Smith Street. It also improves manoeuvrability of these turns as there is a reduced likelihood of parked vehicles obstructing the access points of 1 Smith Street.

The median island is low-profile and mountable to allow vehicles to turn right out of 1 Smith Street onto Smith Street northbound and mount over the median.

10.2.4.2 Impacts to Parking

As mentioned in Option 1, Smith Street will have an estimated 5 and 14 vacant spaces remaining on Thursday and Saturday respectively, after spaces are removed for the Bunnings development.

The median island will result in a loss of seven (7) parking spaces on the western side and one (1) space on the eastern side, a total of eight (8) spaces. With the removal of these eight spaces, this will result in a **shortage of three (3) spaces** on a Thursday, and residential parking will be displaced onto adjacent streets such as Barden Street or South Street. Parking availability on Saturday will still be able to cope with the additional removal of spaces due to the median island.

On Thursday, Barden Street has a parking occupancy rate of around 50% out of 63 spaces, and South Street between Smith and Fanning Streets has a parking occupancy rate of around 40% out of 19 spaces. This means out of a total of 82 spaces, 39 are occupied and 42 are vacant, and therefore, Barden and South Streets will be able to cope with the additional parking demand of the three displaced vehicles.

It is also important to note that this is based on the worst-case scenario where most residents are expected to park overnight or outside Bunnings trading hours. It is possible that some residents may park within Bunnings overnight.

10.2.4.3 Other Impacts

As the median island is built in the centre of the roadway, it will not require changes to accesses along Smith Street. Traffic exiting 1 Smith Street will still be able to turn right onto Smith Street northbound by mounting over the concrete median.

The island will also slow down cyclists riding along Smith Street as they need to divert around the island. However, the impact is minimal and the device is still 'bicycle-friendly'.

The treatment option may have an impact on the travel time of emergency service vehicles through the area. However, in consideration of the existing road environment along these local streets, any

additional proposed LATM measures are not expected to have a significant impact to emergency service vehicle access.

10.2.5 Additional Measures to Options 1 & 2

In addition to the location specific treatment as part of Option 1 and 2, other measures are proposed along Smith Street between Princes Highway and South Street. Some of these measures will also aid in increased connectivity for cyclists along pedestrians and Smith Street.

10.2.5.1 Right Turn Only Sign

The “Right turn only” sign located opposite and facing Bunnings will enforce turn restrictions, preventing traffic exiting Bunnings from turning left onto Smith Street and using local streets.

10.2.5.2 Line Marking

Edge and centre line markings will be provided along Smith Street (partially under Option 1, full length under Option 2), in addition to proposed line marking as part of Bunnings development arrangement. It will also provide differentiation between the northern and southern sections of Smith Street. Recommended delineation alignments to tie in with the proposed treatments have also been provided in the concept drawings in **Appendix B**.

10.2.5.3 Bicycle Infrastructure

To provide off and on road bicycle transitions and connect the route on Smith Street to Princes Highway, the existing shared paths along Princes Highway will be extended on Smith Street, with kerb ramps and delineation. This aims to aid bicycles to transition to mixed traffic (bicycle and vehicles) along Smith Street away from the Princes Highway intersection. This will involve realignment and widening of the existing footpaths to allow one-way bicycle travel at minimum.

An angled bicycle ramp for southbound cyclists will be located on the eastern shared path, along with wayfinding and pavement markings to guide cyclists onto the road. Northbound cyclists will utilise the existing driveway of 48 Smith Street to access the extended shared path. Signage and marking will be used to guide cyclists to transition onto the shared path to travel along the existing Princes Highway shared paths.

On-road bicycle markings spaced evenly along Smith Street reaffirm that Smith Street is a mixed-traffic cycling route.

10.2.5.4 Widened Footpath

Option a

The non-shared path section of the western footpath will be widened to 2.5m width to provide improved pedestrian facility. This option is known as **Option 1a or 2a** in the concept plans. Kerbside parking will be retained and delineated by edge line marking. The delineation will also provide a road narrowing along Smith Street and assist in slowing down vehicles.

Option b

Alternatively, the kerbside parking may be replaced with a landscaped verge of 1.6m width to provide a form of screening between the widened footpath and the roadway. This option is known as **Option 1b or 2b** in the concept plans. The reduced roadway width will also assist in slowing down vehicles. However, this will result in the loss of 31 kerbside parking spaces on the western side of the road. Six (6) spaces will be retained for parking, resulting in a net loss of 25 spaces on the western side of the road, i.e. a total of 26 spaces on both sides.

As mentioned previously, Smith Street will have an estimated 5 and 14 vacant spaces remaining on Thursday and Saturday respectively, after spaces are removed for the Bunnings development. The removal of 26 spaces will result in the overflow of 21 and 12 spaces onto adjacent streets on Thursday and Saturday respectively. Barden and South Streets, with a total of 42 vacant spaces, will be able to absorb the overflow of parking from Smith Street.

A summary of the loss in parking on Smith Street for the different options is shown in Table 10.1.

Table 10.1: Loss of Smith Street Parking Spaces between Different Options

Option	Western side	Eastern side	Total spaces lost from Design	Spaces removed for Bunnings	Total spaces removed	Existing vacant spaces	Vacant spaces remaining[1]
Thursday							
Option 1a	3	1	4	13	17	18	1
Option 2a	8	1	9	13	22	18	-4
Option 1b	25	1	26	13	39	18	-21
Option 2b	25	1	26	13	39	18	-21
Saturday							
Option 1a	3	1	4	13	17	27	10
Option 2a	8	1	9	13	22	27	5
Option 1b	25	1	26	13	39	27	-12
Option 2b	25	1	26	13	39	27	-12

1. Negative vacant spaces indicates parking demand exceeds capacity, resulting in parking overflow

10.3 Holbeach Avenue

10.3.1 Issues

As discussed in previous sections, the issues present on Holbeach Avenue are:

- Holbeach Avenue has relatively high average daily traffic (ADT) volumes, up to 550 vehicles per day in each direction, compared to other local roads in the study area.
- Holbeach Avenue has relatively high 85th percentile speeds of up to 44 km/h per direction compared to other local roads.
- Based on crash history, five (5) crashes occurred along Holbeach Avenue between January 2014 and December 2018, all resulting in injuries.

10.3.2 Location of Treatment Options

Treatment options for Smith Street will be located between the accesses of 14 and 16 Holbeach Avenue. Placing treatment options mid-block on Holbeach Avenue breaks up the long straight section of the roadway, preventing drivers from speeding up along the road.

The existing streetlight outside 14 Holbeach Avenue will also provide visibility of the device at night.

10.3.3 Option 1: Speed Cushions

This option involves a set of four (4) speed cushions of 100mm height across the roadway, along with associated signage.

10.3.3.1 Merits

It is generally uncomfortable for drivers of vehicles to travel over vertical deflections at high speeds. By providing speed cushions as vertical deflections, vehicles will slow down in order to safety travel over the speed cushions. Lower speeds will in turn increase travel time and may deter non-local traffic from utilising Holbeach Avenue as an alternative route.

10.3.3.2 Impacts to Parking

As speed cushions do not require changes in roadway geometry, there will also be no impacts to kerbside parking or driveway accesses. Vehicles can still park over the road hump.

10.3.3.3 Other Impacts

The low profile of speed cushions allows for buses and service vehicles to travel to the Tempe recreation area. Bicycles can also safely get over speed cushions after slowing down.

Noise generated from travelling over speed cushions is not an issue as the land use along Holbeach Avenue is non-residential in nature.

10.3.4 Option 2: Speed Cushions and Road Narrowing

This option is similar to option 1 in providing speed cushions. However, only a set of two (2) speed cushions of 100mm height will be provided across the roadway, with landscaped kerb blisters on each side of the road to provide narrowing of the roadway.

10.3.4.1 Merits

Similar to Option 1 for Smith Street, road narrowing will provide a narrow travel width and will likely be able to force traffic to slow down. Landscaping on the kerb blisters may also improve the aesthetics of the roadway and enhance sense of place. It may also provide clearer changes in road geometry for vehicles approaching the treatment.

Road narrowing will result in a loss of parking along Holbeach Avenue (see next section). However, the removal of parking may improve sightlines of vehicles turning out from the accesses onto Holbeach Avenue. It also improves manoeuvrability of these turns as there is a reduced likelihood of parked vehicles obstructing the access points of 14 and 16 Holbeach Avenue.

10.3.4.2 Impacts to Parking

Road narrowing will result in a loss of up to one (1) parking space on each side of the road, a total of two (2) spaces. While there are no parking surveys available for Holbeach Avenue, observations during site visit show that there are ample vacant on-street parking spaces along Holbeach Avenue during the daytime. It is very likely that the parking availability of Holbeach Avenue is able to cope with the loss of a mere two spaces.

10.3.4.3 Other Impacts

Impacts of speed cushions on traffic have been outlined in Option 1 and will not differ in Option 2.

The kerb blisters will be built between 14 and 16 Holbeach Avenue. There are no property accesses on the western side at the same location. As such, there will be no impacts of the treatments on the accesses along Holbeach Street.

The treatment option (road narrowing) may have an impact on the travel time of emergency service vehicles through the area. However, in consideration of the existing road environment along these local streets, any additional proposed LATM measures are not expected to have a significant impact to emergency service vehicle access.

10.4 Stanley Street

10.4.1 Issues

As discussed in previous sections, the issues present on Stanley Street are:

- Stanley Street has relatively high 85th percentile speeds of up to 45 km/h per direction compared to other local roads, although these speeds are below the speed limit of 50 km/h.
- Stanley Street also has up to 13 heavy vehicles per direction daily, despite the 3 tonne truck load limit imposed.

10.4.2 Location of Treatment Options

Treatment options for Stanley Street will be located at two locations: outside 14 and 37 Stanley Street. The treatments to be installed at both locations will be the same.

Placing treatment options on two mid-block locations along Stanley Street breaks up the long straight section of the roadway, preventing drivers from speeding up along the road. The spacing between both locations are also consistent with spacing recommendations

Existing streetlights outside 13-15 Stanley Street and 37 Stanley Street will also provide visibility of the devices at night.

10.4.3 Option 1: Flat Top Road Hump

This option involves a 100mm high concrete flat top road hump across the roadway at each location. The hump will have a contrasting surface treatment, usually a ‘terracotta’ colour surface.

10.4.3.1 Merits

Similar to speed cushions, by providing flat top road humps as vertical deflections, vehicles will slow down in order to safety travel over the humps. Lower speeds will in turn increase travel time and may deter non-local traffic from utilising Stanley Street.

Flat top road humps are consistent with other LATM devices in the area, particularly along Edwin Street.

10.4.3.2 Impacts to Parking

As flat top road humps do not require changes in roadway geometry, there will also be no impacts to kerbside parking or driveway accesses. Vehicles can still park over the road hump.

10.4.3.3 Other Impacts

As Stanley Street is not a heavy vehicle or bus route, there will be no noise generated as a result of trucks or buses travelling over the road hump. Bicycles will still be able to safely get over speed cushions.

10.4.4 Option 2: Road Narrowing

This option involves landscaped kerb blisters on each side of the road at each location.

10.4.4.1 Merits

Similar to road narrowing options proposed in other roads, road narrowing will provide a narrow travel width and will likely be able to force traffic to slow down. Lower speeds will in turn increase travel time and may deter non-local traffic from utilising Stanley Street.

Landscaping on the kerb blisters may also improve the aesthetics of the roadway and blend into the local landscape. It may also provide clearer changes in road geometry for vehicles approaching the treatment.

Road narrowing will result in a loss of parking along Stanley Street (see next section). However, the removal of parking may improve sightlines of vehicles turning out from the accesses onto Stanley Street. It also improves manoeuvrability of these turns as there is a reduced likelihood of parked vehicles obstructing nearby access points.

Kerb blisters are consistent with other LATM devices in the area, particularly along Union Street.

10.4.4.2 Impacts to Parking

Road narrowing will result in a loss of up to one (1) parking space on each side of the road at each of the two (2) locations, a total of four (4) spaces. While there are no parking surveys available for Stanley Street, observations made during a site visit show that there are ample vacant on-street parking spaces along Stanley Street during the daytime. It is very likely that the parking availability of Stanley Street is able to cope with the loss of four spaces.

10.4.4.3 Other Impacts

The kerb blisters will be built in between driveways of properties along Stanley Street. As such, there will be no impacts on the property access.

Road narrowing in general may slightly increase travel time of emergency service vehicles through the area due to reduced speed. However, considering the existing road environment along these local streets, any additional proposed LATM measures are not expected to have a significant impact on emergency service vehicle access.

10.5 Wentworth Street

10.5.1 Issues

As discussed in previous sections, the issues present on Wentworth Street are:

- Wentworth Street has up to 10 heavy vehicles per direction daily, despite the 3-tonne truck load limit imposed.
- A signage audit noted missing truck load limit signage when approaching Wentworth Street from Princes Highway.

10.5.2 Location of Treatment Options

Treatment options for Wentworth Street will be located at two locations: north of South Street (outside 5 Wentworth Street) and south of Princes Highway (outside 846-854 Princes Highway, south of the Tempe Tyre Centre access). The treatments to be installed at both locations will be the same.

10.5.3 Option 1: Road Narrowing & Contrasting Threshold

This option involves landscaped kerb blisters on each side of the road at each location, and an at-grade embossed text pattern as contrasting pavement between the kerb blisters.

10.5.3.1 Merits

Similar to Option 1 for Smith Street, providing road narrowing will encourage traffic to slow down. Lower speeds will in turn increase travel time and may deter non-local traffic from utilising Stanley Street.

Landscaping on the kerb blisters may also improve the aesthetics of the roadway and enhance sense of place. It may also provide clearer changes in road geometry for vehicles approaching the treatment.

The contrasting pavement will highlight the local traffic area by providing a physical and visual gateway treatment to Wentworth Street. The differentiation of road environment may discourage vehicles from turning into Wentworth Street, particularly from South Street. Combined with road narrowing, the reduce geometry may also be less favourable to heavy vehicles and deter them from turning into Wentworth Street.

Road narrowing will result in a loss of parking along Wentworth Street. However, the removal of parking may improve sightlines for vehicles exiting driveways onto Wentworth Street. It also improves manoeuvrability of these turns as there is a reduced likelihood of obstruction from parked vehicles .

10.5.3.2 Impacts to Parking

Road narrowing will result in a loss of up to one (1) parking space on each side of the road at the location south of Princes Highway. There is no nominal loss of parking spaces at the location north of South Street as it is within 10 metres from a T-intersection, meaning it has an existing non-signposted No Stopping restriction. Therefore, a total of two (2) spaces will be lost.

While there are no parking surveys available for Wentworth Street, observations during site visit show that there are ample vacant on-street parking spaces along Wentworth Street during the daytime. It is very likely that the parking availability of Wentworth Street is able to cope with the loss of two spaces.

10.5.3.3 Other Impacts

At the location south of Princes Highway, the kerb blisters will be built between the property access of 846 Princes Highway and Tempe Tyre Centre access. At the location north of South Street, there are no property accesses adjacent to the device location. As such, there will be no impacts on the accesses along Wentworth Street.

Road narrowing in general may slightly increase travel time of emergency service vehicles through the area due to reduced speed. However, considering the existing road environment along these local streets, any additional proposed LATM measures are not expected to have a significant impact on emergency service vehicle access.

10.5.4 Option 2: Flat Top Road Hump

This option involves a 100mm high concrete flat top road hump across the roadway at each location. The road hump will have a contrasting surface treatment, usually a ‘terracotta’ colour surface.

10.5.4.1 Merits

By providing flat top road humps as vertical deflections, vehicles will slow down in order to safety travel over the humps. Lower speeds will in turn increase travel time and may deter non-local traffic from utilising Wentworth Street.

10.5.4.2 Impacts to Parking

As flat top road humps do not require changes in roadway geometry, there will also be no impacts to kerbside parking or driveway accesses. Vehicles can still park over the road hump.

10.5.4.3 Other Impacts

As Wentworth Street is not a heavy vehicle or bus route, there will be no noise generated as a result of trucks or buses travelling over the road hump. Bicycles will still be able to safely get over the road humps.

10.5.5 Additional Measures to Options 1 & 2

In addition to Option 1 or 2, truck restriction (3t limit) is proposed at the northern end of Wentworth Street. The signage along Princes Highway will provide an early indication and warning of the truck restriction along Wentworth Street, while the signage along Wentworth Street south of the Tempe Tyre Centre access will enforce the truck load limit and reinforce the local road environment. The signage aims to reduce heavy vehicles accessing Wentworth Street from Princes Highway, with the exception of delivery vehicles accessing Tempe Tyre Centre.

10.6 Union Street

10.6.1 Issues

As discussed in previous sections, the issues present on Union Street are:

- Union Street has relatively high average daily traffic (ADT) volumes of almost 500 vehicles per day, compared to other local roads in the study area.
- Due to its proximity to a school, there is high pedestrian activity especially before and after school hours

Additionally, Union Street will be impacted by traffic generated from Bunnings, and will likely heighten any of the existing traffic issues.

Other options such as a closure of Union Street at Princes Highway have been considered, however, such a closure will result in a number of unfavourable routes and outcomes.

10.6.2 Option 1: Flat Top Road Hump

This option involves a 100mm high concrete flat top road hump across the roadway at each location. The road hump will have a contrasting surface treatment, usually a ‘terracotta’ colour surface.

The flat top road humps will be located outside 2 Union Street and outside 46 Union Street.

10.6.2.1 Merits

By providing flat top road humps as vertical deflections, vehicles will slow down in order to safety travel over the humps. Lower speeds will in turn increase travel time and may deter non-local traffic from utilising Union Street, in particularl utility type vehicles.

10.6.2.2 Impacts to Parking

As flat top road humps do not require changes in roadway geometry, there will also be no impacts to kerbside parking or driveway accesses. Vehicles can still park over the road hump.

10.6.2.3 Other Impacts

As Union Street is not a heavy vehicle or bus route, there will be no noise generated as a result of trucks or buses travelling over the road hump. Bicycles will still be able to safely travel over the road humps.

10.6.3 Option 2: Shared Zone

This option involves implementing a 10 km/h shared zone between Princes Highway and School Lane. Marked parking bays will be provided along the shared zone, with some overlapping with the footpath. The shared zone will require approval from Transport for NSW.

10.6.3.1 Shared Zone Warrants

Transport for NSW *Shared Zone Policy* (SS/12/01) provides a set of criteria for implementing shared zones. The proposal area was assessed against the criteria, shown in Table 10.2. Transport for NSW technical direction *Design and implementation of shared zones including provision for parking* (TTD2016/001) was also considered for the design of the shared zone.

10.6.3.2 Merits

A 10 km/h shared zone will force vehicles to slow down along Union Street. Additionally, vehicles must always give way to all pedestrians crossing Union Street. This will increase pedestrian safety, particularly to school children from Tempe Public School and Union Street residents. Lower speeds will also increase travel time and may deter non-local traffic from utilising Union Street.

Marked parking bays will be provided along the shared zone, with some overlapping with the footpath. This will formalise parking on the footpath, which is already present on Union Street.

10.6.3.3 Impacts to Parking

The marked parking bays will retain parking along Union Street. However, each bay must meet the dimensional requirements of *AS2890.5 On-street parking*, which state that most spaces must be 6.0-6.7 metre long. The parking bays will be slightly longer than the existing unmarked parking spaces, hence reducing the parking capacity of Union Street and a small reduction of parking spaces. Based on the parking surveys, the parking occupancy of Union Street is about 60-80%, which allows some room for the reduction of a few parking spaces without impacting on capacity. The PWD space on the eastern side of Union Street will be retained and marked.

10.6.3.4 Other Impacts

As the shared zone has no physical changes to the roadway, there will be no changes to waste collection services and routes. Parking bays will not be marked outside driveway accesses to maintain property accesses at all times.

10.6.4 Additional Measures to Options 1 & 2

An at-grade contrasting pavement is proposed at the start of Union Street to deter non-local traffic from travelling along Union Street.

Table 10.2: Shared Zone Criteria Assessment

Features	Shared Zone Criteria	Union Street between Princes Highway and School Lane	Meets Criteria?
Current traffic flows	≤ 100 vehicles per hour and ≤ 1000 vehicles per day	Less than 100 per hour based on intersection count surveys and tube counts Average of 487 vehicles per day based on tube counts	Yes
Current speed limit	≤50 km/h	50 km/h	Yes
Length of proposed Shared Zone	≤400 metres	Around 215 metres	Yes
Current speed limit of adjoining roads	≤50km/h	Adjoining roads Smith Street, Zuitton Lane, Brooklyn Lane and School Lane are not signposted and are assumed to have the default 50 km/h speed limit. Princes Highway is 60 km/h, however vehicles would already have to slow down when turning into Union Street.	Yes
Current Carriageway width	Minimum traffic width of 2.8 metres	Assuming vehicles are allowed to park on footpaths, a traffic width of at least 2.8 metres is possible	Yes
Route Access	Must not be located along bus routes or heavy vehicle routes except delivery or garbage trucks	No bus routes Not a heavy vehicle route due to the 3 tonne truck load limit	Yes
Streets with narrow or no footpaths	Where pedestrians are forced to use the road	Footpaths are already quite narrow and are further narrowed with parked vehicles on footpath	Yes
Kerbs	Kerbs must be removed unless excepted by RMS / Transport for NSW	A Category 2 shared zone as shown in TTD2016/001 can be implemented, without the removal of kerbs.	Yes
All criteria met?			Yes

10.7 Edwin Street

10.7.1 Issues

As discussed in previous sections, the issues present on Edwin Street include:

- Relatively high average daily traffic (ADT) volumes of over 400 vehicles per day, compared to other local roads in the study area
- Due to its proximity to a school, there is a high level of pedestrian activity especially during AM and PM school peaks

In addition, there is potential for Bunnings generated traffic to use Edwin Street as an alternative route to access Unwins Bridge Road.

10.7.2 Option 1: Flat Top Road Hump

This option involves a 100mm high concrete flat top road hump across the roadway with a contrasting surface treatment, such as a 'terracotta' colour surface and light coloured ramps / wings.

The flat top road hump will be located outside No. 14 Edwin Street, and complement the existing road hump on east of Stanley Street.

10.7.2.1 Merits

While speed is not a concern along Edwin Street, by providing flat top road hump as vertical deflections, vehicles will slow down in order to safety travel over the humps. This provides two benefits:

- Lower speeds to increase pedestrian safety, particularly during school pick up and drop off locations
- Increased travel time and a less comfortable road environment in conjunction with the existing road hump and narrow carriageway should deter non-local traffic from using Edwin Street.

10.7.2.2 Impacts to Parking

No changes to kerbside alignments are proposed, the flat top road hump will have no impact on kerbside parking or driveway accesses. Vehicles can still park over the road hump. Landscaped barriers on the kerbside may hinder opening of car doors.

10.7.2.3 Other Impacts

As Edwin Street is not a heavy vehicle or bus route, there will be little noise generated as a result of trucks or buses travelling over the road hump. Bicycles will still be able to safely travel over the road humps.

10.8 Tramway Street

10.8.1 Issues

Tramway Street does not currently experience excess traffic speed or volume issues, however has been identified as potential alternative route or rat run for non-local traffic, including Bunnings development traffic.

10.8.2 Option 1: Contrasting Thresholds

Due to the restricted carriageway and length of road and existing splitter island at Edwin Street, further physical treatment won't be necessary along Tramway Street. However, contrasting thresholds are proposed to be located at each end (Unwins Bridge Road and Edwin Street).

10.8.2.1 Merits

The contrasting thresholds provide a visual indicator of the change in road environment on entry to Tramway Street, particularly at Unwins Bridge Road. The threshold will act as a visual gateway to the local residential area and aim to deter non-local traffic.

10.8.2.2 Impacts to Parking

The contrasting threshold will have no impacts to existing kerbside parking.

10.9 Barden, Fanning, Hart and Station Streets

At-grade contrasting threshold pavements are proposed along Barden, Fanning, Hart and Station Streets just south of Princes Highway.

While there are no existing issues with these four roads, LATM measures should still be put in place to further deter non-local traffic from travelling along these local roads, particularly from Princes Highway.

It is understood that a 40 km/h Local Traffic Area, including the study area south of Princes Highway, is intended to be implemented in the future. This reduction in speed limit will be subject to a speed review study, potentially including further proposed traffic calming treatments. These treatments and the 40km/h Local Traffic Area will be subject to review and approval by Transport for NSW.

10.9.1.1 Merits

The contrasting pavement will highlight the local traffic area by providing a physical and visual gateway treatment to these local roads. The differentiation of road environment may be able to deter vehicles turning left from Princes Highway onto the local roads.

10.9.1.2 Impacts to Parking

As the threshold pavements require no physical change to the roadway geometry, there will be no impacts to parking. As the proposed locations are within 10 metres from T-intersections, there are already existing No Stopping restrictions at the locations in accordance with the Australian Road Rules.

10.9.1.3 Other Impacts

As the contrasting pavements do not involve any horizontal or vertical deflection of the roadway, there will be no impacts to property access, cyclists or emergency service vehicles.

10.10 Summary of Merits

The merits of each proposed treatment are summarised in Table 10.3. Deterring non-local traffic was a key objective in all proposed treatments.

Table 10.3: Merits of Proposed Treatments

Road	Option	Type	Rationale
Smith Street	1	Road Narrowing and Contrasting Pavement	▪ Historic non-preference for vertical deflection devices such as speed humps or cushions ▪ Kerb blisters slows traffic by providing a narrow travel width ▪ Can reduce travel width similar to neighbouring streets ▪ Highlights local traffic area by providing a physical and visual gateway treatment to the south section of Smith Street ▪ Differentiation of road environment may deter vehicles turning left from proposed Bunnings access Smith Street south ▪ Reduced geometry less favourable to heavy vehicles ▪ Breaks up long straight section of roadway ▪ Landscaped elements may enhance sense of place ▪ Removal of parking improves sightlines and manoeuvrability of traffic entering Smith Street ▪ No noise impacts to residences ▪ Bicycle friendly (with appropriate road markings)
	2	Mountable Concrete Median Treatment	▪ Historic non-preference for vertical deflection devices such as speed humps or cushions ▪ Highlights local traffic area by providing a physical and visual gateway treatment to the south section of Smith Street ▪ Differentiation of road environment may deter vehicles turning left from proposed Bunnings access Smith Street south ▪ Reduced geometry less favourable to heavy vehicles and slows traffic by diverting vehicles around the island ▪ Breaks up long straight section of roadway ▪ Removal of parking improves sightlines and manoeuvrability of traffic entering Smith Street ▪ No noise impacts to residences ▪ Bicycle friendly (with appropriate road markings) ▪ Low-profile allows right-turning trucks out of 1 Smith Street to mount over the median
	Additional to both options	Right Turn Only Signage	▪ Right turn only" sign deters traffic exiting Bunnings from turning left onto Smith Street

Road	Option	Type	Rationale
Smith Street	Additional to both options	Line Marking	▪ Difference in line marking between the northern and southern sections of Smith Street provide differentiation of road environment between both sections ▪ Differentiation of road environment may deter vehicles turning left from proposed Bunnings access Smith Street south ▪ Recommended lane delineation alignments tie in with the proposed treatments ▪ Provides clear travel lanes for vehicles and cyclists, with sufficient clearance from parked vehicles and opposing traffic
		Bicycle Facilities	▪ Shared paths allow cyclists to ride between on-road cycling along Smith Street and the Princes Highway shared path without dismounting ▪ Bicycle ramps provide off and on-road bicycle transitions between the Smith Street roadway and the shared path ▪ On-road bicycle markings spaced evenly along Smith Street reaffirm that Smith Street is a mixed-traffic cycling route
		Widened Footpath	▪ Provide improved pedestrian facility ▪ Reduced roadway provides a road narrowing along Smith Street and assist in slowing down vehicles
		Optional Landscaped Verge (Option b)	▪ Provides form of screening from the roadway
Holbeach Avenue	1	Speed Cushions (x4)	▪ Slows vehicles down by providing vertical deflection which may be inconvenient to speeding vehicles ▪ Lower speeds increase travel time and may deter non-local traffic ▪ Allows for bus and service vehicle travel to Tempe recreation area ▪ Does not impact kerbside parking ▪ Minimises impact to driveway access ▪ No noise impacts to residences (industrial area) ▪ Located near street lighting for better visibility at night ▪ Spacing between intersections consistent with recommendations ▪ Bicycle friendly

Road	Option	Type	Rationale
Holbeach Avenue	2	Speed Cushions (x2) & Road Narrowing	▪ Slows vehicles down by providing vertical deflection which may be inconvenient to speeding vehicles ▪ Lower speeds increase travel time and may deter non-local traffic ▪ Provides further traffic calming by narrowing the available roadway ▪ Landscaped kerb blisters may enhance the local streetscape ▪ Provides physical and visual gateway to area ▪ No noise impacts to residences (industrial area) ▪ Located near street lighting for better visibility at night ▪ Spacing between intersections consistent with recommendations ▪ Bicycle friendly
Stanley Street	1	Flat Top Road Hump	▪ Breaks up long straight section of roadway ▪ Slows vehicles down by providing vertical deflection which may be inconvenient to speeding vehicles ▪ Lower speeds increase travel time and may deter non-local traffic ▪ Consistent with other LATM devices in the area ▪ Located near street lighting for better visibility at night ▪ Treatment spacing consistent with spacing recommendations ▪ Does not impact kerbside parking
	2	Road Narrowing	▪ Slows vehicles down by providing horizontal deflection ▪ Lower speeds increase travel time and may deter non-local traffic ▪ Kerb blisters break up long straight section of roadway ▪ Provides a permanent narrowing of roadway ▪ Landscaped features are visually more appealing and will allow the device to blend into the local streetscape ▪ Located near street lighting for better visibility at night ▪ Treatment spacing consistent with spacing recommendations ▪ Consistent with other LATM devices in the area
Wentworth Street	1	Road Narrowing & Contrasting Pavement	▪ May deter heavy vehicle traffic and slow vehicles down by reducing roadway widths and increasing roadway friction ▪ Lower speeds increase travel time and may deter non-local traffic ▪ Highlights local traffic area by providing a visual gateway treatment to the local roads ▪ Differentiation of road environment may deter vehicles from turning into Wentworth Street

Road	Option	Type	Rationale
Wentworth Street	2	Flat Top Road Hump	▪ Slows vehicles down by providing vertical deflection which may be inconvenient to speeding vehicles ▪ Lower speeds increase travel time and may deter non-local traffic ▪ Highlights local traffic area by providing a visual gateway treatment to the local roads ▪ Differentiation of road environment may deter vehicles turning into Wentworth Street
	Additional to both options	3 Tonne Truck Limit Signage	▪ Deter heavy vehicles from turning into Wentworth Street from Princes Highway, other than to access Tempe Tyre Centre
Union Street	1	Flat Top Road Hump	▪ Breaks up long straight section of roadway ▪ Slows vehicles down by providing vertical deflection which may be inconvenient to speeding vehicles ▪ Lower speeds increase travel time and may deter non-local traffic ▪ Consistent with other LATM devices in the area ▪ Located near street lighting for better visibility at night ▪ Treatment spacing consistent with spacing recommendations ▪ Does not impact kerbside parking
	2	Shared Zone	▪ Slows vehicles down with a 10 km/h speed limit ▪ Lower speeds increase travel time and may deter non-local traffic ▪ The nature of shared zone also gives priority to pedestrians and increase pedestrian safety ▪ Marked parking bays on footpaths formalises parking on footpath
	Additional to both options	Contrasting Pavement Threshold	▪ Highlights local traffic area by providing a visual gateway treatment to the local roads ▪ Differentiation of road environment may deter vehicles from turning into Union Street from Princes Highway
Edwin Street	1	Flat Top Road Hump	▪ Breaks up long straight section of roadway ▪ Slows vehicles down by providing vertical deflection ▪ Lower speeds improve pedestrian safety, increases travel time and may deter non-local traffic ▪ Consistent with existing road hump on Edwin Street ▪ Located near street lighting for better visibility at night ▪ Treatment spacing consistent with spacing recommendations ▪ Does not impact kerbside parking
Tramway Street	1	Contrasting Pavement Threshold	▪ Highlights local traffic area by providing a visual gateway treatment to the local roads ▪ Differentiation of road environment may deter vehicles from turning into Tramway Street from Unwins Bridge Road

Road	Option	Type	Rationale
Barden, Fanning, Hart and Station Streets	-	Contrasting Pavement Threshold	▪ Highlights local traffic area by providing a visual gateway treatment to the local roads ▪ Differentiation of road environment may deter vehicles from turning into these local streets from Princes Highway ▪ Complements existing truck load limit signage

10.11 Summary of Impacts

The possible impacts on kerbside parking, property accesses and cyclists are summarised in Table 10.4.

Table 10.4: Impacts of Proposed Treatments

Road	Option	Type	Impacts to Parking & Access	Impacts to Cyclists
Smith Street	1	Road Narrowing and Contrasting Pavement	▪ Up to two (2) parking spaces removed on the western side and one (1) space on the eastern side Combined with the loss of 13 on-street parking as part of Bunnings development, a total of 16 on-street parking will be lost. Two (2) vacant spaces will still be available on Smith Street on an average Thursday. ▪ No impacts to 1 Smith Street access.	▪ Minimal impacts to cyclists on roadway
	2	Mountable Concrete Median Treatment	▪ Up to seven (7) parking spaces removed on the western side and one (1) space on the eastern side. Combined with the loss of 13 on-street parking as part of Bunnings development, a total of 21 on-street parking will be lost. On average Thursday, there will be a **shortage of three (3) spaces** and will result in a flow-on effect of residential parking onto other streets such as Barden Street or South Street. ▪ Right-turning vehicles exiting 1 Smith Street access may and will be allowed to mount over the low-profile median.	▪ Cyclists on roadway will have to slow down to divert around the median treatment
	Additional to both options	Right Turn Only Signage	▪ Vehicles exiting the Bunnings access must turn right	▪ No impact to cyclists
		Line Marking	▪ Minimal impacts	▪ Minimal negative impacts

Road	Option	Type	Impacts to Parking & Access	Impacts to Cyclists
		Bicycle Facilities	▪ One (1) parking space loss	▪ Minimal negative impacts
		Widened Footpath	▪ Footpath must be designed to allow access driveways and the roadway ▪ Minimal impacts to parking, as kerbside parking will be retained	▪ No impact to cyclists
		Optional Landscaped Verge (Option b)	▪ Removal of 25 parking spaces on the western side	▪ No impact to cyclists
Holbeach Avenue	1	Speed Cushions (x4)	▪ No impacts to parking, as vehicles are still able to park over speed cushions ▪ No impacts to property accesses.	▪ Minimal impacts to cyclists as they are expected to utilise the shared path adjacent to roadway
	2	Speed Cushions (x2) and Road Narrowing	▪ One (1) parking space removed on each side of the roadway, total two (2) ▪ No impacts to property accesses.	▪ Minimal impacts to cyclists as they are expected to utilise the shared path adjacent to roadway
Stanley Street	1	Flat Top Road Hump	▪ No impacts to parking, as vehicles are still able to park over flat top road humps ▪ No impacts to property accesses.	▪ Cyclists on roadway will have to slow down to safely get over the hump
	2	Road Narrowing	▪ For each location: one (1) parking space removed on each side of the roadway, total two (2) per location ▪ No impact to property accesses.	▪ Minimal impacts to cyclists on roadway
Wentworth Street	1	Road Narrowing & Contrasting Pavement	▪ For the location south of Princes Highway: one (1) parking space removed on each side of the roadway, total two (2) spaces ▪ No nominal loss of parking spaces for the location north of South Street, as it is located within 10 metres from a T-intersection, meaning it has an existing non-signposted No Stopping restriction ▪ Minimal impacts to property accesses, including vehicular access to Tempe Tyre Centre. May impact waste access to Tempe Tyre Centre.	▪ Minimal impacts to cyclists on roadway

Road	Option	Type	Impacts to Parking & Access	Impacts to Cyclists
	2	Flat Top Road Hump	▪ No impacts to parking, as vehicles are still able to park over flat top road humps ▪ No impacts to property accesses.	▪ Cyclists on roadway will have to slow down to safely get over the hump
	Additional to both options	3 Tonne Truck Limit Signage	▪ Any heavy vehicle accidentally turning into Wentworth Street will have to exit via Tempe Tyre Centre	▪ No impact to cyclists
Union Street	1	Flat Top Road Hump	▪ No impacts to parking, as vehicles are still able to park over flat top road humps ▪ No impacts to property accesses.	▪ Cyclists on roadway will have to slow down to safely get over the hump
	2	Shared Zone	▪ The longer marked parking bays will result in a small number of parking spaces ▪ Parking bays will stay clear of property driveways to ensure no impact to property accesses	▪ Cyclists will have to give way to pedestrians
	Additional to both options	Contrasting Pavement Threshold	▪ No impacts to parking and access.	▪ No impact to cyclists
Edwin Street	1	Flat Top Road Hump	▪ No impacts to parking and access.	▪ No impact to cyclists
Tramway Avenue	1	Contrasting Threshold	▪ No impacts to parking and access.	▪ No impact to cyclists
Barden, Fanning, Hart and Station Streets	-	Contrasting Pavement Threshold	▪ No impacts to parking and access.	▪ No impact to cyclists

11. INFRASTRUCTURE ITEMISATION

11.1 Methodology

Most of the concept designs of LATM treatments were designed against on-site conditions such as road width and geometry, with reference to Australian Standards and Austroads design guidelines. However, the contrasting pavement thresholds presented are typical designs which may be adapted in each treatment location.

The following general costing methodology was adopted:

- Treatments were itemised and broken down into their composite elements, such as reinforced concrete platforms, line marking, signs, and landscaping
- Previous LATM studies, benchmark infrastructure costs and pedestrian facility planning reports recently undertaken in NSW were consulted to estimate a baseline treatment unit cost
- A unit cost per treatment type was developed based on the itemisation and base line unit costs
- The total estimated cost was developed based on the quantity and unit cost of each treatment.

The assumptions and exclusions made as a part of our cost estimations are outlined in the sections below.

11.2 Relevant Guidelines

11.2.1 Australian Standards

AS1742 Manual of Uniform Traffic Control Devices was the primary reference consulted for this study for specifications on traffic calming devices, and relevant signage and line marking. Both *AS1742 Part 10: Pedestrian Control and Protection* and *AS1742 Part 13: Local Area Traffic Management were* consulted for the specifications, with the former relating to refuge and median islands, and wombat crossings, and the latter relating to thresholds and other humps.

The Roads and Maritime Supplement to Australian Standard 1742 – Manual of Uniform Traffic Control Devices parts 1-15 (Version 2.4) (known simply as RMS supplement to AS1742) was consulted for any Roads and Maritime (RMS) modification or practices that differ from AS1742. The supplement cross references a number of RMS (and its predecessor Roads and Traffic Authority) technical directions, which are listed in Section 11.2.4.

11.2.2 Austroads Guide to Traffic Management

Austroads Guide to Traffic Management Part 8 – Local Area Traffic Management was also consulted for recommended specifications on treatments not covered in AS1742 or the RMS supplement to AS1742.

The RMS Austroads Guide Supplements – Austroads Guide to Traffic Management Part 8 – Local Area Traffic Management (known simply as RMS supplement to Austroads) was consulted for any Roads and Maritime (RMS) modification or practices that differ from Austroads.

11.2.3 STA Bus Infrastructure Guidelines

The *State Transit Authority Bus Infrastructure Guidelines* outlines a number of infrastructure design aspects which must be taken into considering when implementing traffic calming treatments along bus routes. These are recommended to ensure a minimisation of impacts to bus operations.

11.2.4 Transport for NSW Technical Directions and Guidelines

Transport for NSW (and its predecessors Roads and Maritime Services (RMS) and Roads and Traffic Authority (RTA)) delineation guidelines were also consulted for specification for zebra crossings and edge and centre line markings:

- Roads and Traffic Authority Delineation Section 4 – Longitudinal Markings was consulted for dimensions of edge and centre line markings.
- Roads and Traffic Authority Delineation Section 7 – Transverse Lines Pedestrian Facilities was consulted for dimensions of pedestrian (zebra) crossings.

Transport for NSW technical direction *Design and implementation of shared zones including provision for parking* (TTD2016/001) was consulted for requires signage for shared zones.

11.3 Treatments

Each proposed treatment option was broken down into its key components, such as physical components and any required signage. Itemised components of the proposed standard treatments may include (but are not limited to):

- Concrete components (such as platforms, kerb blisters, refuge islands etc)
- Line marking or road surface marking
- Surfacing or surface colour treatment
- Signage
- Landscaping
- Civil works

Table 11.1 details the breakdown of each proposed treatment type.

These traffic calming devices are identified as being appropriate for the context of the zone and can assist in creating a safer local road environment.

Table 11.1: Proposed Treatments

LATM Treatments	Description	Components	Signs and Posts
Road narrowing	Landscaped kerb blisters with low height shrubs	▪ Kerb blisters ▪ Treatment surfacing ▪ Civil works ▪ Landscaping	n/a
Contrasting pavement	At-grade contrasting pavement treatment (embossed text pattern)	▪ Contrasting pavement (at-grade) ▪ Treatment surfacing ▪ Civil works	n/a
Line marking	Edge, centre line and lane delineation marking	▪ Edge line marking ▪ Centre line marking ▪ Lane Delineation (L1 and C1)	n/a
Mountable concrete median	Mountable low-profile concrete median with contrasting pavement	▪ Low-profile median island ▪ Treatment surfacing ▪ Signage ▪ Civil works	n/a
Right Turn Only signage		▪ Signage ▪ Civil works	▪ 1 x R2-14_R  ▪ ▪ 1 x signpost

LATM Treatments	Description	Components	Signs and Posts
Speed cushions	100mm high speed cushions (either in set of 2 or set of 4)	▪ Speed cushions ▪ Signage ▪ Civil works	▪ 2 x W5-10  ▪ 2 x W8-2 (25 km/h)  ▪ 1 x signpost[1]
Flat top road hump	100mm high flat top road hump with contrasting surface treatment ('terracotta' colour surface of similar)	▪ Raised Hump ▪ Line marking ▪ Treatment surfacing ▪ Signage ▪ Civil works ▪ Roadside barrier (landscaping or bollard and chain type)	▪ 2 x W5-10  ▪ 2 x W8-2 (25 km/h)  ▪ 1 x signpost[2]
Bicycle facilities	Shared path and Bicycle on-ramp	▪ Footpath demolition ▪ Shared path (new) ▪ Bicycle ramp ▪ Bicycle marking (bicycle symbols and arrows) ▪ Signage ▪ Civil works	▪ 5 x R8-2  ▪ 2 x R7-4  ▪ 3 x signposts

LATM Treatments	Description	Components	Signs and Posts
Widened footpath	Widened footpath of 2.5m width, with optional landscaped verge	▪ Footpath demolition ▪ Footpath (new) ▪ Treatment surfacing ▪ Civil works ▪ Landscaping (verge)	▪ n/a
3 tonne truck limit signage	3 tonne truck limit signage	▪ Signage	▪ 2 x R6-10-2  ▪ 2 x R9-231 (3 tonne)  ▪ 1 x W8-245N_L  ▪ 1 x signpost[3]

LATM Treatments	Description	Components	Signs and Posts
Shared zone	10 km/h shared zone with marked parking bays	▪ Signage ▪ Line marking	▪ 3 x R4-4  ▪ 3 x R5-5  ▪ 3 x R2-10  ▪ 3 x R5-65  ▪ 1 signpost[4]

Image Source: Transport for NSW

1. The speed cushion treatment will only be installed at Holbeach Avenue, using an existing streetlight pole and a new signpost instead of two signposts.

2. It is assumed that each location requires one new signpost:

- The flat top road hump treatment (Option 2) at Wentworth Street north of South Street will utilise an existing streetlight pole and a new signpost

- The flat top road hump treatment (Option 2) at Wentworth Street south of Princes Highway will utilise the signpost used for the 3 tonne truck limit signage, and a new signpost

- The flat top road hump treatment (Option 1) at Stanley Street (at each location) will utilise an existing streetlight pole and a new signpost instead of two signposts.

- The flat top road hump treatment (Option 1) at Union Street (at both locations) will utilise an existing streetlight pole and a new signpost instead of two signposts. It will be assumed one new signpost is needed per location.

3. The 3 tonne truck limit signage treatment will only be installed at Wentworth Street south of Princes Highway, using an existing streetlight pole and a new signpost instead of two signposts.

4. The shared zone treatment will only be installed along Union Street, using an existing streetlight pole, an existing signpost, an existing traffic signal post and a new signpost.

12. COST ESTIMATION

12.1 Treatments

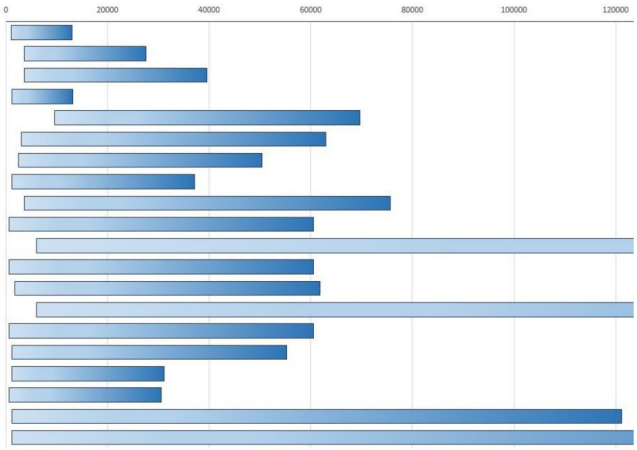
12.1.1 Cost Factors

The cost of implementing these treatments is highly dependent upon the contextual surroundings at each install site. Factors which can affect the costs include:

- Material selection
- Size of treatment
- Accommodation for drainage
- Street lighting
- Any kerb or gutter works
- Adjustments to any pits
- Any landscaping
- Requirement of street closures or traffic control
- Any other additional features, such as supplementary line marking or pedestrian fencing.

In developing cost estimates for the different types of treatments, *Austroads Guide to Traffic Management Part 8 (Local Area Traffic Management)* was consulted. The graph in Figure 12.1 shows the relative construction costs of LATM devices.

Local Area Traffic Management Device	Construction Cost (2015 AUD$)
Road humps (round profile)	1,000 - 12,000
Flat-topped road humps	3,600 - 24,000
Wombat crossing	3,600 - 36,000
Road cushions	1,200 - 12,000
Raised intersection pavements	9,600 - 60,000
Kerbside lane narrowings / kerb extensions - per 100 m	3,000 - 60,000
Slow points (angled or straight)	2,400 - 48,000
Blister islands	1,200 - 36,000
Driveway links - per 100 m	3,600 - 72,000
Median treatments - per 100 m	600 - 60,000
Roundabouts	6,000 - 480,000
Full road closure	600 - 60,000
Half / part / diagonal road closure	1,800 - 60,000
Modified "T" intersection	6,000 - 300,000
Pedestrian crossings	600 - 60,000
Perimeter threshold treatments	1,200 - 54,000
Tactile surface treatments - per 100 m	1,200 - 30,000
Bicycle lanes / bypasses - per 100 m	600 - 30,000
bus only links / bus bypasses - per 100 m	1,200 - 120,000
Shared zones - per 100 m	1,200 - 180,000



Source: Damen (2007) cited in Austroads Guide to Traffic Management Part 8

Figure 12.1: Relative LATM Device Costs

Council has provided average standard costs for various LATM treatments, signage, installation and marking, which is the main source used for cost estimation. The Independent Pricing and Regulatory Tribunal New South Wales (IPART NSW) report *Local Infrastructure Benchmark Costs* was also consulted for the cost estimates of some treatments.

The costs detailed in this report should be taken as indicative only. The final treatment costs will ultimately be subject to detailed design at each specific site location.

12.1.2 Treatment Signage

There is a minimum provision of signs required to be installed to accompany the specific treatments proposed, as previously detailed in Section 11.3. These primarily include warning signage associated with the treatments modifying road geometry, such as 'speed hump' warning signs. The provision of these signs is included within the treatment-specific signage costs.

The standard costs of signs were provided for 3 tonne load limit (two signs), speed hump and speed advisory signs, which is $83 per sign. The standard cost of a galvanised signpost is $105, and the cost of installing a signpost in concrete is $205.

12.1.2.1 Assumptions

The following assumptions were made for estimating treatment-associated signage costs:

- The cost of a single sign was estimated at $83
- All signposts are assumed to be installed in concrete. As such, the total cost for a signpost and its installation was assumed to be $310.
- Parking restriction signs (certain treatments like kerb blisters have specific restrictions on nearby on-street parking) have ***not*** been included, as their implementation will be specific to parking conditions at each location.

The minimum sign requirement for each type of treatment is presented in Table 12.1 below.

Table 12.1: Signage Costs per Treatment

LATM Treatment	No. of Signs (each)	No. of Posts (each)	Cost
Road narrowing	-	-	-
Contrasting pavement	-	-	-
Line marking	-	-	-
Mountable concrete median	-	-	-
Right Turn Only signage (Smith Street)	1	1	$393
Speed cushions	4	1	$642
Flat top road hump	4	1	$642
3 tonne truck limit Signage (Wentworth Street south of Princes Highway)	5	1	$725
Bicycle facilities (Smith Street)	7	3	$1511
Shared zone	12	1	$1306

It should be noted the values presented in Table 12.1 do not include labour and installation costs, other than the installation of signposts. The costs of the individual signs and posts are shown to be a relatively small component of the total treatment cost.

Depending on Council's sign inventory and the quality of replaced/removed signs, there may be opportunities to recycle use of old signs where appropriate. Due to their nature, these considerations are subject to detailed design and the actual installation process.

12.1.3 Item Unit Costs

The total unit cost of each component of the treatments identified in Table 11.1 have been estimated at the following costs in Table 12.2. It is important to note that these prices are indicative.

Table 12.2: Item Unit Cost

Item	Unit	Unit Cost ($)
Treatment (excludes treatment-specific signage)		
Kerb blister	Each	$5,000
Contrasting pavement (at-grade)	Each	$15,000
Mountable concrete median	Each	$10,000
Speed cushion	Each	$900
Flat top road hump	Each	$35,000
Footpath demolition	Per square metre	$55
New footpath or shared path	Per square metre	$120
Kerb and gutter	Per metre	$115
Bicycle ramp	Each	$5,000
Barrier (Landscape or Fence type)	Each	$1,000
Verge Landscaping	Per metre	$100
Signage		
Right Turn Only signage at Smith Street	-	$393
Speed cushions signage	Per set of speed cushions	$642
Flat top road hump signage	Per flat top road hump	$642
Bicycle signage at Smith Street	-	$1511
3 tonne truck limit signage at Wentworth Street south of Princes Highway	-	$725
Shared zone signage at Union Street	-	$1306
Marking		
Line marking of 100-150mm width (including edge and centreline)	Per metre	$6
Shared zone parking bay marking - assumed 4x6m longitudinal marking and 2x2.1m transverse marking, equating to 28m of linemarking	Per 6 metre (a pair of parking bays) of shared zone	$169
Bicycle symbols	Per symbol	$62
Directional symbols (arrow)	Per symbol	$62
Speed Marker	Per symbol	$62

These estimates are based on the following assumptions:

- Estimates were prepared for a 'standard' treatment for typical conditions within the study area
  - Dimensions and specifications (other than width) are assumed to be the same for each treatment regardless of site and conditions
- Cost of the treatments exclude costs of treatment-specific signage (speed hump warning signs for flat top road humps etc.)
- Costs of treatment-specific and associated sign posts exclude associated parking restriction signs (see Section 12.1.2).
- Flat top road humps have the same cost as a raised pedestrian crossing, which has a cost of $35,000 based on Council's average standard costs

- Footpath widening or shared path construction includes a complete demolition of the old footpath and construction of a 100mm tall reinforced concrete footpath
- General and landscaping maintenance costs are not included

12.2 Landscaping

The provision of landscaped treatments allows for visually attractive devices with additional functionality. For example, landscaped kerb blisters deter pedestrians from using devices such as flat-top road humps as road crossing devices.

Landscaped treatments can contribute to a more positive community reception of new traffic calming devices. Residents may be inclined to more readily accept a device which contributes to the local streetscape aesthetic with landscaping reflective of the contextual surrounds. Conversely, there may be community backlash over an excessive implementation of devices perceived as intrusive and utilitarian due to the impact to local amenity.

An example of a landscaped versus non-landscaped kerb blister is displayed in Figure 12.2.

Figure 12.2: Kerb Blisters – Landscaping (left) and Standard (right)

However, providing landscaping on treatments requires additional costs, both capital costs for the installation process (soil infill, plant species, etc.) and on-going maintenance costs (watering, general upkeep of the plants, potential future replacements).

Austroads Guide to Traffic Management Part 8, citing City of Knox's Annual LATM Program Review (2002), suggests that the construction costs of an LATM can be reduced by 20-25% with the removal of landscaped features.

12.3 Maintenance

Maintenance costs are an additional consideration when installing treatments, dependent upon a number of factors including:

- Material choice: concrete treatments tend to have a longer life-span than those made out of asphalt or small unit pavers, therefore requiring less future maintenance costs
- Any supplementary elements to the treatment, including street furniture and accompanying warning signage is vulnerable to ongoing damage and potential vandalism
- Devices which require a horizontal deflection of the vehicle (chicane slow points, wide median splitter islands, etc.) may require further reinforcement works to the pavement to handle the side pressures exerted by the vehicle tyres
- Line marking and road symbols must be maintained and refreshed if their condition deteriorates, as efficiency and effectiveness is strongly linked to their visibility.

The high degree of variability in maintenance costs renders it difficult to estimate with a satisfactory degree of accuracy. Maintenance needs and costs will be monitored by Council following the installation of the treatments.

12.4 Estimated Total Treatment Costs

The estimated treatment cost for the entire study area is itemised in Table 12.3. This cost includes all treatment and sign costs identified in the earlier sections. Lengths measured for line marking and landscaping treatments are approximate only.

Table 12.3: Estimated Treatment Cost

Road	Option	Item	Unit Cost ($)	Quantity	Total ($)	Including 10% Contingency Cost & 10% Design Cost
Smith Street	Option 1a - Road Narrowing & Contrasting Pavement (including additional measures)	Kerb blisters	$5,000	2	$10,000	$12,000
		Contrasting pavement	$15,000	1	$15,000	$18,000
		Right Turn Only signage	$393	1	$393	$472
		Line marking	$6 / m	approx. 350m	$2,100	$2,520
		Shared path (western)	$120 / m^2	approx. 30m x 2m	$7,200	$8,640
		Shared path (eastern)	$120 / m^2	approx. 65m x 2.5m	$19,500	$23,400
		Bicycle ramp	$5,000	2	$10,000	$12,000
		Bicycle symbols and arrows	$62	14	$868	$1,042
		Footpath demolition	$55 / m^2	approx. 230m x 1.5m	$18,975	$22,770
		New footpath	$120 / m^2	approx. 200m x 2m	$48,000	$57,600
		Kerb and gutter	$115 / m	approx. 230m	$26,450	$31,740
		Total			**$158,486**	**$190,183**
	Option 1b - Road Narrowing & Contrasting Pavement (including additional measures)	Similar to Option 1a	$153,900	1	$158,486	$190,183
		Less one kerb blister	$5,000	- 1	- $5,000	- $6,000
		Less line marking (on western side)	$6 / m	- 100 m	- $600	- $720
		Verge landscaping	$100 / m	180m	$18,000	$21,600
		Total			**$170,886**	**$205,063**

Road	Option	Item	Unit Cost ($)	Quantity	Total ($)	Including 10% Contingency Cost & 10% Design Cost
Smith Street	Option 2a - Mountable Concrete Median Treatment (including additional measures)	Mountable concrete median	$10,000	1	$10,000	$12,000
		Right turn only signage	$393	1	$393	$472
		Line marking	$6 / m	approx. 500m	$3,000	$3,600
		Shared path (western)	$120 / m^2	approx. 30m x 2m	$7,200	$8,640
		Shared path (eastern)	$120 / m^2	approx. 65m x 2.5m	$19,500	$23,400
		Bicycle ramp	$5,000	2	$10,000	$12,000
		Bicycle symbols and arrows	$62	14	$868	$1,042
		Footpath demolition	$55 / m^2	approx. 230m x 1.5m	$18,975	$22,770
		New footpath	$120 / m^2	approx. 200m x 2m	$48,000	$57,600
		Kerb and gutter	$115 / m	approx. 230m	$26,450	$31,740
		Total			**$144,386**	**$173,263**
	Option 2b - Mountable Concrete Median Treatment (including additional measures)	Similar to Option 1a	$138,900	1	$144,386	$173,263
		Less line marking (on western side)	$6 / m	- 140 m	- $840	- $1,008
		Verge landscaping	$100 / m	150m	$15,000	$18,000
		Total			**$158,546**	**$190,255**
Holbeach Avenue	Option 1 - Speed Cushions	Speed cushions	$900	4	$3,600	$4,320
		Speed cushion signage	$642	1 set	$642	$770
		Total			**$4,242**	**$4,666**
	Option 2 - Speed Cushions & Road Narrowing	Speed cushions	$900	2	$1,800	$4,320
		Kerb blister	$5,000	2	$10,000	$12,000
		Speed cushion signage	$642	1	$642	$770
		Total			**$14,242**	**$17,090**

Road	Option	Item	Unit Cost ($)	Quantity	Total ($)	Including 10% Contingency Cost & 10% Design Cost
Stanley Street	Option 1 – Flat Top Road Hump	Flat top road humps	$35,000	2	$70,000	$84,000
		Flat top road hump signage	$642	2	$1,284	$1,541
		Landscaping barrier	$1,000	4	$4,000	$4,800
		Total			**$71,284**	**$85,541**
	Option 2 – Road Narrowing	Kerb blisters	$5,000	4	$20,000	$24,000
		Total			**$20,000**	**$24,000**
Wentworth Street	Option 1 - Road narrowing & Contrasting Pavement (including additional measures)	Kerb blisters	$5,000	4	$20,000	$24,000
		Contrasting pavement	$15,000	2	$30,000	$36,000
		3 Tonne Truck Limit signage	$725	1 set	$725	$870
		Total			**$50,275**	**$60,870**
	Option 2 - Flat Top Road Hump (including additional measures)	Flat top road humps	$35,000	2	$70,000	$84,000
		Flat top road hump signage	$642	2	$1,284	$1,541
		3 Tonne Truck Limit signage	$725	1 set	$725	$870
		Bollard and Chain barrier	$1,000	4	$4,000	$4,800
		Total			**$76,009**	**$91,211**
Union Street	Option 1 - Flat Top Road Hump (including additional measures)	Flat top road humps	$37,000	2	$74,000	$84,000
		Flat top road hump signage	$642	2	$1,284	$1,541
		Contrasting pavement	$15,000	1	$15,000	$18,000
		Bollard and Chain barrier	$1,000	4	$4,000	$4,800
		Total			**$90,284**	**$108,341**
	Option 2 - Shared Zone (including additional measures)	Shared zone signage	$1,306	1	$1,306	$1,567
		“10” speed marker	$62	2	$124	$149
		Parking bay marking	$169 per 6m of shared zone	215 m (roughly 36 * 6m)	$1,015	$1,218

Road	Option	Item	Unit Cost ($)	Quantity	Total ($)	Including 10% Contingency Cost & 10% Design Cost
		Contrasting pavement	$15,000	1	$15,000	$18,000
		Total			**$17,445**	**$20,934**
Barden Street	Contrasting Pavement Threshold	**Contrasting Pavement**	**$15,000**	**1**	**$15,000**	**$18,000**
Fanning Street	Contrasting Pavement Threshold	**Contrasting Pavement**	**$15,000**	**1**	**$15,000**	**$18,000**
Hart Street	Contrasting Pavement Threshold	**Contrasting Pavement**	**$15,000**	**1**	**$15,000**	**$18,000**
Station Street	Contrasting Pavement Threshold	**Contrasting Pavement**	**$15,000**	**1**	**$15,000**	**$18,000**
Edwin Street	Flat Top Road Hump	Flat top road hump	$37,000	1	$35,000	$42,000
		Flat top road hump signage	$642	1	$642	$770
		Landscaping barrier	$1,000	2	$2,000	$2,400
		Total			**$37,642**	**$45,170**
Tramway Street	Contrasting Pavement Threshold	**Contrasting Pavement**	**$15,000**	**2**	**$30,000**	**$36,000**

13. COMMUNITY ENGAGEMENT

13.1 Overview

A draft version of the LATM report (Version 2, dated 25th September 2020), which incorporated sections 1 to 12, was released for exhibition on the *Your Say Inner West* website between 3rd November 2020 and 12th January 2021. On the website, participants could participate in a survey voting for the most preferred option for each road, and could provide additional comments and feedback. A total of 92 participants participated in the survey.

In addition to the survey, a number of comments have also been received via email from residents and businesses in the area.

A summary of the survey responses and comments are described in the Engagement Outcomes Report in **Appendix E**.

13.2 Survey Preferred Option

During the survey, participants could provide an indication on their most preferred treatment options proposed for each road. They could also vote for “neither option” or “no opinion” for each question. For Edwin Street and Tramway Street where there was only one option, participants had the option to choose how satisfied or dissatisfied they were with the proposed option. The preferred options are summarised in Table 13.1.

Table 13.1: Survey Preferred Option

Road	Survey Result
Smith Street	Preference for Option 1a (road narrowing and contrasting pavement, with widened footpath)
Holbeach Avenue	Preference for Option 2 (speed cushions & road narrowing)
Stanley Street	Preference for Option 1 (flat top road hump)
Wentworth Street	Preference for Option 2 (flat top road hump)
Union Street	Non-support for either option (flat top road hump or shared zone). Shared zone is the most preferred option out of the two.
Edwin Street	Non-support for flat top road hump
Tramway Street	Non-support for contrasting pavement threshold
Barden, Fanning, Hart and Station Streets	Support for contrasting pavement threshold

13.3 Participant Comments

In addition to the survey, participants could provide any feedback or additional comments. Additional comments were also received via email by residents or affected businesses in the study area.

Comments received from the 92 survey participants and via email have been summarised into general themes in Table 13.2.

Table 13.2: Comments Themes and Responses

Category / Theme	Description	Response
Existing parking issues	Residents have highlighted difficulty in parking outside their property due to parking by nearby workers, airport users and other visitors. They prefer a residential parking scheme to be implemented to improve parking in the local area.	As part of the study, a parking survey on a number of streets was undertaken. The parking levels found were generally within 50-70% occupancy during weekdays and weekends, which do not meet the level required for a resident parking scheme as outlined in Council's Public Domain Parking Policy.
Efficiency of LATM proposals	Residents do not agree that the proposals will be able to address the increase in non-local traffic and do not reduce non-local traffic volumes.	The proposals aim to deter non-local traffic by reducing vehicle speeds and increasing travel time as to make routes using local roads less desirable for non-local traffic. LATM proposal was selected based on traffic volumes, speed and/or crash history.
Existing rat-running and non-local traffic issues	Residents have highlighted existing rat-running routes and use by non-local traffic. They have suggested schemes such as one-way system or road closures.	The LATM study focuses on the additional non-local traffic caused by Bunnings and may not universally address existing rat running issues.
Alternative Union Street proposal	Union Street residents have suggested closing Union Street to Smith Street through traffic, i.e. left turn entry only from Princes Highway	This option may be required given the direct route along Union Street and presence of schools. This option is to be further explored.
Children safety	Local streets often have children and residents have highlighted that additional Bunnings related traffic will make the streets unsafe	The LATM study aims to minimise additional traffic by reducing through traffic and vehicle speeds using the selected proposals.
Alternative Bunnings entrance and exit	Bunnings traffic should not exit via Smith Street and an alternative access be provided on Princes Highway.	An alternative access on Princes Highway will be the subject of further investigations, however it is noted that Transport for NSW has not supported an alternative signalised exit on Princes Highway.
Alternative transport	Residents preferred solutions that encourage alternative transport such as cycleways to ensure walking and cycling are more attractive	Active transport has been considered in Smith Street, which provides connectivity to existing routes. Traffic calming results in lower vehicle speeds, and improving safety for vulnerable road users such as pedestrians and cyclists.

13.4 Changes Following Community Engagement

13.4.1 New Traffic Surveys

The community has expressed concerns over the collection and use of traffic data (March 2020) in the analysis and LATM assessment as outlined in Section 4. The primary concern was that the surveys were undertaken in the midst of the COVID-19 pandemic lockdown period and would

provide an under representation of existing traffic. To address this, additional 24-hour tube counts have been undertaken in February 2021, including:

- Tube Count 1: Wednesday, 10 February 2021 to Wednesday, 17 February 2021
- Tube Count 2: Monday, 15 February 2021 to Sunday, 21 February 2021
- Tube Count 3: Monday, 22 February 2021 to Sunday, 28 February 2021

The average daily traffic (ADT) volumes, the 85th percentile speeds, and daily heavy vehicle percentages are shown in Table 13.3. The peak hour volumes are shown in Table 13.4.

Table 13.3: Union Street Tube Count Data Summary (February 2021)

Tube Count	Location	Direction	ADT Volumes	ADT Weekday	ADT Weekend	85th %ile Speed (km/h)	Heavy Vehicle (%)
Tube Count 1	Between Princes Highway & Edwin Street	WB	517*	567*	416	34.9	3.5%
Tube Count 2			547	578	469	34.6	3.2%
Tube Count 3			545	583	432	34.4	3.1%
Average			**536**	**576**	**439**	**34.6**	**3.3%**
March 2020 tube counts			487	-	-	26.9	3.4%
Difference with March 2020			**+49 (10%)**	**-**	**-**	**+7.7**	**-0.1%**

**The volumes for Tube Count 1 are lower due to missing volume data on Thursdays afternoon and evening.*

Table 13.4: Union Street Peak Hour Data Summary (February 2021)

Tube Count	Location	Direction	AM Peak	PM Peak	Weekend Peak
Tube Count 1	Between Princes Highway & Edwin Street	WB	82	52	36
Tube Count 2			81	53	42
Tube Count 3			82	56	37
Average			**81**	**54**	**38**
March 2020 intersection count surveys			n/a	49	38
Difference with March 2020			**n/a**	**+5 (10%)**	**0**

A comparison of the new tube count data finds:

- An increase in daily traffic volumes (approximately 10%)
- Heavy vehicle composition remains approximately similar
- An increase in 85th percentile speeds (approximately 7%, likely due to the location of the survey further away from the intersection with Princes Highway)
- Max hourly traffic flows occur during the AM peak hour, approx. 82 veh.hr

While the 85th percentile speeds are within the posted 50km/h speed limit, it may be considered too high for the narrow roadway with a high pedestrian presence, particularly school aged children.

Engagement comments also indicated frequent side-swiping occurrences between moving and parked vehicles.

While 'typical' traffic volumes and speeds are found to be higher, the assessment criteria and points system presented in Section 8 has not been modified.

Updated traffic volumes have been further considered in the calculation of expected future volumes along Union Street in Table 13.8 and reassessing shared zone criteria in Table 13.9.

13.4.2 Changes to Traffic Generation

Members of the USTAG have expressed concern that traffic generation rates within *RTA Guide to Traffic Generating Developments 2002 (GTGD)* or *Trip Generation and Parking Generation Surveys - Bulky Goods / Hardware Stores Analysis Report (2009)* was not used to determine future Bunnings traffic and provided an under-representation of traffic resulting from the proposed Bunnings site. We agree that documents by RTA (and successors) should be used to calculate generated trips from Bunnings. The guide provided average traffic generation rates for bulky goods retail stores for the PM peak and weekend. However, Bunnings does not exactly match the definition of bulky goods retail, which is more associated with furniture or whitegoods stores.

Instead, a traffic generation analysis report titled *Trip Generation and Parking Generation Surveys - Bulky Goods / Hardware Stores Analysis Report (2009)*, jointly produced by RTA and Hyder Consulting, was used for analysis. The report is available online at *OpenGov NSW*. The report defined Bunnings and Mitre 10 as hardware stores, undertook traffic surveys at a few hardware stores across NSW and analysed the traffic generation rates for each store. A review of RTA / Hyder rates in comparison to rates previously adopted (developed by GTA Consultants and TTPA, Section 6.2.2) showed that the RTA/ Hyder rates provide more a higher hourly rate and more conservative figure.

The report has identified that Mitre 10 is more 'tradesman' orientated and will have slightly higher traffic generation rates than Bunnings in the weekdays and lower in the weekends. It also identified that Sydney metropolitan stores have a lower traffic generation rate than similar stores in the regional areas outside Sydney.

Table 13.5 shows the traffic generation rates calculated by RTA / Hyder for Bunnings stores in Sydney for various peak hours and per day.

Table 13.5: Traffic Generation Rates Specific to Bunnings in Sydney

Traffic Generation Rates (veh/100m^2 GFA)	Bunnings North Parramatta (HW1)	Bunnings Bankstown Airport (HW2)	Bunnings Minchinbury (HW4)	Average
Weekday				
Peak specific to store (per hour) (generally in late mornings or early afternoons)	4.11	3.15	4.12	3.79
AM Peak (per hour)	1.43	0.60	2.04	1.36
PM Peak (per hour)	2.30	2.05	2.84	2.40
Daily	**36.36**	**26.80**	**39.75**	**34.30**
Weekend				
Peak (per hour)	6.69	5.98	6.33	6.33
Daily	**49.05**	**39.74**	**46.16**	**44.98**

Source: Trip Generation and Parking Generation Surveys – Bulky Goods / Hardware Stores Analysis Report (RTA, Hyder 2009)

From the RTA / Hyder report, the PM peak and weekend generation rates were higher than the rates used by GTA Consultant. Therefore, using the RTA / Hyder rates in place of GTA rates, the volumes generated by Bunnings were recalculated and presented in Table 13.6.

Table 13.6: Recalculated Traffic Generation Volumes

Peak	Total Trips	Directional Split		Volumes (veh / hour)	
		In	Out	In	Out
Weekday					
AM Peak (vph)	194	50%	50%	97	97
PM Peak (vph)	347			173	173
Daily (vpd)	**4893**			**2447**	**2447**
Weekend					
Weekend Peak (vph)	903	50%	50%	452	452
Daily (vpd)	**6417**			**3209**	**3209**

The recalculated PM and weekend volumes are 60 and 117 higher than the previous calculation. Following the same traffic distribution methodology in Section 6.2.2.2, recalculated volumes of up to 30% of Bunnings traffic using local streets north of Princes Highway are provided in Table 13.7.

Table 13.7: Recalculated Traffic Distribution (Using Local Streets)

Peak	Total Trips	Vehicle Volumes			
		10%	20%	25%	30%
Weekday					
AM Peak (vph)	97	10	19	24	29
PM Peak (vph)	173	17	35	43	52
Daily (vpd)	**2447**	**245**	**489**	**612**	**734**
Weekend					
Weekend Peak (vph)	452	45	90	113	136
Daily (vpd)	**3209**	**321**	**642**	**802**	**963**

Adding on to the February 2021 tube counts, the potential traffic volumes on Union Street are shown in Table 13.8.

Table 13.8: Potential Traffic Volumes on Union Street (based on February 2021 Volumes)

Peak	February 2021 Volumes	Total Traffic on Union Street				Acceptable Environmental Limit
		10%*	20%*	25%*	30%*	Local Road
Weekday						
AM Peak (vph)	81	91	100	105	110	< 200 vph
PM Peak (vph)	54	71	89	97	106	
Daily (vpd)	**576**	**821**	**1065**	**1188**	**1310**	**< 1,500 vpd**
Weekend						
Weekend Peak (vph)	38	83	128	151	174	< 200 vph
Daily (vpd)	**439**	**760**	**1081**	**1241**	**1402**	**< 1,500 vpd**

** by proportion split of Bunnings Warehouse traffic*

With a worse case assessment of up to 30% of the expected traffic generated by Bunnings Warehouse, the increase in traffic can be accommodated by Union Street and does not exceed the acceptable environmental limit (200 vehicles per hour).

13.4.3 Updated Assessment of Shared Zone Criteria

In the draft version of the report, Union Street was assessed against the shared zone criteria in Table 10.2. However, the future traffic flows along Union Street including Bunnings traffic were not considered or used to assess the shared zone criteria. The reassessment using February 2021 traffic volumes and the recalculated Bunnings traffic volumes (worst case) are shown in Table 13.9.

Table 13.9: Updated Shared Zone Volume Criteria Assessment

Scenario	Shared Zone Volume Criteria	Union Street between Princes Highway and School Lane	Meets Criteria?
Existing volumes			
February 2021	▪ ≤ 100 vehicles per hour ▪ ≤ 1000 vehicles per day	▪ 82 vehicles per hour (AM) ▪ 576 vehicles per day (weekday)	Yes
Future traffic volumes including Bunnings traffic			
No ban on through movement from Smith Street to Union Street – i.e. volumes calculated in Table 13.8	▪ ≤ 100 vehicles per hour ▪ ≤ 1000 vehicles per day	▪ 174 vehicles per hour (weekend) ▪ 1402 vehicles per day (weekend)	No
A ban on through movement from Smith Street to Union Street		If Bunnings traffic is not allowed to travel into Union Street from Smith Street, the future traffic volumes on Union Street is roughly expected to equal to current flows	Yes

Therefore, to enable the implementation of the shared zone, further treatments such as the banning of through movement must be in place to maintain traffic volumes at existing or lower levels.

13.4.4 Ban of Through Movement from Smith Street into Union Street

A ban of through movement from Smith Street into Union Street was previously assessed in Section 7.4 and was initially not recommended in the draft version of this report. However, this treatment was requested by residents along Union Street and through the USTAG.

Based on the future volume analysis in Section 13.4.3, in order to satisfy the shared zone criteria on Union Street, traffic volumes will need to be maintained at existing levels. A ban of the through movement from Smith Street will allow traffic volumes to remaining at existing levels and will allow the implementation of a shared zone. Additionally, the benefits of a ban outweigh the impacts identified in Section 7.4. Therefore, a ban of the through movement from Smith Street is now proposed as part of this LATM study.

Due to the existing geometry of the Princes Highway / Union Street / Smith Street intersection, a physical barrier or closure to stop through traffic from Smith Street is not feasible. Instead, a 'soft closure' using signage and line marking can be used, and arrow markings on Smith Street will be amended to left and right arrows only. These treatments will indicate to drivers the through movement to Union Street is not permitted.

The proposed signage includes:

- "No Entry" (R2-4n) signs, supplemented with "From Smith Street" tag plates.
  - It is noted that the No Entry signs may cause confusion to drivers, especially those intending to turn left from Princes Highway to Union Street.
  - However, the signs will also help to deter non-local traffic turning left from Princes Highway to Union Street, even though this turn is still permitted. This is because drivers may see the No Entry sign but not the tag plate, and assume that they are not allowed to turn into Union Street. This will then deter the non-local drivers from turning into Union Street.
  - Local residents would have been familiar with the new intersection arrangement, and would not be affected or confused by the No Entry signs.
- Custom "Left and Right Only" sign, supplemented with "Into Princes Highway" tag plates. An example of the use of this sign includes Johnston Street at Collins Street, Annandale (shown in Figure 13.1), also within Inner West LGA.

Source: Google StreetView

Figure 13.1: Left / Right Turn only Signage - Annandale

As previously identified in Section 7.4, an alternative route to enter Union Street from Smith Street would be a right turn from Smith Street to Princes Highway, then left from Princes Highway to Brooklyn Street, then left at Brooklyn Lane or School Lane to access Union Street. Despite the narrow widths of Brooklyn Lane or School Lane, Bunnings traffic could still potentially use this route to enter Union Street towards Unwins Bridge Road. Therefore, a partial closure (one-way exit to Princes Highway only) may be required at Brooklyn Street. Such a proposal will also have to undergo community consultation.

Residents south of Princes Highway, which are within the school catchment for Tempe Public and High Schools, may be impacted by the 'soft' closure. A 'soft' closure would require residents to take longer trips via Holbeach Avenue and may not be favoured by these residents. Since the 'soft' closure was not proposed as part of the community engagement, the proposal may have to undergo further community consultation for comments and opinions by residents. If the proposal is not supported by the residents, the shared zone proposal for Union Street may not go ahead due to traffic volumes.

13.4.5 Feasibility Study of Traffic Signals at Princes Highway / Bunnings Access

Following a Council resolution in December 2020, a further feasibility study of traffic signals at the Princes Highway / Bunnings access will be undertaken in addition to this LATM study. If traffic signals are approved by Transport for NSW, it will allow Bunnings traffic to exit directly onto Princes Highway instead of using the Smith Street exit, which could then be converted to entry only. The proposed treatments along Smith Street, Union Street, Edwin Street and Tramway Street may not be required to be implemented as a result.

13.4.6 Changes to Concept Design

Based on the preferred options, community feedback and the above assessments, the following changes to concept designs were made:

- **Wentworth Street**
  - The 3 tonne truck load limit signage (R6-10-2 and R9-231) at Wentworth Street near Princes Highway was moved further south to allow waste vehicles to access the waste access at Tempe Tyres
  - The 3 tonne truck load limit signage with left arrow (R6-10-2, R9-231 and W8-245_L) at Princes Highway before Wentworth Avenue was replaced with a single sign with a similar message (G9-321_N_L)
- **Smith Street**
  - The kerb blister on the western side of Smith Street was moved southwards to allow for a proposed dual driveway at 28 Smith Street. The kerb blister on the eastern side will remain at the proposed location.
  - The footpath widening on Smith Street was applied only between Princes Highway and the Bunnings access
- **Tramway Street**: A new flat top road hump was proposed on Tramway Street, located north of the accesses to 402 and 404 Unwins Bridge Road. This was based on the feedback that there are existing rat-running issues where vehicles travel via Tramway and Edwin Streets to Gannon Street, bypassing the traffic signals at Richardson Crescent. The hump will assist to mitigate existing rat-running issues as well as deterring Bunnings traffic from rat-running in both directions.
- **Union Street**: The through movement from Smith Street to Union Street was banned using signage and arrow markings ('soft' closure) – subject to further investigation and community consultation

13.4.7 Changes to Cost Estimation

Only roads requiring significant changes to the extent of civil works had the associated cost estimate recalculated. This excludes minor works such as change of signage and line marking. The cost estimation for Smith Street and Tramway Street was recalculated and shown in Table 13.10. Only the option that is most preferred by the community was recalculated.

Table 13.10: Recalculated Treatment Cost

Option	Item	Unit Cost ($)	Quantity	Total ($)	Including 10% Contingency Cost & 10% Design Cost
Smith Street Option 1a - Road Narrowing & Contrasting Pavement	Kerb blisters	$5,000	2	$10,000	$12,000
	Contrasting pavement	$15,000	1	$15,000	$18,000
	Right Turn Only signage	$393	1	$393	$472
	Line marking	$6 / m	approx. 350m	$2,100	$2,520
	Shared path (western)	$120 / m^2	approx. 30m x 2m	$7,200	$8,640
	Shared path (eastern)	$120 / m^2	approx. 65m x 2.5m	$19,500	$23,400
	Bicycle ramp	$5,000	2	$10,000	$12,000
	Bicycle symbols and arrows	$62	14	$868	$1,042
	Footpath demolition	$55 / m^2	approx. 125m x 1.5m	$10,313	$12,375
	New footpath	$120 / m^2	approx. 95m x 2.5m	$22,800	$27,360
	Kerb and gutter	$115 / m	approx. 125m	$14,375	$17,250
	Total			**$112,549**	**$135,058**
Tramway Street – Contrasting Pavement Threshold & Flat Top Road Hump	Contrasting pavement	$15,000	2	$30,000	$36,000
	Flat top road hump	$35,000	1	$35,000	$42,000
	Flat top road hump signage	$642	1	$642	$770
	Landscaping barrier	$1,000	1	$2,000	$2,400
	Total			**$67,642**	**$81,170**

13.5 Adopted Treatments

Table 13.9 shows the adopted treatments to be used in the LATM scheme, and its cost estimate. A map of the treatments is shown in Figure 9.2.

Table 13.11: Adopted Treatments

Road	Adopted Treatment	Rationale	Estimated Cost
Smith Street	Road narrowing and contrasting pavement, with widened footpath	Preferred by community based on survey	$135,058
Holbeach Avenue	Speed cushions & road narrowing	Preferred by community based on survey	$17,090
Stanley Street	Flat top road hump	Preferred by community based on survey	$85,841
Wentworth Street	Flat top road hump	Preferred by community based on survey	$91,211
Union Street	Shared zone, with contrasting pavement threshold and 'soft' road closure	Preferred option out of the two options	$20,934
Edwin Street	Flat top road hump	Deters rat-running via Edwin Street	$45,170
Tramway Street	Contrasting pavement threshold and flat top road hump	Deters rat-running via Tramway Street	$81,170
Barden, Fanning, Hart and Station Streets	Contrasting pavement threshold	Supported by community based on survey	$18,000 per road

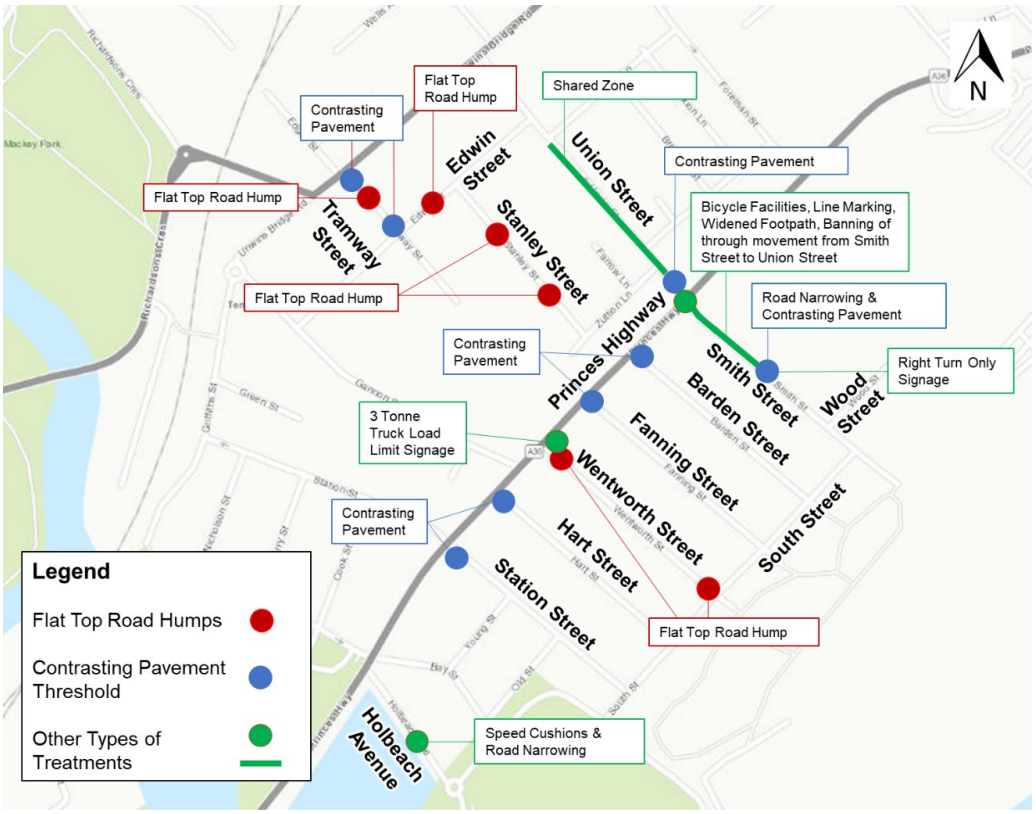


Figure 13.2: Adopted Treatments

14. CONCLUSION

In order to manage the traffic impacts related to the proposed Bunnings Development at No. 728-750 Princes Highway, an LATM study was conducted on behalf of Inner West Council. The study area included a number of local streets within Tempe South adjoining the Princes Highway.

The study reviewed existing conditions on site and expected future traffic conditions within the local area and provides recommendation on appropriate LATM treatment options to be implemented along certain streets.

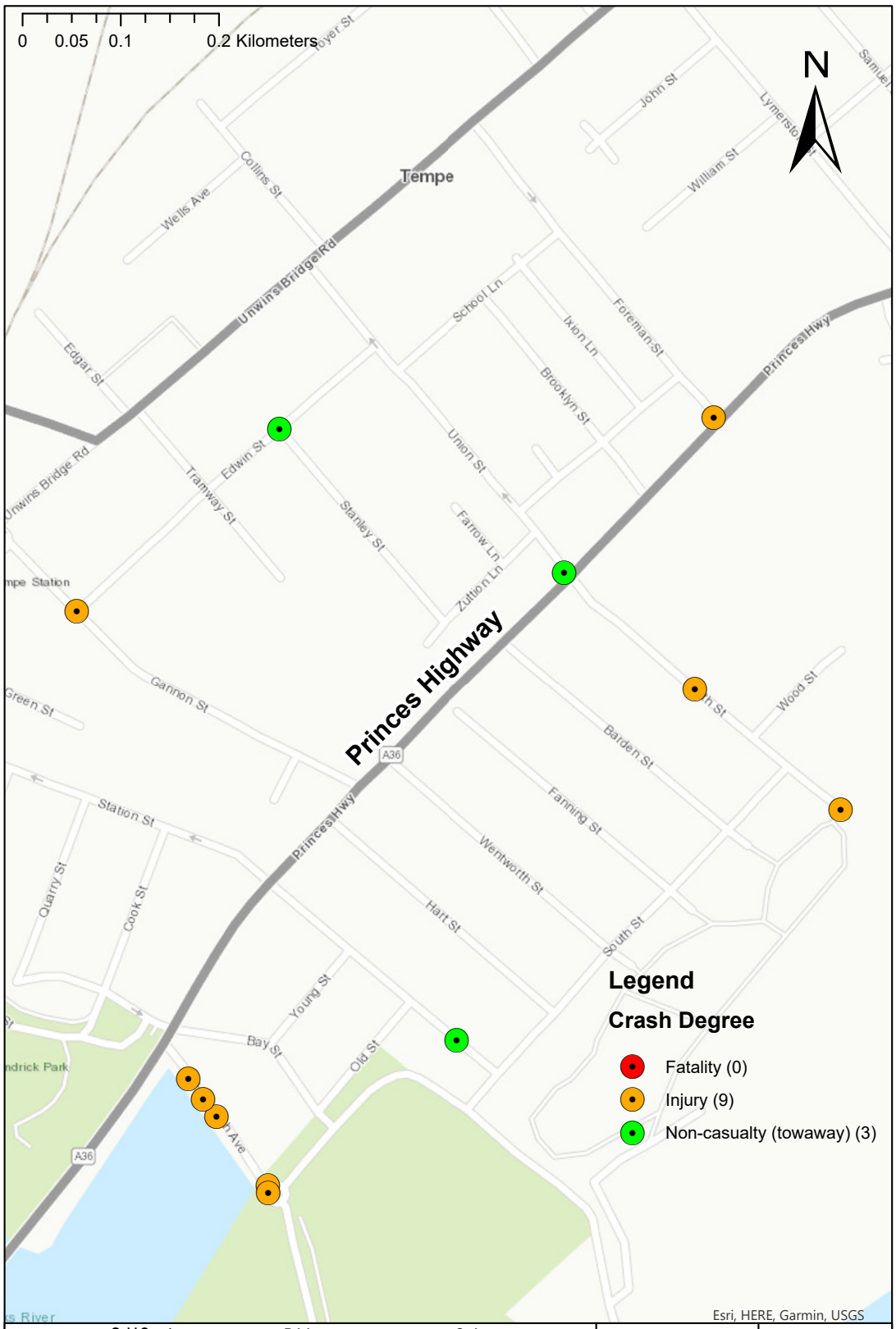
A summary of key processes undertaken and findings in this study is as follows:

- Background information and documents relating to the proposed Bunnings development were reviewed, providing information on future proposed traffic and road changes in the area
- Existing site conditions, surrounding land uses and road network information was reviewed
- A site inspection and audit was conducted, including identification of existing LATM devices, traffic signs, parking signs and restrictions, pedestrian and bicycle facilities, and refuse collection issues
- Traffic and parking surveys were conducted to capture the levels of traffic and parking demand within the study area. This included tube counts, parking occupancy surveys and intersection counts
- The survey of on-street parking on Smith Street showed that on average, there are 18 vacant spaces on Thursday and 27 vacant spaces on Saturday. After the removal of spaces due to the Bunnings development and the proposed LATM treatments Smith street parking is expected to be at capacity.
- The traffic survey data was analysed and identified streets requiring further LATM devices in order to:
  - Provide traffic calming and reduce vehicle speeds
  - Reduce general traffic volumes by deterring traffic
  - Reduce Heavy Vehicle volumes
  - Reduce crash risk
- A scoring system was developed to determine priority streets requiring LATM treatments
- A detailed selection criteria and list of suitable LATM measures were developed based on existing devices in the area and typical LATM devices presented in *Austroads Guide to Traffic Management Part 8 - Local Area Traffic Management*
- Up to two LATM Treatment options were presented for each priority street. These treatment options included:
- Holbeach Avenue – Outside No. 14 and No 16 Holbeach Avenue
  - Option 1: *Speed Cushions*, set of four across roadway
  - Option 2: *Speed Cushions*, set of two with *Kerb Blisters*
- Smith Street – Outside No. 28 Smith Street and south of proposed Bunnings Access
  - Option 1: Road Narrowing using Kerb blisters and contrasting pavement marking
  - Option 2: Mountable Concrete Median and associated line marking
  - Both options are to be supplemented by *Right Turn Only signage*, *edge line marking, bicycle ramp, and shared path* between Princes Highway and the LATM treatment, and *widened footpath* between Princes Highway and South Street. An optional *landscaped verge* may also be provided between the widened footpath and roadway, which will result in the removal of kerbside parking.
- Stanley Street – Outside No. 14 and No. 35 Stanley Street
  - Option 1: Flat Top Road Hump
  - Option 2: Road narrowing using *Kerb Blisters*

- Wentworth Street – South of Princes Highway and North of South Street
  - Option 1: Road narrowing using Kerb Blisters and contrasting pavement marking
  - Option 2: Flat Top Road Hump
  - Both options will include *3 Tonne Truck Limit signage* at Princes Highway and Wentworth Street to deter heavy vehicles from entering Wentworth Street
- Union Street
  - Option 1: Flat Top Road Hump outside 2D and 46 Union Street
  - Option 2: *Shared Zone* between Princes Highway and School Lane
  - Both options will include a contrasting pavement threshold
- Edwin Street
  - Option 1: Flat Top Road Hump outside No. 14 Edwin Street
- Tramway Street
  - Option 1: Contrasting Pavement Threshold at Unwins Bridge Road and Edwin Street
- Additionally, contrasting pavements were proposed for the entries of Barden, Fanning, Hart and Station Streets from Princes Highway.
- Each treatment was assessed for its merits and impacts to parking, property accesses, cyclists and emergency service vehicles.
- Concept designs of each treatment were developed
- The treatments proposed were itemised into their constituent parts, including signage and line marking
- The type and number of signs associated with each type of treatment were identified, along with the number of signposts required
- A baseline treatment unit cost was established, based on:
  - Council provided rates
  - Previous experience
  - IPART Benchmark infrastructure costs
  - Austroads Guide to Traffic Management Part 8
  - A review of previous LATM studies and pedestrian facility planning reports for other studies in NSW
- A standard cost of signs (such as speed hump warning signs etc.) was included in the treatment unit cost
- Ancillary signs such as advance warning signs and parking restriction signs were not included in the treatment unit cost, as they are subject to the specific implementation site of each treatment
- Estimated costs for each option or measure, including contingency and design costs, range from **$18,000** to **$190,000**, with an at-grade contrasting pavement as the least cost option and treatment options along Smith Street resulting with the highest cost.
- A draft version of this report was released for exhibition on the Your Say Inner West website between 3rd November 2020 and 12th January 2021. Participants could participate in a survey voting for the most preferred option for each road.
- Changes were made to the concept designs, and a design was adopted for each road based on the survey results. The adopted designs are:
- Holbeach Avenue – Outside No. 14 and No 16 Holbeach Avenue
  - *Speed Cushions*, set of two with *Kerb Blisters*
- Smith Street – Outside No. 26 Smith Street and south of proposed Bunnings Access
  - Road Narrowing using Kerb blisters and contrasting pavement marking
  - Supplemented by *Right Turn Only signage*, *edge line marking, bicycle ramp, and shared path* between Princes Highway and the LATM treatment, and *widened footpath* between Princes Highway and Bunnings access

- Stanley Street – Outside No. 14 and No. 35 Stanley Street
  - Flat Top Road Hump
- Wentworth Street – South of Princes Highway and North of South Street
  - Flat Top Road Hump
  - Supplemented by *3 Tonne Truck Limit signage* at Princes Highway and Wentworth Street to deter heavy vehicles from entering Wentworth Street
- Union Street
  - *Shared Zone* between Princes Highway and School Lane
  - A 'soft' road closure at Union Street and Princes Highway to ban northbound through traffic travelling from Smith Street to Union Street (subject to further investigation and community consultation)
  - Supplemented by a contrasting pavement threshold at the entry from Princes Highway
- Edwin Street
  - Flat Top Road Hump outside No. 14 Edwin Street
- Tramway Street
  - Contrasting Pavement Threshold at Unwins Bridge Road and Edwin Street
  - Flat Top Road Hump at mid-block outside 404 Unwins Bridge Road
- The estimated costs for the adopted treatments, including contingency and design costs, range from **$18,000** to **$135,000**,

Appendix A: Crash Data Maps



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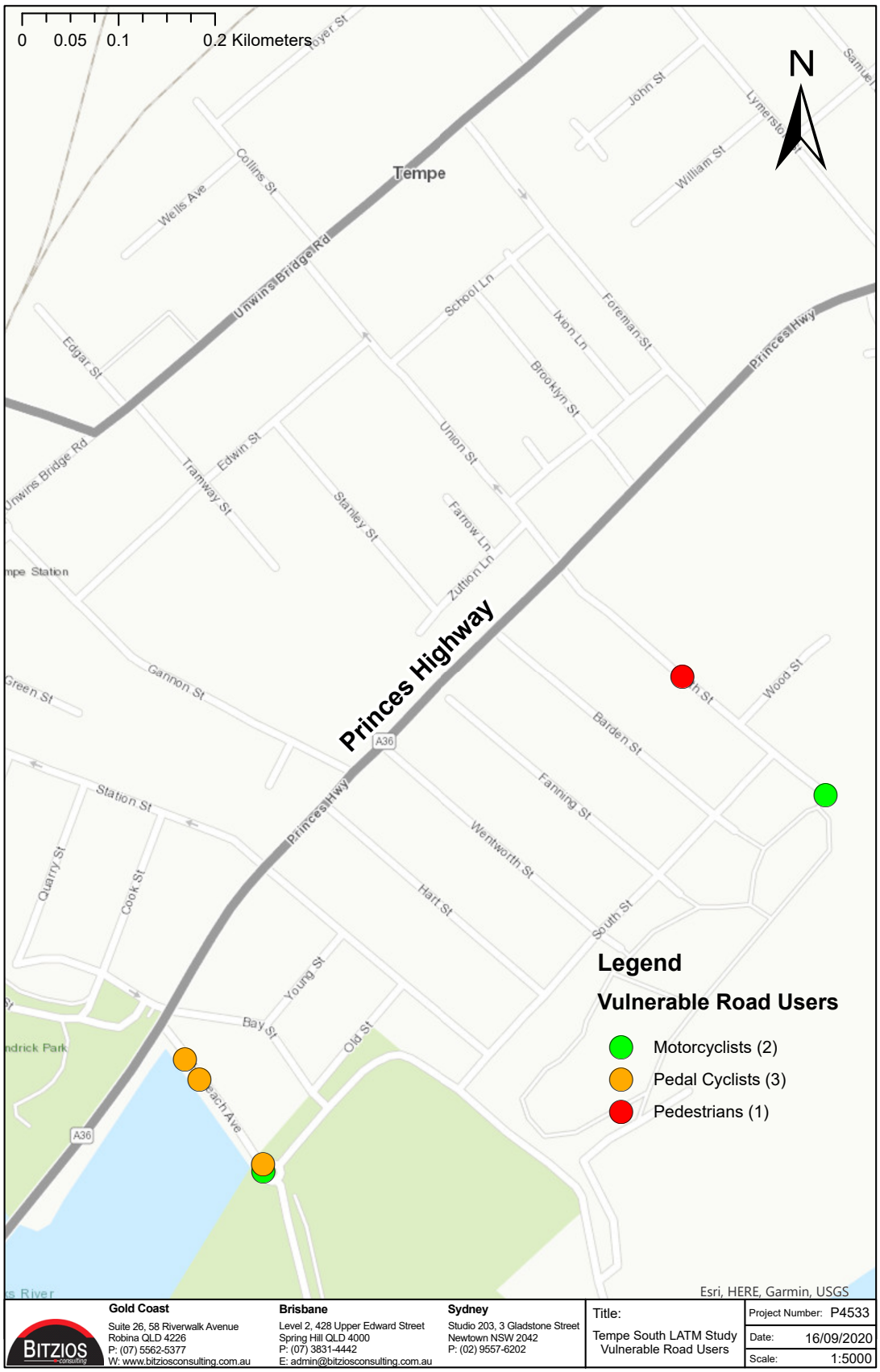
Title:	Tempe South LATM Study Crash Degree
Project Number:	P4533
Date:	16/09/2020
Scale:	1:5000



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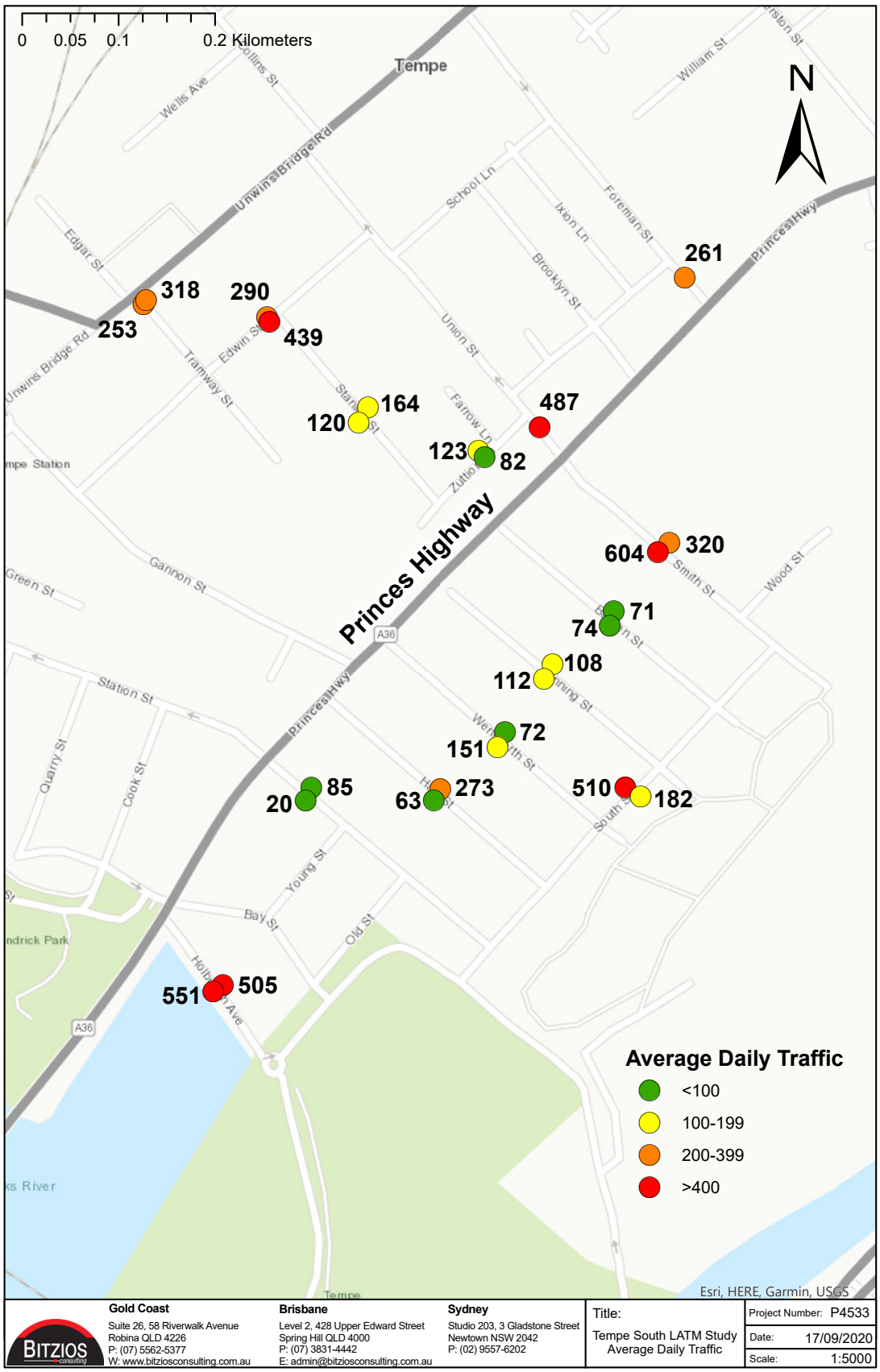
Project Number:	P4533
Date:	16/09/2020
Scale:	1:5000

Appendix B: Tube Count & Parking Data Maps



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Project Number:	P4533
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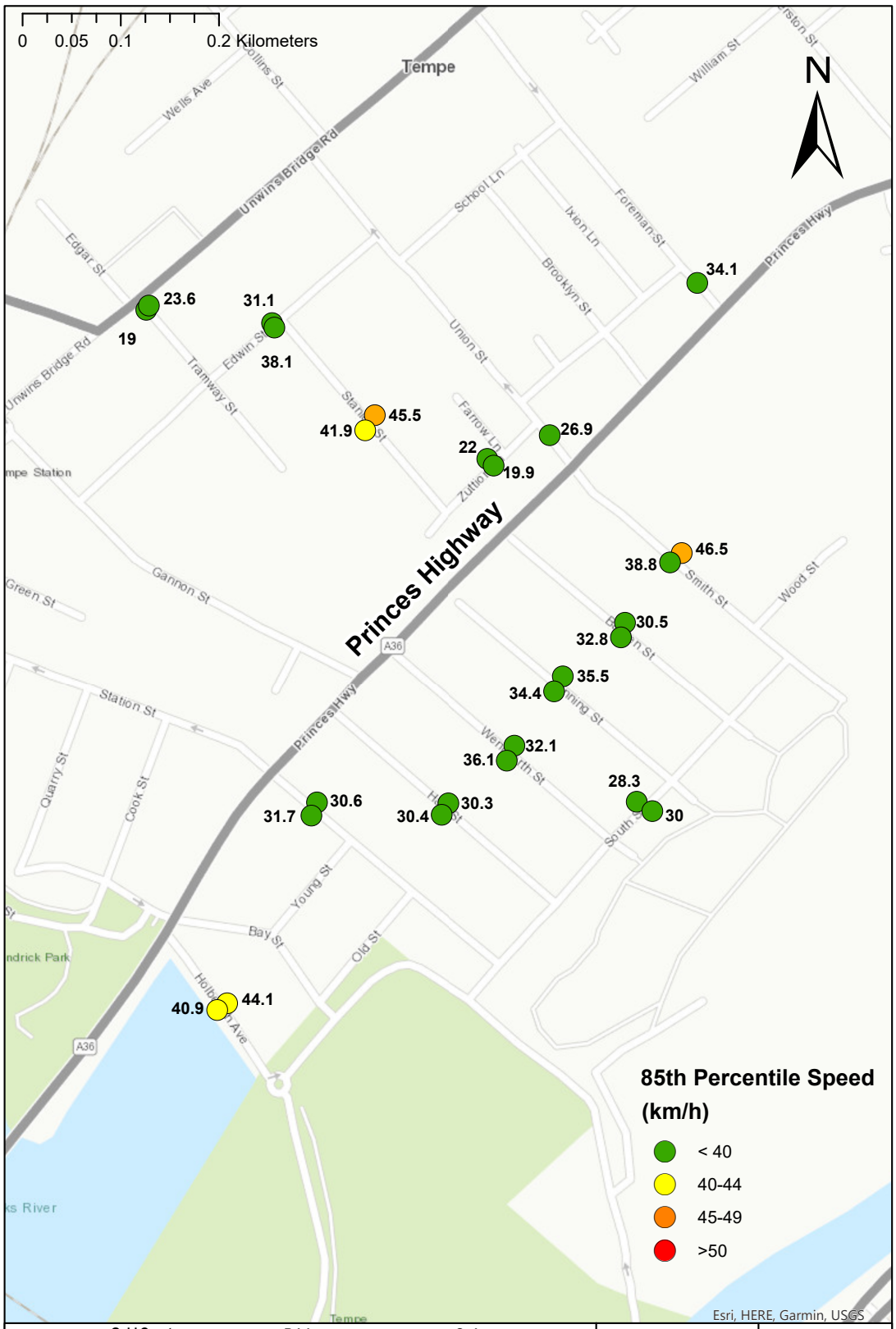

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Project Number:	P4533
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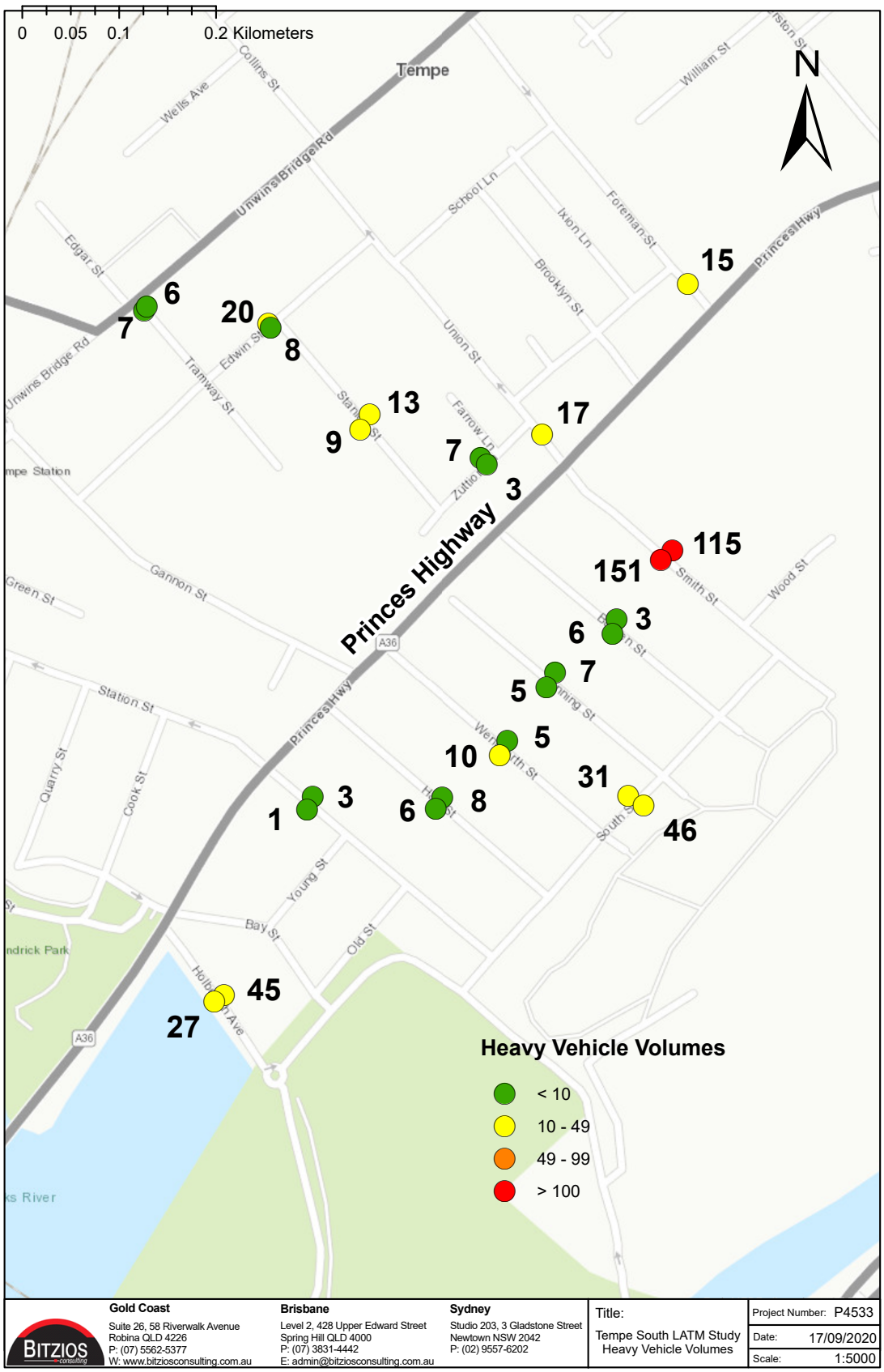

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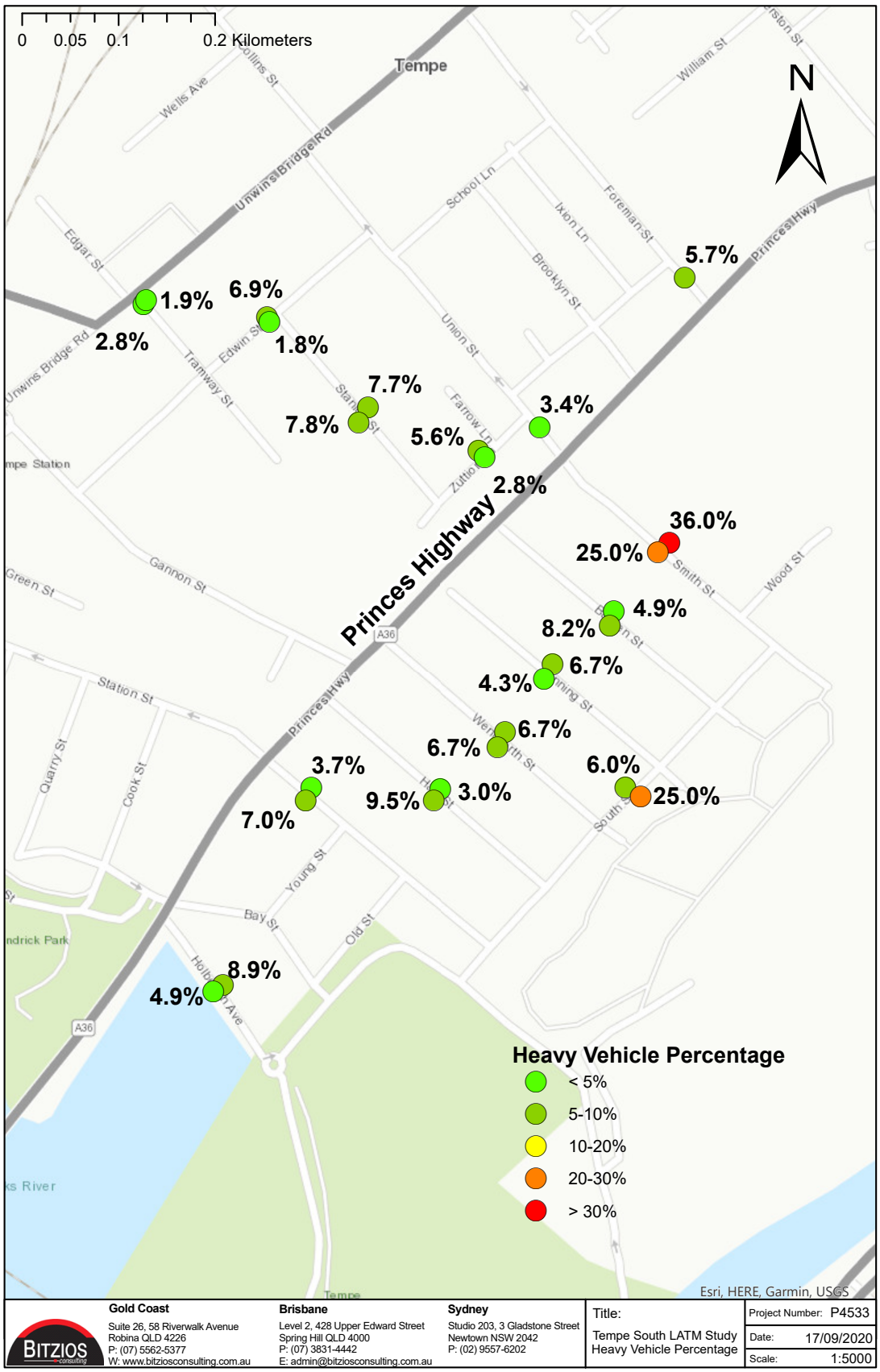
Title:
Tempe South LATM Study
Heavy Vehicle Volumes

Project Number: P4533
Date: 17/09/2020
Scale: 1:5000



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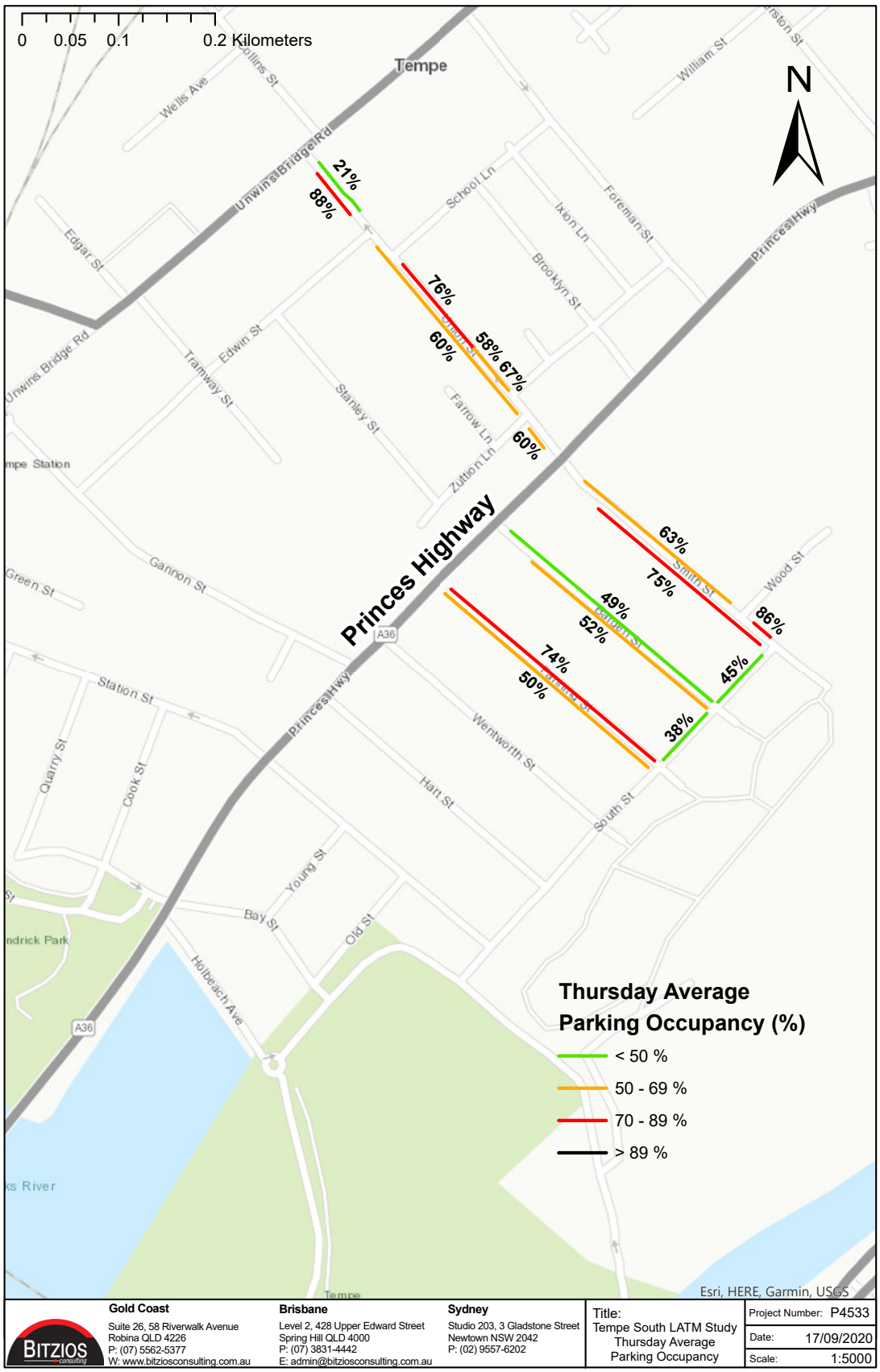

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Title:
Tempe South LATM Study
Thursday Average
Parking Occupancy

Project Number:	P4533
Date:	17/09/2020
Scale:	1:5000

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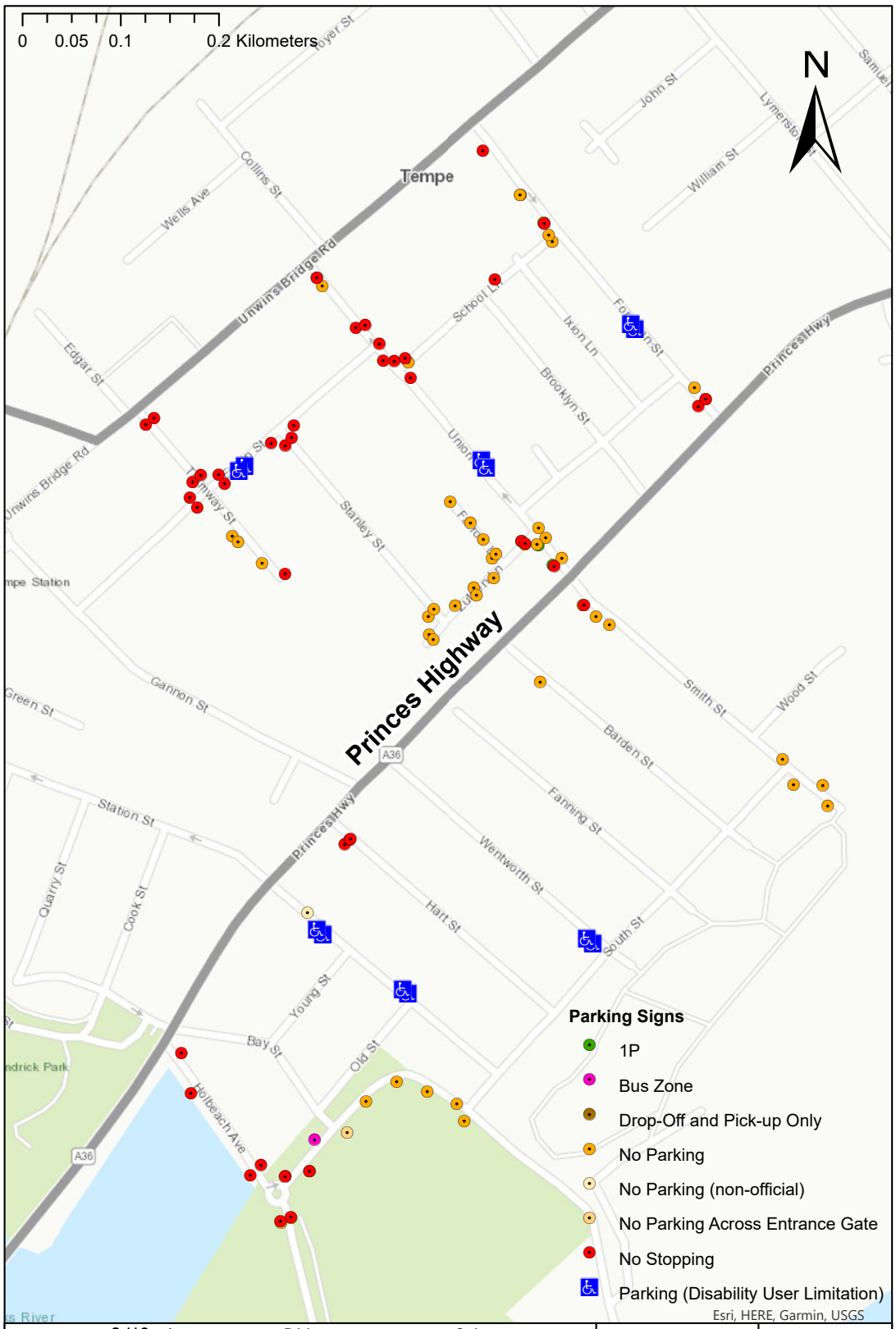
Appendix C: Site Audit Data and Maps

P4533 Tempe South LATM Study

Parking Signs - Site Audit

Number	Street	Direction of Traffic	Condition	Restrictions	Time_1	Day_1	Time_2	Day_2	Direction of Arrow	Obstruction	Sign Code	x	y	Other
001	Barden Street	Northbound	Faded	No Parking					Right		R5-40 (LR)	151.1621	-33.9242	
001	Edwin Street	Westbound	Good	No Stopping					Right	Tree	R5-400 (R)	151.1598	-33.9223	
002	Edwin Street	Westbound	Good	No Stopping					Left		R5-400 (L)	151.1596	-33.9224	
003	Edwin Street	Westbound	Good	Parking (Disability User Limitation)					Right		R5-1-3 (R)	151.1594	-33.9226	
004	Edwin Street	Westbound	Good	Parking (Disability User Limitation)					Left		R5-1-3 (L)	151.1593	-33.9226	
005	Edwin Street	Westbound	dalised/Graffitied	No Stopping					Right		R5-400 (R)	151.1592	-33.9227	
006	Edwin Street	Eastbound	Good	No Stopping					Left		R5-400 (L)	151.1592	-33.9227	
007	Edwin Street	Eastbound	Good	No Stopping					Right		R5-400 (R)	151.1589	-33.9228	
008	Edwin Street	Westbound	Good	No Stopping					Left		R5-400 (L)	151.1590	-33.9229	
001	Farrow Lane	Northbound	Good	No Parking					Both		R5-40 (LR)	151.1617	-33.9233	
002	Farrow Lane	Northbound	Good	No Parking					Both		R5-40 (LR)	151.1617	-33.9233	
003	Farrow Lane	Northbound	Good	No Parking					Both		R5-40 (LR)	151.1616	-33.9231	
004	Farrow Lane	Southbound	Good	No Parking					Right		R5-40 (R)	151.1613	-33.9229	
005	Farrow Lane	Northbound	Good	No Parking					Both		R5-40 (LR)	151.1615	-33.9230	
001	Foreman Street	Southbound	Good	No Stopping					Left		R5-400 (L)	151.1635	-33.9221	
002	Foreman Street	Southbound	Good	No Stopping					Right		R5-400 (R)	151.1636	-33.9221	
003	Foreman Street	Southbound	Good	No Parking					Left		R5-40 (L)	151.1636	-33.9221	
004	Foreman Street	Southbound	Good	No Parking					Right		R5-40 (R)	151.1635	-33.9220	
005	Foreman Street	Southbound	Good	Parking (Disability User Limitation)					Right		R5-1-3 (R)	151.1630	-33.9215	
006	Foreman Street	Southbound	Good	Parking (Disability User Limitation)					Left		R5-1-3 (L)	151.1629	-33.9215	
008	Foreman Street	Southbound	Good	No Stopping					Left		R5-400 (L)	151.1621	-33.9207	
009	Foreman Street	Southbound	Faded	No Parking	8am -930am	School Days	230pm - 4pm	School Days	Right		R5-41 (R)	151.1621	-33.9207	
010	Foreman Street	Southbound	Good	Drop-Off and Pick-up Only								151.1621	-33.9207	Tag Plate
011	Foreman Street	Southbound	Faded	No Parking	8am - 930am	School Days	230pm - 4pm	School Days	Left		R5-41 (L)	151.1619	-33.9205	
012	Foreman Street	Southbound	Good	Drop-Off and Pick-up Only								151.1619	-33.9205	Tag Plate
013	Foreman Street	Southbound	Good	No Stopping					Right		R5-400 (R)	151.1616	-33.9202	
001	Hart Street	Northbound	Good	No Stopping					Right		R5-400 (R)	151.1603	-33.9255	
002	Hart Street	Southbound	Good	No Stopping					Left		R5-400 (L)	151.1604	-33.9254	
003	Hart Street	Southbound	Good	No Stopping					Left		R5-400 (L)	151.1604	-33.9254	Sign on wall
001	Holbeach Avenue	Southbound	Good	No Stopping					Left		R5-400 (L)	151.1588	-33.9270	
002	Holbeach Avenue	Southbound	Good	No Stopping					Left		R5-400 (L)	151.1598	-33.9283	
003	Holbeach Avenue	Southbound	Good	No Parking					Right		R5-40 (R)	151.1598	-33.9283	
004	Holbeach Avenue	Northbound	Good	No Parking					Left		R5-40 (L)	151.1597	-33.9283	
005	Holbeach Avenue	Northbound	Good	No Stopping					Right		R5-400 (R)	151.1597	-33.9283	
006	Holbeach Avenue	Southbound	Damaged	No Stopping					Right		R5-400 (R)	151.1595	-33.9279	Signpost fallen
007	Holbeach Avenue	Northbound	Good	No Stopping					Left		R5-400 (L)	151.1594	-33.9280	
008	Holbeach Avenue	Northbound	Good	No Stopping					Right		R5-400 (R)	151.1589	-33.9274	
009	Holbeach Avenue	Eastbound	Good	No Stopping					Left		R5-400 (L)	151.1598	-33.9280	
010	Holbeach Avenue	Eastbound	Good	Bus Zone					Right		R5-20	151.1598	-33.9280	
011	Holbeach Avenue	Eastbound	Good	Bus Zone					Left		R5-20	151.1600	-33.9277	
012	Holbeach Avenue	Westbound	Good	No Stopping					Right		R5-400 (R)	151.1600	-33.9279	
013	Holbeach Avenue	Westbound	Good	No Parking					Left		R5-40 (L)	151.1600	-33.9279	
014	Holbeach Avenue	Eastbound	dalised/Graffitied	No Parking Across Entrance Gate							Custom	151.1603	-33.9276	Sign on Entrance Gate, No Arrows
015	Holbeach Avenue	Eastbound	Good	No Parking					Both		R5-40 (LR)	151.1605	-33.9274	
016	Holbeach Avenue	Westbound	Good	No Parking					Both		R5-40 (LR)	151.1608	-33.9273	
017	Holbeach Avenue	Westbound	Good	No Parking					Both		R5-40 (LR)	151.1611	-33.9273	
018	Holbeach Avenue	Southbound	Good	No Parking					Both		R5-40 (LR)	151.1613	-33.9274	
019	Holbeach Avenue	Northbound	Good	No Parking					Both		R5-40 (LR)	151.1614	-33.9276	
001	School Lane	Westbound	Good	No Parking					Left		R5-40 (L)	151.1622	-33.9209	
002	School Lane	Eastbound	Good	No Parking					Right		R5-40 (R)	151.1622	-33.9208	
003	School Lane	Eastbound	Good	No Stopping					Left		R5-400 (L)	151.1609	-33.9218	
004	School Lane	Westbound	Faded	No Parking					Right		R5-40 (R)	151.1609	-33.9218	
005	School Lane	Eastbound	dalised/Graffitied	No Stopping					Left		R5-400 (L)	151.1617	-33.9212	
001	Smith Street	Northbound	Good	No Parking					Left		R5-40 (L)	151.1644	-33.9250	
002	Smith Street	Northbound	dalised/Graffitied	No Parking					Both		R5-40 (LR)	151.1647	-33.9252	
003	Smith Street	Southbound	Good	No Parking					Both		R5-40 (LR)	151.1647	-33.9250	
004	Smith Street	Southbound	Good	No Parking					Right		R5-40 (R)	151.1643	-33.9248	
005	Smith Street	Northbound	Faded	No Parking					Right	Tree	R5-40 (R)	151.1627	-33.9238	
007	Smith Street	Northbound	Faded	No Parking					Both		R5-40 (LR)	151.1626	-33.9237	
008	Smith Street	Northbound	Faded	No Parking					Left		R5-40 (L)	151.1625	-33.9236	
009	Smith Street	Northbound	Good	No Stopping					Right		R5-400 (R)	151.1625	-33.9236	
001	Stanley Street	Northbound	Good	No Parking					Left		R5-40 (L)	151.1611	-33.9237	
002	Stanley Street	Northbound	Good	No Stopping					Right		R5-400 (R)	151.1598	-33.9224	
003	Stanley Street	Southbound	Good	No Stopping					Left		R5-400 (L)	151.1598	-33.9224	
004	Stanley Street	Southbound	dalised/Graffitied	No Parking					Right		R5-40 (R)	151.1611	-33.9237	
001	Station Street	Southbound	Good	Parking (Disability User Limitation)					Left		R5-1-3 (L)	151.1609	-33.9266	
002	Station Street	Southbound	Good	Parking (Disability User Limitation)					Right		R5-1-3 (R)	151.1608	-33.9266	
003	Station Street	Northbound	Good	Parking (Disability User Limitation)					Right		R5-1-3 (R)	151.1601	-33.9261	
004	Station Street	Northbound	Good	Parking (Disability User Limitation)					Left		R5-1-3 (L)	151.1601	-33.9261	
005	Station Street	Southbound	Good	No Parking (non-official)							Not an official si	151.1600	-33.9260	Resident Parking Only Keep Driveway Clear
001	Tramway Street	Northbound	Good	No Stopping					Left		R5-400 (L)	151.1589	-33.9227	
002	Tramway Street	Southbound	Good	No Stopping					Right		R5-400 (R)	151.1590	-33.9227	

Number	Street	Direction of Traffic	Condition	Restrictions	Time_1	Day_1	Time_2	Day_2	Direction of Arrow	Obstruction	Sign Code	x	y	Other
003	Tramway Street	Northbound	Good	No Stopping					Right		R5-400 (R)	151.1585	-33.9223	
004	Tramway Street	Southbound	Good	No Stopping					Left		R5-400 (L)	151.1586	-33.9222	
005	Tramway Street	Northbound	Good	No Parking					Left		R5-40 (L)	151.1593	-33.9231	Sign on fence
006	Tramway Street	Northbound	Good	No Parking					Right	Tree	R5-40 (R)	151.1593	-33.9232	Sign on fence
007	Tramway Street	Northbound	Good	No Parking					Left		R5-40 (L)	151.1596	-33.9233	
008	Tramway Street	Northbound	Good	No Stopping					Right	Tree	R5-400 (R)	151.1598	-33.9234	
001	Union Street	Northbound	dalised/Graffitied	No Stopping					Left		R5-400 (L)	151.1622	-33.9233	
002	Union Street	Northbound	Good	1P	830am - 6pm	Mon-Fri	830am - 1230pm	Sat	Right		R5-1-1 (R)	151.1622	-33.9233	
003	Union Street	Northbound	Good	No Parking					Both		R5-40 (LR)	151.1623	-33.9233	
004	Union Street	Northbound	dalised/Graffitied	No Parking					Both		R5-40 (LR)	151.1622	-33.9231	
005	Union Street	Northbound	Good	1P	830am - 6pm	Mon-Fri	830am - 1230pm	Sat	Left		R5-1-1 (L)	151.1621	-33.9232	
006	Union Street	Northbound	Faded	No Parking					Right		R5-40 (R)	151.1621	-33.9232	
007	Union Street	Northbound	Damaged	No Parking					Both		R5-40 (LR)	151.1621	-33.9231	
008	Union Street	Northbound	Faded	No Stopping					Right		R5-400 (R)	151.1607	-33.9218	
009	Union Street	Northbound	Good	No Stopping					Left		R5-400 (L)	151.1604	-33.9215	
010	Union Street	Northbound	Good	No Parking					Right		R5-40 (R)	151.1601	-33.9212	
011	Union Street	Northbound	Good	No Parking					Left		R5-40 (L)	151.1601	-33.9212	
012	Union Street	Northbound	Good	No Stopping					Right		R5-400 (R)	151.1601	-33.9212	
013	Union Street	Northbound	Good	No Stopping					Right		R5-400 (R)	151.1605	-33.9215	
014	Union Street	Northbound	Good	No Stopping					Both		R5-400 (LR)	151.1606	-33.9217	
015	Union Street	Northbound	Good	No Stopping					Both		R5-400 (LR)	151.1608	-33.9218	
016	Union Street	Northbound	Good	No Stopping					Left		R5-400 (L)	151.1609	-33.9219	
017	Union Street	Northbound	Good	Parking (Disability User Limitation)					Right		R5-1-3 (R)	151.1616	-33.9225	
018	Union Street	Northbound	Faded	Parking (Disability User Limitation)					Left		R5-1-3 (L)	151.1616	-33.9226	
001	Wentworth Street	Northbound	Good	Parking (Disability User Limitation)					Right		R5-1-3 (R)	151.1626	-33.9262	
002	Wentworth Street	Northbound	Good	Parking (Disability User Limitation)					Left		R5-1-3 (L)	151.1625	-33.9262	
001	Zuttion Lane	Eastbound	Good	No Stopping					Right		R5-400 (R)	151.1619	-33.9232	
002	Zuttion Lane	Eastbound	Good	No Parking					Left		R5-40 (L)	151.1619	-33.9232	
003	Zuttion Lane	Westbound	Faded	No Stopping					Left		R5-400 (L)	151.1620	-33.9232	
004	Zuttion Lane	Westbound	Faded	No Parking					Right		R5-40 (R)	151.1620	-33.9232	
005	Zuttion Lane	Westbound	Faded	No Parking					Both		R5-40 (LR)	151.1617	-33.9234	
006	Zuttion Lane	Eastbound	Good	No Parking					Both		R5-40 (LR)	151.1615	-33.9235	
007	Zuttion Lane	Westbound	Good	No Parking					Both		R5-40 (LR)	151.1615	-33.9236	
008	Zuttion Lane	Eastbound	Good	No Parking					Both		R5-40 (LR)	151.1613	-33.9236	
009	Zuttion Lane	Eastbound	Good	No Parking					Both		R5-40 (LR)	151.1611	-33.9239	
010	Zuttion Lane	Westbound	Good	No Parking					Left		R5-40 (L)	151.1611	-33.9239	Sign on wall



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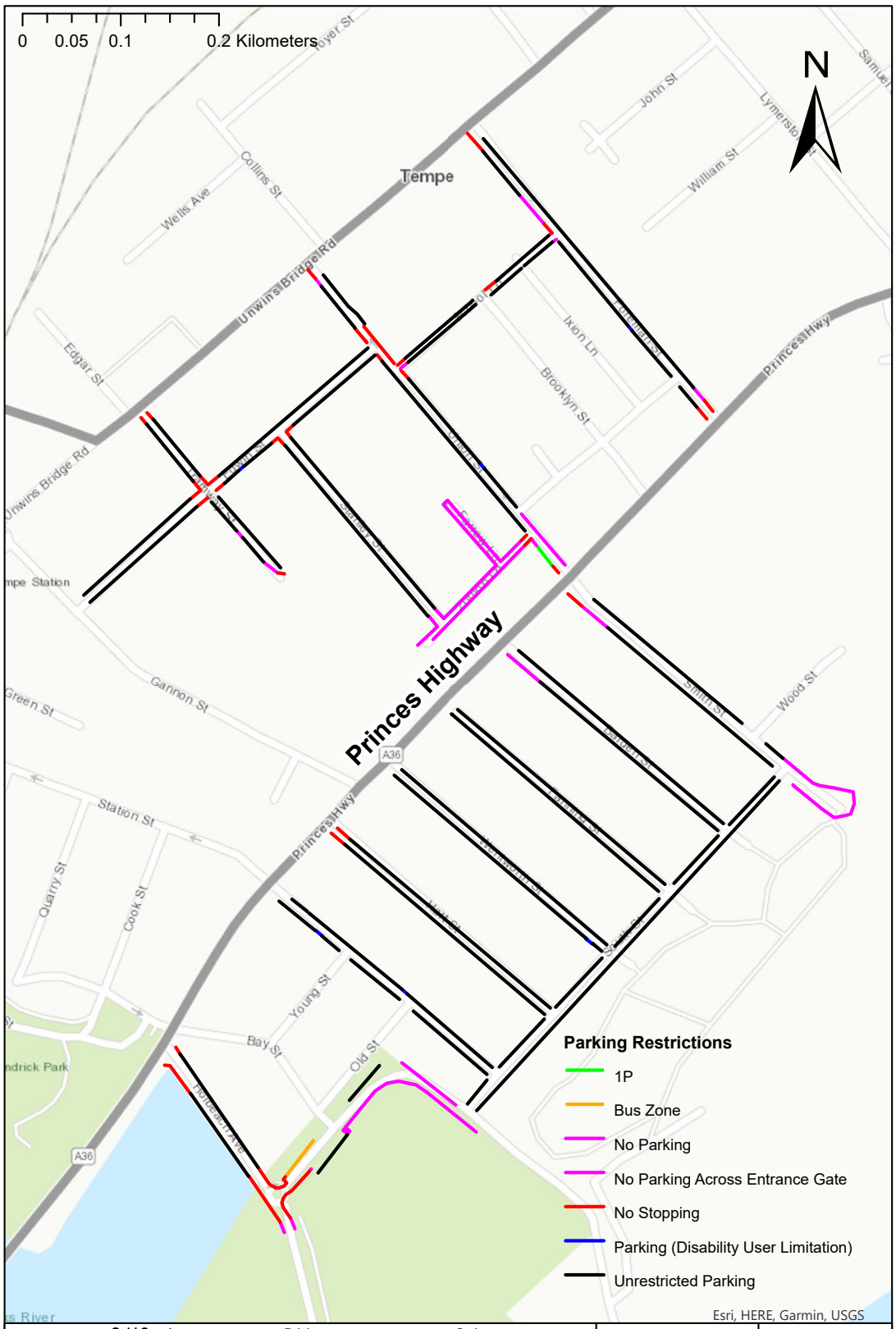
Title:
Tempe South LATM Study
Parking Signs

Project Number: P4533
Date: 16/09/2020
Scale: 1:5000



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Title: Tempe South LATM Study Parking Restrictions

Project Number: P4533
Date: 16/09/2020
Scale: 1:5000

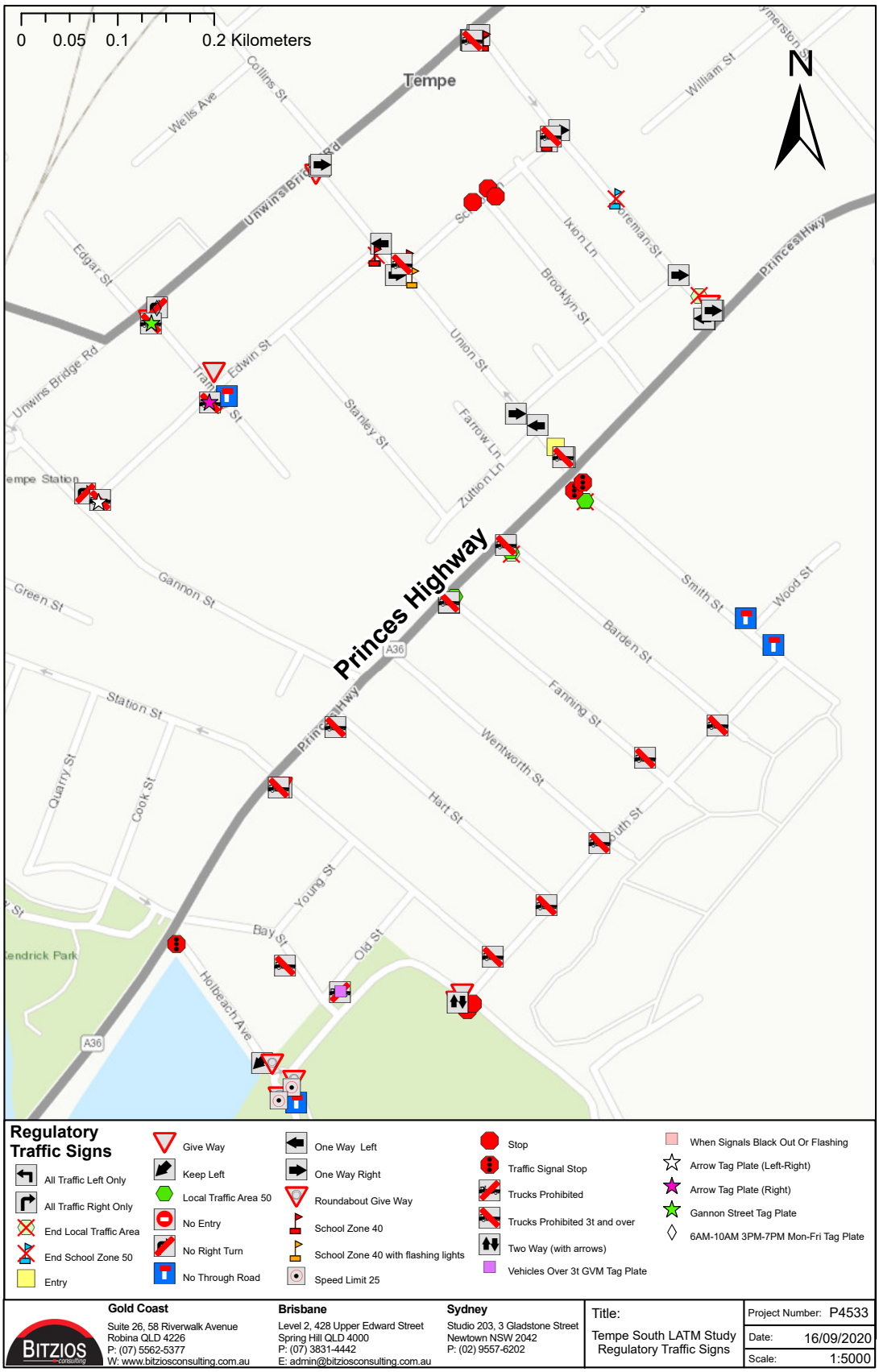
P4533 Tempe South LATM Study

Traffic Signs - Site Audit

Number	Street	Sign	Direction	Condition	Obstruction	Code	x	y	Comments
001	Barden Street	Trucks Prohibited 3t and over	Northbound	Good		R6-222	151.1637	-33.9254	
002	Barden Street	End Local Traffic Area	Northbound	Vandalised/Graffitied		R4-241	151.1618	-33.9240	
003	Barden Street	Local Traffic Area 50	Southbound	Vandalised/Graffitied		R4-240 (50 km/h)	151.1618	-33.9240	
004	Barden Street	Trucks Prohibited 3t and over	Southbound	Vandalised/Graffitied		R6-222	151.1618	-33.9240	
005	Bay Street	Trucks Prohibited 3t and over	Northbound	Good		R6-222	151.1597	-33.9272	
006	Brooklyn Lane	One Way Right	Eastbound	Faded		R2-2 (R)	151.1634	-33.9219	At Foreman Street
007	Brooklyn Lane	One Way Right	Westbound	Vandalised/Graffitied		R2-2 (R)	151.1619	-33.9230	At Union Street
008	Edwin Street	Speed Hump	Eastbound	Good		W5-10	151.1599	-33.9221	
009	Edwin Street	15 km/h Tag Plate	Eastbound	Vandalised/Graffitied		W8-2	151.1599	-33.9221	
010	Edwin Street	Speed Hump Ahead	Westbound	Good		W3-4	151.1606	-33.9217	
011	Edwin Street	End School Zone 50	Westbound	Good		R4-231	151.1606	-33.9217	
012	Edwin Street	One Way Left	Eastbound	Good		R2-2 (L)	151.1606	-33.9216	At Union Street
013	Edwin Street	Pedestrian Crossing Left	Eastbound	Good		W6-2-1	151.1606	-33.9217	
014	Edwin Street	School Zone 40	Eastbound	Good		R4-230	151.1606	-33.9217	
015	Edwin Street	Speed Hump	Westbound	Good	Tree	W5-10	151.1587	-33.9231	
016	Edwin Street	15 km/h Tag Plate	Westbound		Tree	W8-2	151.1587	-33.9231	
017	Edwin Street	Speed Hump	Eastbound	Good	Tree	W5-10	151.1585	-33.9231	
018	Edwin Street	15 km/h Tag Plate	Eastbound	Good	Tree	W8-2	151.1585	-33.9231	
019	Edwin Street	Speed Hump Ahead	Eastbound	Good		W3-4	151.1580	-33.9235	
020	Edwin Street	Stop	Westbound	Vandalised/Graffitied		R1-1	151.1580	-33.9236	
021	Edwin Street	Trucks Prohibited 3t and over	Eastbound	Good		R6-222	151.1580	-33.9236	
022	Edwin Street	Arrow Tag Plate (Left-Right)	Westbound	Good		W8-245 (LR)	151.1580	-33.9236	Non-standard design
023	Fanning Street	Trucks Prohibited 3t and over	Northbound	Good		R6-222	151.1631	-33.9256	
024	Fanning Street	All Traffic Left Only	Northbound	Good		R2-14	151.1612	-33.9244	
025	Fanning Street	Trucks Prohibited 3t and over	Southbound	Good		R6-222	151.1612	-33.9244	
026	Fanning Street	Local Traffic Area 50	Southbound	Faded		R4-240 (50 km/h)	151.1613	-33.9244	
027	Foreman Street	No Entry	Northbound	Good		R2-4n	151.1636	-33.9222	
028	Foreman Street	No Entry	Northbound	Good		R2-4n	151.1637	-33.9222	
029	Foreman Street	Give Way	Southbound	Good		R1-2	151.1637	-33.9221	
030	Foreman Street	Hazard Warning Marker	Southbound	Vandalised/Graffitied		T5-5	151.1636	-33.9221	
031	Foreman Street	Hazard Warning Marker	Southbound	Vandalised/Graffitied		T5-5	151.1636	-33.9222	
032	Foreman Street	End Local Traffic Area	Southbound	Good		R4-241	151.1636	-33.9220	
033	Foreman Street	Speed Hump	Southbound	Good		W5-10	151.1632	-33.9218	
034	Foreman Street	15 km/h Tag Plate	Southbound	Good		W8-2	151.1632	-33.9218	
035	Foreman Street	End School Zone 50	Southbound	Good		R4-231	151.1628	-33.9213	Sign facing perpendicular to road
036	Foreman Street	Speed Hump	Southbound	Faded		W5-10	151.1626	-33.9211	
037	Foreman Street	15 km/h Tag Plate	Southbound	Faded		W8-2	151.1626	-33.9211	
038	Foreman Street	Speed Hump	Southbound	Good		W5-10	151.1619	-33.9204	
039	Foreman Street	15 km/h Tag Plate	Southbound	Good		W8-2	151.1620	-33.9204	Sign loose/slanted
040	Foreman Street	Speed Hump Ahead	Southbound	Damaged		W3-4	151.1618	-33.9203	
041	Foreman Street	School Zone 40	Southbound	Good		R4-230	151.1616	-33.9201	Signpost bent
042	Foreman Street	Speed Hump	Southbound	Good		W5-10	151.1616	-33.9201	
043	Foreman Street	25 km/h Tag Plate	Southbound	Good		W8-2	151.1615	-33.9200	
044	Foreman Street	Speed Hump	Southbound	Good		W5-10	151.1615	-33.9201	
045	Foreman Street	25 km/h Tag Plate	Southbound	Good		W8-2	151.1615	-33.9201	
046	Foreman Street	Trucks Prohibited 3t and over	Southbound	Good		R6-222	151.1615	-33.9201	
047	Gannon Street	No Right Turn	Northbound	Good		R2-6 (R)	151.1579	-33.9236	At Edwin Street
048	Hart Street	Trucks Prohibited 3t and over	Southbound	Damaged		R6-222	151.1602	-33.9254	
049	Hart Street	Trucks Prohibited 3t and over	Northbound	Good		R6-222	151.1622	-33.9268	
050	Holbeach Avenue	Roundabout Warning	Southbound	Good		W2-7	151.1590	-33.9273	
051	Holbeach Avenue	Pedestrian Warning	Southbound	Good		W6-1	151.1592	-33.9275	Pairs with "Refuse Island" Tag Plate
052	Holbeach Avenue	Refuge Island Tag Plate	Southbound	Good		W8-211	151.1592	-33.9275	Pairs with "Pedestrian" Warning Symbol Sign
053	Holbeach Avenue	Keep Left	Southbound	Good		R2-3	151.1595	-33.9280	On Pedestrian Refuge
054	Holbeach Avenue	Roundabout Give Way	Southbound	Good		R1-13	151.1596	-33.9280	
055	Holbeach Avenue	Speed Limit 25	Southbound	Good		R4-1	151.1598	-33.9282	
056	Holbeach Avenue	Roundabout Give Way	Northbound	Good		R1-13	151.1597	-33.9282	
057	Holbeach Avenue	No Through Road	Southbound	Good		G9-18	151.1598	-33.9283	
058	Holbeach Avenue	Hazard Warning Marker	Northbound	Vandalised/Graffitied		T5-5	151.1597	-33.9283	
059	Holbeach Avenue	Speed Limit 25	Southbound	Good	Tree	R4-1	151.1597	-33.9283	
060	Holbeach Avenue	Traffic Signal Stop	Northbound	Good		R1-4n	151.1587	-33.9271	

Number	Street	Sign	Direction	Condition	Obstruction	Code	x	y	Comments
061	Holbeach Avenue	Stop	Northbound	Good		R1-1	151.1614	-33.9276	
062	Holbeach Avenue	Stop	Northbound	Good		R1-1	151.1615	-33.9275	
063	Holbeach Avenue	Roundabout Give Way	Westbound	Good		R1-13	151.1598	-33.9281	
064	Holbeach Avenue	Roundabout Warning	Westbound	Good		W2-7	151.1605	-33.9274	
065	Holbeach Avenue	Give Way	Southbound	Faded		R1-2	151.1613	-33.9275	
066	Holbeach Avenue	Two Way (with arrows)	Northbound	Good		R2-223	151.1613	-33.9275	
067	Holbeach Avenue	Give Way	Southbound	Good		R1-2	151.1614	-33.9274	Signpost slanted
068	Old Street	Trucks Prohibited	Eastbound	Good		R6-10-2	151.1602	-33.9274	Pairs with "Vehicles over 3t GVM" Sign
069	Old Street	Vehicles Over 3t GVM Tag Plate	Eastbound	Good	"Trucks Prohibited" Sign	R9-221	151.1602	-33.9274	Pairs with "Trucks Prohibited" Sign
070	Princes Highway	One Way Left	Eastbound	Faded		R2-2 (L)	151.1623	-33.9233	At Union Street
071	Princes Highway	One Way Left	Westbound	Good		R2-2 (L)	151.1636	-33.9222	At Foreman Street
072	Princes Highway	One Way Right	Eastbound	Vandalised/Graffitied		R2-2 (R)	151.1637	-33.9222	At Foreman Street
073	School Lane	One Way Right	Westbound	Good		R2-2 (R)	151.1607	-33.9219	At Union Street, signpost slanted
074	School Lane	One Way Right	Eastbound	Good		R2-2 (R)	151.1623	-33.9208	At Foreman Street
075	School Lane	Trucks Prohibited 3t and over	Westbound	Good		R6-222	151.1622	-33.9208	
076	School Lane	School Zone 40	Westbound	Faded		R4-230	151.1622	-33.9208	
077	School Lane	All Traffic Right Only	Eastbound	Vandalised/Graffitied		R2-14	151.1622	-33.9209	
078	School Lane	Trucks Prohibited 3t and over	Eastbound	Good		R6-222	151.1608	-33.9218	
079	School Lane	School Zone 40	Eastbound	Good	Tree	R4-230	151.1609	-33.9218	
080	School Lane	Stop	Eastbound	Good		R1-1	151.1615	-33.9213	
081	School Lane	Stop	Westbound	Vandalised/Graffitied		R1-1	151.1616	-33.9212	
082	School Lane	Stop	Westbound	Good		R1-1	151.1617	-33.9213	
083	Smith Street	No Through Road	Southbound	Good		G9-18	151.1643	-33.9248	
084	Smith Street	End Local Traffic Area	Northbound	Good		R4-241	151.1625	-33.9236	
085	Smith Street	Local Traffic Area 50	Southbound	Vandalised/Graffitied		R4-240 (50 km/h)	151.1625	-33.9236	
086	Smith Street	Traffic Signal Stop	Northbound	Good		R1-4n	151.1624	-33.9236	
087	Smith Street	Traffic Signal Stop	Northbound	Good		R1-4n	151.1625	-33.9235	Pairs with "When Signals Black Out Or Flashing" Sign
088	Smith Street	When Signals Black Out Or Flashing Tag Plate	Northbound	Good		R9-201	151.1625	-33.9235	Pairs with Traffic Signal Stop Sign
089	South Street	Speed Hump Ahead	Eastbound	Good		W3-4	151.1615	-33.9274	
090	South Street	10 km/h Tag Plate	Eastbound	Good		W8-2	151.1619	-33.9270	Attached high up on an electric pole
091	South Street	Speed Hump	Westbound	Good		W5-10	151.1620	-33.9269	
092	South Street	15 km/h Tag Plate	Westbound	Good		W8-2	151.1620	-33.9269	
093	South Street	Speed Hump Ahead	Eastbound	Good		W3-4	151.1625	-33.9265	
094	South Street	Speed Hump	Eastbound	Good		W5-10	151.1629	-33.9262	
095	South Street	15 km/h Tag Plate	Eastbound	Good		W8-2	151.1629	-33.9262	
096	South Street	Speed Hump	Westbound	Good	Tree	W5-10	151.1630	-33.9261	
097	South Street	15 km/h Tag Plate	Westbound	Good	Tree	W8-2	151.1630	-33.9261	
098	South Street	Speed Hump	Eastbound	Faded		W5-10	151.1640	-33.9252	
099	South Street	15 km/h Tag Plate	Eastbound	Faded		W8-2	151.1640	-33.9252	
100	South Street	Speed Hump	Westbound	Faded		W5-10	151.1640	-33.9252	Also slightly bent
101	South Street	15 km/h Tag Plate	Westbound	Faded		W8-2	151.1641	-33.9252	
102	South Street	Speed Hump Ahead	Westbound	Vandalised/Graffitied		W3-4	151.1643	-33.9250	
103	Station Street	Trucks Prohibited 3t and over	Northbound	Faded		R6-222	151.1617	-33.9272	
104	Station Street	All Traffic Left Only	Northbound	Good		R2-14	151.1597	-33.9259	
105	Station Street	Give Way	Northbound	Damaged	All Traffic Left Only' sign	R1-2	151.1597	-33.9259	
106	Station Street	Trucks Prohibited 3t and over	Southbound	Vandalised/Graffitied		R6-222	151.1597	-33.9259	
107	Tramway Street	Give Way	Southbound	Good		R1-2	151.1591	-33.9226	
108	Tramway Street	Give Way	Northbound	Good		R1-2	151.1585	-33.9222	
109	Tramway Street	Trucks Prohibited 3t and over	Southbound	Good		R6-222	151.1590	-33.9229	
110	Tramway Street	Arrow Tag Plate (Right)	Southbound	Good		W8-245 (R)	151.1590	-33.9229	Non-standard design
111	Tramway Street	Give Way	Northbound	Faded		R1-2	151.1591	-33.9229	
112	Tramway Street	No Through Road	Southbound	Good		G9-18	151.1592	-33.9228	
113	Union Street	Trucks Prohibited 3t and over	Northbound	Good		R6-222	151.1623	-33.9233	
114	Union Street	Entry	Northbound	Vandalised/Graffitied		Custom	151.1622	-33.9232	Into Private Property (No. 669 Princes Highway), Sign on wall
115	Union Street	Speed Hump	Northbound	Good	Obstructed by trees	W5-10	151.1616	-33.9227	
116	Union Street	15 km/h Tag Plate	Northbound	Faded		W8-2	151.1616	-33.9227	
117	Union Street	Children Crossing	Northbound	Damaged		W6-3	151.1615	-33.9225	Pairs with "School" Warning Sign
118	Union Street	School Tag Plate	Northbound	Damaged		W8-14	151.1615	-33.9225	Pairs with "Children Crossing" Symbol Sign
119	Union Street	Pedestrian Crossing Ahead	Northbound	Good		W6-2	151.1612	-33.9223	
120	Union Street	Pedestrian Crossing Ahead	Northbound	Good		W6-2	151.1607	-33.9218	
121	Union Street	Speed Hump Ahead	Northbound	Good		W3-4	151.1607	-33.9218	
122	Union Street	Hazard Warning Marker	Northbound	Good		T5-5	151.1607	-33.9218	
123	Union Street	Hazard Warning Marker	Northbound	Vandalised/Graffitied		T5-5	151.1607	-33.9218	

Number	Street	Sign	Direction	Condition	Obstruction	Code	x	y	Comments
124	Union Street	Speed Hump	Northbound	Good		W5-10	151.1605	-33.9216	
125	Union Street	25 km/h Tag Plate	Northbound	Good		W8-2	151.1605	-33.9216	
126	Union Street	Pedestrian Crossing	Southbound	Good		R3-1	151.1605	-33.9216	Facing the wrong way (facing north)
127	Union Street	Hazard Warning Marker	Northbound	Good		T5-5	151.1601	-33.9211	
128	Union Street	Speed Hump	Northbound	Good		W5-10	151.1600	-33.9211	
129	Union Street	Pedestrian Warning	Northbound	Good		W6-1	151.1600	-33.9212	
130	Union Street	10 km/h Tag Plate	Northbound	Good		W8-2	151.1601	-33.9212	
131	Union Street	Give Way	Northbound	Good		R1-2	151.1600	-33.9211	
132	Union Street	Hazard Warning Marker	Northbound	Good		T5-5	151.1601	-33.9211	
133	Union Street	Speed Hump	Northbound	Good		W5-10	151.1601	-33.9211	
134	Union Street	Pedestrian Warning	Northbound	Good		W6-1	151.1601	-33.9211	
135	Union Street	10 km/h Tag Plate	Northbound	Good		W8-2	151.1601	-33.9211	
136	Union Street	Pedestrian Crossing	Northbound	Good		R3-1	151.1606	-33.9216	
137	Union Street	Speed Hump	Northbound	Good		W5-10	151.1606	-33.9216	
138	Union Street	25 km/h Tag Plate	Northbound	Vandalised/Graffitied		W8-2	151.1606	-33.9216	
139	Union Street	Hazard Warning Marker	Northbound	Good		T5-5	151.1609	-33.9219	
140	Union Street	School Zone 40 with flashing lights	Northbound	Good		R4-230-1	151.1609	-33.9219	
141	Unwins Bridge Road	One Way Left	Eastbound	Good		R2-2 (L)	151.1600	-33.9211	At Union Street
142	Unwins Bridge Road	One Way Right	Westbound	Faded		R2-2 (R)	151.1601	-33.9210	At Union Street
143	Unwins Bridge Road	One Way Right	Eastbound	Good		R2-2 (R)	151.1615	-33.9200	At Foreman Street
144	Unwins Bridge Road	No Right Turn	Eastbound	Good		R2-6 (R)	151.1615	-33.9200	At Foreman Street
145	Unwins Bridge Road	One Way Left	Westbound	Good		R2-2 (L)	151.1615	-33.9201	At Foreman Street
146	Unwins Bridge Road	No Right Turn	Eastbound	Good		R2-6 (R)	151.1614	-33.9201	At Foreman Street
147	Unwins Bridge Road	No Right Turn	Eastbound	Good		R2-6 (R)	151.1585	-33.9221	At Tramway Street
148	Unwins Bridge Road	6AM-10AM 3PM-7PM Mon-Fri Tag Plate	Eastbound	Good		R9-1-2	151.1585	-33.9221	
149	Unwins Bridge Road	Trucks Prohibited 3t and over	Westbound	Good		R6-222	151.1585	-33.9223	Located at Tramway Street
150	Unwins Bridge Road	Gannon Street Tag Plate	Westbound	Good		Custom	151.1585	-33.9223	Located at Tramway Street
151	Wentworth Street	Trucks Prohibited 3t and over	Northbound	Faded		R6-222	151.1626	-33.9263	
152	Wood Street	No Through Road	Eastbound	Good		G9-18	151.1640	-33.9245	
153	Zuttion Lane	One Way Left	Eastbound	Good		R2-2 (L)	151.1621	-33.9231	At Union Street


0 0.05 0.1 0.2 Kilometers
N
Tempe
Princes Highway
A36
Unwins Bridge Rd
Wells Ave
Collins St
Edgar St
Edwin St
Stanley St
Union St
Brooklyn St
Ixion Ln
Foreman St
William St
Farrow Ln
Zuttion Ln
Garnon St
Green St
Station St
Quarry St
Cook St
Barden St
Fanning St
Wentworth St
Hart St
Young St
Bay St
Old St
Holbeach Ave
Smith St
Wood St
Regulatory Traffic Signs
All Traffic Left Only
All Traffic Right Only
End Local Traffic Area
End School Zone 50
Entry
Give Way
Keep Left
Local Traffic Area 50
No Entry
No Right Turn
No Through Road
One Way Left
One Way Right
Roundabout Give Way
School Zone 40
School Zone 40 with flashing lights
Speed Limit 25
Stop
Traffic Signal Stop
Trucks Prohibited
Trucks Prohibited 3t and over
Two Way (with arrows)
Vehicles Over 3t GVM Tag Plate
When Signals Black Out Or Flashing
Arrow Tag Plate (Left-Right)
Arrow Tag Plate (Right)
Gannon Street Tag Plate
6AM-10AM 3PM-7PM Mon-Fri Tag Plate
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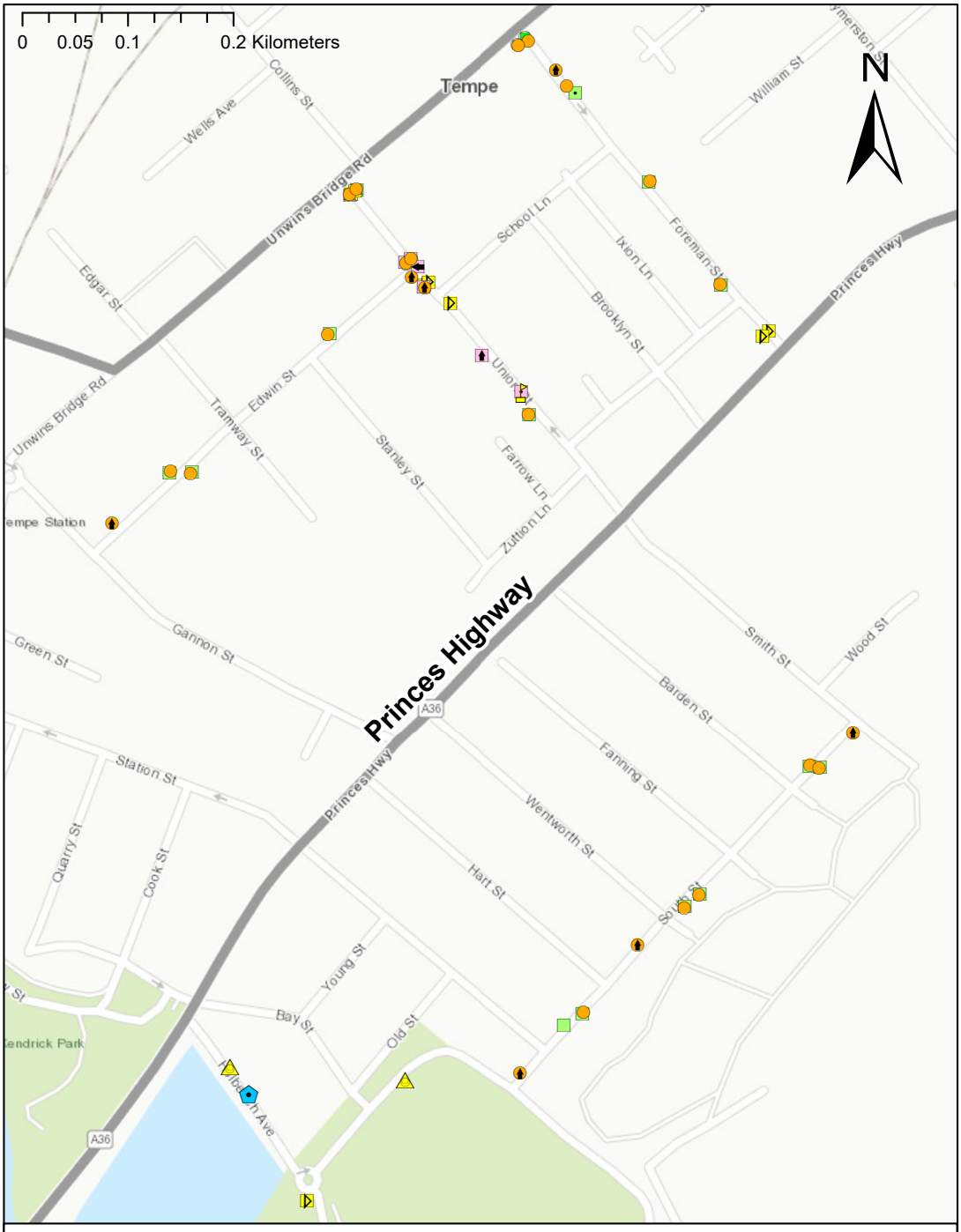
Title:
Tempe South LATM Study
Regulatory Traffic Signs
Project Number: P4533
Date: 16/09/2020
Scale: 1:5000



Warning & Other Traffic Signs

- 10 km/h Tag Plate
- 15 km/h Tag Plate
- 25 km/h Tag Plate
- Children Crossing
- Hazard Warning Marker
- Pedestrian Crossing
- Pedestrian Crossing Ahead
- Pedestrian Crossing Left
- Pedestrian Warning
- Refuge Island Tag Plate
- Roundabout Warning
- School Tag Plate
- Speed Hump
- Speed Hump Ahead

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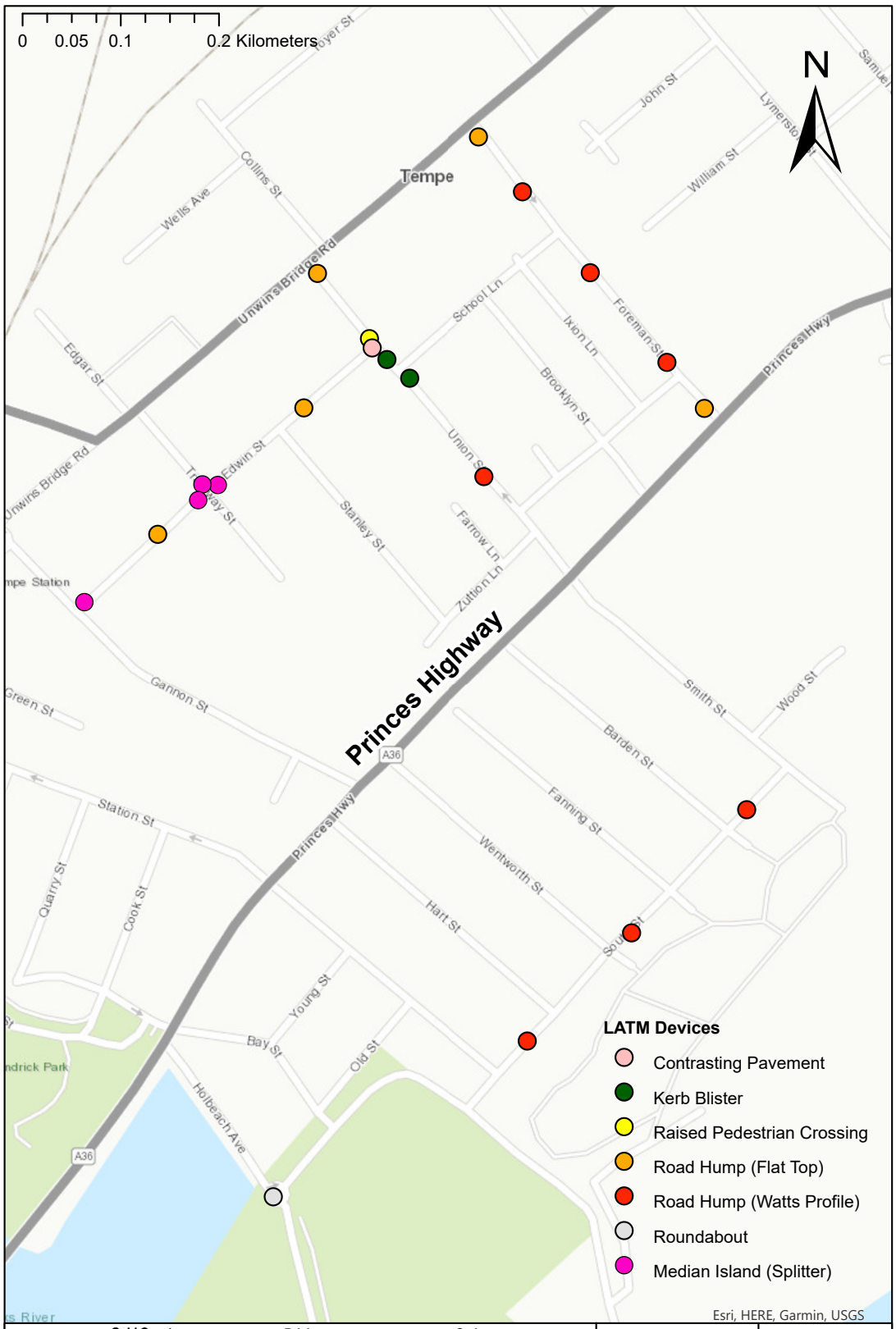
Title:
Tempe South LATM Study
Warning & Other
Traffic Signs

Project Number:	P4533
Date:	16/09/2020
Scale:	1:5000

P4533 Tempe South LATM Study

LATM Devices - Site Audit

Street	Type	Comments	x	y
Edwin Street	Road Hump (Flat Top)	Parking over hump	151.1599	-33.9221
Edwin Street	Contrasting Pavement	Contrasting Pavement	151.1606	-33.9217
Edwin Street	Median Island (Splitter)	Faded linemarking, rumble strips	151.1592	-33.9227
Edwin Street	Road Hump (Flat Top)	Parking over hump	151.1586	-33.9231
Edwin Street	Median Island (Splitter)	Rumble strips	151.1579	-33.9236
Edwin Street	Median Island (Splitter)	Faded linemarking, rumble strips	151.1590	-33.9228
Foreman Street	Road Hump (Flat Top)	With kerb blisters and contrasting pavement	151.1636	-33.9221
Foreman Street	Road Hump (Watts Profile)	Parking over hump	151.1633	-33.9218
Foreman Street	Road Hump (Watts Profile)	Parking over hump	151.1626	-33.9211
Foreman Street	Road Hump (Watts Profile)	Parking over hump	151.1619	-33.9205
Foreman Street	Road Hump (Flat Top)	With kerb blisters and contrasting pavement	151.1615	-33.9201
Holbeach Avenue	Roundabout	With kerb blister at Holbeach Avenue northbound approach	151.1597	-33.9281
South Street	Road Hump (Watts Profile)	Parking over hump	151.1620	-33.9270
South Street	Road Hump (Watts Profile)	Faded line marking	151.1629	-33.9261
South Street	Road Hump (Watts Profile)	Parking over hump	151.1640	-33.9252
Tramway Street	Median Island (Splitter)	Rumble strips	151.1590	-33.9227
Union Street	Road Hump (Watts Profile)	Parking over hump	151.1616	-33.9227
Union Street	Kerb Blister	A pair of kerb blisters with contrasting pavement	151.1607	-33.9218
Union Street	Raised Pedestrian Crossing	Also recorded as Ped facility	151.1605	-33.9216
Union Street	Road Hump (Flat Top)	With kerb blisters	151.1601	-33.9211
Union Street	Kerb Blister	Only one at eastern Side of Union Street	151.1609	-33.9219



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Suite 26, 58 Riverwalk Avenue Robina QLD 4226 P: (07) 5562-5377 W: www.bitziosconsulting.com.au	Level 2, 428 Upper Edward Street Spring Hill QLD 4000 P: (07) 3831-4442 E: admin@bitziosconsulting.com.au	Studio 203, 3 Gladstone Street Newtown NSW 2042 P: (02) 9557-6202	Tempe South LATM Study Existing LATM Devices	Date: 16/09/2020 Scale: 1:5000

P4533 Tempe South LATM Study

Pedestrian Facilities - Site Audit

Street	Type	Comments	x	y
Barden Street	Kerb Ramp		151.1618	-33.9240
Collins Street	Pedestrian Refuge		151.1601	-33.9209
Collins Street	Kerb Ramp		151.1600	-33.9210
Collins Street	Kerb Ramp		151.1601	-33.9209
Edwin Street	Kerb Ramp		151.1606	-33.9217
Edwin Street	Kerb Ramp		151.1605	-33.9217
Edwin Street	Kerb Ramp		151.1579	-33.9236
Edwin Street	Kerb Ramp		151.1580	-33.9237
Fanning Street	Kerb Ramp		151.1612	-33.9244
Foreman Street	Kerb Ramp		151.1636	-33.9222
Foreman Street	Kerb Ramp		151.1614	-33.9201
Foreman Street	Kerb Ramp		151.1615	-33.9200
Foreman Street	Kerb Ramp		151.1637	-33.9222
Hart Street	Kerb Ramp		151.1603	-33.9253
Hart Street	Kerb Ramp		151.1602	-33.9254
Hart Street	Kerb Ramp	No footpath connectivity from northern side of South Street	151.1622	-33.9268
Hart Street	Kerb Ramp	No footpath connectivity onto northern side of South Street	151.1622	-33.9267
Holbeach Avenue	Signalised Pedestrian Crossing		151.1587	-33.9270
Holbeach Avenue	Pedestrian Refuge	In conjunction with Roundabout	151.1596	-33.9280
Holbeach Avenue	Kerb Ramp		151.1598	-33.9281
Holbeach Avenue	Kerb Ramp		151.1598	-33.9281
Holbeach Avenue	Kerb Ramp		151.1596	-33.9280
Holbeach Avenue	Kerb Ramp	Stormwater drain located on kerb ramp	151.1595	-33.9281
Holbeach Avenue	Kerb Ramp	No footpath western side of Holbeach Avenue	151.1598	-33.9280
Holbeach Avenue	Kerb Ramp		151.1587	-33.9270
Holbeach Avenue	Kerb Ramp		151.1587	-33.9270
Princes Highway	Signalised Pedestrian Crossing		151.1586	-33.9270
Princes Highway	Signalised Pedestrian Crossing		151.1613	-33.9243
Princes Highway	Signalised Pedestrian Crossing		151.1623	-33.9235
Princes Highway	Kerb Ramp		151.1624	-33.9235
Princes Highway	Signalised Pedestrian Crossing		151.1624	-33.9234
Princes Highway	Kerb Ramp		151.1625	-33.9234
Princes Highway	Kerb Ramp		151.1624	-33.9233

Street	Type	Comments	x	y
Princes Highway	Kerb Ramp		151.1622	-33.9234
Princes Highway	Kerb Ramp		151.1586	-33.9270
Princes Highway	Kerb Ramp		151.1586	-33.9270
Smith Street	Signalised Pedestrian Crossing		151.1624	-33.9235
Smith Street	Kerb Ramp		151.1624	-33.9235
Smith Street	Kerb Ramp		151.1625	-33.9235
South Street	Kerb Ramp	Only connectivity to southern side of South Street	151.1617	-33.9272
Stanley Street	Kerb Ramp	no connectivity to Eastern Side	151.1597	-33.9224
Tramway Street	Kerb Ramp		151.1591	-33.9227
Tramway Street	Kerb Ramp		151.1590	-33.9228
Tramway Street	Kerb Ramp		151.1584	-33.9222
Tramway Street	Kerb Ramp		151.1585	-33.9222
Tramway Street	Kerb Ramp		151.1592	-33.9228
Tramway Street	Kerb Ramp		151.1591	-33.9229
Union Street	Signalised Pedestrian Crossing		151.1623	-33.9233
Union Street	Pedestrian Crossing	Raised. Also recorded as LATM	151.1605	-33.9216
Union Street	Kerb Ramp		151.1608	-33.9218
Union Street	Kerb Ramp		151.1608	-33.9219
Union Street	Continuous Footpath	Corresponding road hump recorded as LATM	151.1600	-33.9211
Union Street	Kerb Ramp		151.1623	-33.9234
Union Street	Kerb Ramp		151.1623	-33.9233
Unwins Bridge Road	Signalised Pedestrian Crossing	With pedestrian fencing	151.1610	-33.9204
Wentworth Street	Kerb Ramp	No connectivity	151.1627	-33.9263
Wentworth Street	Kerb Ramp		151.1608	-33.9249
Wentworth Street	Kerb Ramp		151.1608	-33.9249
Zuttion Lane	Kerb Ramp	No connectivity to other side as there are no footpaths on Zuitton Lane	151.1613	-33.9237
Zuttion Lane	Kerb Ramp		151.1620	-33.9231
Zuttion Lane	Kerb Ramp		151.1620	-33.9231

P4533 Tempe South LATM Study

Cycling Facilities - Site Audit

Type	Street	Comments	x	y
Route Wayfinding	Holbeach Avenue	"Route L13 Sydenham Green"	151.1588	-33.9270
Shared Path	Holbeach Avenue	Princes Highway to Roundabout western side, sticker on southbound sign	151.1591	-33.9276
Bike On Ramp	Holbeach Avenue	Connects to Shared Path for bikes northbound	151.1589	-33.9273
Route Wayfinding	Holbeach Avenue	Left Arrow	151.1598	-33.9281
Route Wayfinding	Holbeach Avenue	Left Arrow	151.1614	-33.9276
Route Wayfinding	Holbeach Avenue	Right Arrow	151.1598	-33.9281
Signalised Shared Crossing	Princes Highway		151.1624	-33.9234
Cycle Direction	Smith Street	"Use Path", onto path at Princes Highway, shared crossing	151.1625	-33.9236
Signalised Shared Crossing	Smith Street		151.1624	-33.9235
Bicycle Symbol Linemarking	South Street	Faded	151.1615	-33.9274
Route Wayfinding	South Street	Left Arrow and Right Arrow	151.1643	-33.9250

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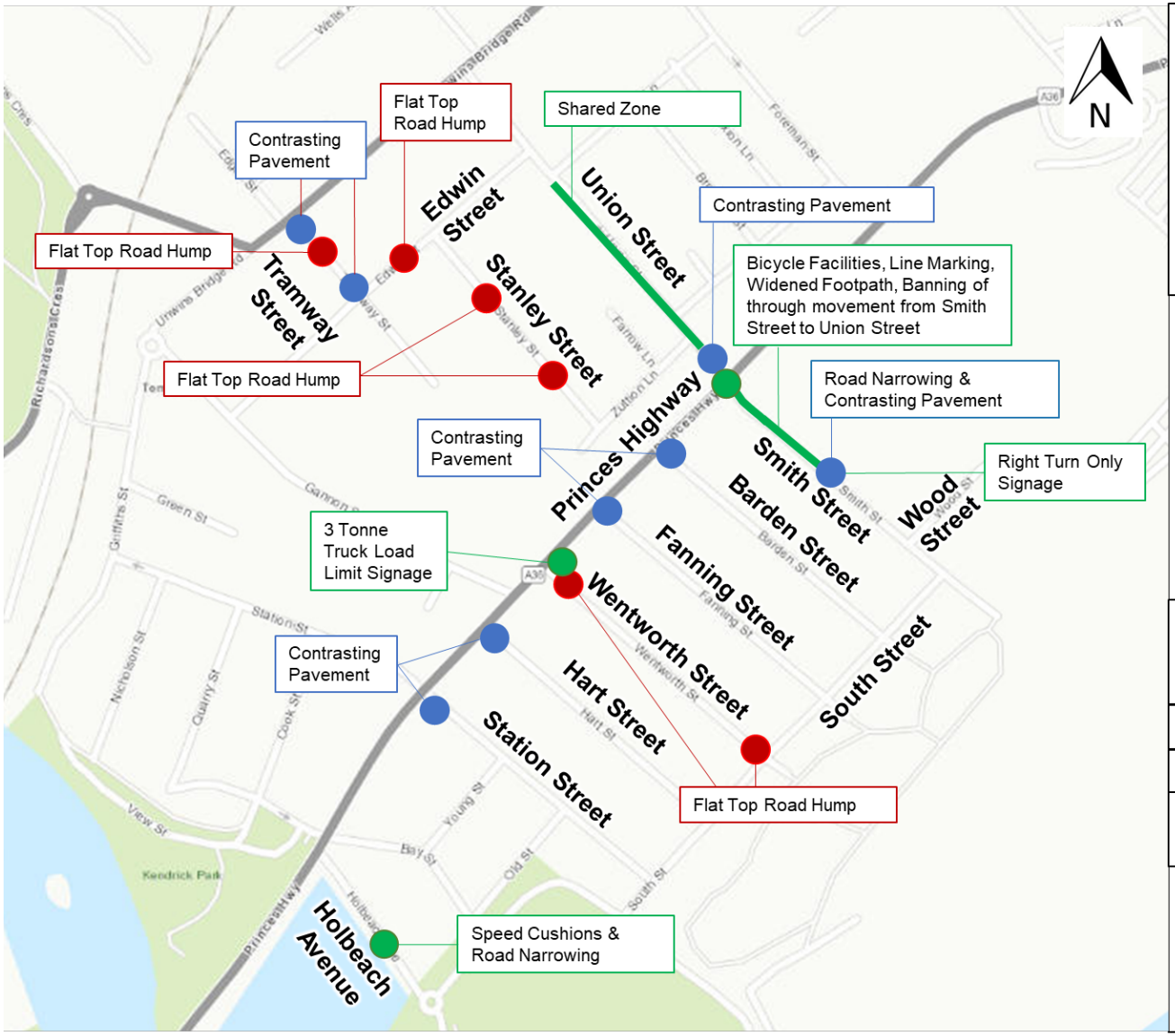
Title:
Tempe South LATM Study
Existing Bicycle Facilities

Project Number: P4533
Date: 16/09/2020
Scale: 1:5000

Appendix D: LATM Treatment Concept Designs



Legend

- Flat Top Road Humps
- Contrasting Pavement Threshold
- Other Types of Treatments

Title:
Proposed LATM Treatments Map

Date: 29/03/2021

Project Number: P4533

Project:
Tempe South LATM Study

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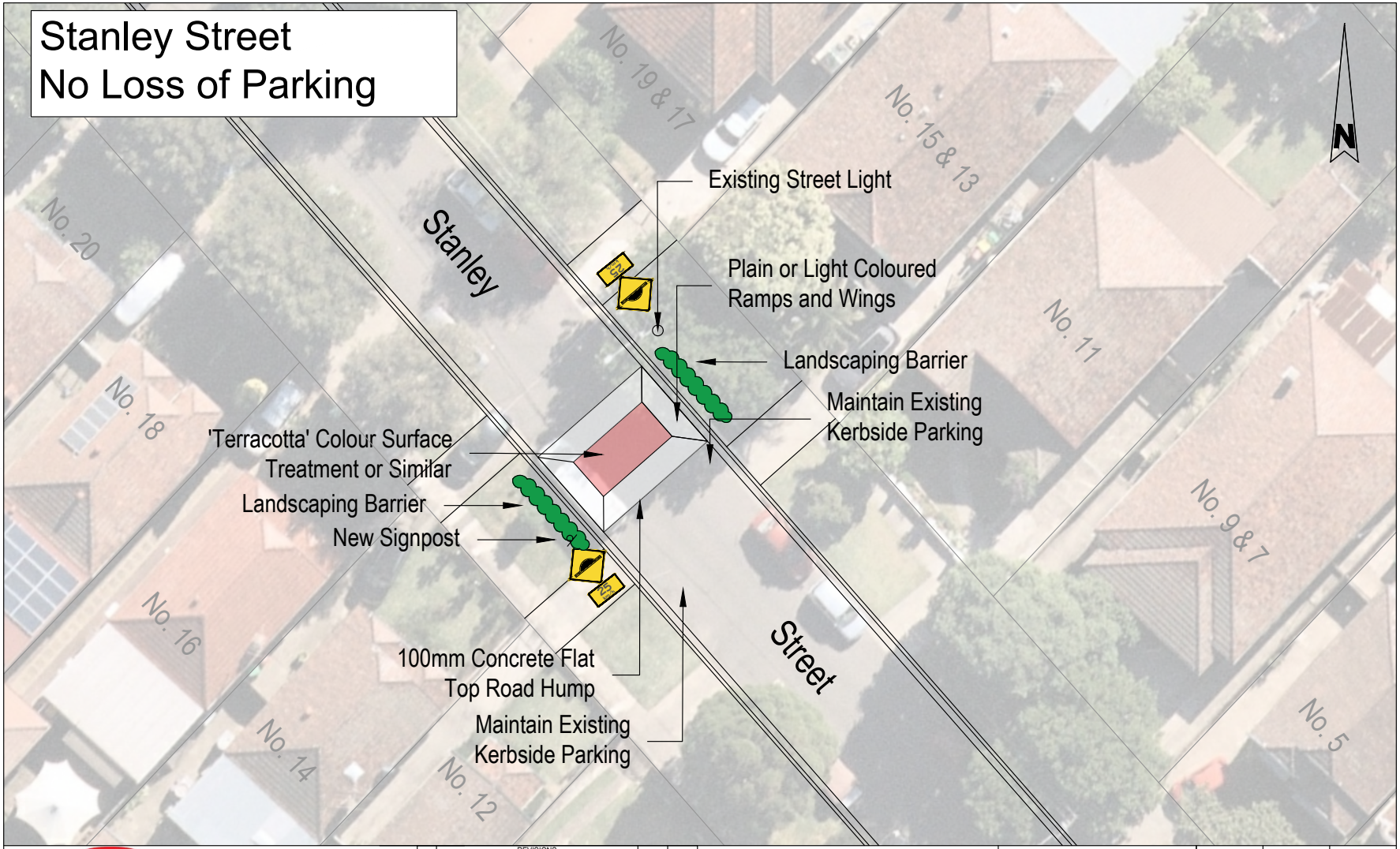

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Stanley Street Option 1 - No. 14 Stanley Street	C.M	30.04.2020
002	NO CHANGES	C.M	19.06.2020
003	NO CHANGES	C.M	03.07.2020
004	Total Number of Spaces Lost	C.M	23.07.2020
005	Landscaping Barrier	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

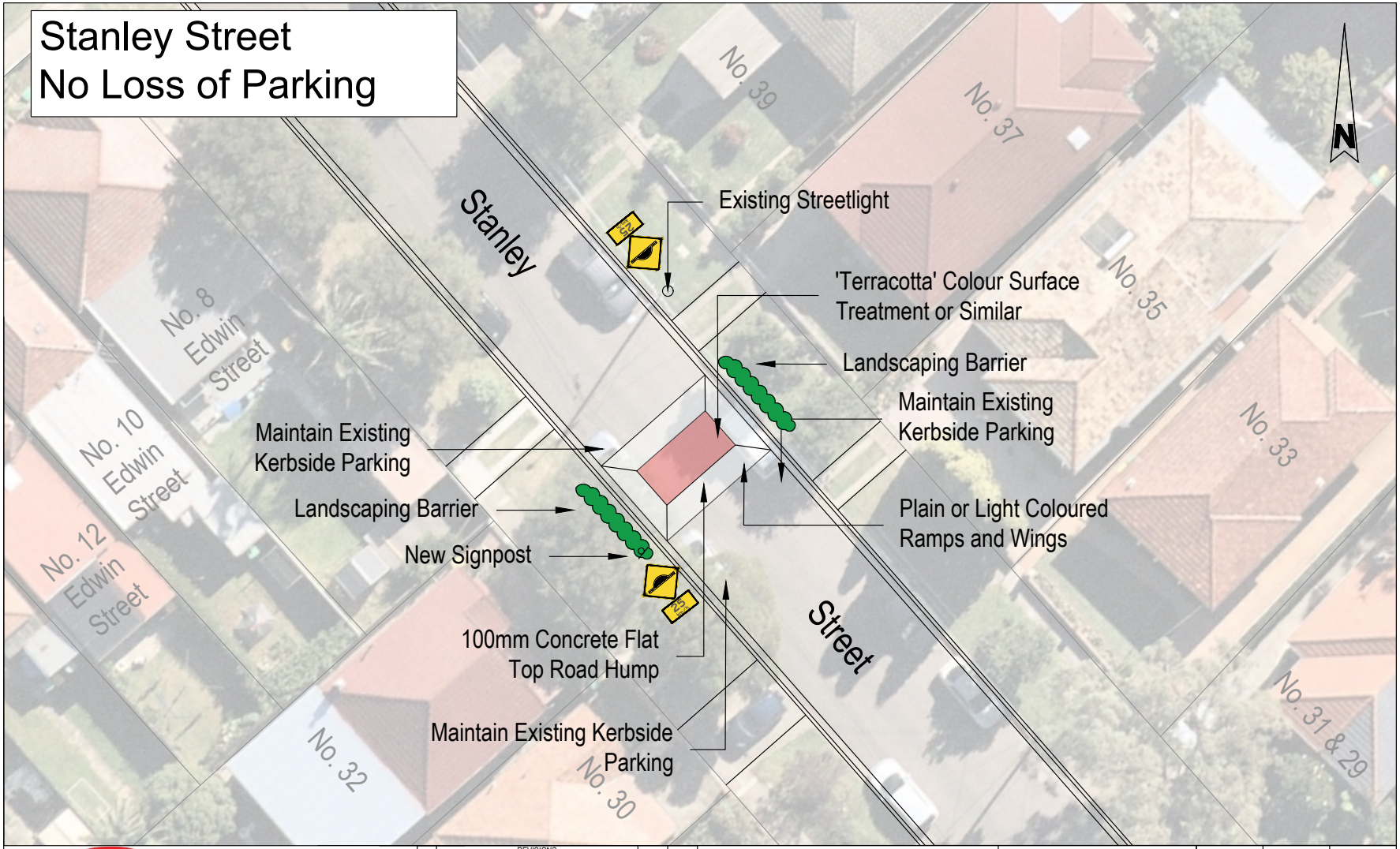
Title: Stanley Street
LATM Treatment
Flat Top Road Hump at No. 14 Stanley Street

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	1	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Stanley Street Option 1 - No. 37 Stanley Street	C.M	30.04.2020
002	NO CHANGES	C.M	19.06.2020
003	NO CHANGES	C.M	03.07.2020
004	Total Number of Spaces Lost	C.M	23.07.2020
005	Landscaping barrier	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

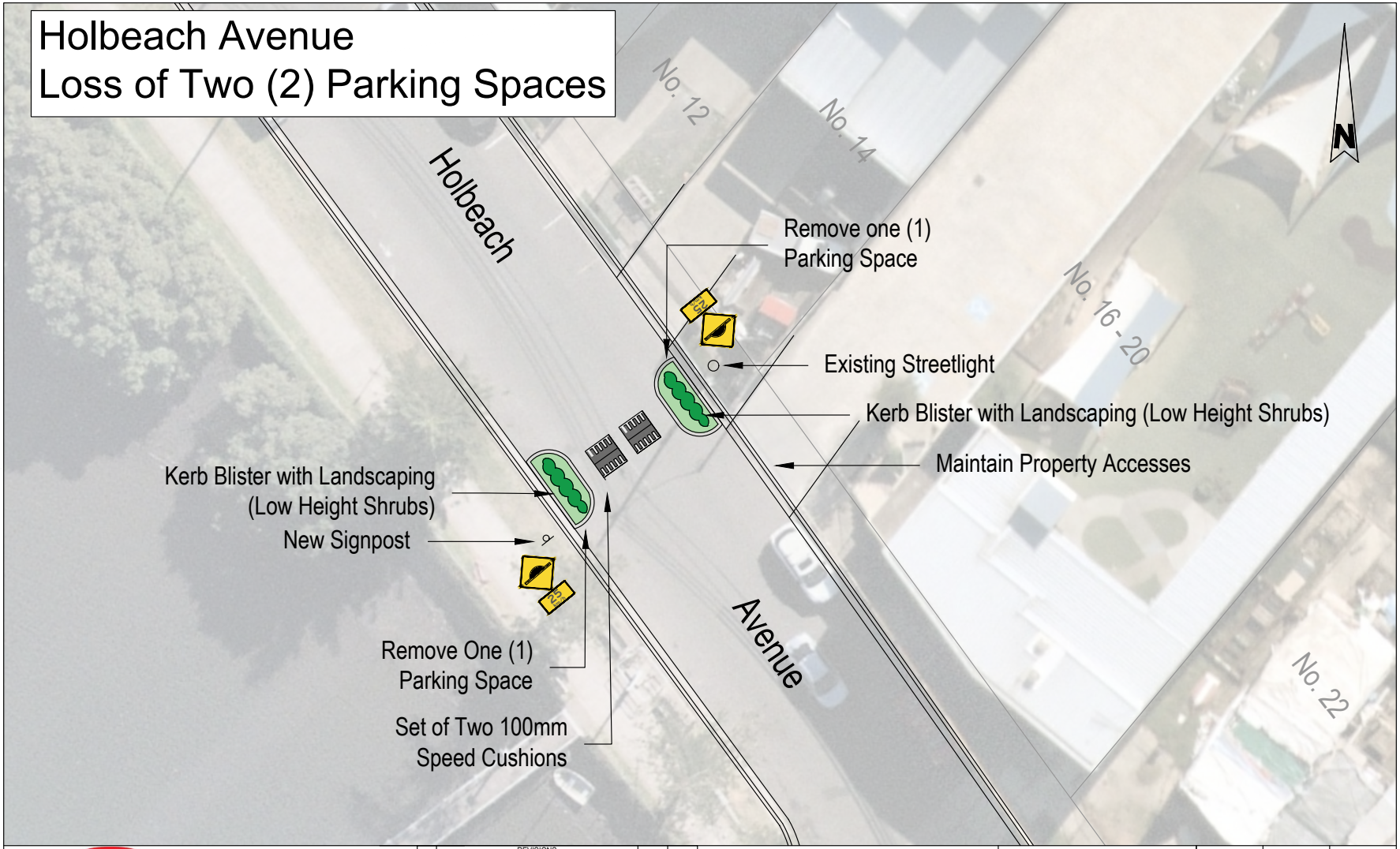
Title: Stanley Street LATM Treatment Flat Top Road Hump at No. 37 Stanley Street

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	2	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Holbeach Avenue Option 2 - No. 14 Holbeach Avenue	C.M	30.04.2020
002	Added Shrubs to Drawing	C.M	19.06.2020
003	NO CHANGES	C.M	03.07.2020
004	Total Number of Spaces Lost	C.M	23.07.2020
005	NO CHANGES	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Project: Tempe South LATM Study

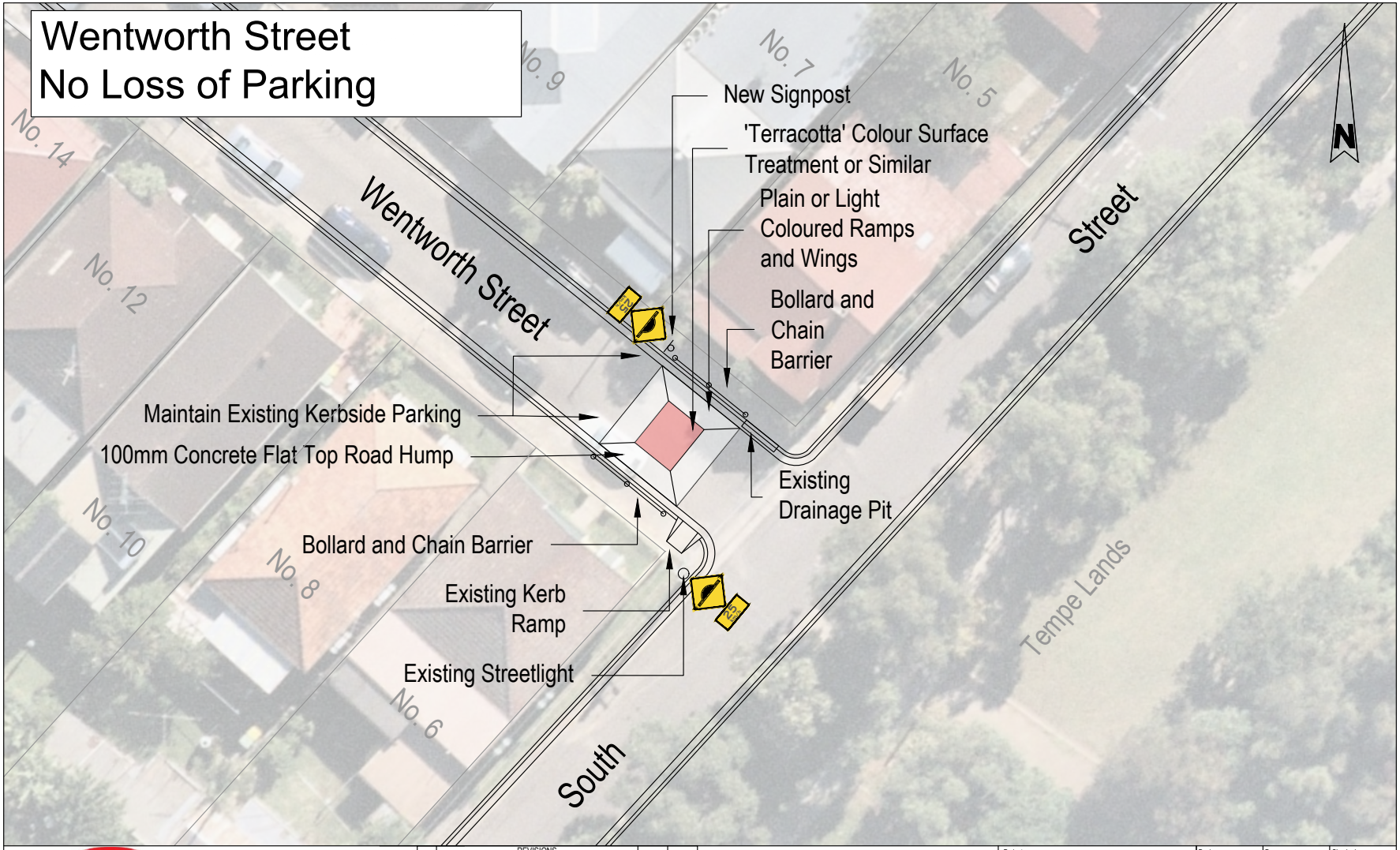
Title: Holbeach Avenue
LATM Treatment
Speed Cushions & Kerb Blisters at No. 14
Holbeach Avenue

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	3	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Wenthworth Street Option 2 - No. 23 Wentworth Street	C.M	30.04.2020
002	Moved to north of South Street	C.M	19.06.2020
003	NO CHANGES	C.M	03.07.2020
004	Total Number of Spaces Lost	C.M	23.07.2020
005	Bollard and Chain Barrier	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

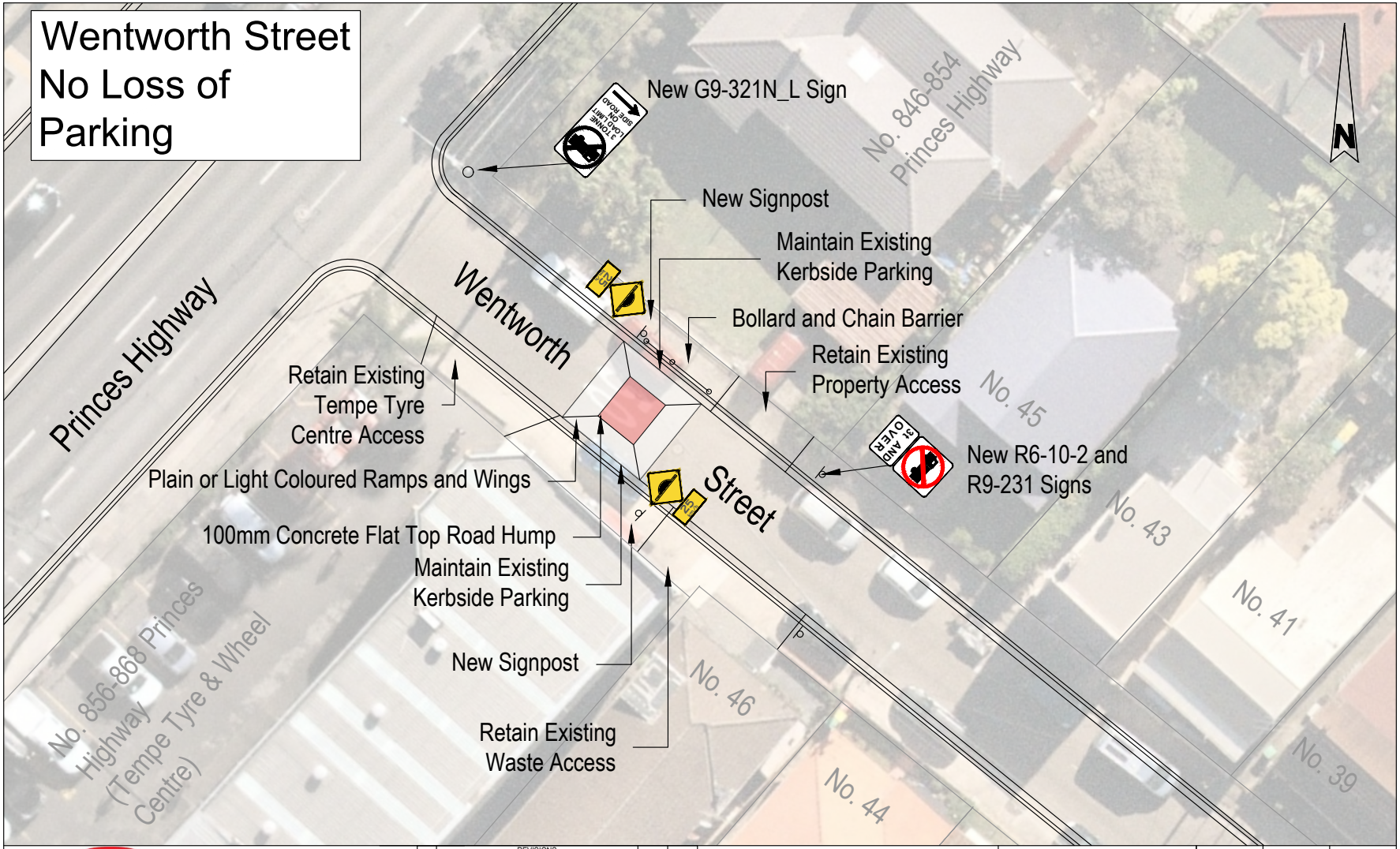
Title: Wentworth Street LATM Treatment Flat Top Road Hump north of South Street

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	4	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Wenthworth Street Option 2 - No. 35 Wentworth Street	C.M	30.04.2020
002	Moved to south of Princes Highway	C.M	19.06.2020
003	NO CHANGES	C.M	03.07.2020
004	Total Number of Spaces Lost	C.M	23.07.2020
005	Bollard and Chain Barrier	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

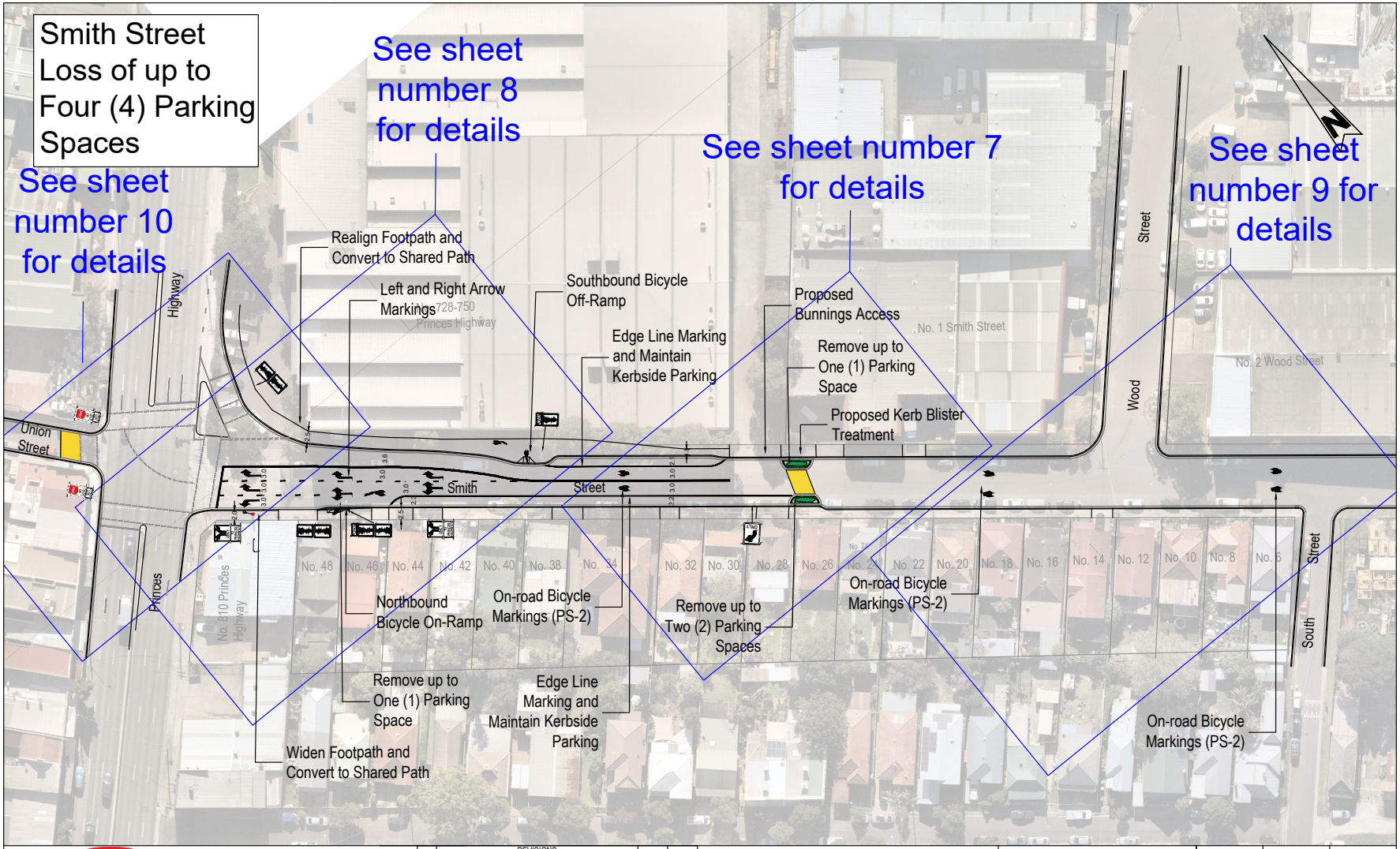
Title: Wentworth Street LATM Treatment Flat Top Road Hump south of Princes Highway

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	5	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Smith Street Option 1 - Edge Line Supplement	G.Y	30.04.2020
002	Added Indicative Bicycle Ramp Locations	C.M	19.06.2020
003	Delineation, Footpath Widening and Bicycle Ramp	C.M	03.07.2020
004	Split Option 1 into Option 1a and Option 1b	C.M	23.07.2020
005	Changes to Bicycle Ramps	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 5 10 15 20 25 30 35 1:750

Project: Tempe South LATM Study

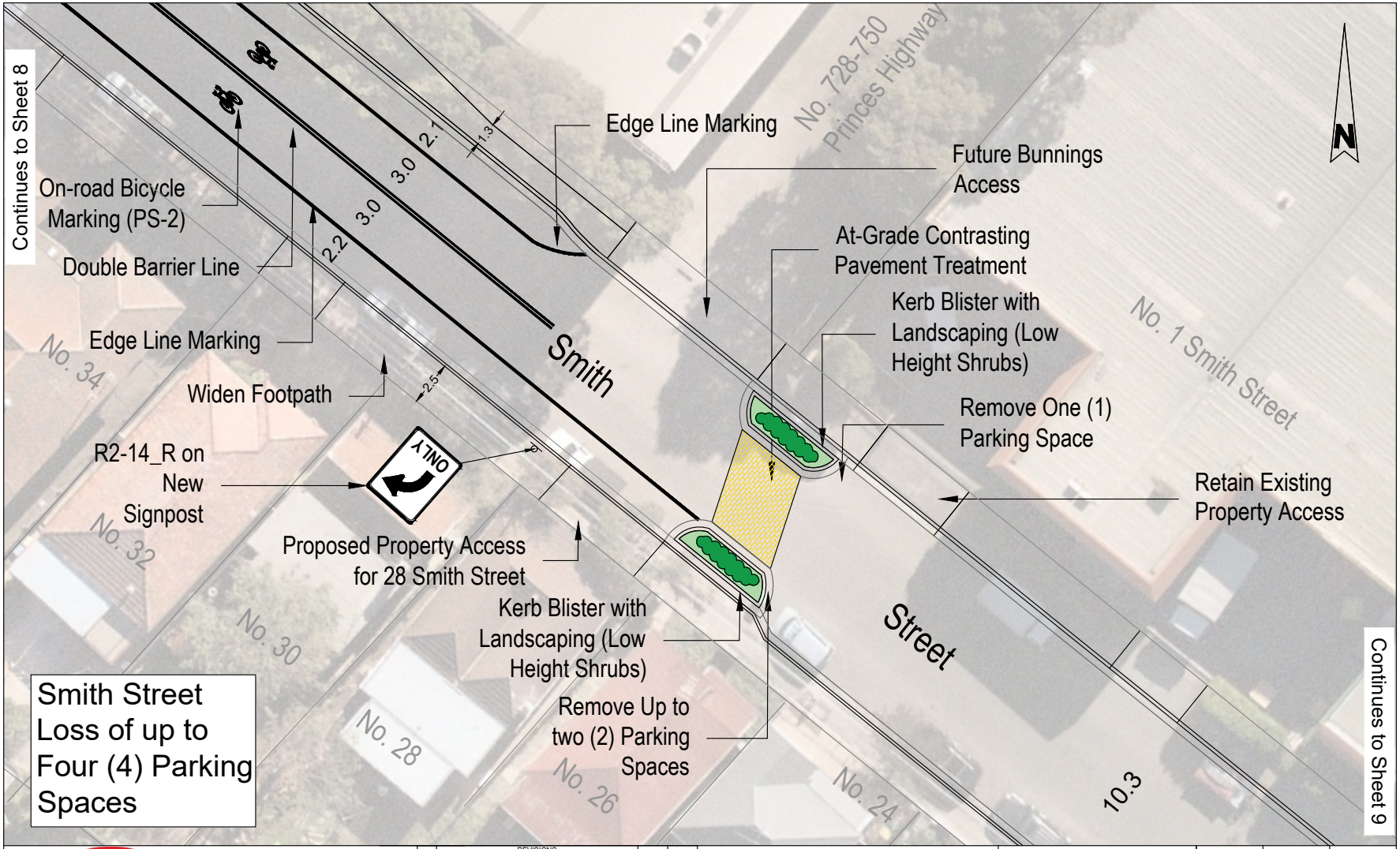
Title: Smith Street LATM Treatment Kerb Blisters & Widened Footpath Overview

Design	Drawn	Checked
G.Y	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	6	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	Smith Street Option 1 - No. 28 Smith Street	C.M	30.04.2020
002	Added "Right Turn Only" sign	C.M	19.06.2020
003	Footpath Widening	C.M	03.07.2020
004	Option 1a	C.M	23.07.2020
005	NO CHANGES	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

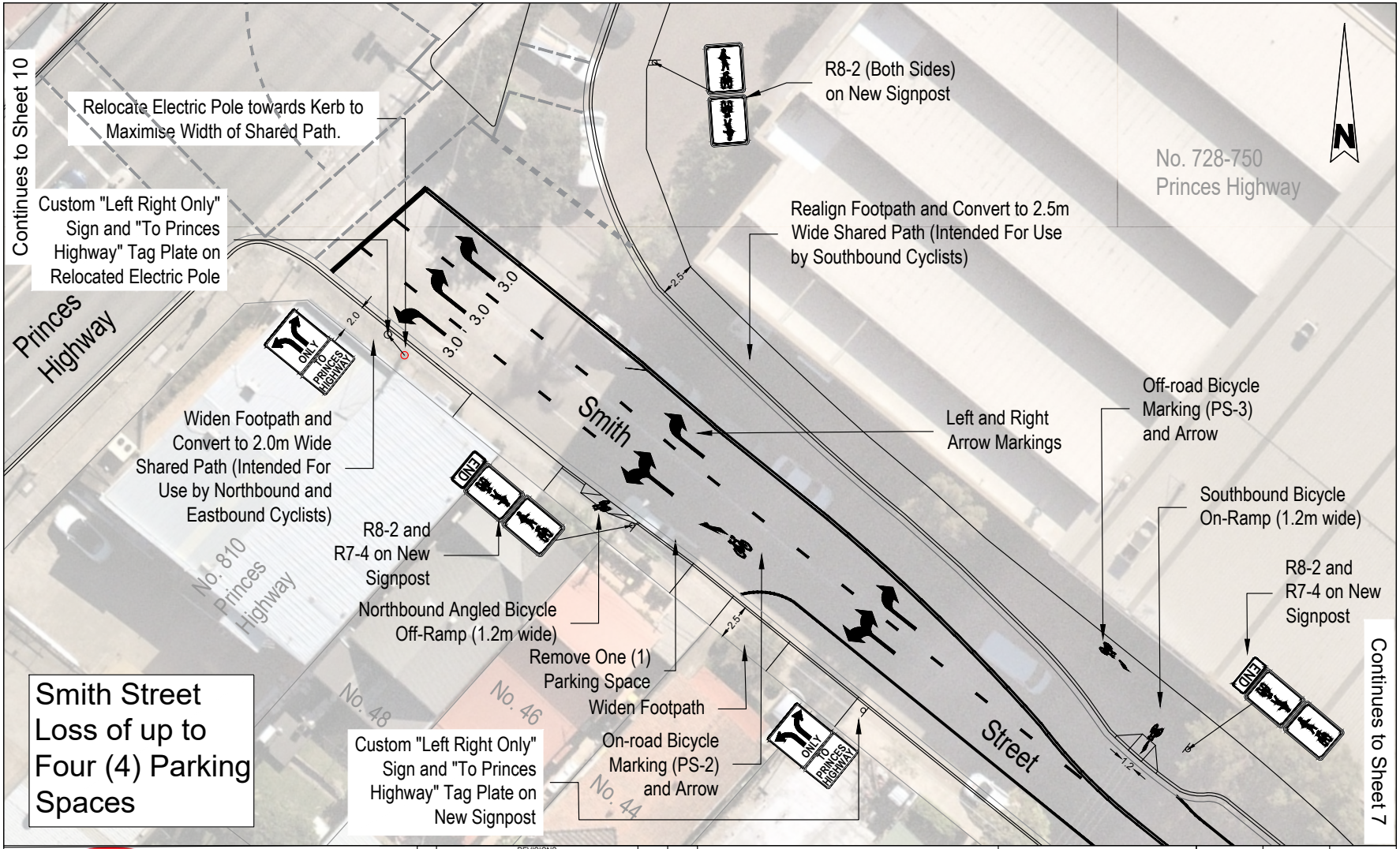
Title: Smith Street LATM Treatment Kerb Blisters at No. 28 Smith Street

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	7	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	NOT USED		
002	NOT USED		
003	Delination, Footpath Widening and Bicycle Ramps	C.M	03.07.2020
004	Option 1a & Option 2a	C.M	23.07.2020
005	Changes to Bicycle Ramps	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: Tempe South LATM Study

Title: Smith Street LATM Treatment Bicycle Ramps, Widened Footpath, Shared Path, Lane Arrangements and Line Marking

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	8	006

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	NOT USED		
002	NOT USED		
003	Footpath Widening and Linemarking	C.M	03.07.2020
004	Option 1a	C.M	23.07.2020
005	NO CHANGES	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 12 1:250

Project: Tempe South LATM Study

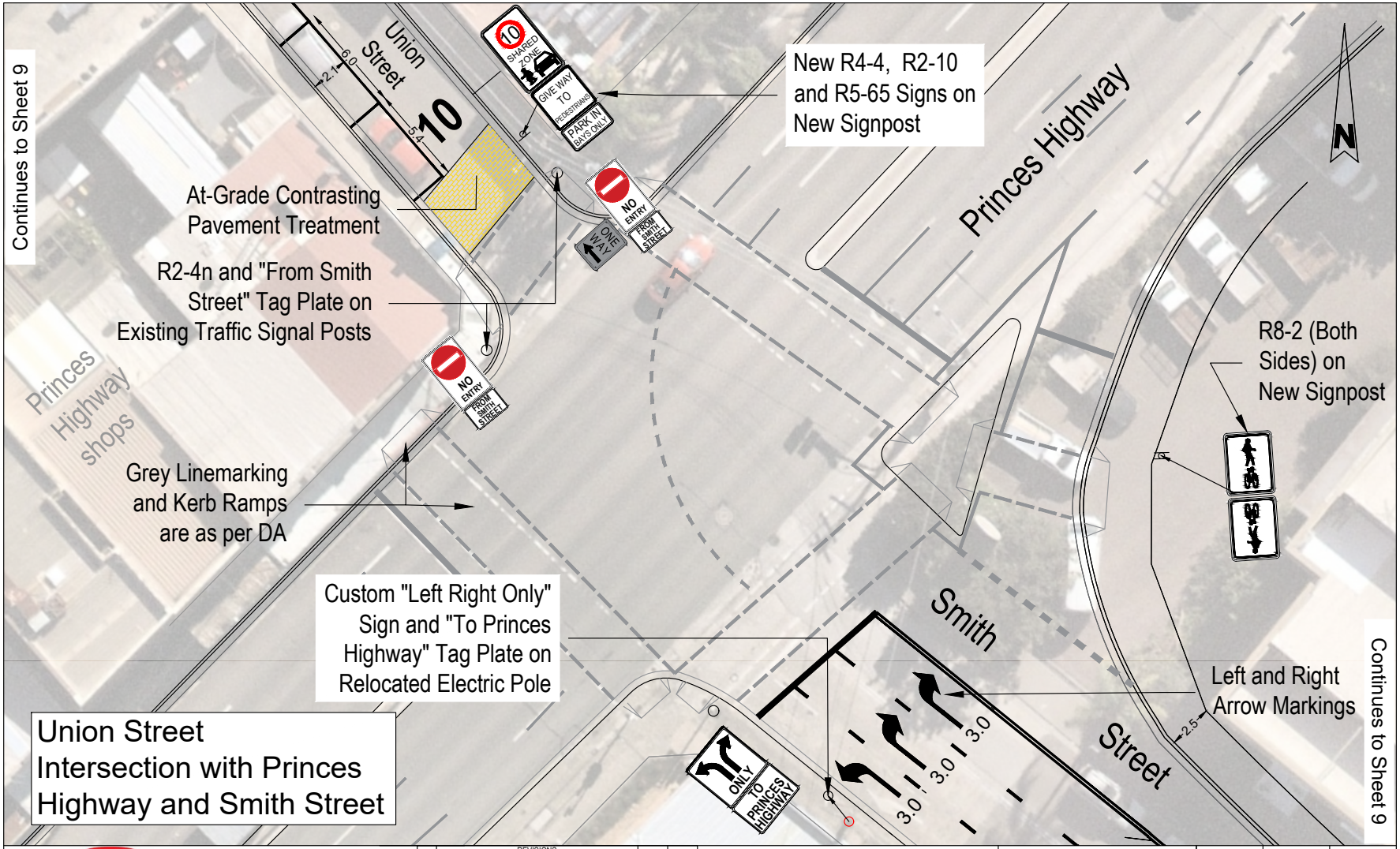
Title: Smith Street LATM Treatment Widened Footpath and Line Marking near South Street

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	9	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	NOT USED		
002	NOT USED		
003	NOT USED		
004	NOT USED		
005	NOT USED		
006	Intersection Concept	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

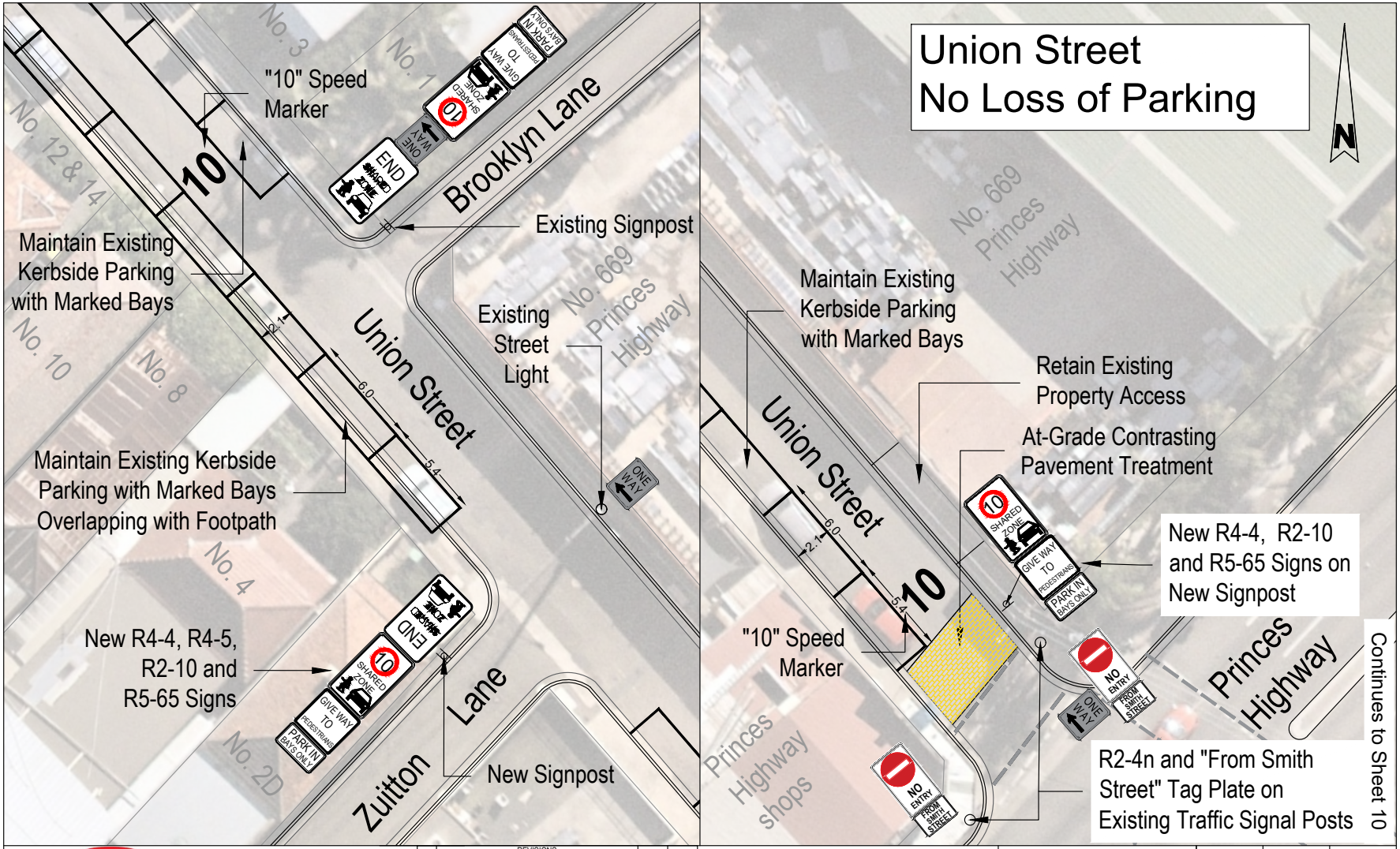
Title: Union Street LATM Treatment Banning of Through Movement from Smith Street

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	10	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	NOT USED		
002	NOT USED		
003	NOT USED		
004	NOT USED		
005	Union Street Option 2 - north of Princes Highway	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

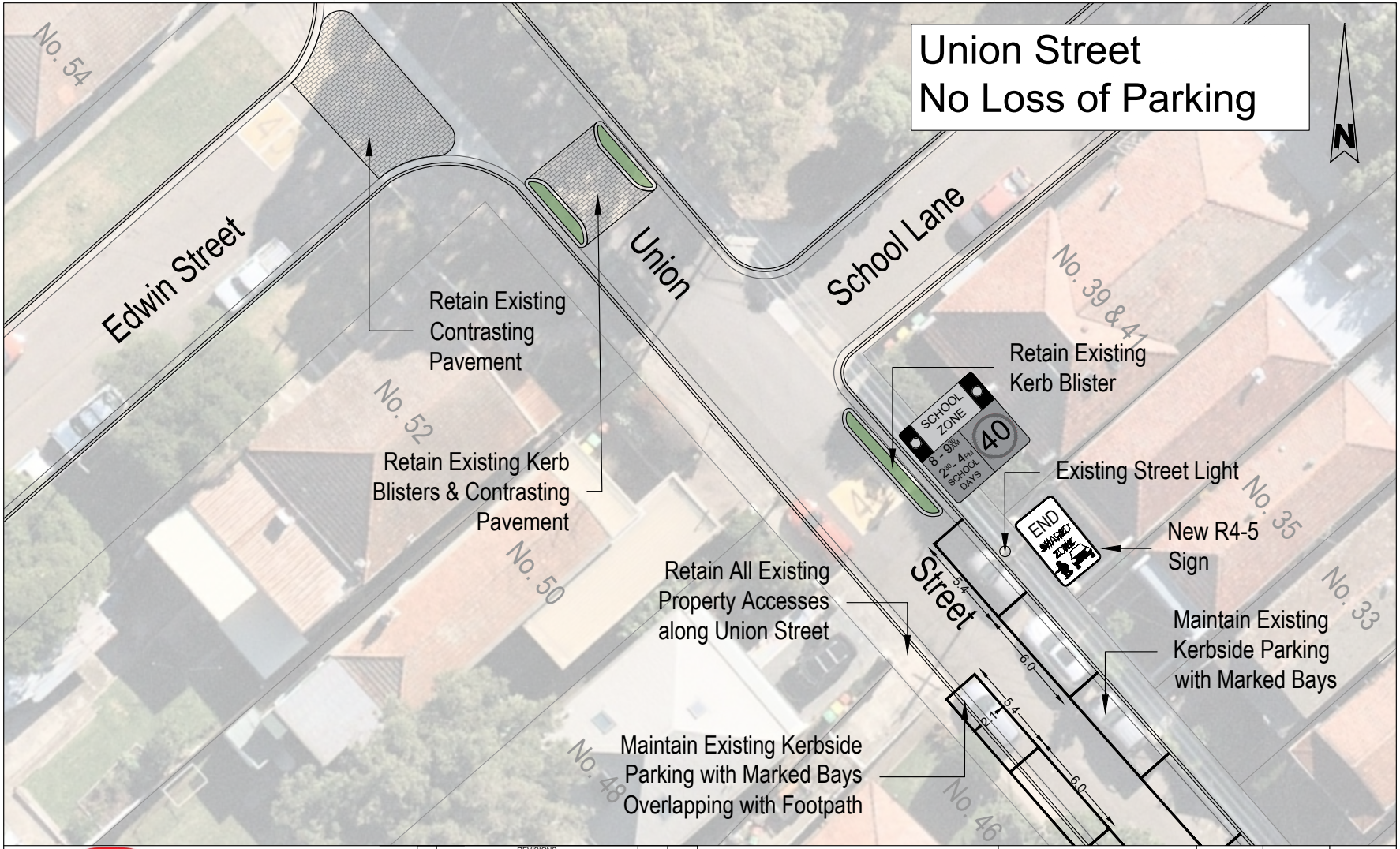
Title: Union Street
LATM Treatment Option 2
Contrasting Pavement & Shared Zone
north of Princes Highway

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	11	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	NOT USED		
002	NOT USED		
003	NOT USED		
004	NOT USED		
005	Union Street Option 2 - south of School Lane	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

Title: Union Street
LATM Treatment Option 2
School Zone south of School Lane

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	12	006

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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	NOT USED		
002	NOT USED		
003	NOT USED		
004	NOT USED		
005	Edwin Street - No.21 & 23 Edwin Street	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

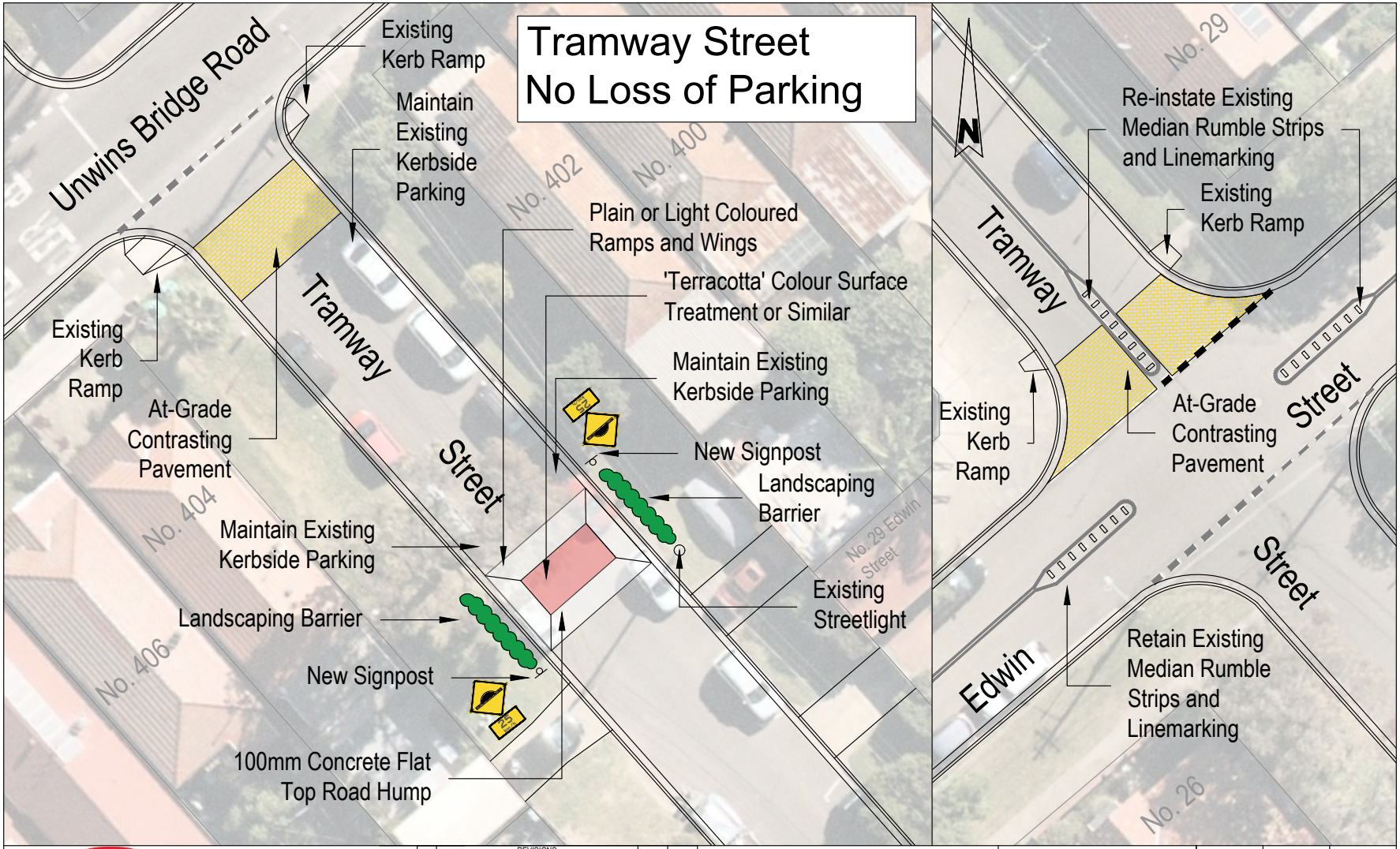
Title: Edwin Street LATM Treatment Flat Top Road Hump at No. 21 & 23 Edwin Street

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	13	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	NOT USED		
002	NOT USED		
003	NOT USED		
004	NOT USED		
005	Tramway Street - at Unwins Bridge Road and Edwin Street	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

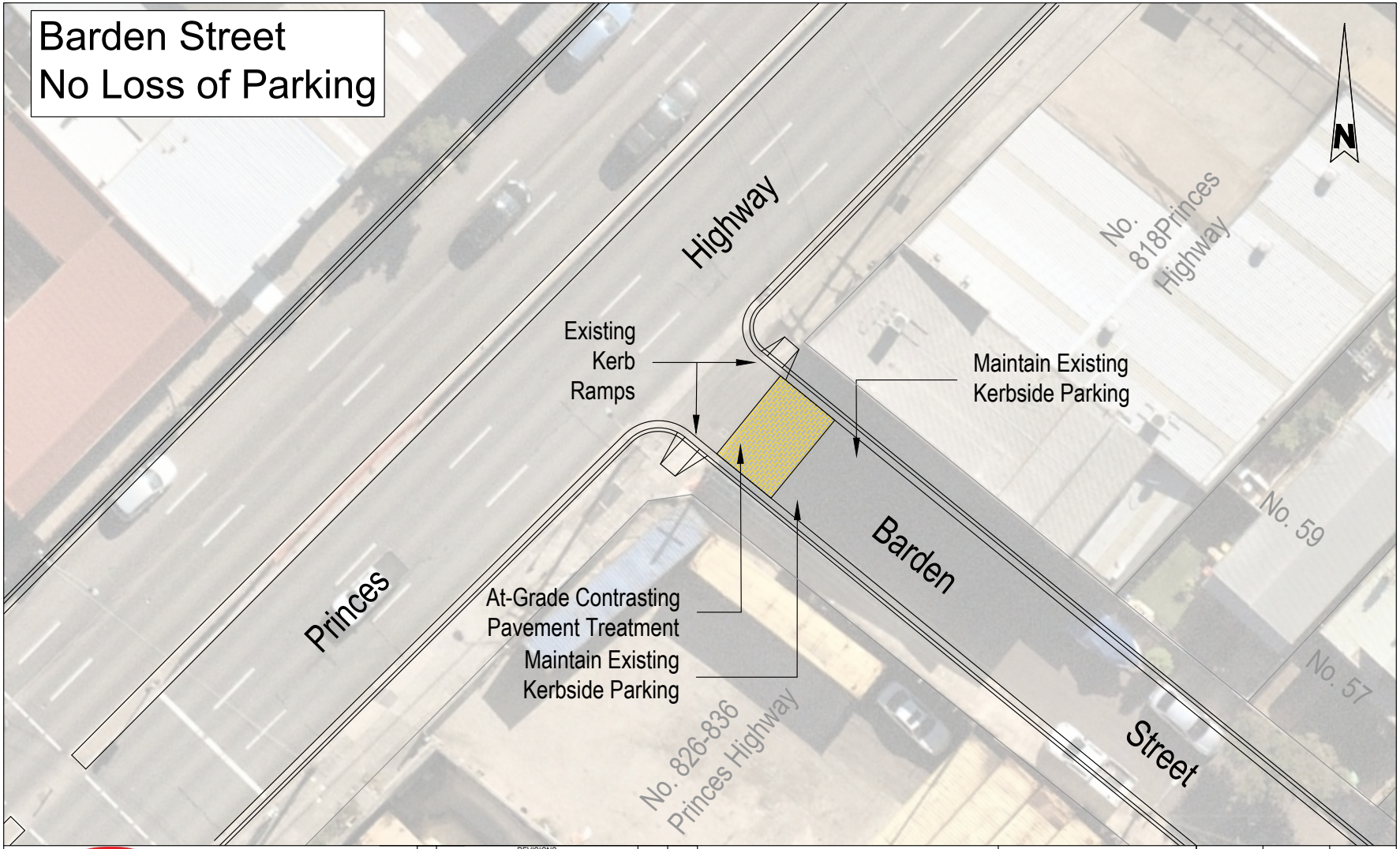
Title: Tramway Street LATM Treatment Contrasting Pavement at Unwins Bridge Road and Edwin Street

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	14	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	NOT USED		
002	NOT USED		
003	Contrasting Pavement Threshold	C.M	03.07.2020
004	Total Number of Spaces Lost	C.M	23.07.2020
005	NO CHANGES	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

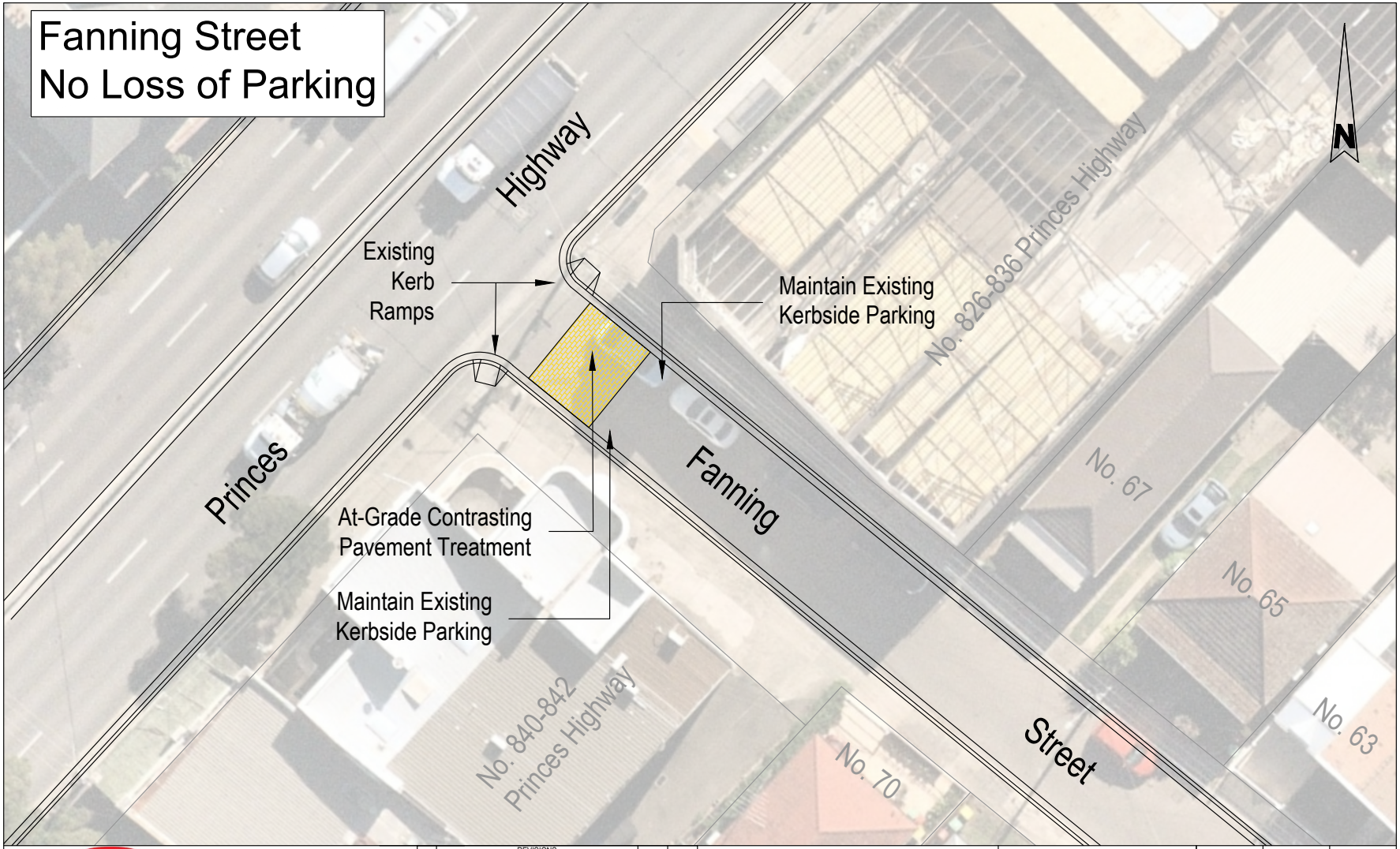
Title: Contrasting Pavement Threshold Barden Street

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	15	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	NOT USED		
002	Contrasting Pavement Threshold	C.M	19.06.2020
003	Location changed	C.M	03.07.2020
004	Total Number of Spaces Lost	C.M	23.07.2020
005	NO CHANGES	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

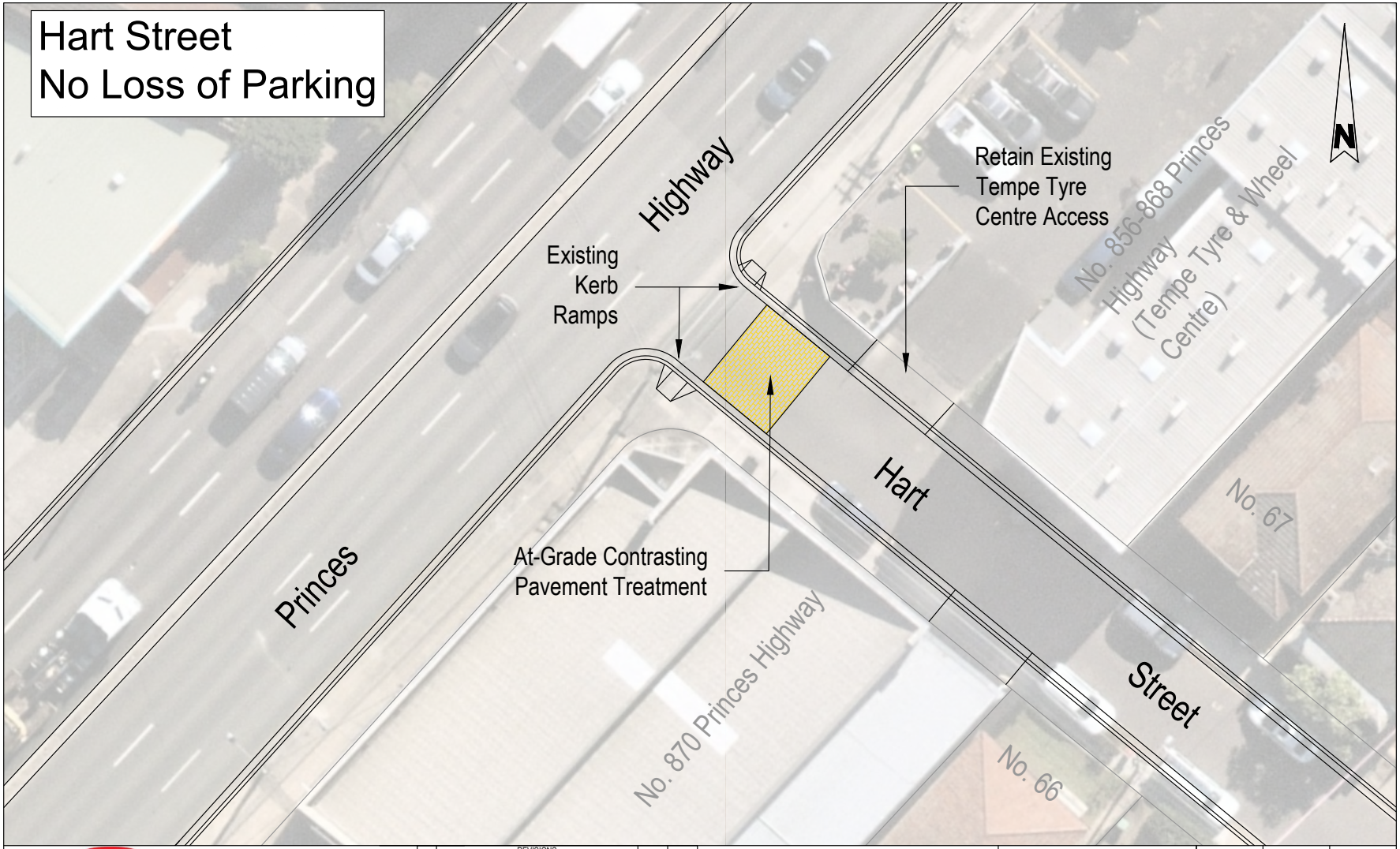
Title: Contrasting Pavement Threshold Fanning Street

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	16	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	NOT USED		
002	NOT USED		
003	Contrasting Pavement Threshold	C.M	03.07.2020
004	Total Number of Spaces Lost	C.M	23.07.2020
005	NO CHANGES	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

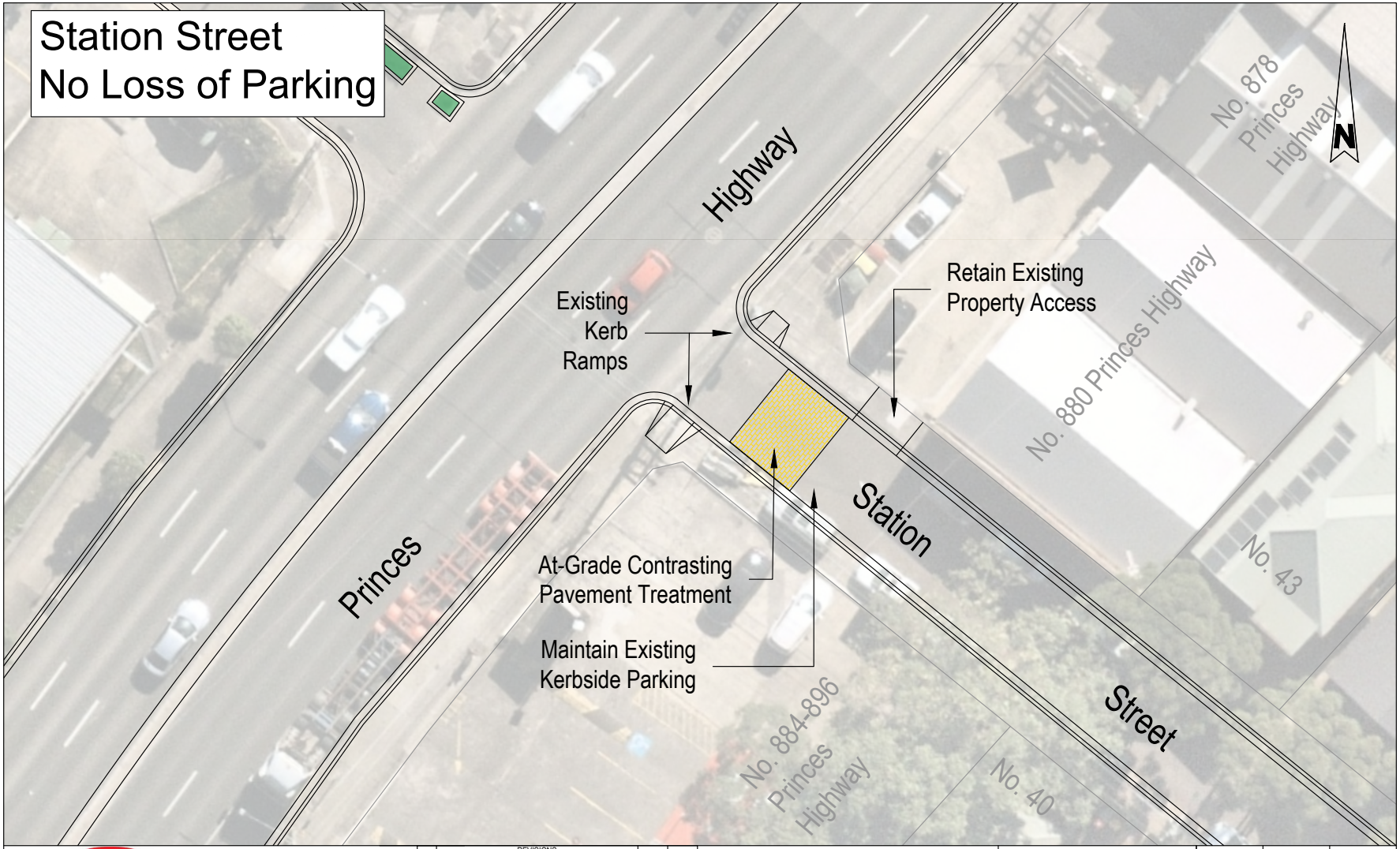
Title: Contrasting Pavement Threshold
Hart Street

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	17	006



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Issue	REVISIONS Revisions/Descriptions	Drawn	Date
001	NOT USED		
002	NOT USED		
003	Contrasting Pavement Threshold	C.M	03.07.2020
004	Total Number of Spaces Lost	C.M	23.07.2020
005	NO CHANGES	C.M	24.09.2020
006	Final Concepts	C.M	26.03.2021

Scale @ A3 0 2 4 6 8 10 1:200

Project: Tempe South LATM Study

Title: Contrasting Pavement Threshold
Station Street

Design	Drawn	Checked
C.M	C.M	S.P

CONCEPT ONLY

Date: 26.03.2021

Project Number	Sheet Number	Issue
P4533	18	006

Appendix E: Engagement Outcomes Report

INNER WEST

Engagement outcomes report
Tempe South LATM Study

Contents

Summary

As part of the Tempe South LATM study, a draft LATM study report and concept designs were prepared and presented for public exhibition between 3 November 2020 and 12 January 2021.

The community could participate in the consultation via a questionnaire on the *Your Say Inner West* website or direct email. Participants could indicate their preference on the treatment proposals and options for each subject street, and provide further comments or suggestions.

Overall, 519 people visited the project page, of which 265 people downloaded a document from the page, and 87 people participated in the survey. A total of 92 contributions have been taken on Your Say Inner West. One of the participants later provided additional comments and feedback via email.

The main community group to be involved in the consultation was the Union Street Traffic Action Group (USTAG), made up of 22 residents along Union Street. USTAG submitted a document via email by 8 of the residents. A petition by 30 residents along Smith Street was also submitted via email.

Tempe Tyres, a business located on Princes Highway, also participated in the engagement, with traffic consultant *Traffix* preparing a submission on behalf of the business.

General comments included:

- The calculated traffic generated from Bunnings along local streets such as Union Street is too low.
- Local streets often have children and additional Bunnings traffic will make the streets unsafe.
- Proposals are out of touch with community concerns and practicalities and do not deter additional non-local traffic.
- Banning through traffic from Smith Street to Union Street. This will also address potential rat-running problems in Stanley, Edwin and Tramway Streets.
- No substantial treatments have been proposed on many local streets in the area to stop alternative routes.
- Signage should be enforced.

The following options were supported or not supported:

- Barden Street, Fanning Street, Hart Street and Station Streets: Contrasting pavement threshold supported
- Edwin Street: Non-support for flat top road hump
- Tramway Street: Non-support for contrasting pavement threshold
- Union Street: Non-support for either options

The preferred option for each street is:

- Holbeach Avenue: **Option 2 (speed cushions and road narrowing)**
- Stanley Street: **Option 1** (**flat top road humps)**
- Wentworth Street: **Option 2 (flat top road humps)**
- Union Street: **Option 2 (shared zone)** most preferred following non-support for either option
- Smith Street: **Option 1a (Road narrowing & contrasting pavement with widened footpath)** was preferred

Background

As part of the conditions of consent for an approved Bunnings Warehouse at 728-750 Princes Highway, the *Eastern City Planning Panel* has conditioned that a Local Area Traffic Management (LATM) study is to be undertaken for the Tempe South area, in order to manage the impacts of the proposed Bunnings development.

Following the initial stages of the study, up to two treatment options were provided for each street identified to require an LATM device or measure. Only one treatment option was provided for Barden, Fanning, Hart, Station, Edwin and Tramway Streets, while a total of four variations of the treatment options were provided for Smith Street.

The purpose of the community engagement of the draft LATM study report and concept designs was to gather responses, preferences and feedback in regard to the proposed treatment options. From the engagement, a preferred option at each location will be determined and included as part of the LATM treatments adopted under the scheme.

While there was no previous official engagement, the Union Street Traffic Action Group (USTAG) has previously made a submission to Council in regard to the LATM measures proposed during the early stage of the project prior to finalising the draft LATM study report.

Engagement Methods

The engagement / exhibition was conducted using the following methods

- ***Your Say inner West (YSIW)*** **Website** – including questionnaire and document download
- **Email submissions** to the Council project team

Your Say Inner West (YSIW)

The engagement was mainly conducted via the project page on the *Your Say Inner West* website. Questions and answerable items included:

- *Preferred treatment option for each street*
- *Comments for each street*
- *Age group*
- *What is your relationship to the area? Mark the three that best describe you*
- *Would you like to receive email updates?*
- *We're working to make it easier for you to provide feedback. How useful did you find this form?*

Due to COVID-19 restrictions and to enforce COVID-safe measures, a physical community consultation was not undertaken.

Email

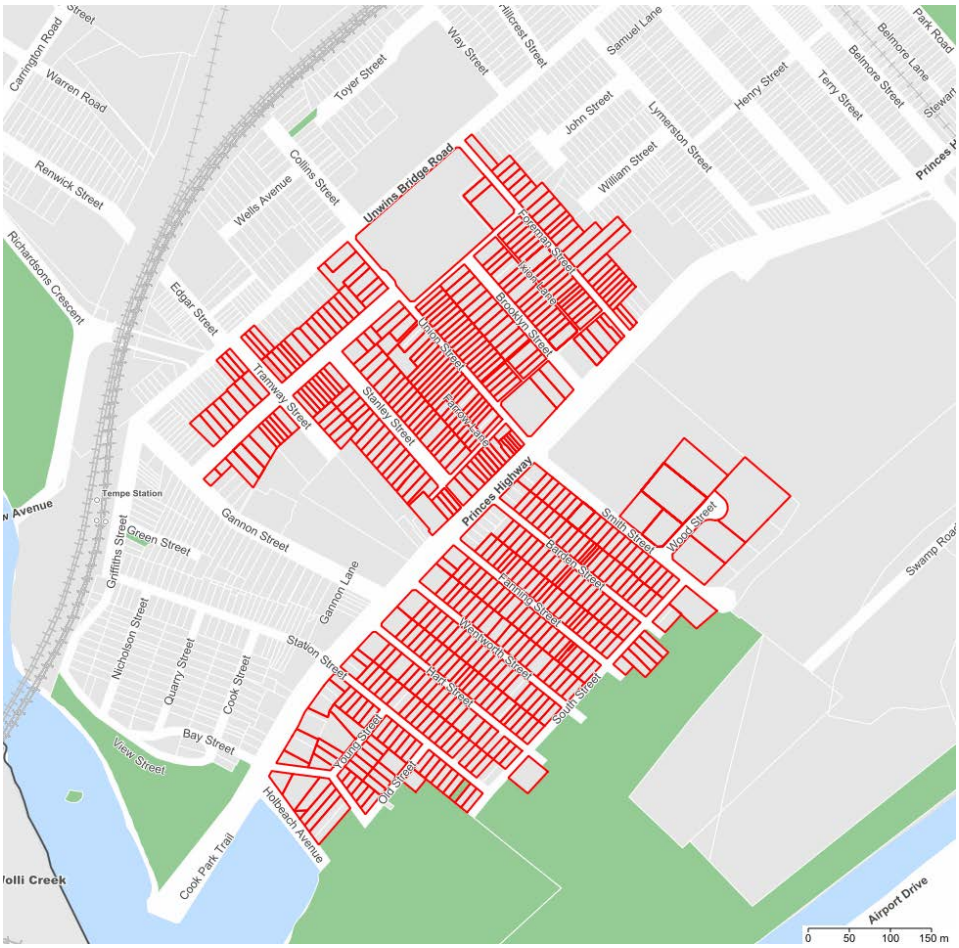
Participants could also provide feedback via email. Email submissions were submitted by:

- USTAG community group (select residents of Union Street)
- Smith Street residents
- Traffix (on behalf of Tempe Tyres).

Promotion

Letter drop

A letter was distributed to the residents and properties marked in red in the map below. The letter summarised and described the project and provided a link to the project page in the *Your Say Inner West* website.



Facebook

A link on Council's Facebook page was provided directing visitors to the Your Say Inner West project website.

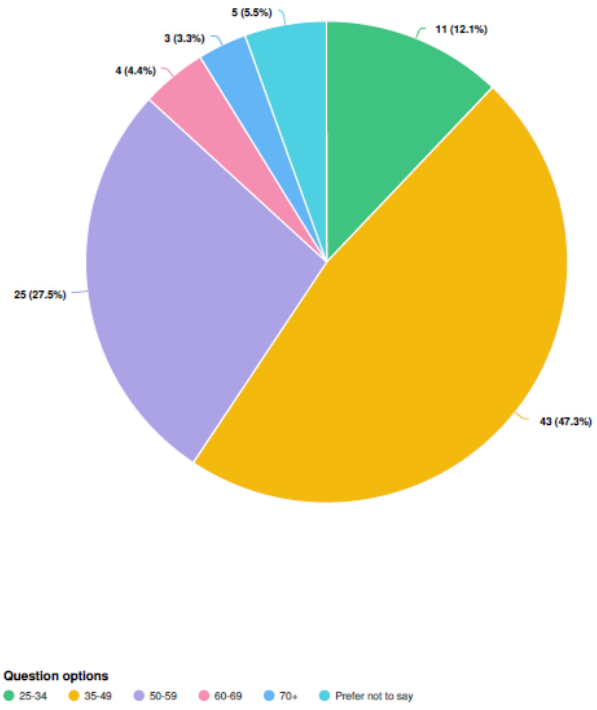
Engagement outcomes

Who did we hear from?

Age group

- Almost half the respondents (47%) identified with the 35-49 age group, followed by approx. 27% identifying with the 50-59 age group.

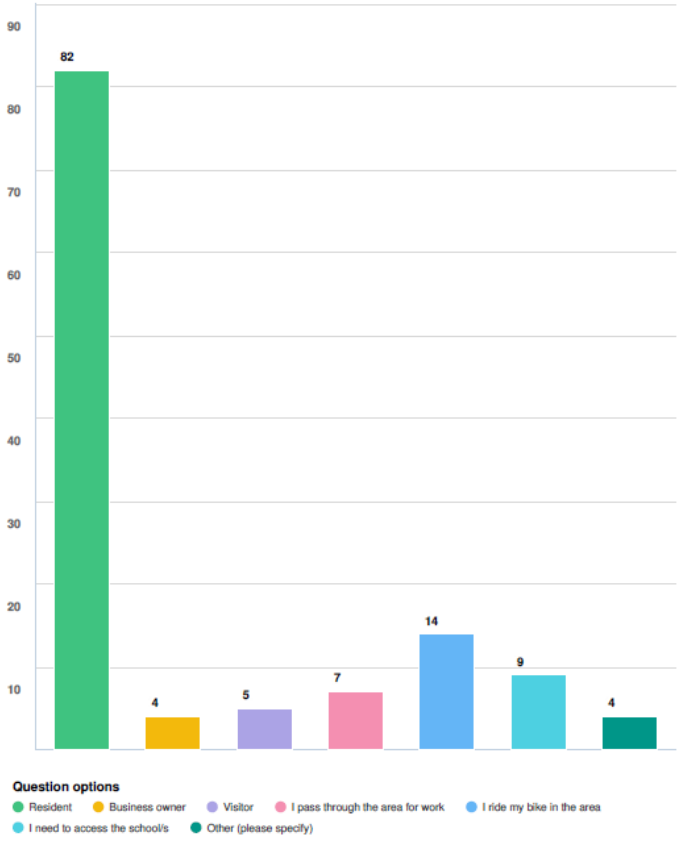
Age Group	Number	Percentage
25-34	11	12.1%
35-49	43	47.3%
50-59	25	27.5%
60-69	4	4.4%
70+	3	3.3%
Undisclosed	5	5.5%
Total responses	91	100%
Skipped	*1*	-



Relationship to area (resident / visitor)

- 89% of responses to this question identified as *residents* within the study area, followed by 15% *bicycle user through the area* and almost 10% as *local school users*.
- It should be noted respondents were able to select up to three responses and as such does not present a direct correlation to the number of responders.

Relationship	Number	Percentage
Resident	82	89.1%
Business Owner	4	4.3%
Visitor	5	5.4%
Pass through area for work	7	7.6%
Bicycle user in the area	14	15.2%
School user	9	9.8%
Other	4	4.3%
Number of respondents	92	100%



What did they say?

Online via yoursay.innerwest.nsw.gov.au

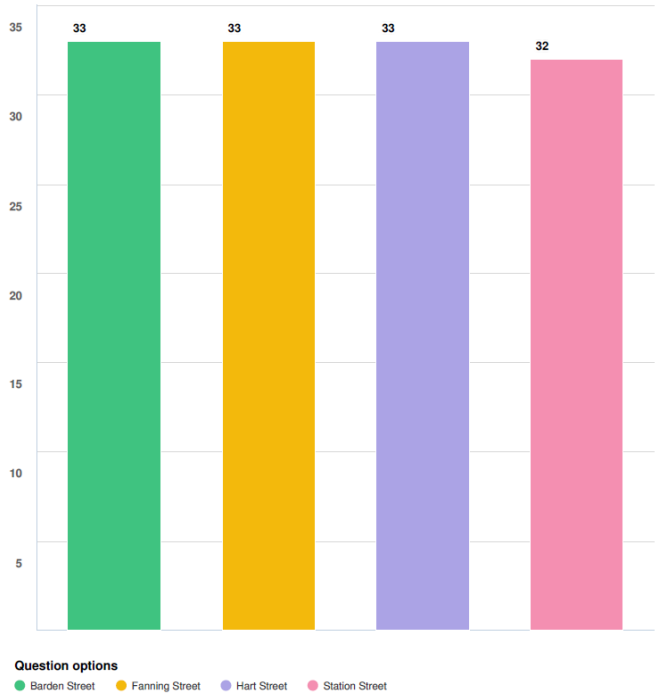
The following is an overview of the feedback provided as part of the online engagement. It should be noted all button questions asked were optional and could be skipped.

Q1: Barden, Fanning, Hart and Station Streets

Do you support this proposal (contrasting pavement threshold)? Tick all the boxes that you agree with. A blank will indicate you do not agree for that location.

- At least 32 of 34 responses (94%) to this question indicated **support** for the contrasting pavement threshold treatments on Barden Street, Fanning Street, Hart Street and Station Streets.
  58 responders skipped this question as it was presented as optional.

	Barden Street	Fanning Street	Hart Street	Station Street
Support	33	33	33	32
Blank (oppose)	1	1	1	2
Total responses	34	34	34	34
Skipped	*58*	*58*	*58*	*58*

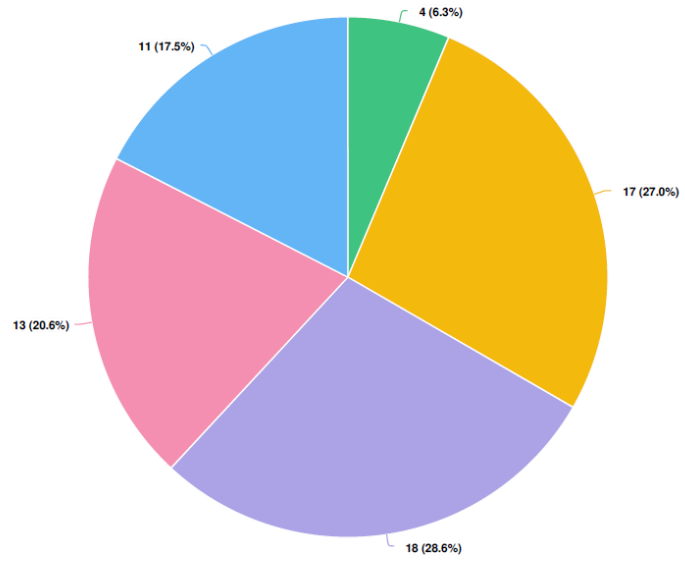


Q2: Edwin Street

How satisfied are you with this proposal (flat top road hump)?

- Of the 63 responses, 24 (38%) indicated they were *dissatisfied* or *completely dissatisfied*, 18 (28%) were *neutral*, and 21 (33%) were *satisfied* or *completely satisfied* with the proposal.
- 29 visitors skipped leaving a response to this question.
- Overall, responses indicated **non-support** for the proposed flat top road hump treatment on Edwin Street

	Edwin Street		
Completely satisfied	4	6.3%	33.3%
Satisfied	17	27.0%	
Neutral	18	28.6%	28.6%
Dissatisfied	13	20.6%	38.1%
Completely dissatisfied	11	17.5%	
Total responses	63	100%	100%
Skipped	*29*	-	-

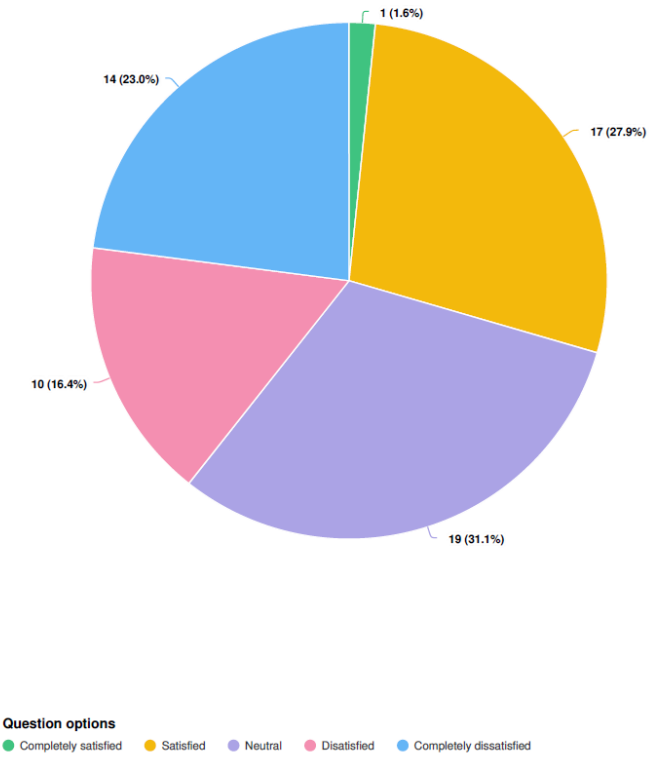


Q3: Tramway Street

How satisfied are you with this proposal (contrasting pavement threshold) for Tramway Street?

- Of 61 responses, 24 (39%) were *dissatisfied* or *completely dissatisfied*, 19 (31%) were *neutral*, and 18 (29%) were *satisfied* or *completely satisfied* with the proposal.
- 31 visitors skipped leaving a response to this question.
- Overall, responses indicate **non-support** of the proposed contrasting pavement threshold treatment on Tramway Street.

	Tramway Street		
Completely satisfied	1	1.6%	29.5%
Satisfied	17	27.9%	
Neutral	19	31.1%	31.1%
Dissatisfied	10	16.4%	39.4%
Completely dissatisfied	14	23.0%	
Total responses	61	100%	100%
Skipped	*31*	-	-

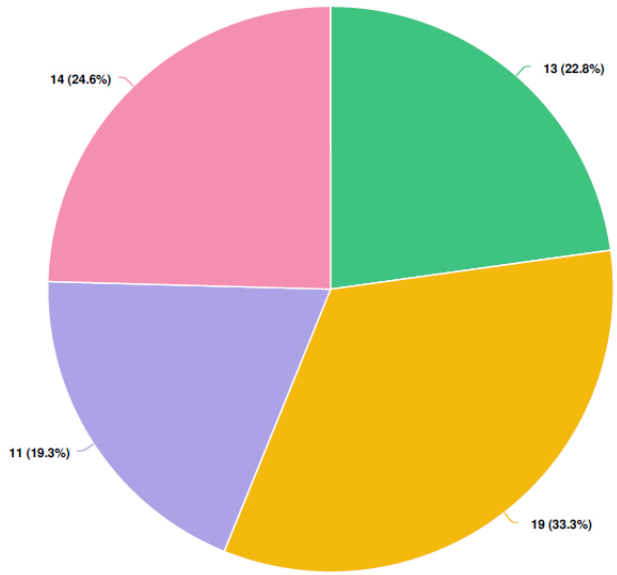


Q4: Holbeach Avenue

Which option do you prefer for Holbeach Avenue?

- Of 57 responses, 19 (33%) of responses preferred *Option 2 (speed cushions and road narrowing)* and 13 (23%) preferred *Option 1 (speed cushions only)*.
- 11 (19%) preferred neither and 14 (24%) had no opinion on either treatment (neutral).
- 35 visitors skipped leaving a response to this question.
- Responses indicate an overall preference for **Option 2** (**speed cushions & road narrowing)**.

	Holbeach Avenue	
Option 1 (speed cushions)	13	22.8%
Option 2 (speed cushions & road narrowing)	19	33.3%
Neither	11	19.3%
No Opinion	14	24.6%
Total responses	57	100%
Skipped	*35*	-

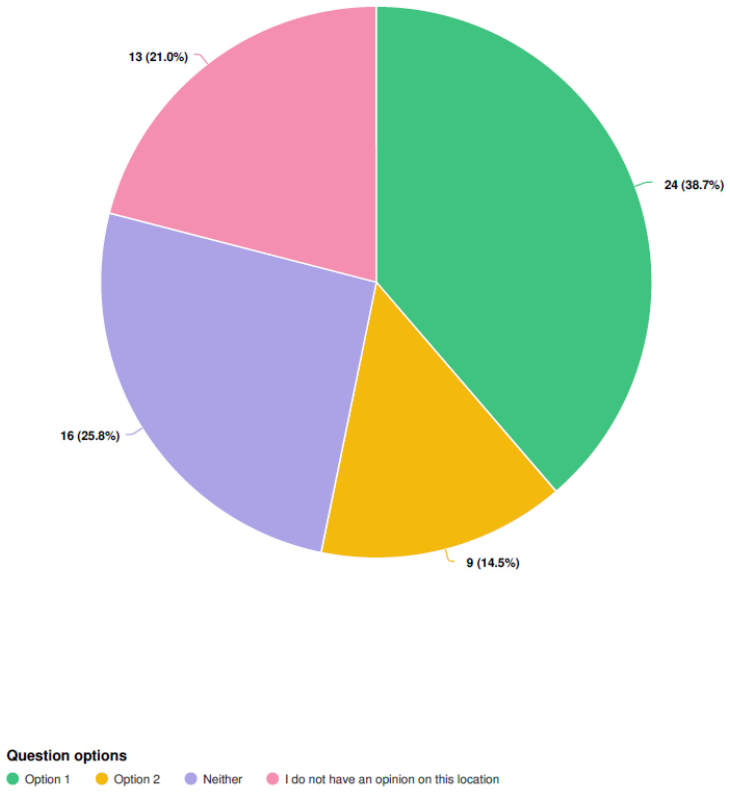


Q5: Stanley Street

Which option do you prefer for Stanley Street?

- Of 62 responses, 24 (38%) of responses preferred *Option 1 (flat top road humps)* and 9 (14%) preferred *Option 2 (road narrowing)*.
- 16 (25%) preferred *neither* and 13 (21%) had no opinion on either treatment (*neutral*).
- 30 visitors skipped leaving a response to this question.
- Responses indicate an overall preference for **Option 1** (**flat top road humps)**.

	Stanley Street	
Option 1 (flat top road humps)	24	38.7%
Option 2 (road narrowing)	9	14.5%
Neither	16	25.8%
No Opinion	13	21.0%
Total responses	62	100%
Skipped	*30*	-

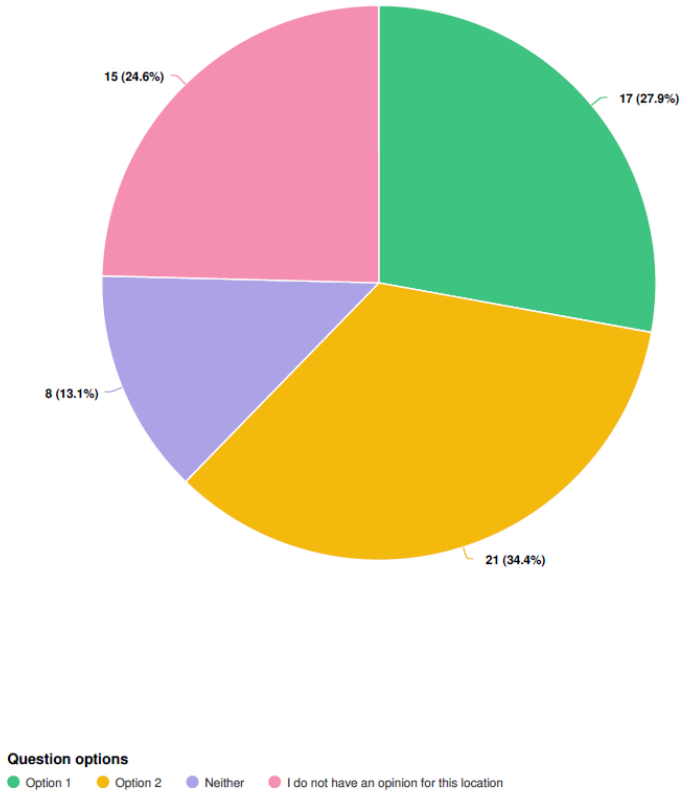


Q6: Wentworth Street

Which option do you prefer for Wentworth Street?

- Of 61 responses, 21 (34%) of responses preferred *Option 2 (flat top road humps)* and 17 (27%) preferred *Option 1 (road narrowing & contrasting pavement)*.
- 8 (13%) preferred *neither* and 15 (24%) had no opinion on either treatment (*neutral*).
- 31 visitors skipped leaving a response to this question.
- Responses indicate an overall preference for **Option 2** (**flat top road humps)**.

	Wentworth Street	
Option 1 (road narrowing & contrasting pavement)	17	27.9%
Option 2 (flat top road humps)	21	34.4%
Neither	8	13.1%
No Opinion	15	24.6%
Total responses	61	100%
Skipped	*31*	-

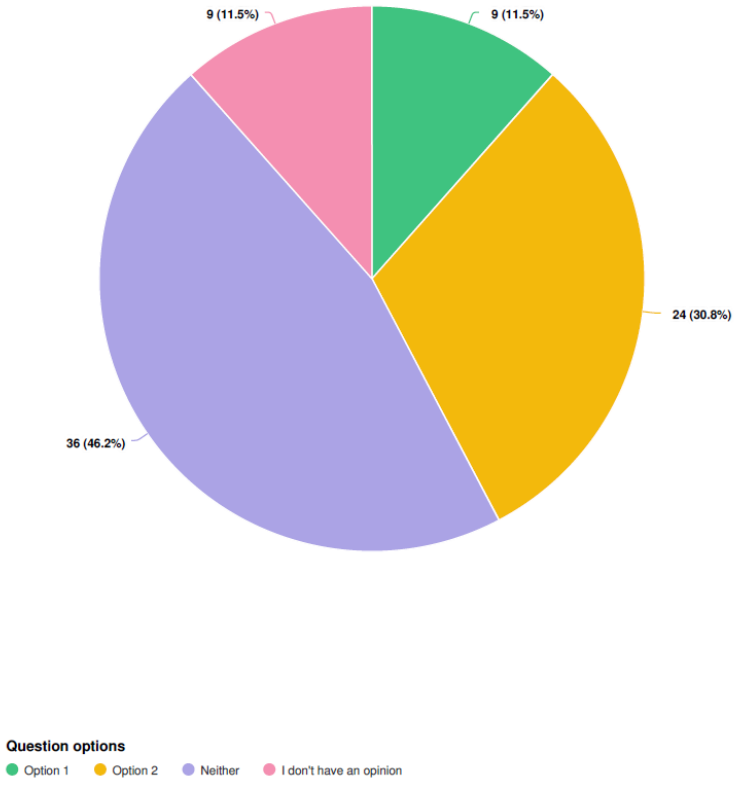


Q6: Union Street

Which option do you prefer for Union Street?

- Of 78 responses, 24 (30%) of responses preferred *Option 2 (shared zone)* and 17 (27%) preferred *Option 1 (road narrowing & contrasting pavement)*.
- 36 (46%) preferred *neither* and 9 (11%) had no opinion on either treatment (*neutral*).
- 14 visitors skipped leaving a response to this question.
- Overall, responses indicated **non-support for either option** flat top road humps or shared zone for Union Street

	Union Street	
Option 1 (flat top road humps)	9	11.5%
Option 2 (shared zone)	24	30.8%
Neither	36	46.2%
No Opinion	9	11.5%
Total responses	78	100%
Skipped	*14*	-

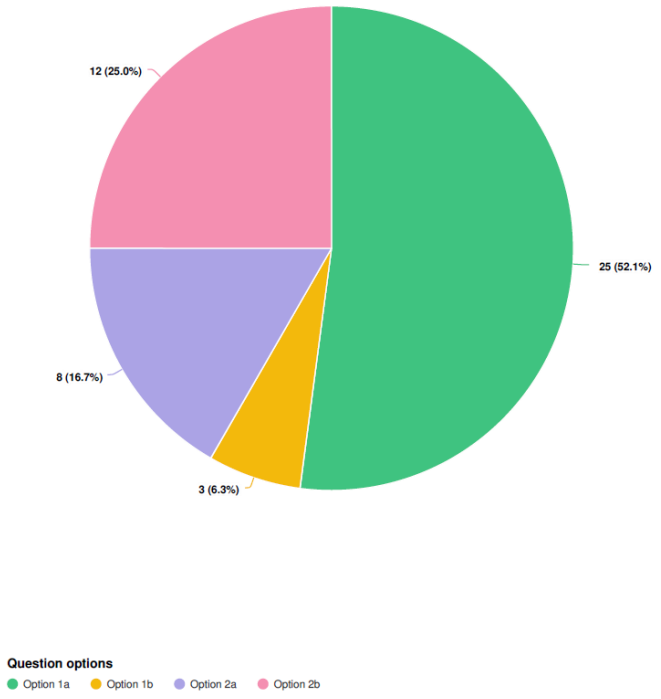


Q7: Smith Street

Which option do you prefer for Smith Street?

- Of 48 responses, 25 (52%) of responses preferred *Option 1a*, 3 (6%) preferred *Option 1b*, 8 (16%) preferred *Option 2a*, and 12 (25%) preferred *Option 2b*.
- Participants were not given the opportunity to reject or be neutral to either option and were to choose one option that they prefer the most or skip the question.
- 14 visitors skipped leaving a response to this question.
- Responses indicate an overall preference for **Option 1a (road narrowing & contrasting pavement, with widened footpath)**.

	Smith Street	
Option 1a (road narrowing & contrasting pavement, with widened footpath)	25	52.1%
Option 1b (road narrowing & contrasting pavement, with widened footpath and landscaped verge)	3	6.3%
Option 2a (mountable concrete median, with widened footpath)	8	16.7%
Option 2b (mountable concrete median, with widened footpath and landscaped verge)	12	25.0%
Total responses	48	100%
Skipped	*44*	-



Comments from YSIW

Participants on the Your Say Inner West project page are also able to provide comments in regard to the proposals on each street, attracting up to 108 comments on the study in general and for specific streets. A detailed summary of comments and associated responses are provided in Attachment A.

The participants provided opinions on the proposals and on the Bunnings development:

- Local streets often have children and additional Bunnings traffic will make the streets unsafe.
- The proposals on Union Street and Stanley Street do not deter additional non-local traffic.
- Proposals are out of touch with community concerns and practicalities.
- Speed humps generate additional noise.
- Landscaping attract litter and will require maintenance.

In addition to comments about the proposals, participants also provided information about the existing traffic and parking conditions on the local streets:

- Parking is a premium in the local streets, often used by Tempe Tyres employees, Tempe Bus Depot employees, international airport travellers and by employees of other businesses on Wood Street.
- The local roads south of Princes Highway are often used by Wood Street businesses including Tempe Tyres.
- Many of the local streets are narrow with high number of parked vehicles, and it is difficult to have two-way travel. Vehicles are incapable of passing each other.
- There are rat-running instances between Unwins Bridge Road to Gannon Street via Tramway and Edwin Streets.
- Holbeach Avenue is used as a turnaround point for Union Street residents and IKEA customers to get to Union Street and Richardson Crescent, due to the right turn ban from Princes Highway to Union Street. This also impacts on Union Street residents.

Participants also provided some suggestions:

- Turning Tramway Street to one-way northbound, or banning the left turn from Unwins Bridge Road onto Tramway Street
- Turning local roads south of Princes Highway into one-way roads
- Banning through traffic from Smith Street to Union Street. This will also address potential rat-running problems in Stanley, Edwin and Tramway Streets.
- Physical deterrent such as road closures are preferred.

One participant of the engagement emailed Council to provide additional comments and feedback:

- The report does not consider a partial closure of Union Street (i.e. left turn only from Princes Highway) and should be considered
- Changing the No Right Turn at Gannon Street
- The report does not consider the resulting threat to public safety.
- School and parents were not consulted.

- Stronger measures (including partial closure) and prioritising pedestrians (School Lane) have not been considered.

USTAG Comments

USTAG is a community group made up of 22 Union Street residents who oppose additional traffic from the proposed Bunnings warehouse. Eight of the USTAG members emailed directly to Council associated with the USTAG's submission. The USTAG's submission had the following comments and concerns:

Doubts over the report process

- The LATM study does not adequately address the requirements/objectives set out by the SECCP and Council.
- Report lacks transparency of data and modelling.

Doubts over traffic volumes as calculated in the report

- RMS Traffic generation rates (RMS TDT 2013/04) have not been adopted. Adopted rates (suggested by TTPA and GTA) are significantly lower (almost half). Resulting traffic using RMS rates exceed RMS performance benchmark traffic volumes for local streets (peak hour and daily)
- Up to 30% of Bunnings traffic continuing northbound on Union Street is still conservative, as Union Street is still most direct out to many inner west suburbs to the north. Traffic counts show approximately 35% of existing traffic flows into Union Street from Smith Street.
- Peak business of Bunnings occurs the middle of the day (2:30-3:30 PM), and the presented traffic generation does not account for this and therefore does not provide sufficient analysis.
- Union Street is a very narrow one-way street, and the projected traffic flows and RMS performance benchmark should take this into account, reinforcing argument of too much traffic along Union Street.
- Surveys conducted at peak COVID-19 lockdowns, significantly less traffic, Apple Maps data indicates 83% and 62% of normal traffic on surveyed dates.
- Comparing against TTPA data is not useful and questioning why it was lower than surveys by GTA.
- Population growth of other Inner West suburbs to the north have not been considered, some of which are significant (i.e. Marrickville south 71% increase 2016-2031)
- Tempe population growth is positive and not negative as presented.
- Population growth and future has not been considered at all.

Criticism of proposed treatments

- Proposed treatments do not effectively address the increase in traffic and only address traffic calming. They are not acceptable for traffic management, safety and environmental impact reasons.
- The points criteria system is flawed, unfair and inconsistent. It does not truly account for one way and narrow nature of Union Street, and presence of school. Score is on the low end, but has been recognised as significant in the report. Effectively, score should be much higher.
- Existing devices (considered in scoring system) on Union Street has not deterred traffic and are mainly for school safety.

- Safety of children should be considered. There is a presence of school and resident families with children along Union Street during 2:30-3:30 PM peak.
- The 85th percentile speeds are higher on Union Street.
- Traffic turning out of Union Street at Unwin's Bridge Road queues back all the time, increase in traffic will make this worse.
- A new bicycle route crosses Union street at School Lane and Edwin Street, increased traffic will not be safe.
- Signage such as the Right Turn Only and truck load limit will need to be enforced.
- Suggestion 1: Change Bunnings to exit onto Princes Highway with signalised intersection, Smith Street to be used as entry only into Bunnings
- Suggestion 2: Left Turn and Right Turn only from Smith Street, block through movement to Union street, potentially using 'dog leg' island design.

Traffic / Tempe Tyres submission

Traffix's submission was on the behalf of Tempe Tyres, whose store is located on Princes Highway between Wentworth Street and Hart Street and warehouse located on Wood Street.

General Comment

- Tempe Tyres wholesale is located on Wood Street; additional traffic (from Bunnings) on Smith Street will impact the business.

Criticism of the LATM study

- The LATM has been prepared 'after the fact' and is concerning.
- Study and treatments should have been conducted as part of DA process and prior to approvals.
- Residents should have had the opportunity to review treatments before approvals.
- Impacts would have informed the DA assessment, lead to changes or the consent itself.
- There is no information provided on what measures are proposed (only options presented), on funding and on monitoring as operating conditions may be different to theoretical conditions as reported.
- If Bunnings is funding the LATM, has the study been done independently.
- Traffix suggested a follow-up study to ensure unforeseen issues are addressed.
- Road Safety Audit should assess the Princes Highway access and is critical to reduce impacts on Smith Street. The audit did not cover the Right Turn into Smith Street, which is expected to be intensified due to Bunnings.
- Audit does not cover safety issues along local streets.
- Keep Clear (on Princes Highway) may encourage drivers to undertake a right turn into Bunnings when sight lines are poor with stopped traffic.

Criticism of proposals

- Right turn only at the Bunnings exit will need to be enforced, otherwise traffic will use southern streets. It is likely vehicle will use local streets to access Princes Highway, particularly if delays at Smith/Princes is likely. Traffix suggested physical means to enforce right turn only from bunnings exit.
- No substantial treatments have been proposed on many local streets in the area to stop alternative routes.
- Gateway treatments are not enough and does not create any disincentive for diverted traffic to not use these streets.

- An extensive and elaborate regime is required, mid block and at intersections with South Street.
- Wentworth Street is a key street to Tempe Tyres. However, only heavy vehicle issues have been considered.
- Diverted traffic issues (from Wentworth Street) should be considered, including queueing at Princes Highway.
- Local narrowing south of Tempe Tyres is appropriate but may not be enough. More aggressive solution is required, in conjunction with proposed flat top road humps.
- No measures proposed for South Street. More measures will be needed to discourage vehicles using South Street.

Smith Street Petition

A petition comprising 30 signatures by Union Street residents has been provided by email, summarising issues and concerns regarding the proposed treatment options.

- Smith Street residents do not agree to any loss of on-street parking. However, they generally support a proposal which results in the lowest impact to on-street parking.
- The need for a kerb blister may not be required if the exit to Princes Highway is signalised, and should be reviewed in connection to the feasibility study of the signals.
- An implementation of a Resident Parking Zone will deter tradesmen of Bunnings from parking on Smith Street during construction, and deter customers from parking after completion.
- Widen the footpath north of the Bunnings access instead of whole length due to the increased traffic. Retain the footpath width in the southern section as a narrower road section will result in an increase in vehicle damage and sideswiping.
- Retain sandstone kerbs due to the heritage nature.
- There is an existing DA application for a new dual driveway at 26-28 Smith Street, which interferes with the location of the proposed kerb blisters as part of Option 1 (road narrowing). The residents request a reduction in the width of the kerb blister to allow for the driveway entrance.

Officer comments in response to public exhibition

Responses to key themes identified in the public exhibition of the Draft LATM study report and concept designs are outlined in the table below.

Category / Theme	Description	Response
Existing parking issues	Residents have highlighted difficulty in parking outside their property due to parking by nearby workers, airport users and other visitors. They prefer a residential parking scheme to be implemented to improve parking in the local area.	Changes to parking schemes are beyond the scope of this LATM study and has been referred on to Council.

Efficiency of LATM proposals	Residents do not agree that the proposals will be able to address the increase in non-local traffic and do not reduce non-local traffic volumes.	The proposals aim to deter non-local traffic by reducing vehicle speeds and increasing travel time as to make routes using local roads less desirable for non-local traffic. LATM type was selected based on traffic volumes, speed and/or crash history.
Existing rat-running and non-local traffic issues	Residents have highlighted existing rat-running routes and use by non-local traffic. They have suggested schemes such as one-way system or road closures.	The LATM study focuses on the additional non-local traffic caused by Bunnings and may not universally address existing rat running issues
Alternative Union Street proposal	Union Street residents have suggested closing Union Street to Smith Street through traffic, i.e. left turn entry only from Princes Highway	This option may be required given the direct route along Union Street and presence of schools. This option is to be further explored.
Children safety	Local streets often have children and residents have highlighted that additional Bunnings related traffic will make the streets unsafe	The LATM study aims to minimise additional traffic by reducing through traffic and vehicle speeds using the selected proposals
Alternative Bunnings entrance and exit	Bunnings traffic should not exit via Smith Street and an alternative access be provided on Princes Highway.	An alternative access on Princes Highway will be subject to discussions and approval by Transport for NSW.
Alternative transport	Residents preferred solutions that encourage alternative transport such as cycleways to ensure walking and cycling are more attractive	Active transport is not explicitly under the scope of this project but has been considered in some treatments presented (such as Smith Street)

The draft LATM study report will be revised to address comments gathered during community consultation and include a summary of the engagement outcomes. There will be adjustments to the proposals in response to some of the comments received. A preferred option will be adapted for each street and presented in the report.

Does your project have multiple engagement stages?

This project does not have multiple engagement stages.

Item No: **LTC0622(1) Item 10**

Subject: **GEORGE STREET, LEICHHARDT - PROPOSED 'MOTOR BIKE ONLY' PARKING RESTRICTIONS (GULGADYA - LEICHHARDT WARD/ BALMAIN ELECTORATE/ LEICHHARDT PAC)**

Prepared By: Vinoth Srinivasan - Engineer - Traffic and Parking Services

Authorised By: George Tsaprounis - Coordinator – Traffic and Parking Services

SUMMARY

Council has received concerns regarding obstructed resident access in George Street for No.52 George Street, Leichhardt. In order to prevent vehicles impeding resident access it is proposed to retain one (1) 5.6m parking '2P 8am-6pm Mon-Fri, Permit Holders Excepted' parking space and utilise the remaining redundant kerb space to install 2m of 'Motor Bike Only' parking.

RECOMMENDATION

THAT one (1) 5.6m '2P 8am-6pm Mon-Fri, Permit Holders Excepted' parking space be retained and a 2m 'Motor Bike Only' parking space be installed to utilise the redundant kerb space in front of No.52 George Street, Leichhardt.

BACKGROUND & OTHER STAFF COMMENTS

Council has received concerns regarding obstructed resident access in George Street for No.52 George Street, Leichhardt.

The existing 7.6m kerb space in George Street in front of No.52 George Street is insufficient to accommodate two (2) standard vehicles without impeding resident access to No.52 George Street, Leichhardt. At times, two vehicles parked in this kerb space, along with vehicles parked across driveways on the opposite side of George Street may hinder vehicular access to the property.

In order to prevent vehicles impeding resident access it is proposed to retain one (1) 5.6m parking '2P 8am-6pm Mon-Fri, Permit Holders Excepted' parking space and utilise the remaining redundant kerb space to install 2m of 'Motor Bike Only' parking.

FINANCIAL IMPLICATIONS

Nil.

PUBLIC CONSULTATION

A letter outlining the proposal was mailed out to 10 properties in George Street and Flood Street, Leichhardt requesting residents' views regarding the proposal. 1 response was received in objection to the proposal.

The main traffic and parking related concerns raised by the resident are outlined in the below table:

Residents' Comments	Officer Comments
The subject 7.6m kerb space is utilized by larger vehicles such as delivery trucks and vans. These oversized vehicles need extra space to park and load/unload materials without impeding accessway to driveway. Furthermore, people operating these vehicles need extra space to ensure their safety when they are loading/unloading materials from the back of vehicles. The proposal poses a safety risk for these personnel who may be struck by vehicles exiting driveways during the unload process. It is not practical to expect drivers to park	George Street is situated in a residential area and the service vehicles attending the street will make short term, non-frequent trips.

The proposal will have the unintended effect of impinging on the driveway of No.54 George Street which will be shifting the problem from one area to another. This issue can be sufficiently managed via driveway line markings.	Driveway line markings only act as a guide and are not enforceable. It should be noted that No.52 George Street already has driveway line markings in front of the property.
Installing 'Motor Bike Only' parking restrictions will increase noise levels in the street and there is already many spaces for motorbikes to park in the area.	Noted.
I have owned the property in close proximity to No.52 George Street for 20 years and not experienced or observed the driveway being blocked or access being restricted due to vehicles being double parked in the allocated space at the front of the property.	Council's enforcement team has received a number of complaints regarding illegal parking behavior in front of No.52 George Street.

ATTACHMENTS

Nil.

Item No: **LTC0622(1) Item 11**

Subject: **NELSON LANE, ANNANDALE - PROPOSED NO PARKING RESTRICTIONS (BALUDARRI-BALMAIN WARD/ BALMAIN ELECTORATE/ LEICHHARDT PAC)**

Prepared By: Brinthaban Baskaran - Graduate Traffic Engineer

Authorised By: George Tsaprounis - Coordinator – Traffic and Parking Services

SUMMARY

The eastern side of Nelson Lane, Annandale has existing 'No Parking 8:00am-6:00pm Mon-Fri' restrictions. This report recommends removing this part-time 'No Parking' zones and instead installing full-time 'No Parking' zones for the residents requiring access to their off-street parking.

RECOMMENDATION

THAT:

1. **The 'No Parking 8:00am – 6:00pm Mon-Fri' restrictions be removed on the eastern side of Nelson Lane, Annandale, opposite the rear accesses of No.253-No.257, No.261-No.263 and No.269-No.331 Nelson Street.**
2. **Full-time 'No Parking' restrictions be installed on the eastern side of Nelson Lane, opposite the rear accesses of No.253-No.257, No.263, No.269, No.297, No.311, No.315 and No.331 Nelson Street.**

BACKGROUND

The existing 'No Parking 8:00am-6:00pm Mon-Fri' restrictions were installed in 2015, to improve resident access as there were issues with construction workers parking due to the nearby Tramshed development. Both full-time and part-time 'No Parking' restrictions were considered but residents at the time preferred the part-time restrictions as the issue was only apparent during construction hours.

A survey was sent out in 2021 and majority of residents did not support a full time 'No Parking' restriction on the eastern side of Nelson Lane. Based on feedback received, majority of the community requested to remove the existing 'No Parking 8:00am-6:00pm Mon-Fri' zone, whilst some requested for a full-time 'No Parking' restriction to access their off-street parking.

FINANCIAL IMPLICATIONS

Nil.

OTHER STAFF COMMENTS

In order to address both requests, it is proposed to remove the existing 'No Parking 8:00am-6:00pm Mon-Fri' zones on eastern side of Nelson Lane, Annandale and install a 6m full time 'No Parking' zone opposite to the rear of No.257, No.263, No.269, No.285 and No.311 Nelson Street, Annandale.

The proposal is shown on the plan below.

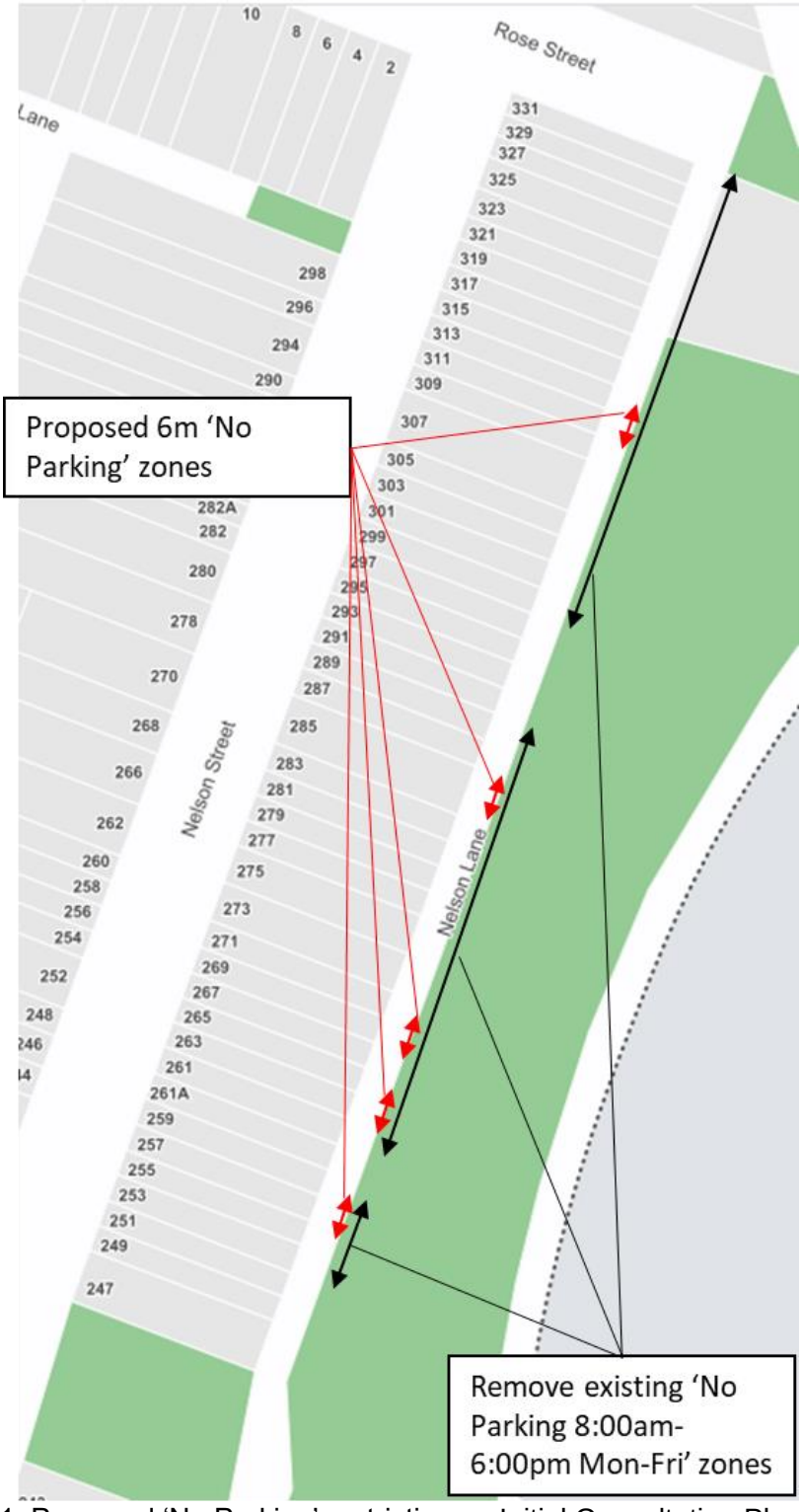


Figure 1: Proposed 'No Parking' restrictions – Initial Consultation Plan (2022)

After assessing feedback from the community, a revised 'No Parking' plan was developed as shown in Figure 2. The changes take into consideration the rate of support received during public consultation and residents who require access to their off-street parking.

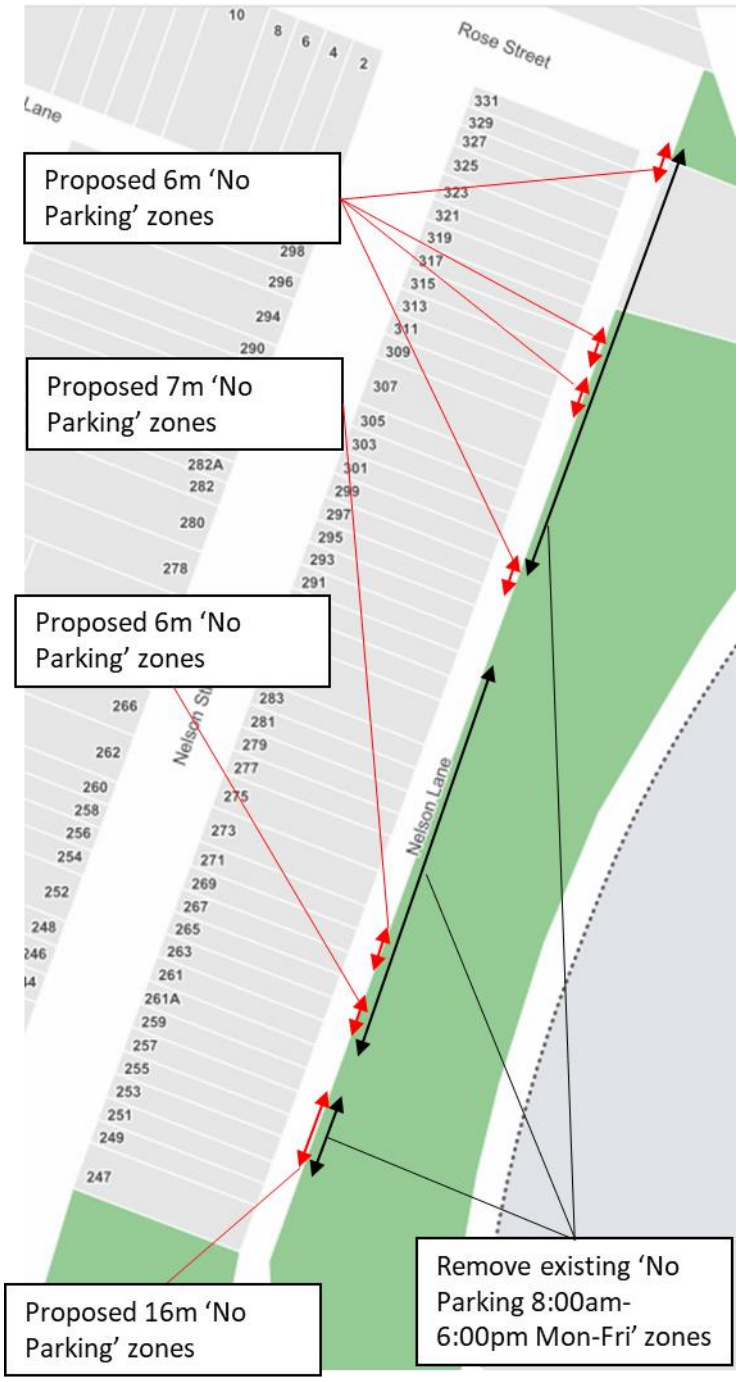


Figure 2: Revised 'No Parking' restrictions

The review of the consultation feedback has resulted in the following recommendation:

- Full-time 'No Parking' zone opposite to the rear of No.253-257, No.263, No.269, No.297, No.311, No.315 and No.331 Nelson Street, Annandale.
- Remove existing 'No Parking 8:00am – 6:00pm' zones opposite to the rear of No.253-No.257, No.261-No.289 and No.299-No.331

PUBLIC CONSULTATION

A letter outlining the above proposal was mailed to the affected properties (52 properties) in Nelson Street (eastern side), requesting residents' feedback on revised proposal.

Thirteen (13) responded to the survey, Twelve (12) in support and one (1) in objection of the proposal.

Resident Comment	Officer Comment
6m 'No Parking' zone is not sufficient to access our off-street parking and it has to be extended.	A swept path analysis was conducted, and the proposal is to extend the 'No Parking' zone to 7m at rear of the property.
No.285 Nelson Street does not require a 'No Parking' zone opposite the rear of our property.	Noted.

CONCLUSION

The revised 'No Parking' restrictions recommendation to be supported.

ATTACHMENTS

Nil.

Item No: **LTC0622(1) Item 12**

Subject: **STEPHEN STREET, BALMAIN (AT VINCENT STREET) - PROPOSED KERB INDENTATION (BALUDARRI - BALMAIN/ BALMAIN ELECTORATE/ LEICHHARDT PAC)**

Prepared By: Vinoth Srinivasan - Engineer - Traffic and Parking Services

Authorised By: George Tsaprounis - Coordinator – Traffic and Parking Services

SUMMARY

Council is planning to improve the existing parking arrangements in Stephen Street, Balmain (Vincent Street to End) by adjusting the existing kerb on the western side of the street to widen the road and forming indented parking bays. The proposed works is intended to improve pedestrian and motorist safety in the area.

RECOMMENDATION

THAT the attached detail design plan (Design Plan No.10203) for the proposed kerb indentation on the western side of Stephen Street, Balmain be approved.

BACKGROUND & OTHER STAFF COMMENTS

The detailed design plan shown in **Attachment 1** outlines the proposed works on Stephen Street, Balmain and includes the following treatments:

- Removal of existing kerb & gutter on the western side of the street and construction of new kerb only along new alignment to form indented parking bays (from A to B) as shown on attached plans;
- Construction of new dish drain along alignment of removed kerb & gutter (from A to B) as shown on attached plans;
- Reconstruction of existing asphalt footpath with new asphalt footpath (western side adjacent to Birrung Park);
- Reconstruction of some damaged sections of asphalt footpath with new asphalt footpath;
- Resurfacing of the road pavement in Stephen Street with new asphalt;
- Construction of 4 new kerb ramps (where shown on the plans);
- Reconstruction of some damaged sections of kerb & gutter with new concrete kerb & gutter;
- Upgrade of existing stormwater drainage pits with new grates and inlet lintels;
- Reconstruction of the entry driveway into Birrung Park;
- Installation of new No Stopping signs to ensure safe access, parking and manoeuvring into and out of Stephen Street; and
- Installation of associated pavement line marking and signage as required.

The proposal will not result in the loss of any on-street parking on Stephen Street, Balmain.

FINANCIAL IMPLICATIONS

Funding of $35,000 has been allocated to this project for construction in the 2022/2023 Traffic Facilities (LATM) Capital Works Program.

PUBLIC CONSULTATION

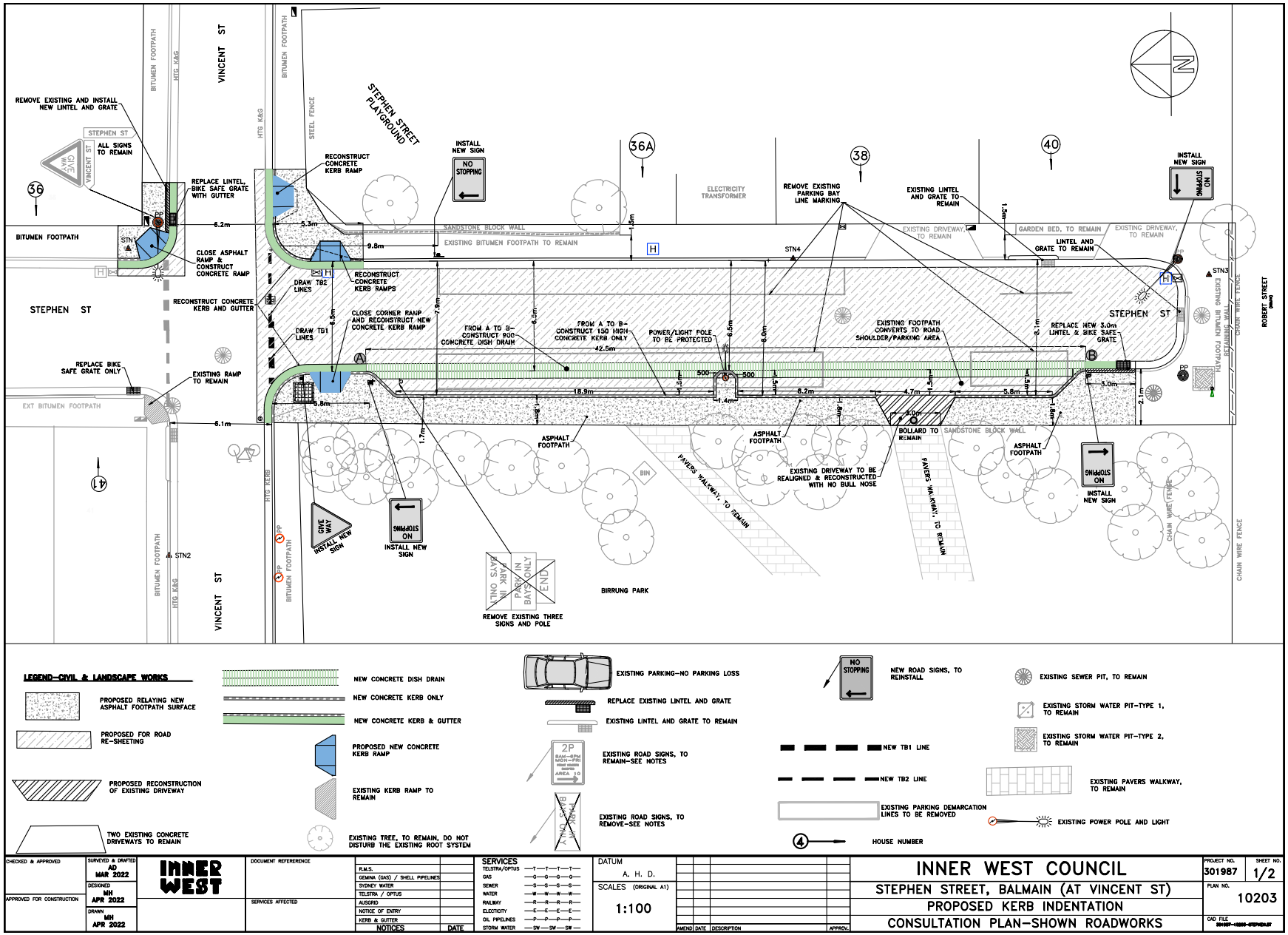
A letter outlining the proposal was mailed out to 6 properties in Stephen Street and Vincent, Balmain requesting residents' views regarding the proposal. Two responses were received in general support with request for changes.

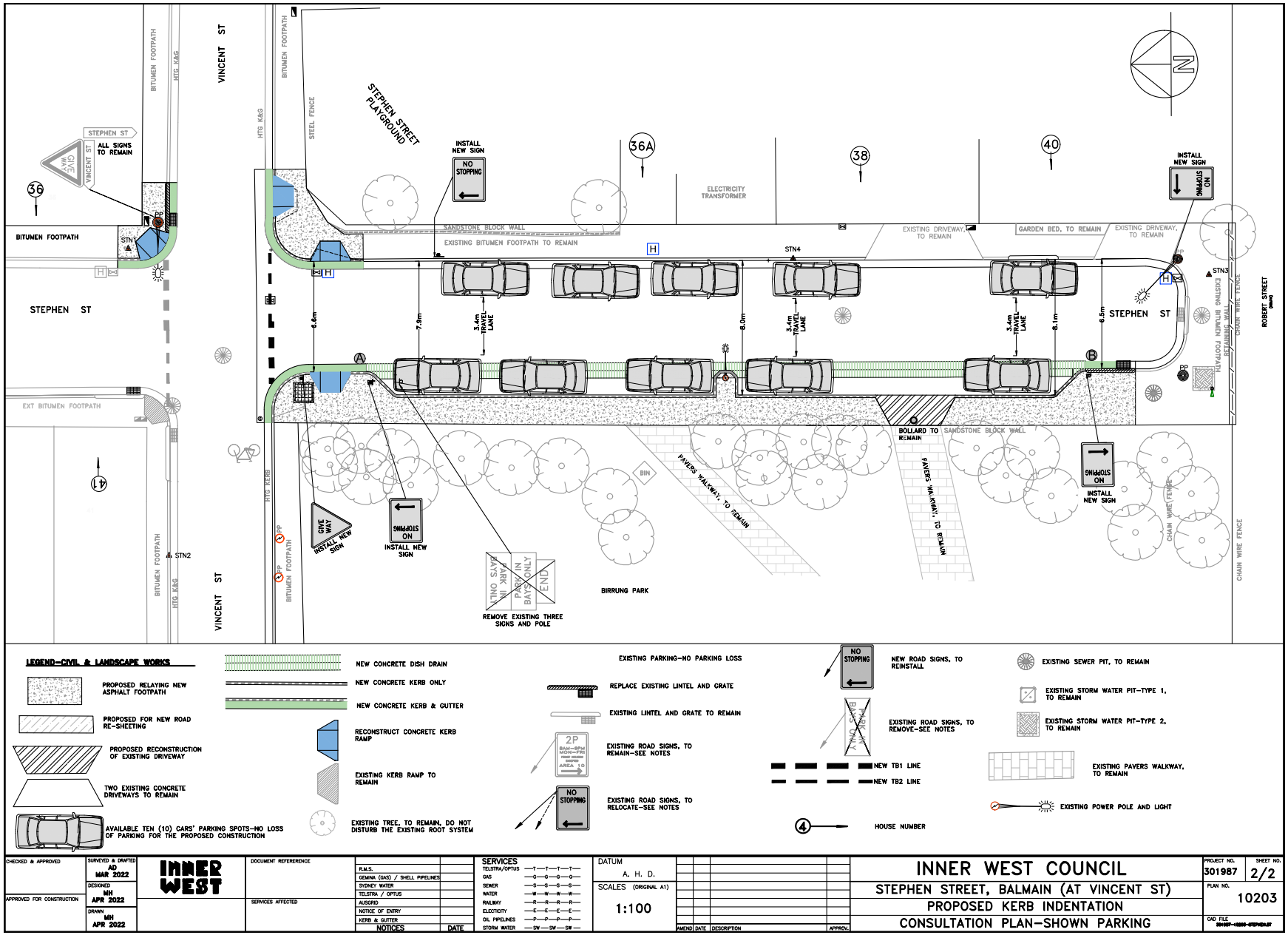
The main traffic and parking related concerns raised by the residents are outlined in the below table:

Residents' Comments	Officer Comments
The proposed location of the bollard should be shifted further down the walkway by approximately one metre. This will make it easier for residents to turn around in the driveway towards the end of the street.	The bollard will move 0.5m toward the park - away from the driveway. This amendment will be shown on the construction plans.
Install 'No Stopping' signs or line marking in front of No.40 Stephen Street to prevent vehicles from parking across the driveway, restricting a vehicles ability to turn around in the cul-de-sac.	The installation of 'No Stopping' signs are not warranted at this stage. The parking on Stephen Street will be monitored after the completion of the roadworks and Council may take further action if it found that there is a high level of non-compliance.

ATTACHMENTS

1.⇩ Detailed Design Plan - Stephen Street, Balmain (At Vincent Street) - Proposed Kerb Indentation


VINCENT ST
STEPHEN ST
STEPHEN STREET PLAYGROUND
BITUMEN FOOTPATH
HTG K&G
STEEL FENCE
SANDSTONE BLOCK WALL
ELECTRICITY TRANSFORMER
EXISTING DRIVEWAY TO REMAIN
GARDEN BED, TO REMAIN
EXISTING DRIVEWAY, TO REMAIN
EXISTING BITUMEN FOOTPATH TO REMAIN
EXT BITUMEN FOOTPATH
ROBERT STREET
CHAIN WIRE FENCE
BIRRUNG PARK
BIN
REMOVE EXISTING AND INSTALL NEW LINTEL AND GRATE
ALL SIGNS TO REMAIN
REPLACE LINTEL, BIKE SAFE GRATE WITH GUTTER
CLOSE ASPHALT RAMP & CONSTRUCT CONCRETE RAMP
RECONSTRUCT CONCRETE KERB RAMP
INSTALL NEW SIGN
NO STOPPING
RECONSTRUCT CONCRETE KERB RAMPS
DRAW TB2 LINES
DRAW TB1 LINES
RECONSTRUCT CONCRETE KERB AND GUTTER
CLOSE CORNER RAMP AND RECONSTRUCT NEW CONCRETE KERB RAMP
REPLACE BIKE SAFE GRATE ONLY
EXISTING RAMP TO REMAIN
FROM A TO B- CONSTRUCT 900 CONCRETE DISH DRAIN
FROM A TO B- CONSTRUCT 150 HIGH CONCRETE KERB ONLY
POWER/LIGHT POLE TO BE PROTECTED
REMOVE EXISTING PARKING BAY LINE MARKING
EXISTING LINTEL AND GRATE TO REMAIN
LINTEL AND GRATE TO REMAIN
EXISTING FOOTPATH CONVERTS TO ROAD SHOULDER/PARKING AREA
REPLACE NEW 3.0m LINTEL & BIKE SAFE GRATE
ASPHALT FOOTPATH
BOLLARD TO REMAIN
EXISTING DRIVEWAY TO BE REALIGNED & RECONSTRUCTED WITH NO BULL NOSE
PAVERS WALKWAY, TO REMAIN
ONE WAY
INSTALL NEW SIGN
STOPPING ON
REMOVE EXISTING THREE SIGNS AND POLE
PARKING BAYS ONLY
PARK IN BAYS ONLY
END
STN1
STN2
STN3
STN4
36
36A
38
40
41
A
B
LEGEND–CIVIL & LANDSCAPE WORKS
PROPOSED RELAYING NEW ASPHALT FOOTPATH SURFACE
PROPOSED FOR ROAD RE–SHEETING
PROPOSED RECONSTRUCTION OF EXISTING DRIVEWAY
TWO EXISTING CONCRETE DRIVEWAYS TO REMAIN
NEW CONCRETE DISH DRAIN
NEW CONCRETE KERB ONLY
NEW CONCRETE KERB & GUTTER
PROPOSED NEW CONCRETE KERB RAMP
EXISTING KERB RAMP TO REMAIN
EXISTING TREE, TO REMAIN, DO NOT DISTURB THE EXISTING ROOT SYSTEM
EXISTING PARKING–NO PARKING LOSS
REPLACE EXISTING LINTEL AND GRATE
EXISTING LINTEL AND GRATE TO REMAIN
EXISTING ROAD SIGNS, TO REMAIN–SEE NOTES
EXISTING ROAD SIGNS, TO REMOVE–SEE NOTES
NEW ROAD SIGNS, TO REINSTALL
NEW TB1 LINE
NEW TB2 LINE
EXISTING PARKING DEMARCATION LINES TO BE REMOVED
HOUSE NUMBER
EXISTING SEWER PIT, TO REMAIN
EXISTING STORM WATER PIT–TYPE 1, TO REMAIN
EXISTING STORM WATER PIT–TYPE 2, TO REMAIN
EXISTING PAVERS WALKWAY, TO REMAIN
EXISTING POWER POLE AND LIGHT
CHECKED & APPROVED
APPROVED FOR CONSTRUCTION
SURVEYED & DRAFTED AD MAR 2022
DESIGNED MH APR 2022
DRAWN MH APR 2022
INNER WEST
DOCUMENT REFERENCE
SERVICES AFFECTED
R.M.S.
GEMINA (GAS) / SHELL PIPELINES
SYDNEY WATER
TELSTRA / OPTUS
AUSGRID
NOTICE OF ENTRY
KERB & GUTTER
NOTICES
DATE
SERVICES
TELSTRA/OPTUS
GAS
SEWER
WATER
RAILWAY
ELECTRICITY
OIL PIPELINES
STORM WATER
DATUM
A. H. D.
SCALES (ORIGINAL A1)
1:100
AMEND DATE DESCRIPTION APPRV.
INNER WEST COUNCIL
STEPHEN STREET, BALMAIN (AT VINCENT ST)
PROPOSED KERB INDENTATION
CONSULTATION PLAN–SHOWN ROADWORKS
PROJECT NO. 301987
SHEET NO. 1/2
PLAN NO. 10203
CAD FILE


STEPHEN ST
VINCENT ST
BITUMEN FOOTPATH
HTG K&G
STEEL FENCE
STEPHEN STREET PLAYGROUND
INSTALL NEW SIGN
NO STOPPING
ALL SIGNS TO REMAIN
ONE WAY
SANDSTONE BLOCK WALL
EXISTING BITUMEN FOOTPATH TO REMAIN
ELECTRICITY TRANSFORMER
EXISTING DRIVEWAY TO REMAIN
GARDEN BED, TO REMAIN
EXISTING DRIVEWAY, TO REMAIN
STN1
STN2
STN3
STN4
8.6m
7.9m
3.4m TRAVEL LANE
8.0m
6.5m
8.1m
EXT BITUMEN FOOTPATH
BOLLARD TO REMAIN TO SANDSTONE BLOCK WALL
PAVERS WALKWAY, TO REMAIN
BIN
BIRRUNG PARK
REMOVE EXISTING THREE SIGNS AND POLE
CHAIN WIRE FENCE
ROBERT STREET
LEGEND–CIVIL & LANDSCAPE WORKS
PROPOSED RELAYING NEW ASPHALT FOOTPATH
PROPOSED FOR NEW ROAD RE–SHEETING
PROPOSED RECONSTRUCTION OF EXISTING DRIVEWAY
TWO EXISTING CONCRETE DRIVEWAYS TO REMAIN
AVAILABLE TEN (10) CARS' PARKING SPOTS–NO LOSS OF PARKING FOR THE PROPOSED CONSTRUCTION
NEW CONCRETE DISH DRAIN
NEW CONCRETE KERB ONLY
NEW CONCRETE KERB & GUTTER
RECONSTRUCT CONCRETE KERB RAMP
EXISTING KERB RAMP TO REMAIN
EXISTING TREE, TO REMAIN, DO NOT DISTURB THE EXISTING ROOT SYSTEM
EXISTING PARKING–NO PARKING LOSS
REPLACE EXISTING LINTEL AND GRATE
EXISTING LINTEL AND GRATE TO REMAIN
EXISTING ROAD SIGNS, TO REMAIN–SEE NOTES
EXISTING ROAD SIGNS, TO RELOCATE–SEE NOTES
NEW ROAD SIGNS, TO REINSTALL
EXISTING ROAD SIGNS, TO REMOVE–SEE NOTES
NEW TB1 LINE
NEW TB2 LINE
HOUSE NUMBER
EXISTING SEWER PIT, TO REMAIN
EXISTING STORM WATER PIT–TYPE 1, TO REMAIN
EXISTING STORM WATER PIT–TYPE 2, TO REMAIN
EXISTING PAVERS WALKWAY, TO REMAIN
EXISTING POWER POLE AND LIGHT
SERVICES
TELSTRA/OPTUS
GAS
SEWER
WATER
RAILWAY
ELECTRICITY
OIL PIPELINES
STORM WATER
DATUM
A. H. D.
SCALES (ORIGINAL A1)
1:100
INNER WEST COUNCIL
STEPHEN STREET, BALMAIN (AT VINCENT ST)
PROPOSED KERB INDENTATION
CONSULTATION PLAN–SHOWN PARKING
PROJECT NO. 301987
SHEET NO. 2/2
PLAN NO. 10203