INTERIM RESPONSE TO SUBMISSIONS REPORT

Planning Proposal: 1 Crescent Street, Holroyd - PP_2019_CUMB_002_00

Prepared for

TIBERIUS (HOLROYD) PTY LTD

FOR SUBMISSION TO DPIE

30 October 2020

URBIS

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1. INTRODUCTION

1.1. OVERVIEW

This Interim Response to Submissions (**RTS**) report has been prepared by Urbis Pty Ltd (**Urbis**) in response to the Government/agency and public submissions received during the exhibition of the Planning Proposal (**PP**) for the amendment to the site zoning and built form controls under the Holroyd Local Environmental Plan 2013 (**HELP 2013**), for 1 Crescent Street, Holroyd NSW.

The PP was subject to the former Pre-Gateway Review Process (now Rezoning Review) in 2016, following the former Holroyd Council (now Cumberland Council (**Council**)) failure to determine the proposal within 90 days of formal lodgement. The former Sydney West Central Planning Panel (now Sydney Central City Planning Panel) considered the proposal and concluded that it had sufficient merit to proceed to Gateway, subject to conditions. On 2 November 2017, the Panel was appointed as the planning proposal authority and on 17th July 2019 Gateway determination was issued.

After minor amendments to the PP at the Gateway stage to become consistent with the Gateway conditions, the PP was able to proceed to public exhibition during August to September 2020. During this period, a total of 14 submissions were received both in support and opposition from a range of sources including the local community, Government agencies, industry, key stakeholders and interest groups. The number of submissions is low for a development of this scale, particularly from the local community, but substantive issues have emerged particularly through the Council and TfNSW submissions which are the primary focus of this response.

This is an interim RTS report which has identified and responds to all of the issues raised in the community, Council and agency submissions. It has been prepared as an "interim response", owing to the need to firstly address the threshold issue of traffic capacity of the surrounding road infrastructure to accommodate the proposed development. It has been agreed with the Department (DPIE) to approach this task on an iterative basis, working to reach an agreed understanding on the traffic capacity issues in the first instance before further finalising any design changes. The proposal by TfNSW to pursue a further road reservation at the north-eastern end of the site will require an updated concept design to accommodate this, but this re-design has been deferred until further understanding is reached on site density informed by the traffic capacity of the road network based on the current GFA.

This means that in the first instance, this interim RtS is seeking to resolve and reach an agreed understanding on the capacity of the surrounding road infrastructure prior to undertaking any re-design or large scale built form amendments. In responding to the traffic issues raised, additional traffic investigations and assessments have been undertaken, including appointing a traffic peer review, to address potential environmental impacts of the Project. Following further engagement with TfNSW and Council, the proponent will prepare a final RTS for the Department's consideration.

1.2. RTS STRATEGY

1.2.1. Background to the Interim RTS Report

In consultation with Department of Planning, Industry and Environment (**DPIE**) on 19 October 2020, it was determined that the content of this document would represent an interim or preliminary RTS. Several matters were raised from public and agency submissions, however the key or threshold issue to address initially is traffic and road/intersection capacity and obtaining consensus with TfNSW on the capacity on the surrounding state road network. Other key themes in the submissions (which a preliminary response is provided) are:

- Built form design;
- Site connectivity; and
- Strategic planning policy alignment.

It was also agreed with DPIE that TfNSW's road reservation declaration is to be acknowledged and accommodated and will be a matter that the planning authority, Sydney Central Planning Panel, will consider in making a determination on the draft LEP. Whilst it is the proponent's position that the notice of the reservation itself has no legal effect until the land is actually reserved, in a practical sense, it is recognised that this matter needs to be considered in the progression of the Planning Proposal.

Therefore, this preliminary RTS acknowledges that the resolution of the traffic capacity is the critical item that requires resolution before contemplating or finalising any revised concept (that is responsive to a future road reservation). A formal RTS will be prepared and targeted for submission as early as possible but likely early 2021, following further discussions with TfNSW.

As requested by DPIE, an indicative program to work towards meeting the July 2021 deadline for finalisation of the LEP as per the amended Gateway determination, is outlined below.

As such, the key fundamental matter discussed in this preliminary RTS is **traffic infrastructure capacity particularly of the surrounding state road network and local street system** as the critical planning item to be resolved as a result of the submissions.

This RTS does address other matters in the submissions such as the scale of the proposed built form and associated impacts as we are of the opinion that they are not of major substance and are manageable in the context of the site and can be responded to in greater depth in concert with the preparation of the revised alternate concept design.

1.2.2. Indicative Program to Finalisation of the LEP

Table 1 Indicative LEP Finalisation Program

Item	Timing	Comment
Lodgement of interim RTS	31 October 2020	This interim RTS primarily comprises a comprehensive response to traffic matters, namely updated traffic modelling by TTPP to address TfNSW's & Council's submission, including a peer review.
Resolution of traffic capacity modelling with TfNSW and Preliminary assessment of interim RTS	November/ December 2020	DPIE to facilitate engagement with proponent and TfNSW (initially in mid-November) with an aim to resolve traffic impacts of the proposal. This forum will aim to reach consensus on the traffic capacity of the surrounding network and the proposed development yield.
DPIE to update/brief Panel of status	Prior to end of 2020	Update on RTS and engagement strategy and timeline.
Preparation of an updated concept plan	December 2020/ January 2021	Proponent to prepare a revised design that reflects the supportable floor space from a traffic capacity basis (following agreement with TfNSW).
Issue updated RTS and amended design	January/ February 2021	Submission of a finalised RTS including an updated design taking into account the road reservation and how this responds to the traffic modelling outputs and built form issues previously raised within the submissions.
DPIE final assessment	March/ April 2021	DPIE to prepare final assessment and recommendation.
Sydney Central City Planning Panel	March/ April 2021	Panel determination.
Final plan making	May to July 2021	Finalisation and making of the LEP including Parliamentary Counsel inputs.

1.3. PURPOSE AND STRUCTURE OF THIS REPORT

This interim RTS report documents and considers the key threshold issues raised in the submissions made to the Panel during the public exhibition of the PP and is structured as follows:

- **Section 2: Overview and Background** – sets out the key components of the Planning Proposal, including findings and the relevant approval pathway.
- **Section 3**: **Overview of Submissions** – provides an overview of the process that was used to analyse the issues raised in each submission, as well as an overview of the key issues raised by the community and government agencies.
- **Section 4: Response to Government and Agency Submissions** – summarises and responds to the issues raised within the Government agonies submissions.
- **Section 5: Response to Community Submissions** – summarises and responds to the issues raised within the community submissions.
- **Section 6: Conclusion**

The following documentation is attached and should be read in association with this RtS:

- **Appendix A - Addenda to Transport Impact Assessment**, prepared by TTPP
- **Appendix B - Traffic peer review letter**, prepared by SLR
- **The Community Engagement Outcomes report**, prepared by Urbis, however will be submitted under separate cover.

2. PROPOSAL OVERVIEW AND BACKGROUND

2.1. BRIEF SUMMARY OF THE PROPOSAL

Table 2 below provides a summary of the key elements of the PP as proposed under PP_2019_CUMBE _002_00.

Table 2 PP Description Summary

Planning Proposal Element	**Summary of Proposal**
Summary	Rezoning from B5 Business Development to part B4 Mixed Use, R4 High Density Residential, SP2 Infrastructure and RE1 Public Open Space.
Local Government Area	Cumberland City Council
Site Owner/ Proponent	Tiberius (Holroyd) Pty Ltd
Site Address	1 Crescent Street, Holroyd NSW
Legal Description	Lot 10 DP 808585
Site Area	37,904m^2
Current Occupant/Use	Vacant industrial facility
Responsible Planning Authority	Sydney Central Planning Panel

In addition to the proposed amendments to the site zoning and built form controls of the HLEP 2013, the PP seeks to facilitate a mixed-use development comprising residential uses with supporting neighbourhood retail, commercial and community land uses. The Planning Proposal also seeks the inclusion of an additional clause within the HLEP 2013 in relation to '*Development requiring the preparation of a development control plan*' to ensure that development on the subject site occurs in accordance with a site-specific development control plan.

To facilitate the proposed mixed-use development, the PP includes a proposed master plan to detail the urban design principles that have guided the PP. The concept master plan outlines the vision to rezone the site and deliver a high-density mixed use development, comprising of approximately 1,255 residential apartments that will be complimented with large areas of passive and active publicly accessible open space (16,372m2), and a 12,755m² Net Lettable Area (**NLA**) retail and commercial area to service the local community.

The key aspects of the master plan and public benefits are summarised as follows:

- Major new open space which links to, and connects with, the Holroyd Sports Ground and provides large areas of publicly accessible open space (over 40% of the site);
- Excellent pedestrian connections and permeability and cycle accessibility, including provision of new opportunities for links and improvements to existing networks;
- Maximum building frontage to open space areas and well separated residential built form with proposed building heights from (32 metres to 96 metres);
- Building forms that enjoy a predominantly northerly aspect with views across open space and Holroyd Sportsground, and an appropriate interface with adjoining uses on the western boundary;
- Ground level commercial and retail uses on the eastern part of the site that include new local shops and facilities (proposed to include supermarket, specialty retail, gym, childcare, medical, showroom, cafes and restaurants);

- Retention of on-site employment, over 1,000 jobs upon completion, while also providing new housing to cater for a diversity of housing demand that responds to the surrounding residential neighbourhood;
- Provision of affordable housing;
- A commitment to design excellence and visual improvement to a prominent site at the Gateway to Holroyd;
- Good vehicle access and circulation with separate commercial and residential access;
- A Planning Proposal that is consistent with Local and State planning strategies of metropolitan Sydney.

2.2. PROPOSAL OBJECTIVES

The PP objectives are to obtain the rezoning and amendment to the HLEP 2013 built form controls, with the focus being:

- Make a positive contribution to the locality by providing a quality integrated urban design solution that respects the existing built form and natural features of the site and surrounding neighbourhood;
- To seek for this Planning Proposal to allow the rezoning of the site to high density residential and mixed use, with an uplift to existing built form controls;
- Maintain employment generating floor space on the site, whilst being sympathetic to the existing and proposed surrounding key centres in Merrylands, Granville, and Parramatta;
- Accommodate a mix of dwellings and deliver a concept master plan for the site that integrates community, transport, environmental and economic outcomes;
- Develop and provide publicly accessible open space, connectivity to surrounding area, and passive recreational spaces that capture riparian and amenity outcomes;
- Maintain the amenity of surrounding businesses and residents through the provision of high-quality design, capable of achieving SEPP 65 compliance; and
- Take full advantage of a large site that can provide significant community benefit through an integrated urban design solution.

2.3. PROPOSED PUBLIC BENEFITS

As part of the PP, the Applicant has proposed several opportunities for social infrastructure and public benefits by way of a Voluntary Planning Agreement (VPA) and state contributions. The purpose of these improvements is to focus on connectivity for the site and its surrounding context. The Applicant is of the opinion that a number of benefits are available to the locality should the Panel and Council elect to proceed with the available opportunities. Additional detail on the opportunities was presented in Architectus' 'Urban Design Response to Panel comments March 2020' and issued to the Panel in April 2020.

Table 3 Proposed Public Benefits

Potential Opportunity	Public Benefit	Potential Provision
State Contributions		
Improvements to underpass connection towards Parramatta/ Harris Park.	Improves quality and safety of pedestrian connections between Holroyd and Parramatta including e.g. for residents of Parramatta walking to Holroyd Sportsground.	Widened path for pedestrians and re-landscaped creek edge. Improvements for lighting.
Potential for direct connection to Church Street west from underpass.	Improved connectivity – Parramatta to Holroyd. Further links to Church Street Parramatta Cycleway noted in	New connections from Cycleway to existing Church Street South.

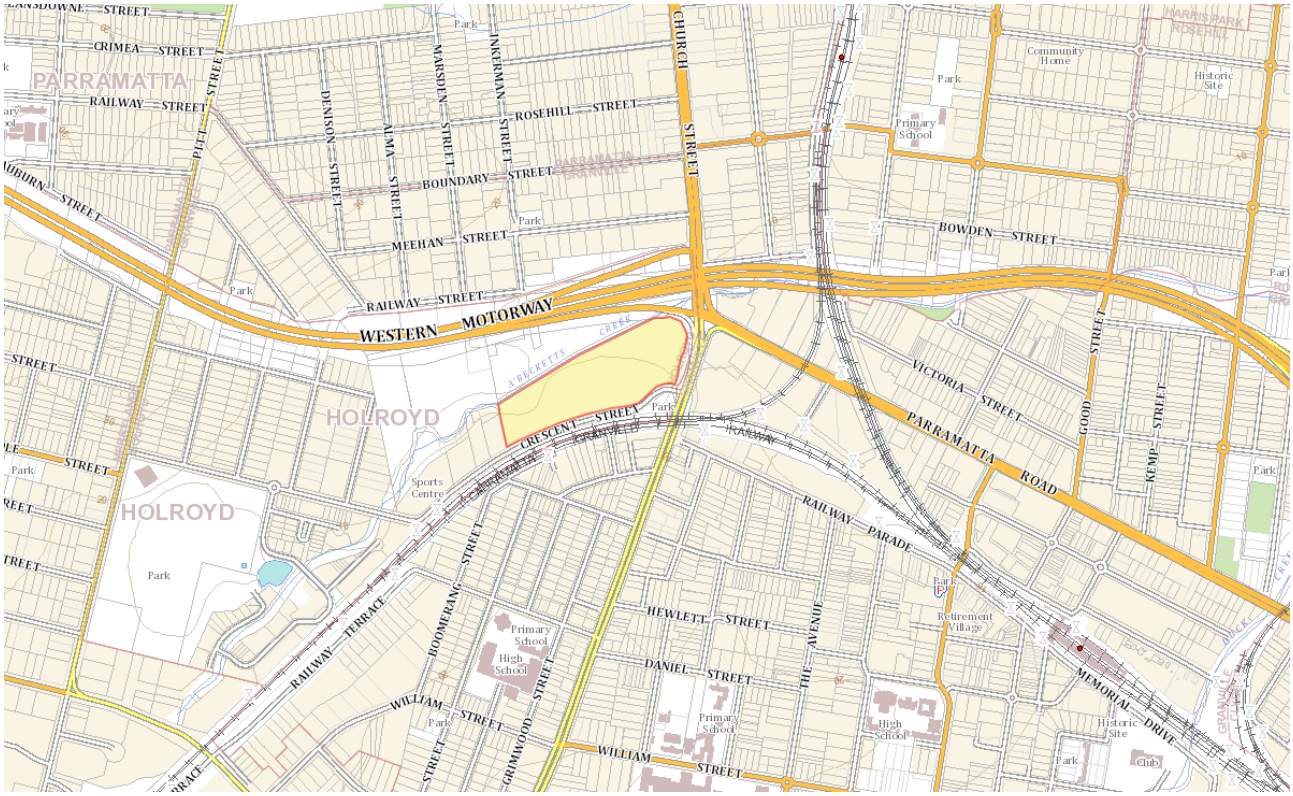
Potential Opportunity	Public Benefit	Potential Provision
	Parramatta Bike Plan as an existing cycle link in need of improvement.	
Funding for Church Street pedestrian/cycleway improvements	Church Street south of Parramatta identified as 'requires improvement' in Parramatta Bike Plan (draft).	Footpath upgrade.
Improvements to existing trunk cycleway.	Qualitative improvement to existing major regional cycle infrastructure.	Within local context of site: - Widening - Lighting - Resurfacing - Line marking
At-grade connection across Woodville Road.	Improved connectivity between Granville and Merrylands/Holroyd.	At grade pedestrian connection including line marking and signals.
Bridged connections across Woodville Road.	Currently no existing signalised crossing between Parramatta Road and Randle Street 615m south. Improved connectivity and quality of connection across Woodville Road walking to Granville and east of Woodville Road accessing Holroyd and Open Space network.	Considered but previously not supported by TfNSW
Local Contributions		
New open space on site.	Need for additional open space in the area to support growth including of Parramatta and Granville North. Facilities designed to complement existing provision within Holroyd Sportsground, which is primarily formal sport, through informal play areas, children's play areas and the connection to neighbourhood centre facilities.	7,714sqm park shown as RE1 zoned land 1.1Ha of total publicly accessible open space shown in masterplan with balance including new square and other spaces, total open space 16,372sqm.

Potential Opportunity	Public Benefit	Potential Provision
Connections across A'Beckett's Creek	Direct link between Holroyd Sportsground and new open space including link from formal recreation areas to local centre Wider connectivity benefits with other connectivity options shown (see adjacent). Allows pedestrian and cycle connection to the south.	Base option to include two bridges Additional connections including land bridge may be possible.
New lane on Crescent Street and new through-site links	Local connectivity improvements, including or residents south of railway who will not have to walk around the present industrial site to do so.	Through site links as shown on the master plan to be locked in through proposed DCP Additional lane proposed to south (through contribution of land on site) to improve capacity. Possible bus 'jump' lane.
Upgrade to creek edge	Greening, water quality, environmental amenity.	Existing channel with additional natural rock and planting to improve habitat. Terraced ephemeral riparian zone with lookout structures.
Improvements to Woodville Road underpass	Improving north-south connectivity from site – qualitative.	Improved separation of pedestrians from carriageway. Lighting. Artwork treatment.

2.4. PROPOSAL HISTORY

The PP applying to the land at 1 Crescent Street, Holroyd was subject to a Pre-gateway Review process in 2016 after the former Holroyd Council failed to make a decision on the proposal within the allocated 90 days. As such, the then Sydney West Central Planning Panel considered the proposal and concluded that it had sufficient merit to proceed to Gateway, subject to conditions. On 2 November 2017, the Panel was appointed as the planning proposal authority as Council elected not to complete this role.

Figure 1 Location Plan



Source: Sixmaps, 2020

The PP lodged with the Council in 2016 sought to amend the HLEP 2013 as follows:

- Rezone the site from B5 Business Development to part B6 Enterprise Corridor (including 'commercial premises' as an additional permitted use), part R4 High Density Residential, part RE1 Public Recreation and part SP2 Infrastructure;
- Increase the maximum floor space ratio (FSR) control for the site from 1:1 to between 3.4:1 and 4.2:1; and
- Increase the maximum height of building control for the site from 15m to between 32m and 96m.

The PP considered at Gateway sought to:

- Accommodate up to 1255 high-rise residential dwellings and 1,000 jobs at a location within 30 minutes of local centres and jobs;
- Retain employment use on part of the site and provide and 12,755m2 NLA of retail and commercial floor space (which has the potential to accommodate 1,000 jobs based on economic reporting submitted with the request for a Gateway determination);
- Facilitate a minimum of 7% of the total number of dwellings for affordable housing;
- Contribute to community benefit by providing publicly accessible open space (16,372m2) zoned RE1 Public Recreation for residents and workers. The proposal will provide linkages to existing public open space, cycleways and pedestrian pathways; and
- Contribute to improving the surrounding transport network by providing an easement for future public transport along Crescent Street. The proposal will provide infrastructure improvements to the Woodville Road intersection with Parramatta Road and Crescent Street.

A Gateway determination was issued for the PP by the DPIE on 17 July 2019. The determination contained conditions requiring the PP application to be updated and ensure:

- Consistency throughout the proposal;
- Consultation with the RMS (now TfNSW);

- The inclusion of affordable housing (min of 7% in perpetuity) as part of the development;
- Inclusion of a satisfactory arrangement clause; and
- Need for mandatory commercial floor space.

Upon amendment of the PP and supporting studies to address the above conditions, the Gateway required approval from the DPIE and the preparation of a site-specific development control plan (**DCP**) prior to exhibition occurring.

The Applicant subsequently requested amendments to the Gateway determination with an aim of allowing the PP to proceed to public exhibition. Following further engagement with the Panel, the requested amendment was limited to changes condition 2 which require da site specific DCP to be prepared in consultation with Council and for it to be publicly exhibited with the PP.

The Gateway determination was later amended to adopt a B4 Mixed Use zoning over part of the land in response to the draft Cumberland LEP 2020.

2.5. THE SITE

The subject site is known as 1 Crescent Street, Holroyd NSW, being legally described as Lot 10 DP 808585, and is owned by Tiberius (Holroyd) Pty Ltd. The site is located within the Holroyd Local Government Area (**LGA**) and covers an area of approximately 37,904m^2. The site is currently zoned B5 Business Development under the HELP 2013.

The subject site is located 25km to the west of the Sydney CBD, 1.6km from the Merrylands city centre and 1.1km from the Parramatta CBD. Parramatta and its surrounds are identified as a key regional centre in the context of Metropolis of Three Cities and plays an increasingly important role in Sydney's economy. The site itself is identified within the Greater Sydney Commission's Greater Parramatta and the Olympic Peninsula (**GPOP**) strategy.

The site was formerly WesTrac's NSW Operational Headquarters and is now vacant. To the immediate north, and adjacent to the site, is the Holroyd Sports Ground which is owned by Cumberland Council. This sports ground is heavily used on weekends as it includes the little athletics centre and Holroyd Sportsground. Located immediately to the west of the site along Crescent Street is a mix of light industrial type land uses that consist primarily of single storey warehouse and industrial units that then transitions to 6-8i storey residential buildings at the start of Walpole Street just prior to Holroyd Gardens.

Located adjacent to the northern boundary of the site is A'Becketts Creek. The part of the Creek that is adjacent the site's northern boundary is contained within an open drainage culvert. The drainage culvert creates a large change in landform along the northern edge of the site, effectively separating the site from the Holroyd Sportsground. To the immediate south of the site is the existing elevated railway line that provides a visual buffer between the site and the predominantly single storey and two storey residential dwellings located south of the railway line.

Figure 2 Site Context

Source: Architectus, 2020

The site has approximately 350 metres of frontage to Crescent Street, which is and will remain the primary vehicle access, and also has frontage to the Parramatta Road/Church Street/Woodville Road intersection to the east. The site is located within 1km to 1.6km walking of 4 train stations including:

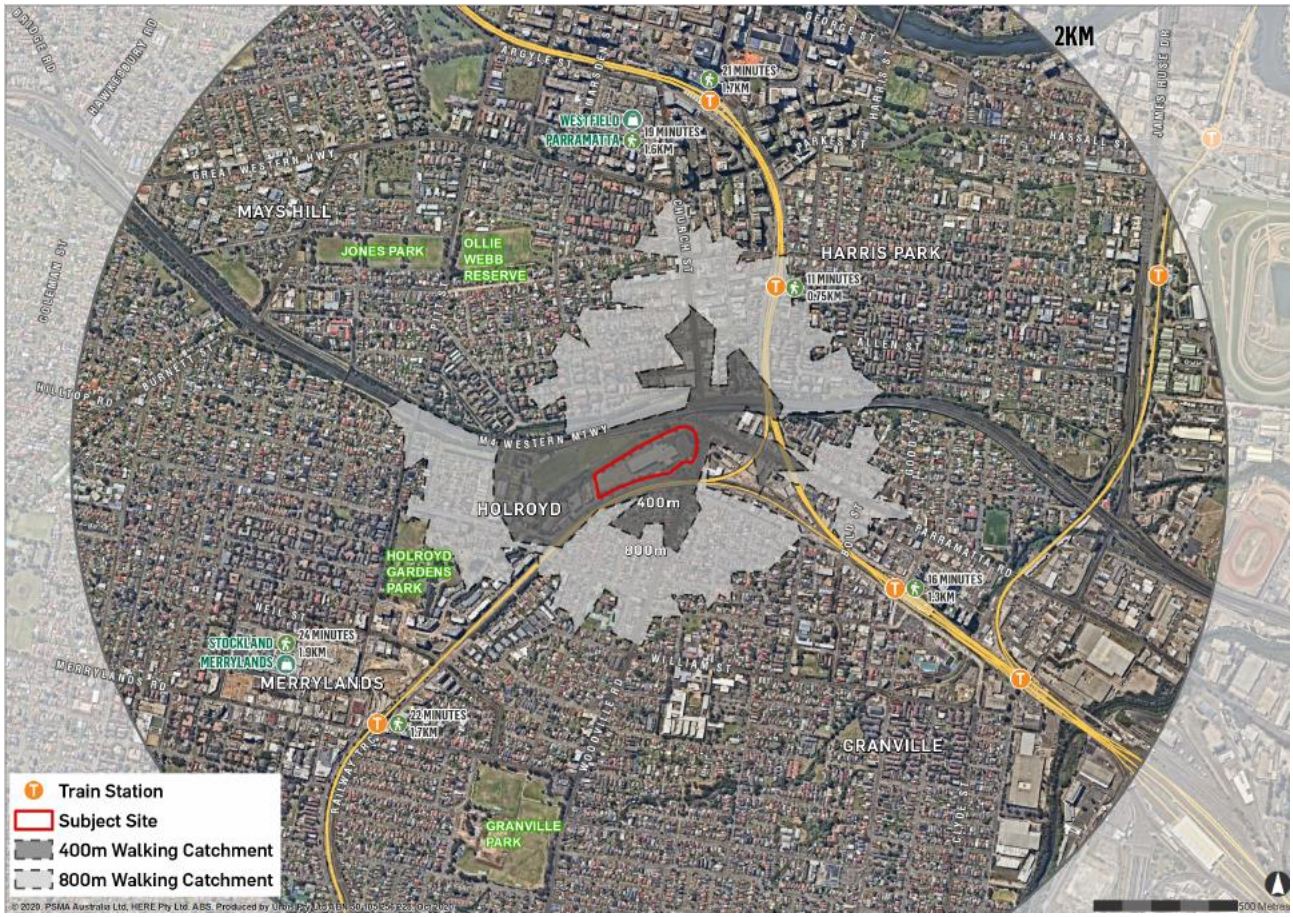
- Harris Park (750m walking)
- Granville (1.3km walking)
- Parramatta (1.6km walking)
- Merrylands (1.7km walking).

A map denoting the 400m and 800m walking catchments is denoted in Figure 3 overpage. The figure also shows the distance and time to walk to various transport nodes or key centres. It has been devised in GIS measuring distances from the proposed access connection points on Crescent Street and proposed connections across to Holroyd sportsground.

The site is connected to the active transport link that runs along the M4 Western Motorway and serviced by existing local bus networks that provide connectivity to Metropolitan Sydney along Woodville Road and Parramatta Road, and the M4 motorway.

Overall, the site is within 10-20 minutes walk of three major centres including Parramatta, (Sydney's 'Central City'), Merrylands (strategic centre), Granville, (a focus growth area under the Parramatta Road Strategy). It is also within 10-20 minutes walk of four train stations including, Parramatta, Harris Park, Granville and Merrylands.

Figure 3 Walking Catchment



2.6. STATUTORY CONTEXT

The planning proposal, as prepared by Tiberius (Holroyd) Pty Ltd has been prepared in accordance with Section 3.33 of the *Environmental Planning and Assessment Act 1979* (**EP&A Act**), and the relevant guidelines prepared by the NSW Department of Planning & Environment (**DPIE**) including, "*A Guide to Preparing Local Environmental Plans and a Guide to Preparing Planning Proposals*".

3. OVERVIEW OF SUBMISSIONS

3.1. TRANSPORT: KEY MATTER FOR CONSIDERATION

As stated earlier, the threshold issue raised in the submissions and outlined in recent discussions with DPIE, is the traffic capacity of the surrounding road infrastructure to accommodate the proposed development.

The Addenda Transport Impact Assessment prepared by TTPP, submitted with this interim RtS, has initially put forth the applicant's position on the traffic capacity which can be discussed in greater detail with TfNSW post lodgement. The Addenda statement includes the following considerations:

- Clarity and veracity of the Aimsum modelling – the detail of which is provided in Appendix 1 of the TTPP statement
- Outlining the traffic generation rates adopted for the various land uses of residential, retail and commercial
- Demonstrates the suitability of site access arrangements
- Quantifies the impacts on the State Road Network (including TfNSW Project Upgrades)
- Quantifies the impacts on the Local Road Network

The key findings from this assessment are summarised as follows:

- The Aimsun modelling shows that with the proposed development, even in 2031, both Parramatta Road/Church Street and Woodville Road / Crescent Street operate at Level of Service D or better. This correlates with the findings of Council's peer reviewer (SCT) and that of Councils own expert in the Land & Environment Court case concerning land acquisition from the subject site.
- The motorway ramps appear to be relatively unaffected by the proposal.
- The proposed development would not impose adverse impacts on the local road network other than the Pitt Street/Neil Street intersection which already experiences traffic capacity issues with or without the subject development.
- The modelled intersections in Merrylands are shown to operate below capacity even in 2031. The exception to this is the intersection of Pitt Street-Neil Street which will operate above capacity in Year 2030 even with the subject developments or those recently approved in Merrylands.
- The three site accesses on Crescent Street are expected to perform at LoS C or better.

The following sections provide our preliminary responses to the Government, agency and community submissions, noting there is the potential for future design amendments to occur which will bring rise to a further consideration of matters such as urban design, built form, access and the like. It has been agreed with the Department to approach this task on an iterative basis, working to reach an agreed understanding on the traffic capacity issues in the first instance before further finalising any design changes.

3.2. GOVERNMENT & AGENCY SUBMISSIONS

A total of five submissions were received from Government and agencies during the public exhibition of PP_2019_CUMBE_002_00. As set out in the table below, of the submissions received in this category, all five provided comment on the proposal including recommended conditions or requested additional information that should be provided, with one objecting to the proposal.

Table 4 Summary of Government & Agency Submissions

Government			**Agency**		
Object	**Support**	**Comment**	**Object**	**Support**	**Comment**
1		1			3

Government	Agency
2	3
Total number of submissions considered for analysis: 5	

The following Government and Agency bodies made a submission during the exhibition of PP_2019_CUMBE_002_00:

Government:

- Cumberland City Council; and
- City of Parramatta Council.
- **Agencies:**
- Heritage NSW;
- Sydney Water; and
- Transport for NSW (**TfNSW**).

As noted above in Table 4, of the five Government and Agency submissions received, all contained comments, with four including matters for further consideration by the Applicant. Upon reviewing the submissions, the three main issues that required addressing within Section 4 include:

- Traffic & Transport;
- Urban Design; and
- Alignment with the site's strategic context.

3.3. COMMUNITY SUBMISSIONS

The Panel received a total of eight community submissions during August and September 2020.

Of the eight submissions, two were identified as proforma letters using a signalised stylistic submission template, these have both been addressed together due to the duplication of issues raised. Of the remaining submissions, four were noted as in objection to the proposal, two submissions provided comment only and did either object or support the proposal, and a further two submission supported the proposal. Table 5 below provides an overview of the public submissions received during the exhibition of PP_2019_CUMBE_002_00.

Table 5 Overview of Public Submissions

Parameter	Number of Submissions Received
Total community submissions	9
Submissions in support	3
Submissions with comment only	2
Submissions in objection	4
Proforma submissions	2
Proforma templates	1
Total number of submissions considered for analysis	5

The Panel provided a copy of each submission with author details redacted on 7 September 2020. Each individual submission received from a member of the public that had a comment or objected to the proposal is addressed below in Section 5. Given the length of a number of submissions and duplication of certain issues, the exact wording of each submission and issue raised by members of the community has been summarised or paraphrased, however the intent and issue raised have been identified as responded to.

Of the three submissions in support, it should be noted that a local business owner, landholder and the Western Sydney Business Chamber all provided submissions in support of the proposal. These submissions praised the PP for the economic benefits that the future development would bring to the region in terms of increased land values and the creation of local jobs both through direct employment of the commercial aspect of the proposal, but as well as indirectly during construction. This is particularly important to the local Western Sydney economy during the current recession brought on as a result of the ongoing COVID-19 Pandemic.

4. RESPONSE TO GOVERNMENT & AGENCY SUBMISSIONS

This section of the RTS report details the key issues and sub-issues raised in submissions made by Government and agencies during the gateway exhibition period for the PP.

The content of each Government and agency submission has been carefully reviewed and captured. The discussion below sets out the key issues raised by category and provides a response to the submission issues. Where the response relies on the assessment of technical matters by the project team, a summary is provided, and the reader is directed to the supporting technical document for a full analysis of the issue.

Table 6 Response to Government & Agency Submissions

Issue	Comment	Response
Heritage NSW		
Local Heritage	*We have reviewed our records and note that the planning proposal will not have a direct physical or visual impact on any heritage items listed on the State Heritage Register.* *However, we do note that the proposal has the potential to impact on two Local heritage items listed under Holroyd LEP:* *1. 'Railway Memorial' (I23), Woodville Road, Granville; and* *2. 'Vauxhall Inn, circa 1938-9' (I11), 284-286 Parramatta Road, Granville.* *As the Planning Proposal Authority responsible for this matter, the Sydney Central City Planning Panel is responsible for the consideration and mitigation of any impacts from the proposal on these items.*	A submission was received from Heritage NSW (HNSW) dated 3 September 2020. The submission itself provided no issues within the submission that require a specific response, HNSW noted the proposal had potential to impact on two local heritage items under the HLEP 2013. The correspondence within the Submission is acknowledged and considered. Item I23 within the Holroyd LEP, the Granville Railway Memorial is a monument that commemorates the opening of the second railway line in Australia and the first in Sydney. The plaque is located within the open public space south of the site at the corner of Crescent Street and Woodville Road, approximately 27 metres to the south of the site. Item I23 is separated by Crescent Street and has a further 14 metre set back into the park located on a sandstone monument. Whilst no immediate impacts to the heritage item are expected as a result of the construction and operation of the proposal, consideration of the item will be given at the future DA stage, particularly in relation to any mitigation measures that will minimise potential threats to the item during construction. Similarly, Item I11, the 'Vauxhall Inn', is an 1830's constructed and 1930's rebuilt pub that maintains the original unique façade. The heritage item is located approximately 40 metres from the sites eastern boundary and is separated by the six lane Woodville Road. Like the above, given the heritage items proximity to the site, consideration to the Vauxhall Inn will be given when considering any potential mitigation measures, ensuring the proposal has no impact on the heritage item.
Sydney Water		
Water Requirements	*Sydney Water's servicing requirements for this proposed development are to be delivered under the Notice of Requirements for the feasibility study that the proponent has already lodged with us – CN 145928. Or any future Notice of Requirements.*	A submission was received from Sydney Water dated 24 July 2020, the submission provided no specific issues or required a response, rather noting any future water and wastewater servicing requirements would be required to be delivered under the Notice of Requirements for the feasibility study that was lodged with Sydney Water previously – CN 145928. Or any future Notice of Requirements. The submission further notes any detailed requirements, including any potential extensions or amplifications, will be provided once the development is referred to Sydney Water for a Section 73 application. This is noted and will be adhered to upon application of a future Construction Certificate.
Transport for NSW		
Traffic Modelling	**Inconsistent Design Upgrades** *The latest design upgrades at the intersection of Woodville Road / Parramatta Road / Church Street appear to be different from that adopted by the proponent's traffic consultant (TTPP) at the time of their assessment. For example, there are four southbound traffic lanes on Church Street approaching Parramatta Road adopted by TTPP. TfNSW would be happy to provide details on the intersection works to ensure accuracy in the revisions required.*	TTPP's assumptions and modelling have been updated in response to the submission, including upgrade design of the intersection of Woodville Road/Parramatta Road and Church Street will be discussed further with TfNSW to ensure consistency with any planned upgrade work.

Issue	Comment	Response
	Inappropriate Modelling Methodology *The modelling methodology adopted by TTPP is not considered to be appropriate given the required model calibration was undertaken at a mesoscopic level only. Therefore, the intricate operation along Woodville Road between the Crescent and M4 off-ramp is not expected to be an appropriate representation. Other operational details such as irregular lane utilisation observed on Woodville Road northbound is not likely to be represented, which is evident in the intersection performance results below, which show that:* 3. *Congestion on Woodville Road in the base case appears to be underestimated with only 10 seconds of delay reported in the TTPP memo in the AM peak.* 4. *Outputs below also indicate that the Project Case has severe impacts on the M4 off-ramp resulting in an average delay of 353 seconds with the development, in comparison to an average delay of 204 seconds with the TfNSW upgrades.*	Detailed AIMSUN modelling forms attachments 1 and 2 of the TTPP Addenda report. As requested by TfNSW, a calibration report is included which should satisfy this request. TTPP states, "*TTPP has calibrated and validated a micro-simulation model based on the PRCUTS Mesoscopic model. The model was calibrated and validated based on the Roads and Maritime Services (now TfNSW) modelling guidelines…* *The model is considered well calibrated and suitable for the purpose of modelling the impacts of the Crescent Parklands Development*".
	Parramatta Road Westbound Inconsistencies *Other inconsistencies with the proponent's traffic modelling relating to the Parramatta Road westbound include:* 5. *The travel time in the PM peak Base Case, which is estimated to be 70 minutes for a 1.4km section (from James Ruse Drive) which equates to an average speed of less than 1.5km/hr. Even with the improvement the travel time the in the Project Case being forecast to be 44 minutes equating to an average travel speed of less than 2km/hr, this appears to be unrepresentative of the expected network conditions.* 6. *The Parramatta Road WB travel time in PM peak appears to improve from approximately 49 minutes in the Intersection Upgrades scenario to ~44 minutes in the TTPP Project Case. No explanation has been given as to how a scenario with the same intersection layouts for Parramatta Road /Woodville Road but with additional development traffic would result in an improvement of approximately 5 minutes in travel time.*	Refer to TTTPP report. Table 13 and 14 of the Addenda report demonstrated the evening peak travel times (eastbound and westbound) for the scenarios of base, with intersection upgrades and the project case.
	Aimsun Modelling Future Traffic Forecast *It is unclear whether the Aimsun modelling assessment has updated the future traffic forecast based on more recent data since the earliest investigations were undertaken back in 2015.*	The AIMSUN modelling has been updated and forms part of this RtS. For clarity, A Model Development report, including calibration assessment forms part of the TTPP Addenda report.
	Inconsistent Land Use Projection *The October 2019 TTPP TIA appears to have adopted a slightly different land use projection compared to the two previous versions. There is an increase of approximately 505 sqm of commercial floor space and a subsequent uplift in the car parking requirements. However, different trip generation rates appear to have been used, which results in an overall net reduction of 50 vehicular trips with no justification.*	The Addenda TIA clearly outlines the quantum of each proposed land use as being 1,255 residential units, 5,627sqm GFLA of retail and 7,502.5sqm GFA of office. The traffic generation rates are detailed on pages 3, 4 and 5 of the TTPP report. The summary of the traffic generation was, 7. The subject development is expected to generate a net change of 840 vph in the AM peak hour and 961 vph in the PM peak hour.

Issue	Comment	Response
		8. This represents an increase of 186 vph and 5 vph in the respective AM and PM peak hours, as compared with the previous assessment, primarily due to the use of lower trip reduction rates and the TfNSW small suburban shopping centre trip rates.
Access Arrangements	**Trip Generation Figures** *A total traffic generation of peak hour vehicle trips per hour (vtph) of 635 and 952 in AM and PM peak respectively was used to assess the traffic generating impact of the planning proposal on the adjacent road network. However, it is noted the total retail traffic generation of 922 PM vtph (based on a rate of 12.3 trips per 100m2) and 461 vtph AM (based on 50% of PM peak) has been heavily discounted to 549 PM vtph and 274 vtph AM trips based on the following:* 9. *A 20% reduction factor is applied to the above trip rates for retail and office uses to account for trips, which will be contained within the site boundary.* 10. *A 28% of retail generated trips will be "pass-by" trips (i.e. the new development is an intermediate stop on a trip that is made from an origin to a destination). This assumption is adopted from Guide to Traffic Management Part 12: Traffic Impacts of Development Commentary 8 – Linked Trips.* *TfNSW advises that former RMS commissioned updated trip generation surveys of small suburban shopping centres in 2018 (i.e. less than 10,000m2 GFA). As part of this trip generation surveys, vehicles were counted entering and exiting the surveyed sites, which means that linked trips were additional trips confined within each surveyed site. For example, for the Glenwood Shopping Village (less than 10,000m2 GFA), identified a trip rate of 12.7 trips per 100m2 and linked trips were additional trips.* *Further, the 28% discount for "pass by" trips are still trips that will enter and exit the subject site and result in additional turning movements at the driveway, as well as additional turning movements at the intersection of Woodville Road/Crescent Street. For example, a motorist instead of heading in the southbound through carriageway of Woodville Road may instead turn right into Crescent Street to do shopping, which will add to the vehicle queue for this right turn movement and should be assessed.*	TTPP has discussed this matter with the ACE's peer reviewer (SLR Consulting) with regard to the traffic generation calculations used in this addendum report. They reached consensus on the rate of residential, retail and office. It is noted that a large amount of the TfNSW concern relates to retail traffic generation. The retail traffic generation has been revised based on the Roads and Maritime (currently TfNSW) Trip Generation Surveys Small Suburban Shopping Centres Analysis Report and Data Report, Bitzios Consulting (November 2018). SLR Consulting agreed with the use of following retail traffic generation rates based on the average rates for all surveyed Sydney sites greater than 2,000 m2 GLFA: 11. 7.84 trips/100m2 GLFA in the AM peak hour 12. 10.77 trips/100m2 GLFA in the PM peak hour In order to address TfNSW's comments, TTPP has decreased the trip reduction factor to compensate for trips between the residential development and retail development from 20% to 10% which has been agreed by the ACE peer reviewer (SLR Consulting). The assumption of 10% is considered more conservative than the 20% originally used by TTPP but we note that Parramatta Westfield is located within a 5-10 minute drive as is Merrylands Town Centre, and consequently it is anticipated that the catchment of the retail development proposed will be relatively local within those people wanting more shopping opportunities travelling to Parramatta or Merrylands. Refer to the submitted traffic report provides additional information on the individual land uses. In relation to passing trade, the TTPP statement respond, "*Austroads Guide to Traffic Management Part 12: Traffic Impacts of Developments suggests 28% of the trip generation related to the retail use (greater than 3,000m2) are undiverted (passer-by) drop in trips. This was applied to the retail traffic volumes which consist of traffic on Crescent Street that enters the site as an intermediate stop to another destination"*. *The same Austroads Guide also suggests 22% of the trip generation related to the retail use (greater than 3,000m2) are diverted trips. This was applied to the retail traffic volumes that would be diverted from Woodville Road and Pitt Street*". The TTPP report shows figures of the passer-by trip reduction on Crescent Street and diverted from the Woodville Road and Pitt Streets.
	Proposed Right Turn on Crescent Street *There are significant concerns with regards to the proposed limited capacity of the channelled right-hand turn treatment on The Crescent and its potential impacts including that it may have a queue spill back onto Woodville Road.* *The queue on The Crescent from Woodville Road signals is likely to queue past the proposed access point and therefore the opportunities for vehicles to turn into this driveway/proposed will be limited and create an unacceptable safety issue.*	The proposed site access points have been modelled based on the provision of a 25m long right turn bay on Crescent Street. The middle site access has been modelled under a left-in left-out arrangement. All site accesses would operate under a priority control with a Give Way sign installed on site exit. In response to the queuing from the Woodville Road signals, the TTPP addenda report has modelled the queue length of the right turn movements towards the site and states that it would be up to one vehicle only during the AM and PM peak hours, as such the provision of a 25m long right turn bays would be sufficient to separate the through movement from the right turn movement at the eastern and western site accesses, without overspilling to the adjacent through movements.
	Parramatta Congestion Improvement Program	

Issue	Comment	Response
Impact on TfNSW Project Updates	*TfNSW is providing a $30 million upgrade under the Parramatta Congestion Improvement Program, which includes recent fast track completion of the eastbound M4 exit ramp to Church Street in response to the history of high number of crashes (77 crashes in 6 years) resulting in 14 serious injuries including 1 fatality. Any delays arising from the development after the project upgrades on the State road network including M4 ramps may result in major road safety and network efficiency issues.* *The modelling shows a severe impact on the M4 off-ramp resulting in an average delay of 353 seconds with the development, in comparison to an average delay of 204 seconds with the TfNSW upgrades.*	The M4 ramps already have and will continue to experience capacity issues. This will occur with or without the subject development. Infrastructure upgrades will be a discussion point with TfNSW.
	Nullifying of Travel Time Gains *TfNSW' project upgrades under the Parramatta Congestion Improvement Program will achieve a 2-minute improvement for Church Street southbound in the AM peak. The planning proposal would nullify the gain in travel times due these improvements would have achieved and add a further 3 minutes – making it worse than the current base case scenario.*	Table 11 and 12 of the Addenda report demonstrates the morning peak travel times (eastbound and westbound) for the scenarios of base, with intersection upgrades and the project case
	Increase in Local Travel Time *Model results from the database provided for the development shows that in the AM Peak there is a 6-minute increase for 1.4km eastbound route at Parramatta Road. As the maximum travel time for this route is approximately 16 minutes. This would equate to approximately 40% increase in travel time for the development.*	Table 11 of the Addenda report demonstrates the morning peak travel times (eastbound) for the scenarios of base, with intersection upgrades and the project case.
	Impact on State Road Network *The assessment of the Aimsun modelling reveals the proposal will likely have a significant traffic impact on the State Road network, given the constrained road environment and location at the immediate vicinity of the intersection of Parramatta Road, Woodville Road and Church Street and the M4 ramps.*	The updated AIMSUN modelling in the Addenda TTPP report shows that with the development, even in 2031, both Parramatta Road/Church Street and Woodville Road / Crescent Street operate at Level of Service D or better. This correlates with the findings of Council's peer reviewer (SCT) and that of Councils own expert in the Land & Environment Court case concerning land acquisition from the subject site.
Suitability of the Proposed B4 Zone	*Despite the proposed 7500sqm cap on retail, the current proposed B4 Mixed Use zone permits full scale supermarkets which can be a large attractor, contributing to the high traffic generation from the site. It is recommended that if it is to proceed, to minimise the traffic impacts from the proposal the B4 Mixed use Zone be substituted with the B1 Local Neighbourhood zone. This would be more appropriate and in line with the master plan vision for a neighbourhood retail centre, as it would limit a supermarket to that of a 'neighbourhood' size, being a maximum of 1000sqm, helping reduce the potential traffic impacts.* *A B1 Local Neighbourhood Zone will still offer an opportunity to improve the level of retail services on offer to local residents and serving the shopping needs of people living in the local community.*	The capacity of the site to accommodate a mixed use development, including a certain quantum of retail floor space will be determined once an understanding is reached with TfNSW on the traffic capacity of the surrounding road network and intersections is obtained. It is also noted that the Gateway Determination was also amended to modify the name and description of the Planning Proposal on 7 July 2020 to specifically include B4 Mixed use zone, recognising the appropriateness of this land use zone.
Site Permeability – Proposed Pedestrian Bridge	*The planning proposal does not provide any details, timing, or firm commitments to improve pedestrian connectivity to and from the site to encourage the mode shift to public transport. Whilst the Planning Proposal does recommend improving the pedestrian connectivity across Woodville Road to improve the connectivity and safe access to Granville Station.*	The proponent has previously investigated potential pedestrian bridge connections and consulted with TfNSW. By letter dated 14th October 2019, TfNSW advised as follows: *TfNSW and Roads and Maritime has undertaken a preliminary review of the proposed pedestrian bridge over Woodville Road, and it is not supported at this location for the following reasons:*

Issue	Comment	Response
	TfNSW has a medium-to-long term option to promote active transport and improve connectivity to Granville Station and bus stop on the eastern side of Woodville Road via provision of a pedestrian bridge. Preliminary investigations have identified constraints to achieving this outcome, and TfNSW is happy to work with the developer to investigate the feasibility of these options prior to the further consideration of the planning proposal, to encourage a mode shift away from private vehicles to public transport. *TfNSW advises that enhancement of the pedestrian connectivity/active link to Harris Park station should be considered as part of the Planning Proposal.*	*• The subject land required for the placement of the pedestrian bridge on the eastern side of Woodville Road is in private ownership and not a party to the planning proposal; therefore there is no guarantee that the land required for the bridge can be secured.* *• There are a number of constraints beyond the site, which would hinder pedestrian connectivity to Granville Station; including the railway bridge and railway corridor and the significant difference in grade between Woodville Road and Railway Parade, which is not accessible by pedestrians. Therefore the bridge would not necessarily serve the key pedestrian desire line nor provide convenient and DDA compliant access.* Opportunities for local and state contributions (which include a pedestrian bridge) have been documented in the Architectus' document entitled, "Urban Design Response to Panel comments March 2020". The proponent is committed to negotiating with Council and the DPIE on the applicable public benefits. The proponent has explored the following potential local and regional benefits: • Improvements to underpass connection towards Parramatta/Harris Park • Direction connection to Church Street west from the underpass • Contribution towards Church street pedestrian and cycleway improvements • Improvements to the existing trunk cycle way • At grade connection across Woodville Road as well as a bridged connection across Woodville Road • Provision of new open space on the subject land • Connections across A/Becketts Creek • Additional lane along the site frontage on Crescent Street • Through site connections from Crescent Street to the green space and through the site • Upgrades to the creek line • Improvements to the Woodville Road underpass, such as public art, to improve the amenity A key objective of the proposal is to enhance the permeability of the site and broader offering to the site's residents but also to the community at large. The opportunities under exploration are denoted on the figure below and show the site's ability to improve existing linkages and provide additional connections. Overall, as desired by Council the proponent is willing to negotiate on the preferred local upgrade works with Council (via the VPA process) as soon as possible. Similarly, it is expected that regional contributions will be required, and the proponent is also committed to investing in state infrastructure.

Issue	Comment	Response
		
Future Road Reservation Acquisition	*The site is affected by a future Road Reservation acquisition, which would affect a portion of the site. The reservation is an additional impact over and above the recently completed acquisition. This impact has been outlined and communicated to the owners of the site. Both parties are working together cooperatively on this basis.*	The proponent will address the redesign of the development concept to accommodate this reservation once in-principle agreement is established in relation to the traffic modelling assumptions and implications. This will form part of the final RtS document.
Cumberland City Council		
Urban Planning	**Lack of Strategic Alignment** *The proposal is not aligned with relevant strategic plans for the area. This includes:* 13. *Parramatta Road Corridor Urban Transformation Strategy, which identified the existing planning controls as the desired land use outcome for the site. This Strategy was endorsed by the NSW Government.* 14. *Cumberland 2030: Our Local Strategic Planning Statement, which does not identify the proposal as part of strategic planning for the area. This Statement was endorsed by Council and received a letter of support from the Great Sydney Commission.*	**Paramatta Road Corridor Urban Transformation Strategy (PRCUTS)** Council has raised a lack of strategic alignment with the PRCUTS. This is not necessarily unexpected given that the PP pre-dates the PRCUTS. It is noted that the original PP was lodged with the former Holroyd Council on 15 June 2015, with a subsequent proposal within March 2016. These dates predate November 2016 when the PRUCTS was endorsed by the Minister. The PP, which was granted Gateway Determination on the 17th July 2019, was subject to an extensive assessment by the DPIE to consider whether the proposal had strategic merit to proceed. By granting a Gateway determination, the Gateway has recognised the site and strategic merit of the proposal in proceeding, this is inclusive of the sites strategic context including the PRCUTS. We have however for completeness undertaken a review where possible and relevant, below. Council's suggestion that the PP is not aligned with the Parramatta Road Corridor Urban Transformation Strategy (**PRCUTS**) is disputed, it is the opinion of the Applicant that the PP directly addressed a number of the strategic objectives for the Granville precinct of which the site is located. Granville precinct's vision as detailed in the PRCUTS includes: *Close to Sydney's dual CBD at Parramatta, Granville will be a vibrant mix of new housing, shops and commercial spaces, linked by a much-improved network of streets and attractive new parks and public spaces*.

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<tr><th>Issue</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td></td><td>The PP directly addresses this vision by proposing approximately 1,109 – 1,255 new dwellings, 16,372m^2 of publicly accessible open space, and 12,755m^2 retail and commercial area to service the local community, as well as excellent pedestrian connections and permeability and cycle accessibility, including provision of new opportunities for links and improvements to existing network. The proposal directly aligns with the strategic vision for the Granville precinct under the PRCTUS. To further highlight its strategic alignment, the table below demonstrates the proposal’s direct alignment with the identified opportunities for the precinct within Section 5.3 of the PRCTUS:
<table>
<tr><th>Granville Precinct Opportunities</th><th>Proposed Alignment</th></tr>
<tr><td>High accessibility to employment, recreation, entertainment and cultural facilities in the Parramatta CBD.</td><td>The proposal includes approximately 1,109 – 1,255 new dwellings in a location that is highly accessible to the Parramatta CBD and its associated amenity.</td></tr>
<tr><td>Potential to extend the existing Granville town centre north and provide commercial and retail floor space to accommodate additional urban services such as supermarkets, day-to-day business services, indoor recreation opportunities and childcare facilities</td><td>The PP proposes an approximate 12,755m^2 of retail and commercial area to service the local community in a location to the north of the Granville town centre, inclusive of ground level retail and commercial uses proposed to include a supermarket, speciality retail, gym, childcare, medical and café and restaurants.</td></tr>
<tr><td>Presence of distinct employment uses across the Precinct and Frame Area including Auto Alley adjoining the Parramatta CBD and the Mort Street and Clyde employment lands.</td><td>The subject site is located within the Frame Area of the Granville Precinct and directly addresses this opportunity as noted within the PP report prepared by Mod Urban which highlights the employment outcome for development of the subject site would provide an employment outcome of over 1,000 jobs on site as well as indirect employment through construction. Additionally, the Frame Area and subject site is directly south of the Auto Alley precinct as identified within the Parramatta CBD Planning Proposal. Council however elected to remove the Auto Alley precinct from the Parramatta CBD Planning Proposal on 20 November 2019 to undertake additional heritage analysis of the area, despite adequate provisions to protect the relevant heritage items being proposed by Council’s own planners within the draft CBD PP. Removal of the Auto Alley precinct directly puts at risk achieving the vision of the CBD PP, which aims to increase the capacity for new jobs and dwellings so as to create a dynamic and diverse city consistent with the Central City District Plan. The PP at the subject site however ensures this vision is still able to be achieved by providing both residential and employment opportunities in proximity to the Parramatta CBD and for the land occupied by the Auto Alley precinct, particularly as the future development of the Auto Alley precinct as envisioned by Council’s strategic planners has been potentially been put into jeopardy with the removal of the site from the CBD PP.</td></tr>
<tr><td>Celebrating Granville’s identity as a ‘destination’ for food by providing opportunities for restaurant space and outdoor dining.</td><td>The proposed 12,755m^2 retail and commercial area inclusive of the PP is to include ground level cafés and restaurants to directly address this opportunity.</td></tr>
<tr><td>Good proximity to heavy rail and bus services.</td><td>The site is located within the 800m walking catchment of Harris Park train station, being 750m away. A walking catchment analysis was provided in Section 2.5 of this RTS, which shows the walking distance and associated times to key transport nodes and town centres.</td></tr>
<tr><td>Relatively permeable blocks and wide streets which provide a strong framework to deliver high quality public domain and</td><td>An urban design response was prepared by Architectus to the Panel responding to raised matters from March 2020. This demonstrated that there are potential areas to improve and enhance connectivity and the amenity of the pedestrian experience on</td></tr>
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Issue	Comment	Response

green links, high levels of activation and a pedestrian friendly environment.	key roads surrounding the site. Overall the site is intended to be publicly accessible and contribute to the provision of green open space and connections to Holroyd sportsground. An urban design response below under the issue of 'urban design' addresses the bult form intent.
Incorporating heritage elements in the built form and streetscape in recognition of Granville as one of Sydney's oldest suburbs.	Whilst no heritage items are within the subject site that are able to be incorporated or influenced within the proposal, the design included within the masterplan for the PP is sympathetic to the two local heritage items; 'Railway Memorial' (I23) and the 'Vauxhall Inn' (I11) in proximity to the site and ensures no impact to them.
New open space areas including a new urban plaza, new local parks, opportunities to extend FS Garside Park and embellishments to land under the M4 Motorway and along Duck Creek.	The masterplan for the site put forward as part of the PP includes new major open space which links to and engages the Holroyd Sportsground, and provides large areas of publicly accessible space, as well as excellent pedestrian and cycle accessibility to the existing public open space via the sites permeability and proposed connection links. Significantly this is directly proposed for land that is adjacent to and under the M4 Motorway.
A high degree of development activity around the railway station that presents the opportunity to achieve transformation with quality and improved built form outcomes.	Whilst the development site and PP is not directly adjacent to the local railway station, the PP includes several local infrastructure improvements to the area including road upgrades, direct and safe active transport access to Parramatta and Granville, including linkages across Woodville Road and Parramatta Road, as well as a shuttle bus to link the site with Merrylands and Parramatta. Additionally, the Applicant is committed to design excellence and visual improvement to a prominent site at the gateway to Holroyd and the northern part of the Granville precinct.

Cumberland 2030

Similar to the PRCUTS above, a review of the Cumberland 2030 document's identified priorities suggests that the proposal is in fact aligned with the priorities identified by Cumberland Council in their strategic document towards 2030. The PP directly aligns with a number of the documents planning priorities, as identified below:

Cumberland 2030 Priorities	Proposals Alignment
Planning Priority 5: Delivering housing diversity to suit changing needs.	The PP, which looks to provide an additional 1,109 – 1,255 new apartments is assisting in greater housing choice for the local community which has a local market mostly dominated low density residential housing options. By providing greater housing choice for the community, the PP assists with meeting the housing needs of an increasingly diverse population within the LGA. Housing diversity also encourages active lifestyles and increases the number of people living and working close to jobs, services, and amenities, all of which are proposed as part of the PP.
Planning Priority 6: Delivering affordable housing suitable for the needs of all people at various stages of their lives.	The PP and the Applicant is committed to the provision of 7% (dedicated in perpetuity) of housing within the proposal to be committed as Affordable Housing as defined in SEPP 70 (Affordable Housing).
Planning Priority 7: Design vibrant and attractive centres and encourage healthy living.	The PP and the Applicant in particular are directly aligned with this priority through the proposal of a new residential community, fully integrated into job opportunities and extensive public amenity. The proposal includes a well-designed, permeable community that includes design excellence with the proposed buildings, attractive and connected streetscapes, parks and public areas that reflect the urban vitality of the local population, priorities public transport and community facilities.
Planning Priority 9: Providing high quality, fit-for-purpose community, and social infrastructure in line with growth and changing requirements.	The PP is able to promote healthy, safe and access to inclusive public spaces for all members of the local community with the inclusion of both public and private space, and contribution to local infrastructure to make sure the exiting public spaces are accessible. This is inclusive of the proposed potential land bridge over A'Becketts

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<tr><td></td><td>Creek, which presents an opportunity for more local residents, particularly those in the south towards Granville, having better connections to the Holroyd Sportsground.</td></tr>
<tr><td>Planning Priority 10: Supporting a strong and diverse local economy across town centres and employment hubs.</td><td>The PP ultimately puts forward a design that creates a new small local centre and employment hub that encourages connectivity and linkages, centre activity, shopfront revitalisation, safety and security, ensuring a design that is a diverse and attractive place for residents and businesses alike.
The Cumberland 2030 document notes that site-specific place-based planning will revitalise centres in decline and encourage diverse activities that support the local economy and community. The PP by its nature directly addresses this by ensuring a site-specific response that will ultimately create a new local centre for future residents, employees, and consumers.</td></tr>
<tr><td>Planning Priority 11: Promoting access to local jobs, education opportunities and care services.</td><td>Whilst Cumberland and the subject site are in proximity to a number of metropolitan and strategic centres, the PP is an opportunity for the creation of a localised centre with employment lands to ensure local residents can access jobs close to home, and reduce the need for residents of the LGA to travel for employment and day care/education opportunities outside of Cumberland. This is done so through the proposed 12,755m^2 of retail and commercial area to service the local community.</td></tr>
<tr><td>Planning Priority 13: Protecting, enhancing, and increasing natural and green spaces.</td><td>The PP looks to address this priority via the enhancement of public open space by creating better access connections to Holroyd Sports Ground, 7,714m^2 of additional publicly dedicated open space on the subject site in the form of a public park, plus a further 8,658m^2 of other publicly accessible open space throughout the site (16,372m2 total or approx. 43% of the site area).</td></tr>
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<tr><td></td><td>Arrangements for Affordable Housing Provision

The proponent was previously unsuccessful in their request to amend Condition 1(c) of the Gateway Determination and are required to deliver 7% affordable housing in perpetuity. There continues to be an inconsistency of the proposed affordable housing offering when assessed against Council's Interim Affordable Housing Policy. Therefore, Council maintains its position at least 10% affordable housing contribution should be dedicated to Council in perpetuity.</td><td>The Gateway Determination, Condition 1c, required the preparation of a feasibility study comparing Council's Interim Affordable Housing Policy and the Sydney Central City Planning Panel's position of providing 7% in perpetuity.

The applicant has committed to delivering the SCPP's position of 7% in perpetuity even though the Affordable Housing Feasibility Study previously undertaken by Urbis (based on the DPIE agreed methodology) in October 2019 deemed this to not be feasible.

Further it is noted:

15. Cumberland Council's Interim Housing Policy requiring 15% affordable housing in perpetuity, is a policy that is clearly described as being "an interim measure for affordable housing prior to a more comprehensive affordable housing policy" and is not appropriate to apply to the development, given the existence of the Gateway condition and SCPP stance. It is noted that the interim policy is now superseded by a draft Affordable Housing Policy which was placed on exhibition in July – August 2020 and is not yet adopted by Council. A stated action in the draft Policy is to "review and update Council's interim affordable housing policy" and "Continue to seek affordable housing outcomes through planning agreements". The prescribed position of at least 10% put forward in Council's submission has no standing given due process has not been completed.

16. The Central City District Plan recommends a range of 5-10% of new residential floorspace be affordable housing in the central city and the proposed 7% is within this range.</td></tr>
<tr><td></td><td>Community Survey

In addition to the public exhibition undertaken by the NSW Government, Council undertook a community survey to gauge the perceptions of the local community regarding this proposal.</td><td>The community survey undertaken by Council is noted and acknowledged, however ultimately does not constitute a formal submission to the PP, nor does it carry any legislative weight with regard to it being addressed.</td></tr>
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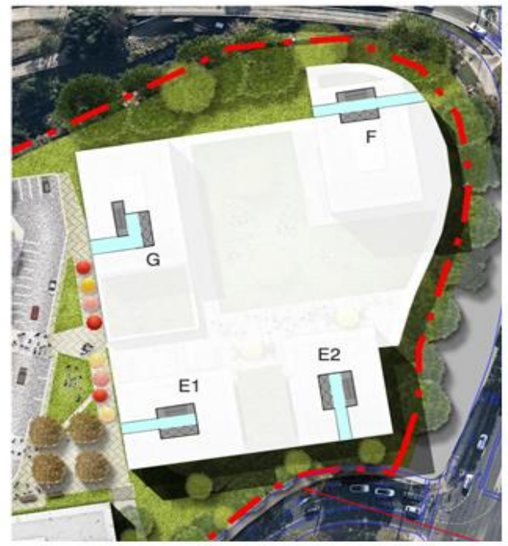
Issue	Comment	Response
		An online community survey undertaken by 272 responders is a non-statutory document. The survey, in which one in five participants were not even aware of the PP fails to articulate the level of information provided with regard to the PP, nor is it indicative of Council's efforts to consult the local LGA about the application. The Applicant however undertook a robust community consultation strategy, prepared by Urbis, that was entirely proponent led, despite there being no statutory requirement at this stage of the rezoning process. The PP has included consultation with neighbouring landowners and occupiers and community stakeholder groups (government and agencies were consulted outside this process). The key issues that emerged in the community engagement exercise were summarised as: *Overall feedback about the proposal included a mix of supportive and not supportive responses. Several community members noted the site is located within a congested road network and requested consideration for improving the traffic flow. Several people provided suggestions for what facilities and services they would like to see at the site including recreational and lifestyle choices and a desire to see open space and pedestrian and cycle paths in the area improve. Several people questioned the need for high-density apartments at the site* An outcomes report that was prepared following the community engagement and a copy of the report will be submitted under separate cover. This includes a detailed summary of the findings. Therefore, the proponent has undertaken due process with regard to community consultation both through the engagement of a community engagement consultant but also through the formal public exhibition process. Furthermore, the main issues highlighted via the Council's survey results include traffic, open space, affordable housing and density and have been addressed throughout this report.
Traffic & Transport	**Local Traffic Improvements** *Council officers have reviewed existing traffic analysis for the proposal, and also commissioned a technical review through an independent consultant. Significantly, while the majority of traffic from the proposal is forecast to travel west towards Merrylands, the traffic reports prepared as part of the planning proposal have not considered the impacts in the Merrylands area nor the future development permitted through current planning controls in the town centre.* *In response to this, a traffic analysis and modelling exercise was undertaken by the independent consultant to understand these impacts of the development in greater detail. The modelling covered both intersections already modelled as part of the planning proposal, and intersections which were not assessed as part of the planning proposal.* *Four scenarios were modelled as part of the traffic analysis. These scenarios include:* 17. *Base year (2019)* 18. *Future year (2030) with background traffic growth only* 19. *Future year (2030) with background traffic growth and 1 Crescent Street development traffic* 20. *Future year (2030) with background traffic growth, 1 Crescent Street development traffic and mitigation measures.* *The results of the modelling indicate that the Pitt/Neil Street intersection at Merrylands will suffer the greatest impact from traffic generated by the proposed development.*	The Addenda to the TIA prepared by TTPP has considered a cumulative assessment of the subject planning proposal and the adjacent approved development as shown in Figure 4 of the TTPP report. The expected traffic generation of the nominated surrounding approved developments is based on the available DA documents and traffic generation calculations. Two separate model packages have been adopted to assess intersection performance in the road network surrounding the subject site. SIDRA modelling was undertaken west of the subject development (between Crescent and Merrylands). The combined traffic volumes associated with the future background traffic and the approved developments and the subject development are shown in Figure 8 in the TTPP report. A detailed comparison of the intersection performance was undertaken of Pitt St- Walpole and Pitt St – Merrylands Road and show: - Existing base case: Both intersections currently operate at LoS B during the AM and PM peak hours, as consistent with the on-site observations. Both signalised intersections have ample spare capacity to accommodate additional traffic volumes - Future base case and approved developments: The modelling results indicate both intersections would have spare capacity to accommodate additional traffic volumes. - Future case, approve and subject development: With the additional traffic volumes associated with the background traffic growth and the approved and proposed developments, both signalised intersections would operate at LoS C or better based on the existing phase times and cycle time. Further in terms of proposed Crescent Street widening and the site access arrangement, results indicate the proposed site access points would not impose adverse traffic impacts on the road network. The modelled queue length of the right turn movements towards the site would be up to one vehicle only during the AM and PM peak hours, as such the provision of a

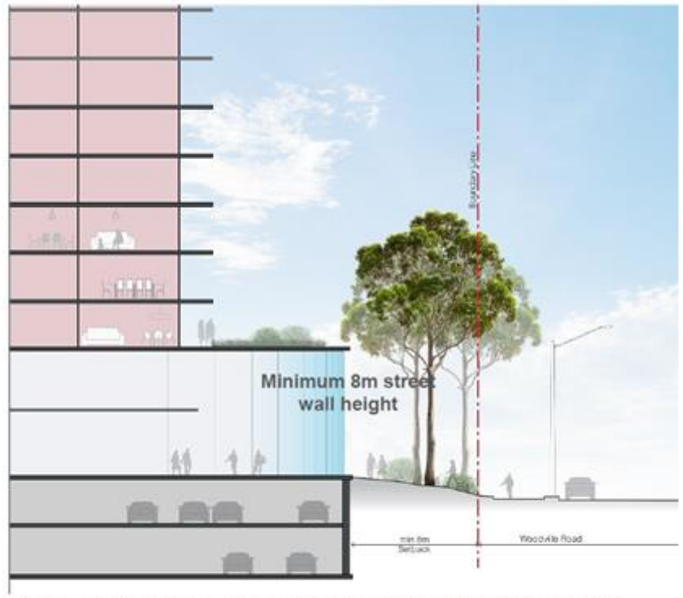
Issue	Comment	Response
	The analysis identifies the need for traffic mitigation works to address the impacts of the planning proposal in the Merrylands area, including improvements to the Neil/Pitt Street intersection and the potential for a Merrylands traffic bypass scheme. These improvements include road widening and the provision of additional turning lanes to offset additional traffic flows generated by the proposed development.	25m long right turn bays would be sufficient to separate the through movement from the right turn movement at the eastern and western site accesses, without overspilling to the adjacent through movements.
	Poor Public Transport & Active Transport Access *The location of the proposed development is isolated from all modes of public transport. Access to the nearest bus and train networks are considered to be beyond industry standards (maximum walking distance of 400m to a bus top, and 800m to a train station). The closest railway station (Harris Park) is 900m away, while the closest bus stop is 450m away (Woodville Road, 907 bus route).* *Pedestrian priority and amenity is poor surrounding the development, most of the footpaths are narrow, are directly next to high volume traffic with no protection and lack of pedestrian priority at crossings. Currently, there are no pedestrian crossings across Woodville Road near the site, a pedestrian bridge over Woodville Road was previously considered, this concept has not been supported by TfNSW. There is no evidence currently available that indicates the proponent is planning to address these issues.*	The proponent has previously investigated potential pedestrian bridge connections and consulted with TfNSW. The letter dated 14th October 2019, TfNSW undertook a preliminary review of a proposed bridge over Woodville Road and did not support its inclusion, as follows: 21. *The subject land required for the placement of the pedestrian bridge on the eastern side of Woodville Road is in private ownership and not a party to the planning proposal; therefore there is no guarantee that the land required for the bridge can be secured.* 22. *There are a number of constraints beyond the site, which would hinder pedestrian connectivity to Granville Station; including the railway bridge and railway corridor and the significant difference in grade between Woodville Road and Railway Parade, which is not accessible by pedestrians. Therefore the bridge would not necessarily serve the key pedestrian desire line nor provide convenient and DDA compliant access.* Walkability mapping suggests the site is within 800m of a transport node. The application has also proposed opportunities for upgrades to enhance pedestrian and cycle connections, site permeability and improvement in the pedestrian amenity of the pedestrian connections (refer to Section 2 -Proposed Public Benefits). The inclusion of suggested outcomes are subject to further discussions with Council (through a VPA) and DPIE (through state contributions). The subject design encourages the use of local public transport infrastructure, provides opportunities to increase permeability and cycleways within the subject site and neighbouring parklands, and committing to a design that is able to support the use of private vehicle with adequate parking for residents, employees and visitors.
Urban Design	**The below forms an interim response to the urban design matters raised by Council. An amended design, following further consultation with TfNSW, will further consider and respond to Council's concerns.**	
	A number of buildings are proposed to have a street wall height of eight storeys, which is considered excessive and should not exceed three storeys.	The Holroyd DCP provides heights relative to lot frontage and maximum building heights but does not prescribe street wall heights. Rather street wall height is a contextual issue. Typically, 4-8 storey's is seen as a good height for a street wall where windows of buildings have a visual relationship to the street. A common rule of thumb used by urban designers is a 1:1 ratio for streets, so if buildings are around 24m across a street, their height is appropriate at 6-8 storeys (24m). For narrow streets, the appropriate building heights may be lower. Facing a park or wide road as all the street wall buildings in the design do 8 storeys is a good design outcome. The 8-storey podium will frame the new park and the Holroyd Sportsground providing passive surveillance. It is common throughout Sydney for street wall heights of this scale (e.g. East Village / Victoria Park). Through detailed design an appropriate response may be to articulate the top two storeys differently, so the proposal reads as 6 storeys plus 2 storeys above. The Holroyd Gardens development nearby which was approved by Council also includes street facing buildings of 6 storeys

Issue	Comment	Response
	Inconsistency with setbacks and building separation when assessed with current planning controls.	Building separation proposed is consistent with the Apartment Design Guide accompanying SEPP 65 and with good urban design practice. Towers in particular provide significantly increased visual privacy from the ADG standards and almost all apartments face out rather than towards each other. HDCP 2013 requires a 6m front setback for B5 zoned land in Holroyd. As with other sections of the DCP, the site specific provisions in the DCP provide a site specific response and provide the prescribed setbacks of 8m on Woodville Road, 2m along Crescent and 6m on the northern and 3m to 20 Crescent Street, appropriate to the surrounding context
	Insufficient information on access for residents to the adjoining Holroyd Sportsground, with improve access over A'Becketts Creek required to between integrate the site.	The intention and key objective of the proposal is to integrate the site with the adjoining green space and also enhance the permeability and connectivity of the site and green space to the broader community, particularly Merrylands residents to the south west. As provided in Section 2.3, there are numerous proposed or potential local and state public benefits opportunities outlined in the submission including improved opportunities for accessibility including proposed pedestrian bridges across A'Beckett's Creek, new through site links as outlined in the draft DCP, improvements to Woodville Road underpass and improvements to connections towards Parramatta/Harris park. Architectus detailed the potential local and state contributions in an "Urban Design Response to the Panel comments in March 2020" dated April 2020. Overall, a range of opportunities that have been identified from our urban analysis as well as our community needs assessment and finalisation of the end outcomes is contingent on a VPA discussions progressing with Council and agreement on state contributions.
	Interface with adjoining industrial development in the area.	The development provides setbacks to the western boundary which are embedded in the draft DCP to help minimise any impact here. These include a 3m setback at ground floor level and a 30m setback to any residential uses directly facing the boundary. It should be noted that this is a B5 zone permitting light industries and neighbourhood shops, not an industrial zone that would permit heavy or more offensive industries. Further, the detailed design of the proposal at DA stage will design this edge in greater detail and likely include landscaped setback and orientation of building so no direct units face industrial areas.
City of Parramatta Council		
Urban Planning	**PRCUTS Planning & Design Guidelines** *The PRCUTS Planning and Design Guidelines provides the recommended planning and urban design controls along the length of the corridor to inform its future vision. These recommended controls are applicable to both the major precincts as well as the frame areas.* *Under the PRCUTS Planning and Design Guidelines, the following controls are recommended for the site:* *23. Rezone from B5 Business Development across the site to part B5 Business Development and part B6 Enterprise Corridor.* *24. Increase the maximum Height of Building control from 15m across the site to part 30m and part 42m.* *25. Increase the maximum FSR control from 1:1 across the site to part 1.8:1 and part 2:1.*	The Applicant notes Council's concerns in relation to the PP and its alignment with the PRCUTS Planning & Design Guidelines, the Section 9.1 Ministerial Direction, and the Implementation Plan. There is considerable information review and digest within the now endorsed strategy. The suggestion however that the PP does not achieve the objects of the plan is disputed, as is detailed above within the response to Cumberland Council submission. Despite this lack of alignment with general planning and design elements of the PRCUTS, as well as the Ministerial Direction, this is not necessarily unexpected given that the PP pre-dates the PRCUTS. It is noted that the original PP was lodged with the former Holroyd Council on 15 June 2015, with a subsequent proposal within March 2016. These dates predate November 2016 when the PRUCTS was endorsed by the Minister. The PP, which was granted Gateway Determination on the 19th July 2019, was subject to an extensive assessment by the DPIE to consider whether the proposal had considerable merit to proceed. By granting a determination, the Gateway has recognised the site and strategic merit of the proposal in proceeding, this is inclusive of the site's strategic context including the PRCUTS.

Issue	Comment	Response
	The proposed amendments to the HELP 2013 under the planning proposal are significantly different from the recommended controls under the PRCUTS. **Consistency with the Section 9.1 Ministerial Direction – 7.3 PRCUTS** *The proposed controls being inconsistent with the PRCUTS raises a significant issue as there is an existing Section 9.1 Ministerial Direction which requires all planning proposals in the Parramatta Road Corridor area to be consistent with the PRCUTS and the PRCUTS Implementation Tool Kit.* *Under Clause 4 of the Ministerial Direction 7.3 Parramatta Road Corridor Urban Transformation Strategy, there are a number of requirements that need to be met. The Planning Proposal is not compliant with at least two of the requirements of the Ministerial Direction:* 26. (4)(c) – the proposed controls under the planning proposal are significantly inconsistent with the recommended controls under the PRCUTS Planning and Design Guidelines. 27. (4)(d) – the planning proposal is seeking a rezoning outside of the PRCUTS Implementation Plan 2016-2023 action plan. According to the Implementation Plan 2016-2023, the subject site is outside of the release area for 2016-2023. The release area is only applicable to the core of the Granville Precinct which is bounded by Granville station to the south, the rail line to the west, Parramatta Road to the north and Duck Creek to the east (Figure 6). Accordingly, the planning proposal is inconsistent with the staging for land use change identified in the Implementation Plan 2016-2023. **PRCUTS Implementation Plan 2016-2023 and the Required Precinct-Wide Traffic Study** *Council raises the issue that under the PRCUTS Implementation Plan 2016-2023 for the Granville Precinct, "prior to any rezoning commencing, a Precinct- wide traffic study and supporting modelling is required to be completed which considers the recommended land uses and densities, as well as future Westconnex conditions, and identifies the necessary road improvements and upgrades required to be delivered as part of any proposed renewal in the Precinct".* *This precinct-wide traffic study is currently on hold as it is awaiting finalisation of the strategic transport model by Transport for NSW (TfNSW) for the Parramatta Road Corridor. The purpose is to determine whether the recommended controls identified in the PRCUTS can be accommodated considering current and future traffic volumes. This study will ultimately inform the appropriate future controls for the Precinct and is an integral part to the broader implementation of the Strategy.* *The planning proposal is significantly inconsistent with the PRCUTS and its supporting documents in relation to zoning, building height and floor space ratio. It is also inconsistent with the above requirements within the PRCUTS Implementation Plan 2016-2023 requiring the precinct-wide traffic study and supporting modelling to be completed prior to any rezoning. Should the planning proposal be approved for finalisation by the SCCPP, there is a high risk of setting an unjustified precedent for sites*	The Gateway Determination, issued by the DPIE under delegation from the Ministry of Planning as per section 3.34(2) of the EP&A Act recommended the PP proceed subject to a number of conditions including: • Ensuring consistency with the urban design report in terms of proposed zoned areas, heights and FSR; • Details of consultation with the RMS and TfNSW; • Preparation of a study investigating the feasibility of providing housing affordability as part of the proposal; • Include a project timeline consistent with section 2.6 of A guide to preparing local environmental plans; • Update the explanation of provisions to include a satisfactory arrangements provision for contributions to state public infrastructure; and • Update the explanation of provisions to include a mechanism to ensuring dedicated floors are for commercial and retail use. The required conditions and subsequent Record of Decision issued by the Panel make no reference to further consideration of the PP against the PRCUTS or any other related strategic documents. The DPIE's assessment and ultimate determination by the Panel suggests that the PP has been considered against these documents, and ultimately still recommended to proceed as the benefits of the proposal are substantial. Through endorsement by the Panel it can be considered that revisiting a strategic document that is predated by the PP is ultimately unnecessary. Furthermore, as noted above in response to the issue being raised by Cumberland Council, the PP can be considered to directly align with outlined opportunities for the Granville precinct within the PRCUTS, and thus at a high level the PP does align with the objectives of the strategy.

Issue	Comment	Response
	not only in the Granville Precinct, but along the Parramatta Road Corridor and beyond, to seek planning controls that are inconsistent with State endorsed strategies.	
Urban Design	***The below forms an interim response to the urban design matters raised by Council. An amended design, following further consultation with TfNSW, will further consider and respond to Council's concerns.***	
	Under the HLEP 2013, the B6 Enterprise Corridor zone allows provision for residential uses as part of a mixed-use development, this could potentially equate to 360 new dwellings at an average of 85m2 per dwelling. The PP is seeking well over three times as many dwellings than what is envisioned under the PRCUTS for this site	This is a site-specific Planning Proposal initiated prior to the adoption of the PRCUTS. The PP has received an endorsement to proceed through the issuing of a Gateway Determination. The proposal has also progressed through many design review panels that have interrogated the design. It is noted that a further design process will occur following resolution of the traffic and transport discussions with TfNSW and responsive to the TfNSW proposed road reservation. This may result in an amended development yield and/or built form.
	Higher density development should have small street blocks and maximum connectivity. There is no connectivity externally or internally within the site. It is a gated estate.	The site is not a gated estate and has never had any intention to be so. The massing proposed in the concept has small street blocks and maximises connectivity. The largest street block is around 100m in length, along the Woodville Road frontage. Pedestrian permeability is possible from four locations along Woodville Road and Crescent Street and two bridges across to the Holroyd Sportsground are proposed. The proposal will enhance the existing connections through and around the site. The site proposed through site links and connections across A'Becketts Creek to Holroyd sportsground. The proposal also provides publicly accessible green space. The principles of such are detailed in the draft site specific DCP. Proposed connections and enhancements are detailed in Architectus' Urban Design Response and also in the figure above in the response to TfNSW submission under the issue: Site Permeability – Proposed Pedestrian Bridge.
	All buildings should have a street address. Buildings F and E2 do not have a street address, Buildings B, C and D have a confused street address with streets on either side of the buildings	The design of street frontages will not be set until a DA stage however the blocks provide ample opportunity for good 'front doors' to these dwellings. Buildings F and E2 can both provide a street address. Though their final design will be set at DA stage, an image of an indicative ground floor lobby arrangement is provided below. As Woodville Road is a busy road, Building F can be provided an alternative entry towards the internal park. For Building E2, a generous 10 metre setback is provided from Crescent Street which allows a combination of both a visible 'street frontage' and appropriate buffering from noise and amenity issues as residents use this entry. Buildings B, C and D are intended to face primarily to the north across the park as the ability for cars to stop along Crescent Street is limited. Architectus have detailed potential street addresses (shaded blue) below.

Issue	Comment	Response
		
	Building heights should be related to street hierarchy. There is no logical distribution or rationalisation of heights. There are seven different tower heights with only eight towers. Minimal differences in the number of storeys of the buildings such as 1 and 2 stories in the podium and similarly in the towers (12; 14 and 17) and (22; 23 and 28) do not assist variety but rather they increase the perceived density of the precinct.	It is generally accepted that variety in tall buildings heights provides visual interest and diversity and conversely that many towers of exactly the same height is cause for concern. The street wall height shown is generally consistent at 8 storeys. The design has been through a long process with the Central City Planning Panel in shaping the heights and distribution of towers which has led to the outcome.
	The built form should be organised to deliver a street wall that relates to the human experience of the place. The lower levels of the buildings require a defined 'street wall height' that relates one building to another as a collective. There is no clear street wall and a mixture of 2, 8, 12, 14, 17 and 23 storey buildings that face the public domain.	As above, the street wall is intended as 8 storeys, with the potential for the articulation of this into a 6 storey 'frontage' with two storeys on top articulated slightly differently. Some towers are proposed to have the potential to come to ground (see comment below). The design has also been responsive to the Panel's comments, desiring more retail activation on the corner element. The street wall design also provides a greater buffer to traffic noise to residents above. Refer to Cumberland above for additional comments on street walls heights.
	Buildings should represent a clear typology. There are towers grafted on 8 storey buildings in three locations. These are A, B and between E1and E2. There is no clear distinction between podium and tower at E1, E2, G and F.	The buildings present a podium and tower typology, consistent with that of the in the Apartment Design Guide accompanying SEPP 65 (p170) which is a well-known and accepted urban design typology for buildings at this density. Distinctions between towers and podium can be helpful in some circumstances or bringing a tower directly to ground (as is done here in some locations) can help with accentuating the height of the tower. A good example in a similar location is the Victoria Square North tower in Green Square.
	There is no communal open space on the ground.	Communal open space is generally provided on podium rooftops, which is consistent with the design guidance in the Apartment Design Guide. This is supplemented by the generous, sunny major public open space on site and Holroyd Sportsground adjacent. The quantum of open space available to residents will be well above most developments in Sydney and will be a desirable element of the scheme.
	Developments should optimise amenity. By grouping the four tallest towers and highest density at the north eastern end of the site the majority of residents are exposed to the most hostile conditions.	The poor amenity of Woodville Road is acknowledged and the development designed with consideration and consistency with the draft 'development near rail corridors and busy roads' guideline. See below extract image from DCP. Both significant tall trees and a minimum commercial podium are to be provided with apartments set back behind this. The apartments at the top of the tower are not subject to significant noise or amenity issues from Woodville Road.

Issue	Comment	Response
		Through a long design process including multiple rounds of review by the Central City Planning Panel the north eastern corner of the site has been seen as the right location for the tallest buildings including a 'marker tower' near the meeting point of Woodville Road, Church Street and Parramatta Road. Air quality and noise assessments have been prepared and formed part of the original submission and demonstrated an appropriate development outcome, with recommendations to be incorporated at the detailed DA stage.  Figure 3 – Illustrative section – Minimum street wall height for buildings on Woodville Road
	The proposal compounds many features that are undesirable in dense apartment living. These are exposed on a site that is highly visible.	The proponent refutes this point. The design provides excellent outcomes with regard to the provision of and access to public open space and solar access amenity (with the majority of apartments facing north over a large open space) as well as providing the amenity of local shops and facilities. It is also capable of providing excellent amenity outcomes across other issues in the Apartment Design Guide.
Traffic & Transport	**Strategic Traffic & Transport Context** *Council is currently undertaking a precinct-wide traffic and transport study in the Granville/Auburn area, as required under the PRCUTS Implementation Plan 2016-2023 to determine whether the recommended controls identified in the PRCUTS can be accommodated considering current and future traffic volumes.* *This study is currently on hold as it is awaiting finalisation of the strategic transport model by TfNSW for the Parramatta Road Corridor before any precinct modelling can be carried out. Until TfNSW completes this work, the precinct-wide traffic and transport studies for the precincts along the entire length of the Parramatta Road Corridor, including the Granville/Auburn area, is unable to progress. Subsequently, all planning proposals seeking controls that are inconsistent with the recommended controls under the PRCUTS should not progress until the work is complete.*	It is noted that under the PRCUTS Implementation Plan 2016-2023 that *"prior to any rezoning commencing, a Precinct-wide traffic study and supporting modelling is required to be completed which considers the recommended land uses and densities, as well as future Westconnex conditions, and identifies the necessary road improvements and upgrades required to be delivered as part of any proposed renewal in the Precinct".* However, the study being placed on hold should not necessarily deter development on one of the most strategically significant growth corridors in Sydney be 'on hold' until such time TfNSW is able to finalise the strategic transport model for each precinct. Noting that the PP was granted a Gateway Determination prior to the implementation of the PRCUTS, it can be suggested that the Panel has recognised the value in the proposal proceeding. Similarly, by way of the Section 9.1 Ministerial Direction – 7.3 containing a scope for proposals to be inconsistent with the strategy and still have grounds to proceed suggests that the completion of the Transport Study is not imperative to ensure the best outcomes for the corridor and local area. To ensure the PP is able to be supported from a traffic perspective, TTPP have undertaken extensive modelling to assess the traffic impacts associated with the subject development on Parramatta Road, Woodville Road and Crescent Street, as

Issue	Comment	Response

		well as the network located further west of the subject site (between Crescent St and Merrylands). This is in addition to local intersections assessed using the following software:
		- SIDRA Modelling
		  o Pitt Street-Walpole Street
		  o Pitt Street-Merrylands Road Intersection
		- Aimsun Microsimulation Modelling
		  o M4 Interchange at Church Street
		  o Parramatta Road-Woodville Road-Church Street
		  o Woodville Road-The Crescent
		The data presented in Attachment 1 of the Addendum to TIA not only highlights that the PP is able to minimise any adverse effects as a result of transport from the proposal, but similarly highlights that the requirement to put on hold all planning proposals whilst TfNSW hold up finalisation of the PRCUTS, a document which is pre-dated by this PP is ultimately unnecessary.

	Site Specific Vehicular Traffic Volumes & Implications *The applicant has prepared a traffic impact assessment report which assessed the performance of key intersections for the future scenario of the planning proposal, The applicant has also undertaken additional traffic modelling at the request of TfNSW which was based on the mesoscopic base model for the PRCUTS.* *Council raises significant concerns regarding the assumptions used to inform the applicant's transport modelling given that the precinct-wide traffic study that will model the cumulative impacts arising from the PRCUTS are still yet to be completed. Despite the applicant undertaking traffic modelling employing the mesoscopic base model for the PRCUTS, Council questions whether this has taken into consideration the traffic impacts along the length of the corridor and not just in proximity to the site.* *Furthermore, there is a risk that should the planning proposal progress prior to the completion of the Granville/Auburn precinct-wide traffic study, discussed above, this could set an undesirable precedent for other sites along the PRCUTS area to proceed prior to the completion of appropriate traffic modelling at densities exceeding the PRCUTS' recommendations.*	As noted above, the suggestion that the PP proceeding sets an 'undesirable precedent' is strongly disagreed with. The PP will only proceed if the consenting authority recognises the value in the proposal and after a considerable assessment process, as was the case with the Panel granting the application a Gateway Determination which would have considered the impact on the corridor and PRCUTS in its assessment. TTPP notes that the initial traffic assessment undertaken was done so at a mesoscopic base model, and this has been addressed within the revised modelling, submitted with Attachment 1 of the report, which utilises data sets sent by TfNSW for intersections at Parramatta Road, Woodville Road & Church Street as recently as the 23 October 2020. Thus, Appendix A looks to clarify the assumptions undertaken in the initial modelling. Similarly, the Applicant and TfNSW are set to have a meeting mid-November 2020 which will include further discussions regarding any inconsistencies and error in modelling. It is the intention of the Applicant to alleviate any issues that remain regarding traffic volumes and implications, particularly with regard to traffic modelling,
Pedestrian/Cycle Amenity & Proposed Infrastructure	*The subject site is heavily constrained and considered to be isolated. As such, a number of infrastructure improvements have been identified as part of the delivery of the planning proposal by the applicant. There are six infrastructure improvements proposed by the applicant that permeate into the Parramatta LGA boundary:* ***28.*** *Improvements to underpass connections to Church Street west from underpass* ***29.*** *Potential for direct connection to Church Street west from underpass* ***30.*** *Funding for Church Street pedestrian/cycleway improvements* ***31.*** *At-grade connection across Woodville Road*	As noted above within Table 3, the Applicant has proposed several opportunities for public benefit to increase permeability via infrastructure improvements as a part of the PP. Overall, subject to Council, the proponent is willing to negotiate on the preferred local upgrade works with Council (via the VPA process) following the Panel's endorsement of the project. Similarly, it is expected that regional contributions will be required, and the proponent is also committed to investing in state infrastructure via a suitable satisfactory arrangements provision.

Issue	Comment	Response
	32. Two potential bridged connections across Woodville Road *Should the planning proposal progress, the proposed connections to the Parramatta CBD and Granville should be delivered via a planning agreement of alternative delivery mechanism to ensure greater connectivity and accessibility to these key sites.*	
Flooding	*The applicant's flooding report states that there are no flooding implications of the rezoning in floods of the 1 in 100-year size, since the flood waters would be contained within the A'Becketts Creek channel. However, should there be a flood of a size greater than the 1 in 100-year flood event, any filling of the site could cause flooding around the site (including the Parramatta LGA) to be much worse.* *Therefore, Council recommends re-running a TUFLOW 2D model for the site for the following reasons:* *33. Check the results of the 2015 study, including if there have been any substantial changes in the catchment in the 5 years since the report was written.* *34. Extend the results to consider the effects of floods lager than the 1 in 100-year flood.* *35. Extend the results to consider the effects on overland flow flooding of the proposed development.* *36. Investigate if flooding downstream could be reduced through additional flood storage on the site.* *Until further technical studies are completed which consider the broader flooding impacts which may arise as part of the planning proposal, Council does not support it nor does it agree that this study clearly demonstrates a better outcome other than the PRCUTS, in reference to clause 5(b) of the relevant Section 9.1 Ministerial Direction.*	Councils request to re-run a TUFLOW 2D model is acknowledged, however is deemed not essential in analysing the suitability of the site as relevant to flooding. Council's submission notes any event greater than the 1 in 100-year flood event could cause additional flooding is ultimately unfounded and unnecessary. As noted within the *Floodplain Development Manual* (Department of Infrastructure, Planning & Natural Resources, 2005), the 1 in 100-year, or 1% flood event, plus a freeboard of typically 0.5, with minimum fill levels at 1% AEP flood levels is the standard Flood Planning Level for development control within NSW. Further modelling to take into account an event with a chance of occurring less than once a century is considered unnecessary and unreasonable. The flooding assessment undertaken by BMT WBM in May 2015 and submitted as part of the PP was done in addition to previous studies of A'Becketts Creek to examine flooding behaviour within the catchment. These previous studies include: 37. Catchment Management Study – A'Becketts Creek SWC No.46, Bewsher Consulting (1990); 38. Report for A'Becketts Creek – Drainage Master Plan, GHD (2009); and 39. Westconnex Stage 1A: M4 Widening – Hydrology & Flooding Technical Study, NSW Transport. The previous Holroyd Council's Flood Control Map, which has been endorsed by Cumberland City Council indicates the entire site is above the 1% annual exceedance probability (**AEP**) design flood level and not subject to inundation from A'Becketts Creek flooding. Floodwater at the 1% flood level is confined to within the A'Becketts Creek channel adjacent to the site. The main channel alignment is categorised as a floodway. The TUFLOW modelling undertaken by MBT WBM has further confirmed the above, that the development site is not subject to mainstream flood inundation from the adjacent creek. The proposal has no major constraints to the proposed development in relation to the mainstream 1% AEP A'Becketts Creek flooding condition. No component of the proposal encroaches within the 1% AEP flood inundation extent, and existing ground surface levels on the lot lie will above the nominal flood planning levels based on the 1% AEP flood level + 0.5m freeboard. Council request to undertake additional modelling, despite the modelling confirming the findings of the previous studies and Cumberland Council's endorsed Flood Control Map is thereby unreasonable.

5. RESPONSE TO COMMUNITY SUBMISSIONS

This section of the RTS report details the key issues raised in submissions made by the community in response to the exhibition of the PP.

The content of each community submission has been carefully reviewed and captured below in Table 7. This section of the report sets out the key issues raised by category and provides a response. Where the response relies on the assessment of technical matters by the project team, a summary is provided, and the reader is directed to the supporting technical document for a full analysis of the issue.

Table 7 Response to Community Submissions

Issue	Comment	Response
Submission 1 & 3 – Proforma Letter		
Urban Planning	*Within the PP report, the number of retail stores, business premises and apartments are not shown, the B4 and R4 zoning indicates that there will be numerous and excessive numbers of apartments especially in the high-rise buildings.* *Additionally, the mix of 1, 2, 4 and 4 bedroom apartments is not shown, but rumoured numbers are from 1200 to more than 2000, so calculating the daily vehicle numbers accessing the site is difficult, but the minimum number could be 1200 vehicles out and 1200 vehicles in each day just for the residents, as well as service vehicles to the retail and commercial premises.*	Given the concept master plan lodged with the PP is indicative only, the exact mix and number of apartments are yet to be finalised. This will be completed at DA stage once the proposed quantum of residential and retail have been supported on traffic grounds in consultation with TfNSW. The PP report however does note that any future development will be between approximately 1,109-1,255 residential apartments, which in concept design could contain the following indicative split: Residential R4 Zone 40. 1-bedroom unit – 221-250 units 41. 2-bedroom unit – 199-255 units 42. 3-bedroom unit – 22-25 units Residential B4 Zone 43. 1-bedroom unit – 332-376 units 44. 2-bedroom unit – 299-339 units 45. 3-bedroom unit – 35-39 units These proposed dwellings are in addition of up to 12,755m^2 of retail and commercial space. Using these figures, the TIA lodged with the PP assessed this proposed floor space and has been able to identify that the expected level of vehicle movements a day that are able to be accommodated, and a compliant and adequate number of parking spaces to support this. Similarly, the PP has included a number of measures to minimise car travel including: 46. Limited parking ratios – reducing congestion, pollution and encouraging a shift to sustainable transport modes; 47. Cycle parking/facilities – a connection through A'Becketts Creek to enhance pedestrian and cycle connectivity between the site and Holroyd Sportsground is proposed, connecting to existing cycleways; 48. Car sharing – the site is ideal for the inclusion of share car spaces and their introduction is supported by the Applicant; and 49. A Green Traffic Plan aimed at promoting sustainable travel and reducing reliance on private vehicles is offered to be produced at DA stage. 50. With the introduction of these measures, it is anticipated that the subject site would generate significantly less traffic than other residential sites in the vicinity. This will have the positive effect on reducing traffic impact.
Traffic & Transport	**Vehicle Entry & Exit Points** *It is noted that there is a Primary Access Point and two secondary access points to the site, however, it is evident there is only one main access in and out of the site, which, is*	

<table>
<tr><th>Issue</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td>a concern due to the number of high density housing planned for the site and the large number of vehicles accessing the site.</td><td>The proposed access arrangements have been assessed in the TTPP report and deem the arrangements, including the provision of a 25m turning lane into the site as appropriate. The proposed improvements to Crescent Street have been considered by Panel.</td></tr>
<tr><td></td><td>Private Vehicles vs Public Transport Usage

The report is based on the premise that residents of the high-density residential apartments are not going to own cars and will use public transport, which is ludicrous.</td><td>It is noted within the TIA lodged with the PP that as per the parking requirements under the HDCP 2013, the development would be required to provide a minimum of 1,570 to 1,736 and a maximum of 2,871 to 3,117 car parking spaces to accommodate residential and commercial aspects of the proposal. The development proposes to provide car parking spaces in accordance with this figure to ensure compliance with Council’s requirements, the exact number will be finalised at the DA stage once the exact residential unit number and mix is determined. Given the Applicant has committed to achieving compliance with Council’s parking provisions, the proposal is able to accommodate residents electing to own and utilise private vehicles.

The PP however does promote the use of public transport as an option for local residents. Given the proximity to a number of bus routes and rail stations, it is expected residents will utilise these services available to them. This is inline with the identified strategic objectives of Council. Council’s own strategic planning document, Cumberland 2030, has identified several Local Planning Priorities. Priority number four – Improve accessibility within our town centres has identified one of the required actions by Council is to advocate for improved transport options for Cumberland’s vibrant centres to support walking, cycling and public transport access. The PP thereby is supporting the strategic vision set out by Council and is looking to encourage the use of local public transport infrastructure, increase permeability and cycleways within the subject site and neighbouring parklands, and committing to a design that is able to support the use of private vehicle with adequate parking for residents, employees and visitors.</td></tr>
<tr><td></td><td>Crescent & Walpole Streets ‘Rat Run’

There is frequent heavy congested traffic along Parramatta Road where it joins the M4 with all lanes filled way back to Auburn and Lidcombe. This prompts drivers to opt to use Crescent & Walpole Street connection as a ‘Rat Run’ to reach Merrylands and beyond.</td><td>This is an existing problem and modelling suggests this will not be exacerbated by development.</td></tr>
<tr><td></td><td>Proposed Upgrade to Woodville Road & Crescent Street Intersection

Whilst an extra lane is evident within the report to create a turning lane onto the M4 Motorway and a bus lane/ public transport is to be put in place, this is not going to move the traffic or stop people from buying a car to travel on the weekends.</td><td>The benefits of the proposed upgrades to the Woodville Road & Crescent Street intersection are made evident within Table 5 of Appendix A which notes the intersection has only a minimal increase in the level of service in both the AM and PM as a result of the development being granted approval.

Similarly, as detailed above, the development is in line with Council’s Local Strategic Planning Statement, Cumberland 2030 which advocates for the improvement of local transport options including public transport infrastructure and increased cyclewears and permeability. The proposal objectively attempts to create increased moveability within the local area to reduce the use of private vehicle. However, should a local resident elect to utilise this form of transport, the proposed local roads and infrastructure upgrades put forward as an opportunity with the proposal would be able to accommodate this.</td></tr>
<tr><td></td><td>Parking Concerns

The parking for the retail/commercial area would be inadequate due to people purchasing/owning cars and attending the park area. The growth of duplexes and granny flats in the LGA exasperates this, so too will the proposed Paramedic Station proposed for Peel Street.</td><td>As noted above, the finalised number for parking spaces will be determined at DA stage as the proposed masterplan is at this point concept only. The Table below outlines the car parking requirements as per the HDCP 2013 and that total number of carparking spaces to be required.

<table>
<tr><th rowspan="2">Use</th><th rowspan="2">Size</th><th colspan="2">Parking Rates</th><th colspan="2">Parking Requirements</th></tr>
<tr><td>Min</td><td>Max</td><td>Min</td><td>Max</td></tr>
<tr><td colspan="6">Residential (R4 Zone)</td></tr>
<tr><td>1 bed unit</td><td>221-250 units</td><td>1 space/unit</td><td>1.5 space/unit</td><td>221-250</td><td>331-375</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Issue</th><th>Comment</th><th>Response</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>2 bed unit</td><td>199-225 units</td><td>1 space/unit</td><td>2 space/unit</td><td>199-225</td><td>398-450</td></tr>
<tr><td>3 bed unit</td><td>22-25 units</td><td>1.2 space/unit</td><td>2 space/unit</td><td>27-30</td><td>44-50</td></tr>
<tr><td>Visitor space</td><td></td><td>0.2 space/unit</td><td>0.5 space/unit</td><td>89-100</td><td>221-250</td></tr>
<tr><td colspan="6">Residential (B4 Zone)</td></tr>
<tr><td>1 bed unit</td><td>332-376 units</td><td>0.8 space/unit</td><td>1 space/unit</td><td>265-300</td><td>331-375</td></tr>
<tr><td>2 bed unit</td><td>299-339 units</td><td>1 space/unit</td><td>1.2 space/unit</td><td>298-338</td><td>357-405</td></tr>
<tr><td>3 bed unit</td><td>35-39 units</td><td>1 space/unit</td><td>1.2 space/unit</td><td>34-38</td><td>40-45</td></tr>
<tr><td>Visitor space</td><td></td><td>0.2 space/unit</td><td>0.2 space/unit</td><td>132-150</td><td>132-150</td></tr>
<tr><td colspan="6">Commercial</td></tr>
<tr><td>Retail</td><td>7,752.5m^2</td><td>1 space/50m^2</td><td>1 space/15m^2</td><td>155</td><td>517</td></tr>
<tr><td>Office</td><td>7,752.5m^2</td><td>1 space/50m^2</td><td>1 space/15m^2</td><td>155</td><td>517</td></tr>
<tr><td colspan="4">Total</td><td>1,570-1,736</td><td>2,871-3,117</td></tr>
</table>
The Applicant, as per the requirements of the HDCP 2013 will be required to provide a level of parking that is not only adequate, but compliant. Consideration of the proposed Paramedic Station at Peel Street will be given by the consenting authority during their assessment at which time a finalised design with parking numbers is proposed at DA stage.
</td></tr>
<tr><td>Contamination</td><td>Upon reviewing the reports, it has been stated that contamination risks are evident and need to be reviewed as per the Contaminated Lands Management Act 1997. From information that I have received I am led to believe that A’Beckett’s Creek which runs through this area was the site of asbestos dumping that had not been cleared up.</td><td>A/Becketts Creek is outside the subject land. However, the Report on Contamination Risks prepared by Douglas Partners and submitted as part of the PP has outlined the extensive history of potential contamination on site.

The Applicant is aware of the potential for contamination to exist at site and has every intention to undertake adequate assessment of the site against State Environmental Planning Policy No 55—Remediation of Land as well undertaking a Remediation Action Plan in the event one is required from the findings of the contamination Assessment undertaken at the DA stage.</td></tr>
<tr><td colspan="3">Submission 4</td></tr>
<tr><td>Urban Planning</td><td>The allocation of public space is miniscule. Three quarters of a hectare may sound impressive in square metres, but, for a resident population likely in the thousands, does not suggest happy barbeques and picnics for residents and visitors as suggested in the exhibition of the proposal, more like shoulder to shoulder crowds and lots pf dead grass.</td><td>The concern raised in the submission is noted but unfounded. The Applicant is aware of the importance in including generous public and open space when proposing high density development, furthermore strong permeability and connections are imperative to ensuring that public space is maximised for future residents of the proposal and the existing community.

Noting this, the site areas based on the current concept masterplan include approximately:

51. 11,464sqm (1.1ha) within the major, publicly accessible open space (excluding road), which accounts for 30% of the overall site; and

52. 4,908sqm other publicly accessible open space, being 13% of the site.

The 1.1ha of open space provided has the potential to link through to the existing Holroyd Sports Ground (approx. 4.8ha), creating a combined open space of nearly 6ha. The open space outcomes for the site are significant, achieving around 43% of the site as publicly accessible open space, excluding the road around its edge. As a point of comparison, redevelopment of the Rhodes West area (Canada Bay Council) has delivered 20% open space. Achieving this proportion of open space provides an excellent urban design outcome for the site.</td></tr>
<tr><td>Traffic & Transport</td><td>Local Congestion

There will be higher vehicular traffic in an already congested site, with little possibility of improving the surrounding road system. The site is surrounded by the M4, Parramatta Road, Church Street & Woodville Road, all serious traffic congestion and air pollution</td><td>As noted above, the revised Traffic Modelling submitted as Appendix A highlights only a minimal increase in the level of service at a number of the major intersections within the local area.

A similar issue regarding the level of local congestion has been addressed above in Section 5 in response to the submission by TfNSW.</td></tr>
</table>

Issue	Comment	Response
	points already, and the only access to this development will be from the small side street, Crescent Street off Woodville Road.	
	Limited Public Transport & Accessibility *The proposal is for a high-density mixed use and residential development marooned on a site where there is no public transport and difficult vehicular access.*	The walkability mapping shows the site is within 800m of a transport node. A number of potential pedestrian and cycleway improvements have been tabled for consideration by council and the Panel which will improve the connectivity of the site.
Submission 5		
Urban Planning	*What is the current rate of occupancy for units in the Parramatta CBD and surrounding areas? If rates of occupancy are low, how can an extra 1,255 be justified?*	There remains a requirement for increased housing within the region, particular to meet the future housing target demands as set out in local strategic documents such as Cumberland 2030 and the PRCUTS, but as well as the Central River City vision within *A Metropolis of Three Cities*. The supply of additional new dwellings within proximity to major regional centres and public transport options remains an important part of delivering housing targets and the growth of the Western Sydney population in general, and the low vacancy rates of apartments within the Parramatta Region further highlights this. The subject proposal will contribute to this demand for housing in the region.
Traffic & Transport	**Construction Parking Management** *Will the builder allocate adequate on-site parking for contractors? If not, how does council plan to manage excess cars taking up valuable parking spaces?*	Should the PP progress to the DA stage, prior to obtaining a Construction Certificate the Applicant would submit a Construction Environmental Management Plan to Council or the consenting authority for approval which would specifically detail a response as to how the construction process will have minimal impact on the local environment. This is inclusive of a Construction Traffic Management Plan. A Construction Certificate would only be issued once the consenting authority is satisfied this issue has been addressed.
	Local Congestion Solutions *In the long-term, the development of 1,255 units will replace the traffic caused by contractors with traffic caused by more residents. What solution does the developer intend to introduce to stop this congestion on Woodville Road, Crescent Road, Church Street & Parramatta Road?*	As part of the PP, the Applicant has proposed several opportunities for social infrastructure and public benefit development by way of a Voluntary Planning Agreement (VPA). The purpose of these improvements is to focus on connectivity for the site and its surrounding context. The full list of available public benefit and connectivity opportunities is available above in Section 5 in response to the submission by TfNSW.
	M4 Access via Church Street *There is no way for drivers heading south on Church Street to enter the M4 westbound. As a result, many vehicles turn down Crescent Street to do a U-turn in the Wes Track driveway, turning left into Woodville Road to enter the M4. How does the developer propose to fix the issue of no M4 access via Church Street southbound?*	This is an existing problem and the M4 access ramp is a key discussion point to be worked through with TfNSW.
	Condition of Local Footpaths *With residents of Crescent Park expected to walk to Granville and Harris Park station, has an assessment of the surrounding walkways been undertaken to decide if they are adequate for the added foot traffic?* *Many of the footpaths and road crossing leading to Granville and Harris Park stations are along main roads. Many of these paths are crossings are narrow, lacking in adequate railing and mechanical separation from traffic and are in need of repair. The path under Woodville Road joining Holroyd and Harris park is desolate and unmaintained, lacking adequate lighting. How does the developer intended to rectify these issues?*	As discussed previously, the Applicant has proposed a number of local infrastructure upgrades, including footpath upgrades and additional crossings to create increased permeability for local residents to nearby major centres and public transport options. Please refer to Table 3 for the full list of proposed local infrastructure upgrades.
Submission 7		

Issue	Comment	Response
Urban Planning	**Overdevelopment** *This massive development proposal will add another 1,200 units which are up to 28 storeys high in this narrow street. The residents of Holroyd need to prepare themselves for a massive development going up in their neighbourhood and their existing infrastructure will need to service a much larger population.*	As mentioned above in Table 3, the Applicant has put forward a number of State and Local opportunities for public benefit to assist in accommodating any potential increases in population numbers. The modelling however in Section 5 by TTPP has highlighted that issues in relation to traffic and local infrastructure are able to be alleviated with any increase in population able to be accommodated. Whilst the proposed will entail an increase in local dwelling numbers, significant public benefits are also proposed that will benefit the local community including: 53. Provision of major new publicly accessible park that is ~7700sqm of dedicated space, connected to the existing Holroyd Sports Ground to offer a combined total of almost 6 hectares of open space; 54. Improved pedestrian and cycle accessibility, including provision of new links, connections, and improvements of others; 55. New shops and facilities to provide for local community demand; 56. Visual improvement to a prominent site at the Gateway to Holroyd; 57. A commitment to design excellence; 58. Retention of on-site employment while also providing new housing supply; and 59. Generous affordable housing offer.
	No Detailed Plans for Infrastructure Upgrades *No detailed plans for infrastructure upgrades – this site is not close to a train station with limited public transport nearby. It is going to place an enormous strain on infrastructure that is already stretched. And the pressures this development will add to an already stressed public transport system.*	As noted previously, the Applicant has put forward a number of local and state infrastructure upgrades and opportunities that would address issues regarding local infrastructure and permeability. The Applicant is open to further discussions with Council, the Panel and TfNSW regarding additional opportunities to upgrade local infrastructure as part of the PP application.
Traffic & Transport	*The site of this proposal is a heavy congested traffic hotspot already. There has been a traffic nightmare that surrounds the location already: next to M4 entry/exit.* *To add 1,200 extra units, with 15,000sqm of commercial and retail space and 6,255sqm of office space will make its location one of the most congested areas in Cumberland City.*	Similar to the above, as part of the PP the Applicant has proposed several opportunities for social infrastructure and public benefit development by way of a Voluntary Planning Agreement (VPA). The purpose of these improvements is to focus on connectivity for the site and its surrounding context. The full list of available public benefit and connectivity opportunities is available above in Section 5 in response to the submission by TfNSW.

6. CONCLUSION

This interim RTS report has considered the submissions received from Government, Agencies and the general public during the exhibition of PP_2019_CUMBE _002_00 for the proposed amendment to the site zoning and built form controls under the HLEP 2013, for 1 Crescent Street, Holroyd NSW. During the RTS process the Applicant and the project team have worked with DPIE and TfNSW seeking clarification of a number of technical issues raised to aid in our understanding of the key issues in order to comprehensively address the comments received and work through key matters.

Whilst all raised matters have been addressed in this response to some extent, the key substantive issue that requires resolution is resolving and reaching agreement on the traffic capacity of the development prior to undertaking any re-design or large scale built form amendments. In responding to the traffic issues raised, additional traffic investigations and assessments have been undertaken, including appointing a traffic peer review, to address potential environmental impacts of the Project. Following further engagement with TfNSW, the proponent will prepare a final RTS.

This RTS report set out a comprehensive analysis of the submissions within Tables 6 & 7, identifying direct response to each submission within the detailed content of this RTS report.

The benefits of the proposal have been outlined in detail within the original PP and this RTS report. The positive outcomes that will be delivered via the proposal include:

- The proposal will eliminate the potential for land use conflict between the existing business development and residential zones;
- The proposed character and scale of the proposed development is consistent with the existing planned densities of development located to the north and east of the site;
- The site is located close to established residential areas and local services such as shops and public transport are in close proximity;
- The proposal will contribute to supporting a diverse range of uses in order to create a neighbourhood precinct;
- Increasing residential densities will support existing infrastructure and will contribute to the objectives of the A Metropolis of Three Cities; to support mixed use precincts, and essentially provide residential, amenity and employment in close proximity to public transport.
- The proposed redevelopment will support revitalisation of the Merrylands and Granville Town Centre through an increase in the residential population and subsequently, household expenditure;
- Provide diversity in employment, whilst still maintain an employment role for the site;
- Increase the range of housing choices within the Holroyd area as well as increasing housing stock within the Cumberland LGA in line with the dwelling targets set out by the government;
- The proposal will contribute to housing targets for the subregion through the provision of approximately 1,109 - 1,255 new dwellings. The proposed housing will provide an affordable alternative to the dominant dwelling typology - semi-detached, which tends to be more expensive. The redevelopment will also expand the quantity of rental accommodation, providing another affordable alternative;
- The potential for the provision of up to 1,000 jobs on site, depending on the future mix of land uses;
- The provision of additional open space for use by the public will improve the amenity of surrounding residents, and create connectivity between Crescent Street and Holroyd Sportsground, and to the wider cycle and pedestrian pathway networks;
- The proposal will create 16,372m^2 of publicly accessible open space (approximately 43% of the total site) for the benefit of future residents and workers on the subject site, and for the existing population of Holroyd and surrounding locality.

Overall, the proposal will deliver significant strategic and positive residential and employment outcomes for the Holroyd and wider Western Sydney area, and ultimately should be endorsed following resolution with TfNSW.

7. DISCLAIMER

This report is dated 30 October 2020 and incorporates information and events up to that date only and excludes any information arising, or event occurring, after that date which may affect the validity of Urbis Pty Ltd **(Urbis)** opinion in this report. Urbis prepared this report on the instructions, and for the benefit only, of Australian Capital Equity **(Instructing Party)** for the purpose of Response to Submissions **(Purpose)** and not for any other purpose or use. To the extent permitted by applicable law, Urbis expressly disclaims all liability, whether direct or indirect, to the Instructing Party which relies or purports to rely on this report for any purpose other than the Purpose, and to any other person which relies or purports to rely on this report for any purpose whatsoever (including the Purpose).

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All surveys, forecasts, projections and recommendations contained in or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report, and upon which Urbis relied. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

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This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.

ADDENDA TO TRANSPORT IMPACT ASSESSMENT, PREPARED BY TTPP

Our Ref: 16241

30 October 2020

Tiberius (Holroyd) Pty Ltd
Suite 801
1 Castlereagh Street
Sydney NSW 2000

Attention: Mr Huw Williams

Dear Huw,

RE: 1 CRESCENT STREET, HOLROYD
ADDENDUM TO TRANSPORT IMPACT ASSESSMENT FOR PLANNING PROPOSAL

Executive Summary

This addendum traffic impact assessment has been prepared in response to the comments received from Transport for NSW, Cumberland Council and Parramatta Council associated with the planning proposal for a mixed use development located at 1 Crescent Street, Holroyd.

The following key issues raised in the comments have been addressed in this addendum:

- Traffic generation rates adopted
- Suitability of site access arrangements
- Impacts on Local Road Network
- Impacts on State Road Network (including TfNSW Project Upgrades)

This letter has addressed these issues and the following conclusions can be drawn

- The subject site is a large commercial and industrial site and the parcel of land will not remain undeveloped. A previous assessment of the traffic generation that could be generated by an alternative development scenario was prepared for Urbangrowth and that traffic assessment prepared and submitted in 2016 estimated it could generate up to 1,500 peak hour trips. It is noted that the proposed development is expected generate significantly less than this level of traffic during the AM and PM peak hours
- The potential traffic generation of the subject development has been revised based on the higher trip generation rates suggested

- The trips have been distributed across the road network based on 2018 Journey to Work data
- The assessment has included the traffic generated by a number of other residential development approvals in Merrylands.
- The intersection analysis has been undertaken taking into account the background traffic growth figures provided by TfNSW which suggest a 20% increase in background traffic over the next 10 years, the additional traffic volumes associated with the planning proposal and the aforementioned approved developments in Merrylands.
- The modelled intersections in Merrylands are shown to operate below capacity even in 2031. The exception to this is the intersection of Pitt Street-Neil Street which will operate above capacity in Year 2030 even with the subject developments or those recently approved in Merrylands.
- The three site accesses on Crescent Street are expected to perform at LoS C or better.
- The Aimsun modelling shows that with the proposed development, even in 2031, both Parramatta Road/Church Street and Woodville Road / Crescent Street operate at Level of Service D or better.
- This correlates with the findings of Council's peer reviewer (SCT) and that of Councils own expert in the Land & Environment Court case concerning land acquisition from the subject site.
- The motorway ramps appear to be relatively unaffected by the proposal.
- It is concluded that the proposed development would not impose adverse impacts on the local road network other than the Pitt Street/Neil Street intersection which already experience traffic capacity issues with or without the subject development.

Background

This addendum has been prepared in response to the comments received from Transport for NSW, Cumberland Council (and their peer reviewer SCT consulting) and Parramatta Council associated with the planning proposal for a mixed use development located at 1 Crescent Street, Holroyd.

Tiberius (Holroyd) Pty Ltd has also appointed SLR Consulting to peer review TTPP's traffic impact assessment submitted as part of the planning proposal.

This addendum focuses on the comments in relation to traffic generation and traffic distribution of the subject development in a cumulative assessment, taking into account TfNSW STFM background traffic growth and the recently approved developments in Merrylands based on the information provided Council.

The following key issues raised in the comments have been addressed in this addendum:

- Traffic generation rates adopted
- Suitability of site access arrangements
- Impacts on Local Road Network
- Impacts on State Road Network (including TfNSW Project Upgrades)
- Providing updated SIDRA Modelling for local road impacts
- Providing updated Aimsun modelling – the detail of which is provided in Attachments 1 and 2 for modelling state road impacts

By way of background, the subject site is a large commercial and industrial site and the parcel of land will not remain undeveloped. A previous assessment of the traffic generation that could be generated by an alternative development scenario was prepared for Urbangrowth and that traffic assessment prepared and submitted in 2016 estimated it could generate up to 1,500 peak hour trips (refer to Attachment 3). It is noted that the proposed development is expected generate significantly less than this level of traffic during the AM and PM peak hours.

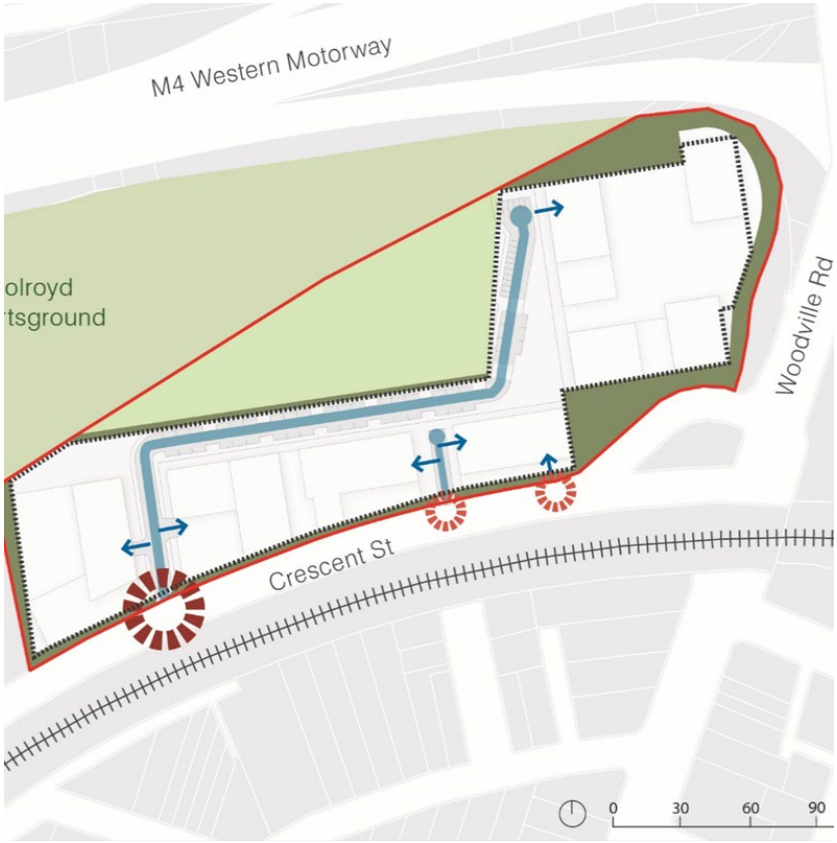
The purpose of a mixed-use development site is that people who live there do not need to travel for basic services outside the site. The co-location of many compatible uses will reduce car travel and increase walking and cycling and locally traffic congestion will be reduced, air quality improved and accessibility maximised.

The design yield of the planning proposal is consistent with the previous as follows:

- Residential: 1,255 units
- Retail (shopping centre): 7,502.5 m^2 GFA (5,627m^2 GLFA)
- Office: 7,502.5 m^2 GFA

There have been concerns that the proposed site was to be accessed by a single access point onto Crescent Street. To address this concern, it is now the intention that the site is served by three driveways as shown below.

Figure A: Proposed Accesses on Crescent Street



Two separate model packages have been adopted to assess intersection performance in the road network surrounding the subject site.

TfNSW require the use of the Parramatta Road Corridor Urban Transformation (PRCUTS) model to assess traffic impacts associated with the subject development on Parramatta Road, Woodville Road and Crescent Street. It is noted that this planning proposal was submitted before the PRCUTS model was developed by TfNSW.

The extent of the Aimsun model does not include the road network located to the west of the subject development (i.e. between Crescent Street and Merrylands). Consequently, SIDRA modelling was adopted to assess traffic impacts on the local road intersections located to the west of the subject development. The use of SIDRA modelling is appropriate to assess these local road intersections and is consistent with typical development assessment practice.

On this basis, the following intersections have been assessed by different modelling software:

- SIDRA modelling
  - Pitt Street-Walpole Street
  - Pitt Street-Merrylands Road intersections

- Aimsun microsimulation modelling
  - M4 interchange at Church Street
  - Parramatta Road-Woodville Road-Church Street
  - Woodville Road-The Crescent

It is acknowledged that the scope of this addendum report is based upon initial discussions with Council about the intersections of concern but noting Council appointed SCT Consulting to assess other intersections surrounding the planning proposal.

The arterial road intersections have been required by TfNSW for reporting in this addendum report.

SIDRA modelling results are presented in the main body of this addendum report, while the Aimsun microsimulation modelling results are presented in Attachments 1 and 2.

The Subject Development - 1 Crescent Street, Holroyd

Traffic Generation

The traffic generation calculation has been revised in response to the comments received from TfNSW, Councils and SLR Consulting on the proposed development. An extract of the comments is shown as follows:

1. A total traffic generation of peak hour vehicle trips per hour (vtph) of 635 and 952 in AM and PM peak respectively was used to assess the traffic generating impact of the planning proposal on the adjacent road network. . However, it is noted the total retail traffic generation of 922 PM vtph (based on a rate of 12.3 trips per 100m^2) and 461 vtph AM (based on 50% of PM peak) has been heavily discounted to 549 PM vtph and 274 vtph AM trips based on the following:
   a) A 20% reduction factor is applied to the above trip rates for retail and office uses to account for trips, which will be contained within the site boundary.

   TfNSW advises that former Roads and Maritime Services commissioned updated trip generation surveys of small suburban shopping centres in 2018 (i.e. less than 10,000m^2 GFA). As part of this trip generation surveys, vehicles were counted entering and exiting the surveyed sites, which means that linked trips were additional trips confined within each surveyed site. . For example, for the Glenwood Shopping Village (less than 10,000m^2 GFA), identified a trip rate of 12.7 trips per 100m^2 and linked trips were additional trips.

TTPP has discussed this matter with the Tiberius peer reviewer (SLR Consulting) with regard to the traffic generation calculations used in this addendum report.

Traffic Generation – Residential

Traffic generation was estimated based on a rate of 0.29 trips/unit/hour which has not been a concern for the authorities, hence no changes have been made to traffic generation associated with the residential component of the development.

Traffic Generation – Retail

The retail traffic generation has been revised based on the Roads and Maritime (now TfNSW) Trip Generation Surveys Small Suburban Shopping Centres Analysis Report and Data Report, Bitzios Consulting (November 2018). SLR Consulting agreed with the use of following retail traffic generation rates based on the average rates for all surveyed Sydney sites greater than 2,000 m^2 GLFA:

- 7.84 trips/100m^2 GLFA in the AM peak hour
- 10.77 trips/100m^2 GLFA in the PM peak hour

Given the TfNSW suburban shopping centre sites are isolated and do not have substantial amount of residential developments around and therefore generate a high level of car based trips.

By contrast, the planning proposal would serve the basic retail needs and contain a substantial number of trips within the site without creating vehicular trips. Having said this, in order to address TfNSW's comments, TTPP has decreased the trip reduction factor to compensate for trips between the residential development and retail development from 20% to 10% which has been agreed by the Tiberius peer reviewer (SLR Consulting).

The assumption of 10% is considered more conservative than the 20% originally used by TTPP but we note that Parramatta Westfield is located within a 5-10 minute drive as is Merrylands Town Centre, and consequently it is anticipated that the catchment of the retail development proposed will be relatively local within those people wanting more shopping opportunities travelling to Parramatta or Merrylands.

Traffic Generation – Office

The office traffic generation has been revised based on the RMS (TfNSW) Technical Direction (TDT 2013/04a):

- 1.6 trips per 100m^2 GFA in the AM peak hour
- 1.2 trips per 100m^2 GFA in the PM peak hour

The use of a 20% trip reduction to compensate for trips between the commercial and the retail has been reduced to a more conservative 5% reflecting the multi-purpose trips associated with workers who visit the retail shops and/or live in the residential component of the site. The use of 5% trip reduction has also been agreed by the Tiberius peer reviewer (SLR Consulting).

Traffic Generation – Summary

A summary of traffic generation is provided as follows in Table 1.

Table 1: Summary of Traffic Generation (1 Crescent Street)

Land use	Yield	AM Peak Hour		PM Peak Hour		Trip Reduction Rate
		Trip Rate	Traffic Generation	Trip Rate	Traffic Generation	
Residential	1,255 units	0.29 trips/unit	364	0.29 trips/unit	364	0%
Retail	5,627 m² GLFA	7.84 trips/100m² GLFA	397	10.77 trips/100m² GLFA	545	10%
Office	7,503 m² GFA	1.6 trips/100m²	114	1.2 trips/100m²	86	5%
Existing Industrial Site Traffic	-	-	-35	-	-34	-
Total	**-**	**-**	**840 (+186)**	**-**	**961 (+5)**	**-**

The subject development is expected to generate a net change of 840 vph in the AM peak hour and 961 vph in the PM peak hour.

This is an increase of 186 vph and 5 vph in the respective AM and PM peak hours, as compared with the previous assessment, primarily due to the use of lower trip reduction rates and the TfNSW small suburban shopping centre trip rates.

Passer-by Trips

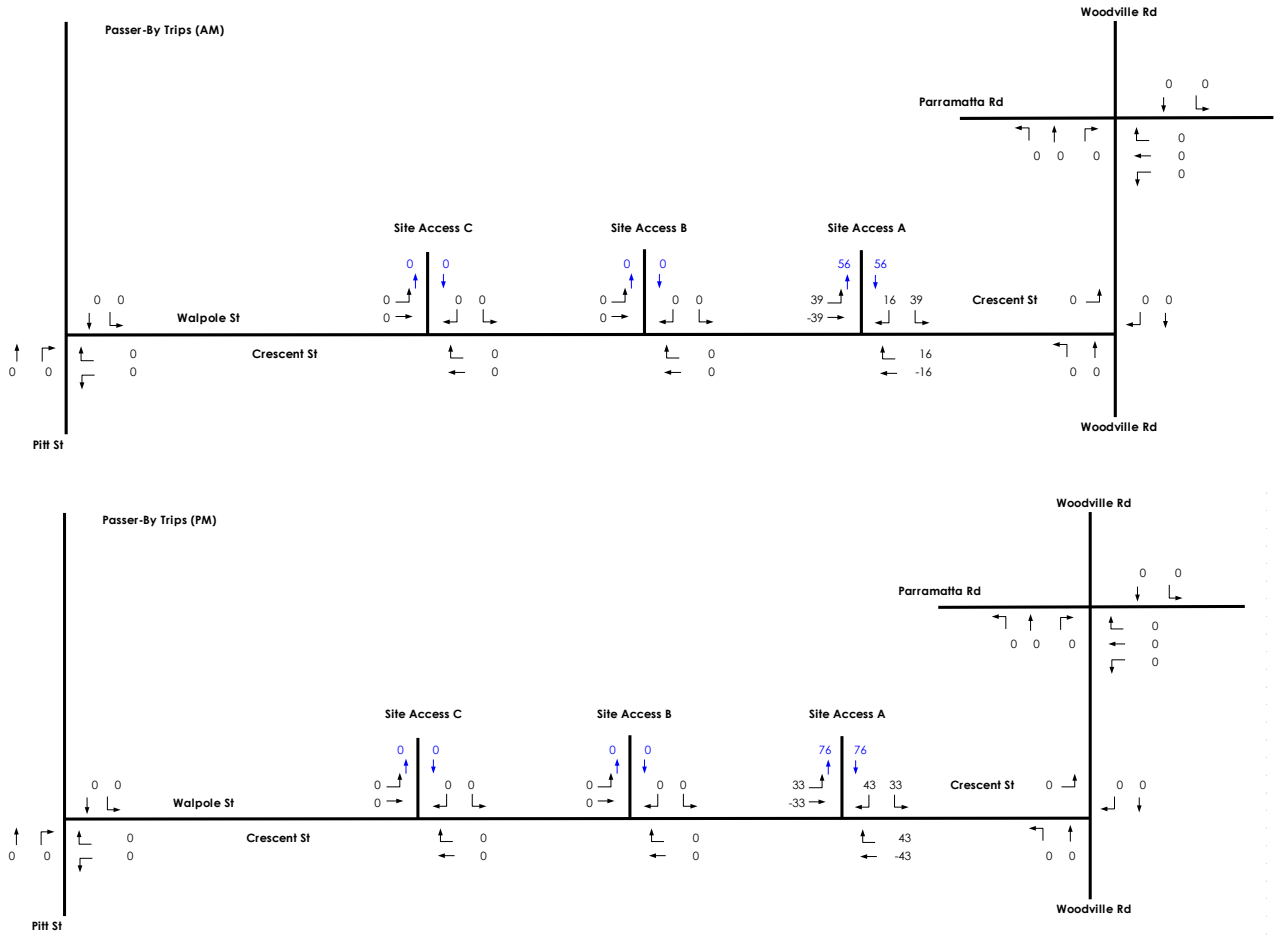
TfNSW commented on the application of passer-by trips. An extract of the comments is shown as follows:

b) A 28% of retail generated trips will be "pass-by" trips (i.e. the new development is an intermediate stop on a trip that is made from an origin to a destination). This assumption is adopted from *Guide to Traffic Management Part 12: Traffic Impacts of Development* Commentary 8 – Linked Trips.

Further, the 28% discount for "pass by" trips are still trips that will enter and exit the subject site and result in additional turning movements at the driveway, as well as additional turning movements at the intersection of Woodville Road/Crescent Street. For example, a motorist instead of heading in the southbound through carriageway of Woodville Road may instead turn right into Crescent Street to do shopping, which will add to the vehicle queue for this right turn movement and should be assessed.

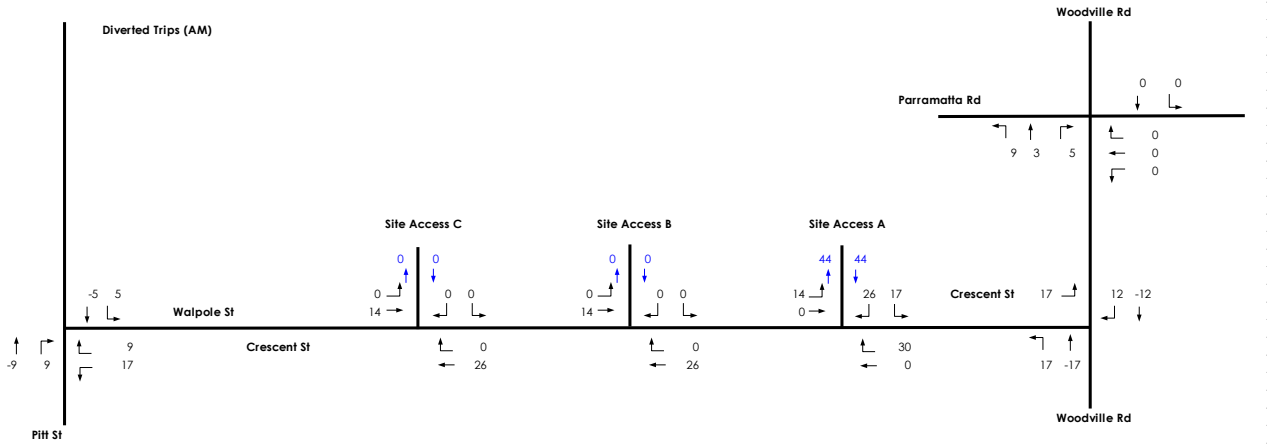
Austroads Guide to Traffic Management Part 12: Traffic Impacts of Developments suggests 28% of the trip generation related to the retail use (greater than 3,000m²) are undiverted (passer-by) drop in trips. This was applied to the retail traffic volumes which consist of traffic on Crescent Street that enters the site as an intermediate stop to another destination. Figure 1 shows the passer-by trip reduction on Crescent Street.

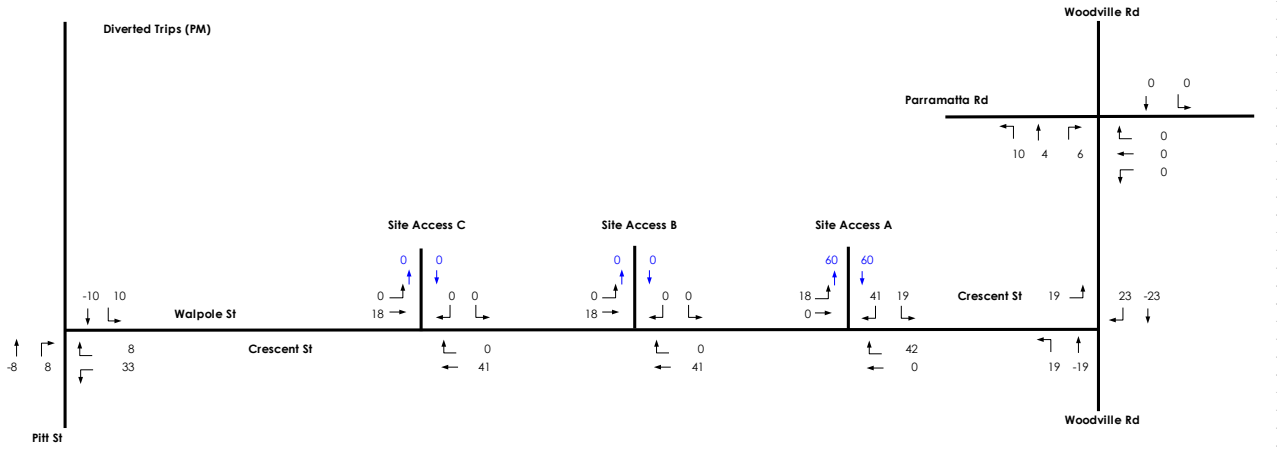
Figure 1: Passer-By Trips



The same Austroads Guide also suggests 22% of the trip generation related to the retail use (greater than 3,000m^2) are diverted trips. This was applied to the retail traffic volumes that would be diverted from Woodville Road and Pitt Street as shown in Figure 2.

Figure 2: Diverted Trips





Traffic Distribution

The directional distribution for residential traffic has been assumed to be 20% inbound and 80% outbound during the AM peak period. These inbound/outbound percentages are reversed in the PM peak period.

For traffic arising from the commercial / retail functions, 50% of the traffic has been assumed to be inbound while the remaining 50% would be outbound during both the AM and PM peak hours.

The development traffic was distributed on the road network based on 2016 Journey to Work (JTW) data of the Holroyd area. The distribution factors are presented in Table 2.

Table 2: Traffic Distribution

To/From Direction	Commercial trips %	Residential trips %
Church St-North	9%	7%
M4/GWH-West	23%	7%
Parramatta Rd/M4-East	13%	36%
Walpole St-North	7%	18%
Walpole St-South	23%	31%
Woodville Rd-South	25%	0%
Total	**100%**	**100%**

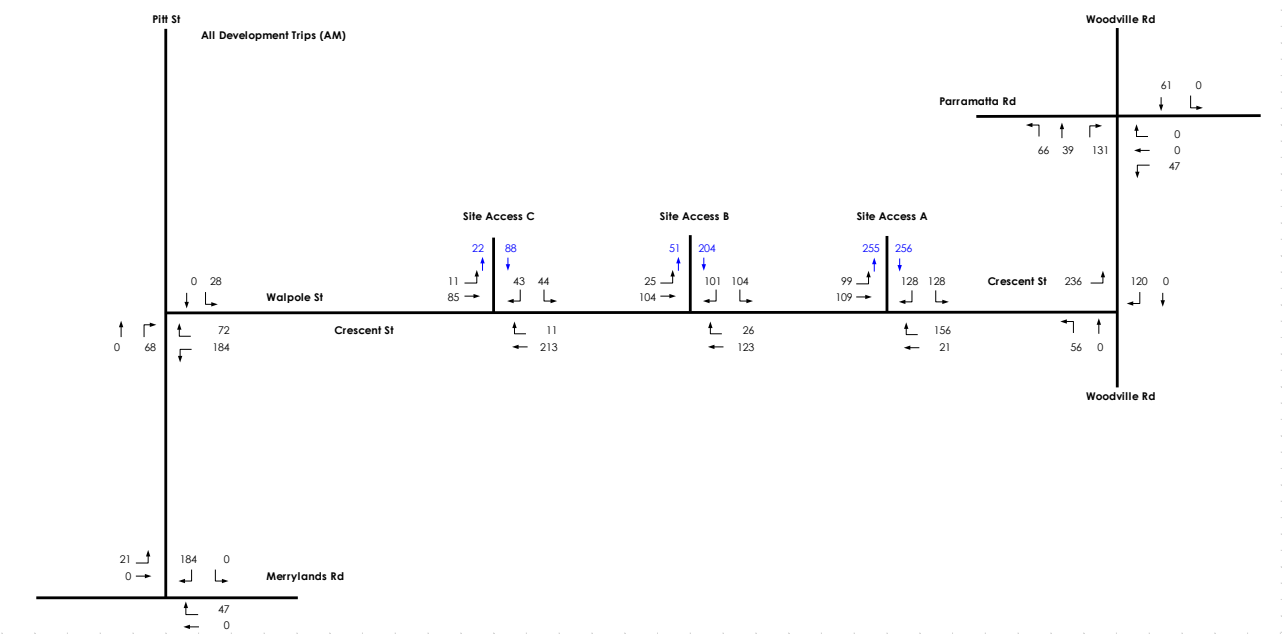
These traffic distribution factors based on 2016 JTW data are similar to those shown in the 2011 JTW data that were adopted in the previous assessment.

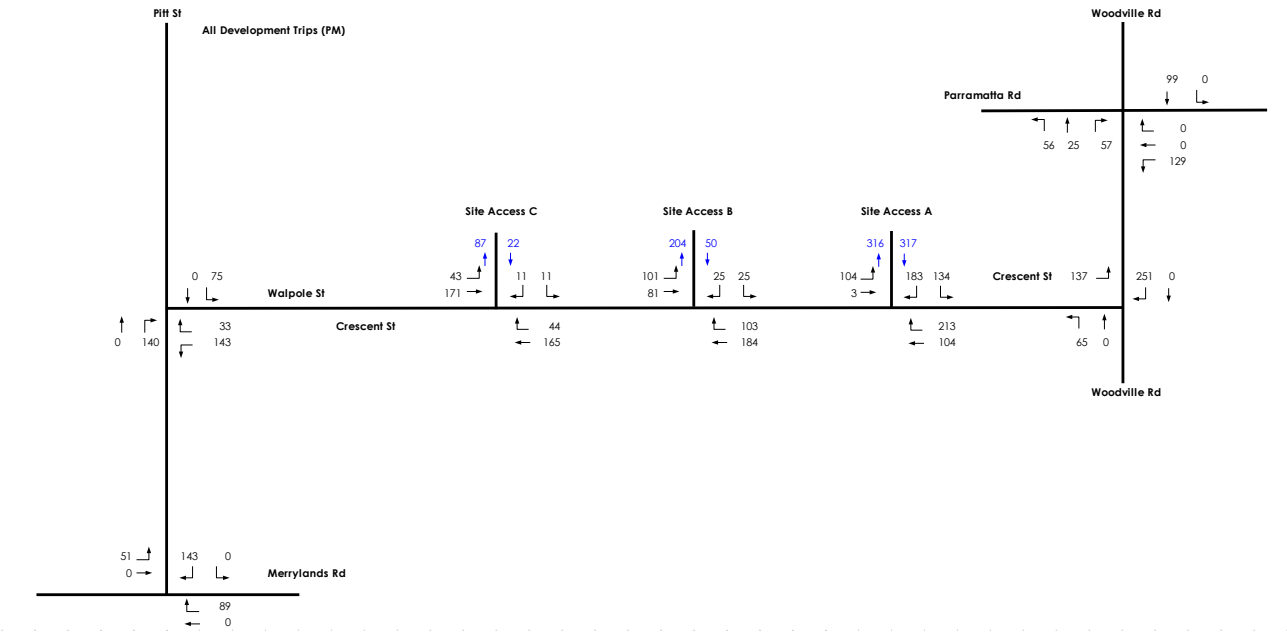
TTPP has also reviewed of the retail impact assessment (2015) which suggested that the retail catchment, particularly the primary trade area, appears to be well dispersed in all directions, as opposed to a strong bias in one particular area. In light of this, the above trip distribution factors have been adopted for the directional split of retail traffic to/from the site.

Traffic Volumes

The traffic volumes associated with the subject development are shown in Figure 3.

Figure 3: Traffic Generation of the Subject Development





Surrounding Developments

A cumulative assessment has been undertaken based on the subject planning proposal at 1 Crescent Street and the adjacent approved developments in Pitt Street and Neil Street as shown in Figure 3 as provided by Cumberland Council and as documented by Urbis.

Figure 4: Location of the Approved Developments

Note: A link road would be constructed between Terminal Place and Neil Street to provide direct access between the public transport interchange and the Neil Street overpass.

Traffic Generation

The expected traffic generation of these approved developments is shown as follows based on the available DA documents and traffic generation calculation.

Table 3: Traffic Generation of Adjacent Approved Developments

Land use	Yield	AM Peak Hour		PM Peak Hour	
		Trip Rate	Traffic Generation	Trip Rate	Traffic Generation
244, 246-250 & 252 Pitt Street	161 residential units	0.19 trips per unit	31 (based on approved DA)	0.15 trips per unit	24 (based on approved DA)
	2,009 m2 GFA of commercial/ retail	1.6 trips per 100m^2 GFA	32 (based on approved DA)	1.2 trips per 100m^2 GFA	24 (based on approved DA)
2-6 Gladstone Street	149 residential units	0.19 trips per unit	DA specified that net change would be zero	0.15 trips per unit	DA specified that net change would be zero
	118.7m2 GLA commercial	1.6 trips per 100m^2 GFA		1.2 trips per 100m^2 GFA	
1-7 Neil Street Building 1	120 residential units	0.19 trips per unit	23	0.15 trips per unit	18
1-7 Neil Street Building 2	115 residential units	0.19 trips per unit	22	0.15 trips per unit	17
9-11 Neil Street	311 residential units	0.19 trips per unit	59	0.15 trips per unit	47
224-240 Pitt Street	355 residential units	0.19 trips per unit	67	0.15 trips per unit	53
	2,415m2 GFA commercial	1.6 trips per 100m^2 GFA (based on other approved DA)	39	1.2 trips per 100m^2 GFA (based on other approved DA)	29
Total	-	-	**273**	-	**212**

Traffic Distribution

Distribution of these approved development trips would be consistent with the traffic distribution factors as shown in Table 2.

Traffic Volumes

Existing traffic volumes

TTPP commissioned intersection counts at the following intersections on Wednesday 19th August 2020:

- Pitt Street-Walpole Street
- Pitt Street-Merrylands Road

To identify impact of the Covid-19 pandemic on traffic operation at these intersections, SCATS data was obtained for the Pitt Street-Walpole Street intersection for the same survey day when the intersection counts were undertaken. SCATS data was also obtained for mid-August 2015 and 2019.

The SCATS 2019 and 2020 data was used to derive adjustment factors for each road on Walpole Street and Pitt Street for the AM and PM peak hours. The adjustment factors for the Pitt Street-Merrylands Road intersection are consistent with the adjustment factor derived for Pitt Street (south of Walpole Street).

A summary of the derived adjustment factors is presented in Table 4.

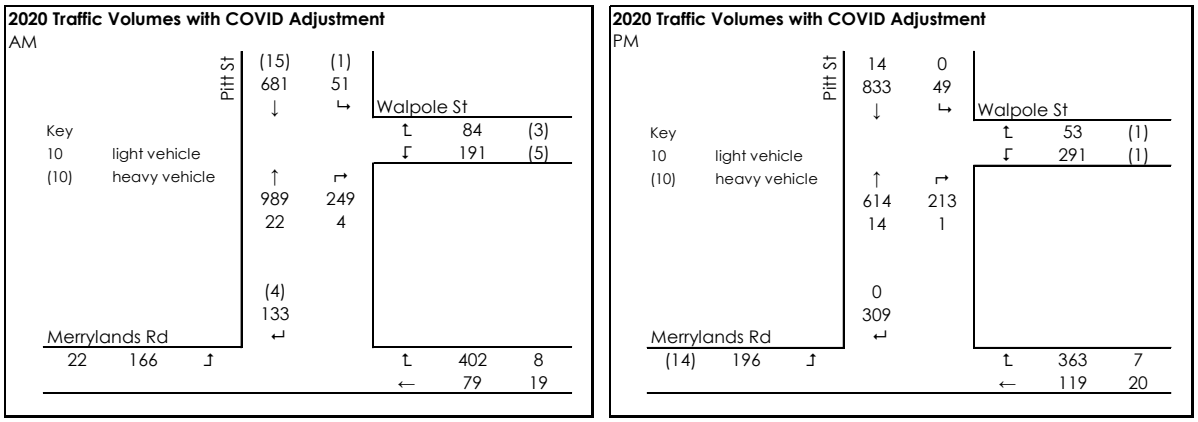
Table 4: Traffic Volume Adjustment Factors

Year	Peak Hour	Walpole Street (East Approach)	Pitt Street (North Approach)	Pitt Street (South Approach)
2015	AM	225	598	1,198
	PM	329	870	789
2019	AM	237	612	1,226
	PM	321	875	804
2020	AM	297	699	1,158
	PM	352	826	814
2020 minus 2019	AM	60	87	-68
	PM	31	-49	10
2020 Adjustment Factor	**AM**	**1.00**	**1.00**	**1.06**
	PM	**1.00**	**1.06**	**1.00**

Table 4 indicates an increase of up to 6% is required to adjust the intersection count data collected in 2020 possibly due to the Covid effects. Where traffic volumes recorded in 2020 were higher than in 2019, the higher traffic volumes would be adopted with no adjustment made to the 2020 traffic volume. This is considered a conservative and robust approach.

The adjusted traffic volumes at the two assessed intersections during the AM and PM peak periods are shown in Figure 5.

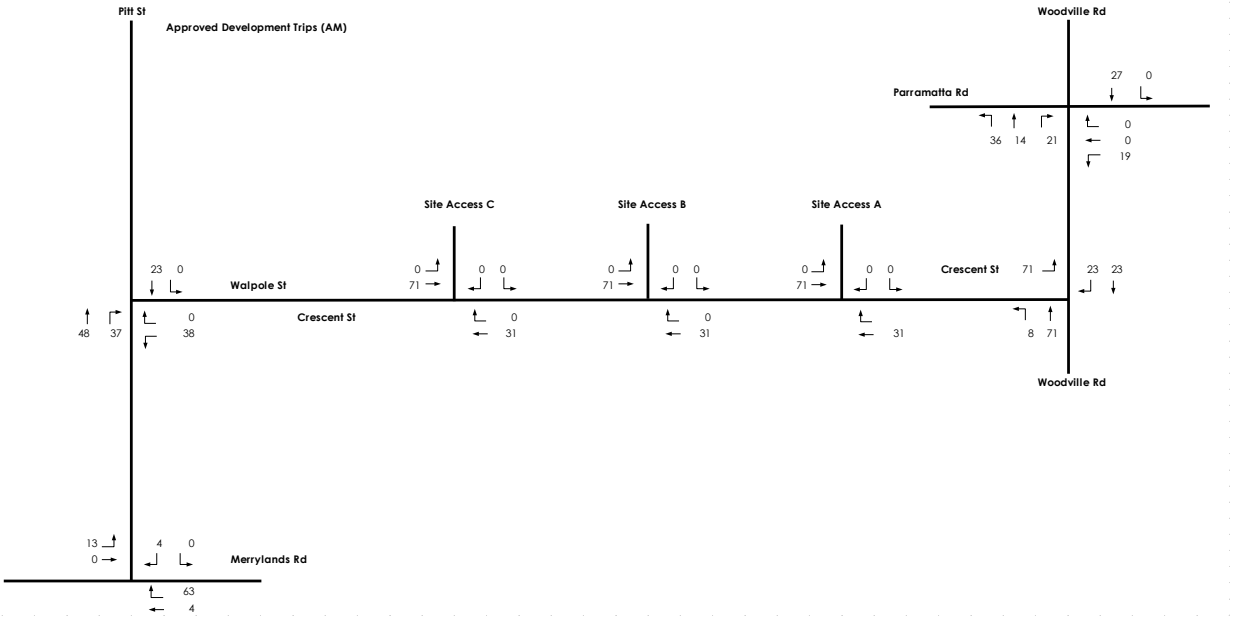
Figure 5: Adjusted Existing Traffic Volumes

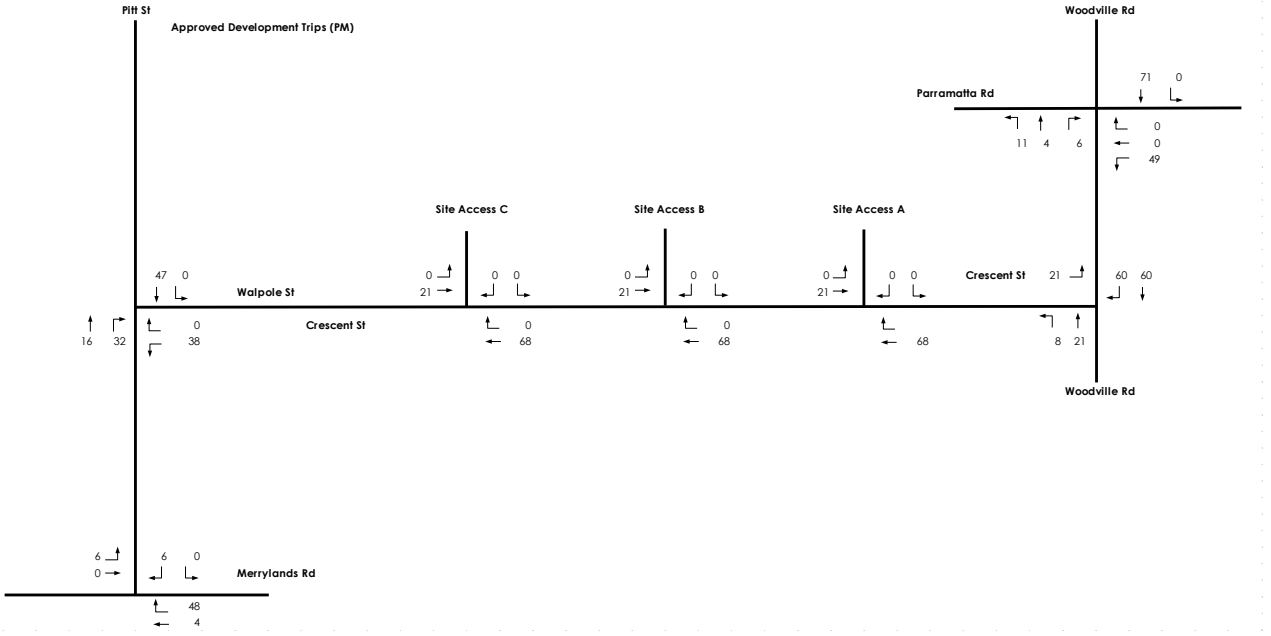


Site traffic generation

The traffic volumes associated with these approved developments are shown in Figure 6 based on the above-mentioned traffic generation and distribution.

Figure 6: Traffic Generation of the Approved Developments

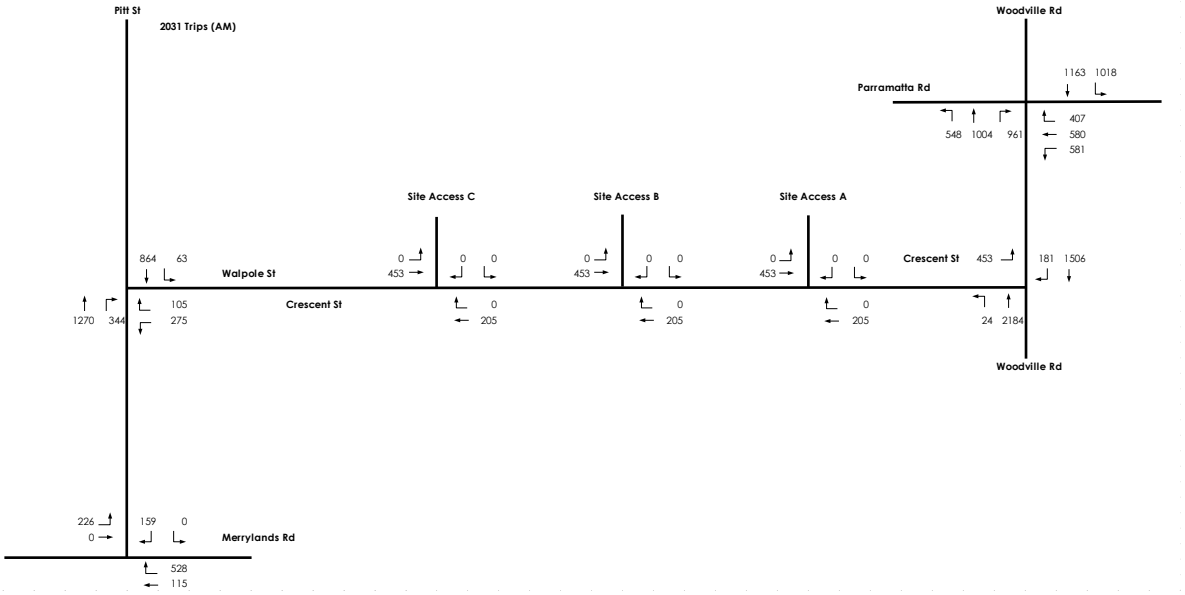


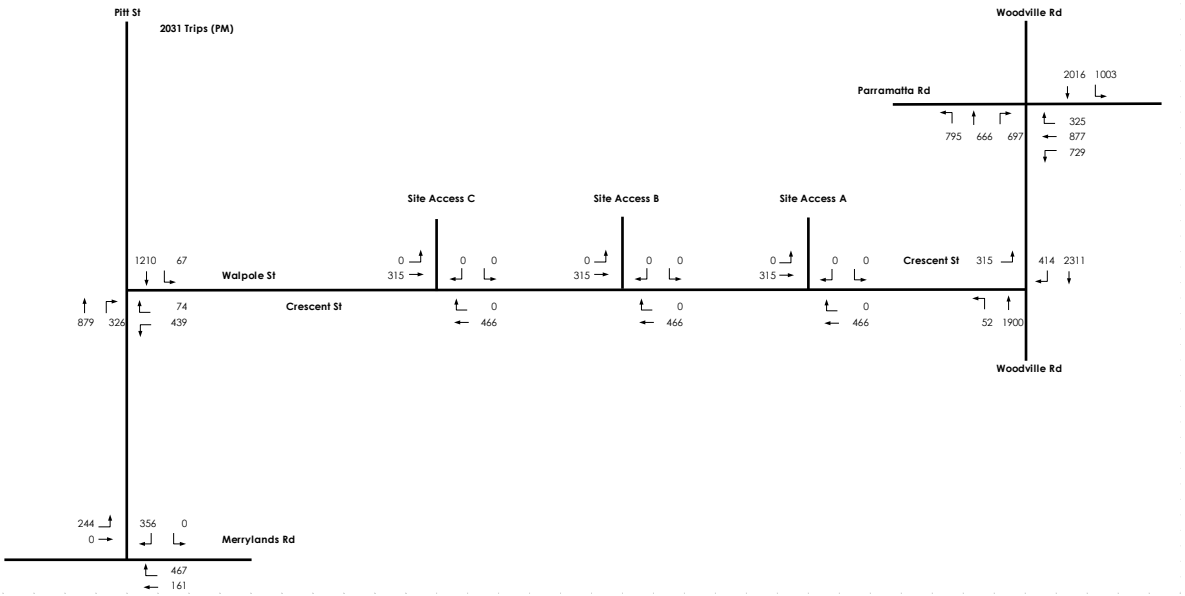


Future traffic volumes

The estimated additional traffic associated with the recently approved developments has been added to the future background network traffic based on the STFM traffic growth rates provided by TfNSW. This is presented in Figure 7.

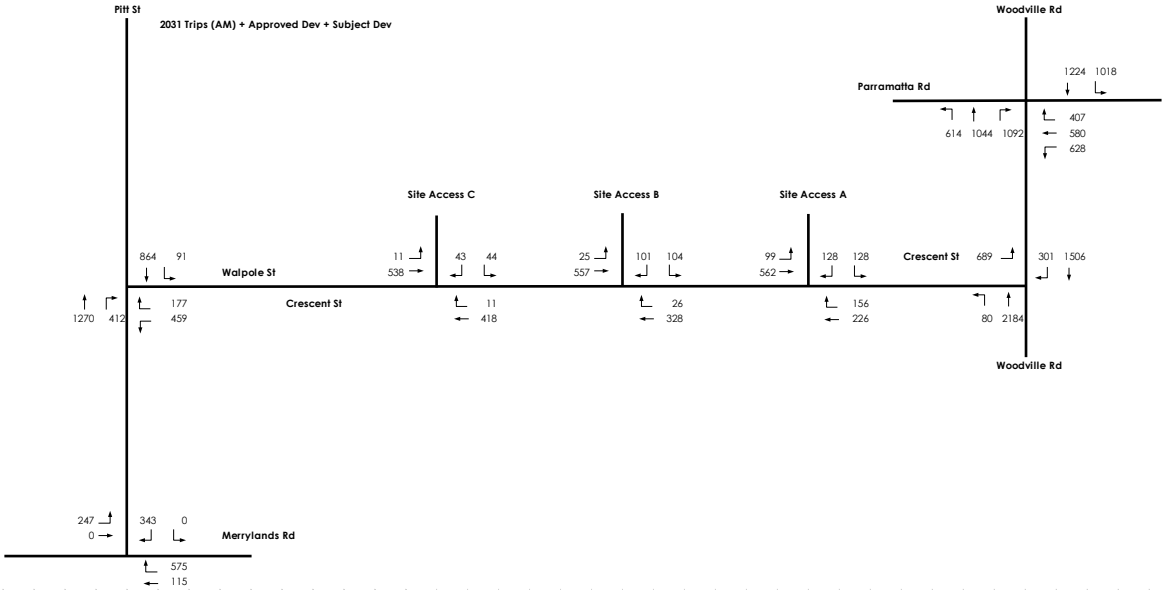
Figure 7: Future Background Traffic Volumes Plus Approved Developments (2031)

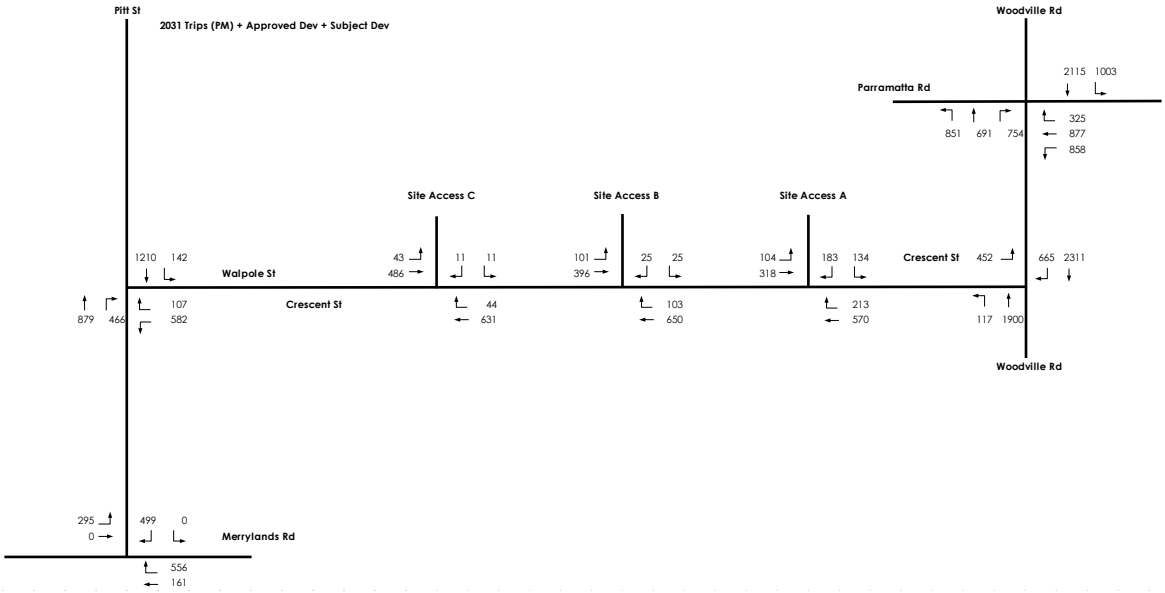




The combined traffic volumes associated with the future background traffic and the approved developments and the subject development are shown in Figure 8.

Figure 8: Future Background Traffic Volumes Plus Approved Developments and Subject Development (2031)





Intersection Capacity Assessment

SCT Consulting Modelling

Council's peer reviewer (SCT Consulting) has undertaken SIDRA modelling to assess the performance of the key intersections based on the following scenarios for the base year (2019) and future year (2030), noting TTPP's future assessment year is 2031:

- Base year (2019)
- Future year (2030) with background traffic growth only
- Future year (2030) with background traffic growth and 1 Crescent Street development traffic
- Future year (2030) with background traffic growth, 1 Crescent Street development traffic and mitigation measures

It is noted that SCT Consulting did not consider the recently approved developments in Pitt Street and Neil Street in their modelling.

SCT's modelling results are re-iterated as follows in Table 5 for comparison with TTPP's modelling results for the Pitt Street-Walpole Street intersection.

TTPP SIDRA Modelling

SIDRA modelling of the local road intersections and site accesses has been conducted in SIDRA 9. Modelling results are shown in Table 5 taking into account the comments received on the planning proposal as well as the revisions made to traffic generation calculations.

The Pitt Street-Walpole Street and Pitt Street-Merrylands Road intersections have been modelled based on the existing layout.

The proposed eastern and western site accesses have been modelled based on the provision of a 25m long right turn bay on Crescent Street. The middle site access has been modelled under a left-in left-out arrangement. All site accesses would operate under a priority control with a Give Way sign installed on site exit.

Table 5: Comparison of SCT and TTPP Intersection Performance

Scenario	Intersection	Control	SCT Consulting Results				TTPP Results			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS
Existing Base Case	Pitt Street-Walpole Street	Signals	18	B	15	B	18	B	16	B
	Pitt Street-Merrylands Road	Signals	-	-	-	-	22	B	20	B
Future Base Case (2030 for SCT and 2031 for TTPP)	Pitt Street-Walpole Street	Signals	25	B	16	B	21	B	22	B
Future Case with Subject Development only (2030 for SCT and 2031 for TTPP)	Pitt Street-Walpole Street	Signals	23	B	22	B	25	B	33	C
Future Base Case and Approved Developments (2031)	Pitt Street-Walpole Street	Signals	-	-	-	-	24	B	29	C
	Pitt Street-Merrylands Road	Signals	-	-	-	-	23	B	21	B
Future Case with Approved and Subject Developments (2031)	Site Access (east – commercial and residential)	Priority (all movements)	-	-	-	-	20	B	45	D
	Site Access (middle – residential only)	Priority (left-in left-out)	-	-	-	-	8	A	7	A
	Site Access C (west – residential only)	Priority (all movements)	-	-	-	-	17	B	23	B
	Pitt Street-Walpole Street	Signals	-	-	-	-	30	C	40	C
	Pitt Street-Merrylands Road	Signals	-	-	-	-	26	B	32	C

Existing Base Case

The above results indicate that the Pitt Street-Walpole Street and Pitt Street-Merrylands Road intersections currently operate at LoS B during the AM and PM peak hours, as consistent with the on-site observations. Both signalised intersections have ample spare capacity to accommodate additional traffic volumes.

Future Base Case and Approved Developments

With the additional traffic volumes due to background traffic growth and the approved developments, both signalised intersections would continue to operate at LoS B in the AM and PM peak hours, except for the Pitt Street-Walpole Street intersection where the average delay is expected to increase notably from 16 seconds to 29 seconds in the PM peak, which would still result in an acceptable LoS C. The modelling results indicate both intersections would have spare capacity to accommodate additional traffic volumes.

Future Case with Approved and Subject Developments

With the additional traffic volumes associated with the background traffic growth and the approved and proposed developments, both signalised intersections would operate at LoS C or better based on the existing phase times and cycle time. The increase in average delay as a result of the proposed development would be in the order of 3-6 seconds in the AM peak hour, and up to 11 seconds in the PM peak hour. The modelling results indicate the proposed development would not impose adverse traffic impacts on the road network.

In terms of the proposed site access, the modelling results indicate that the western and middle site access would operate at LoS B or better in the AM and PM peak hours, and the eastern access would operate at LoS B in the AM peak and LoS D in the PM peak. These results indicate the proposed site accesses would not impose adverse traffic impacts on the road network. The modelled queue length of the right turn movements towards the site would be up to one vehicle only during the AM and PM peak hours, as such the provision of a 25m long right turn bays would be sufficient to separate the through movement from the right turn movement at the eastern and western site accesses, without overspilling to the adjacent through movements.

Figure 9: Schematic Design of the Western Access

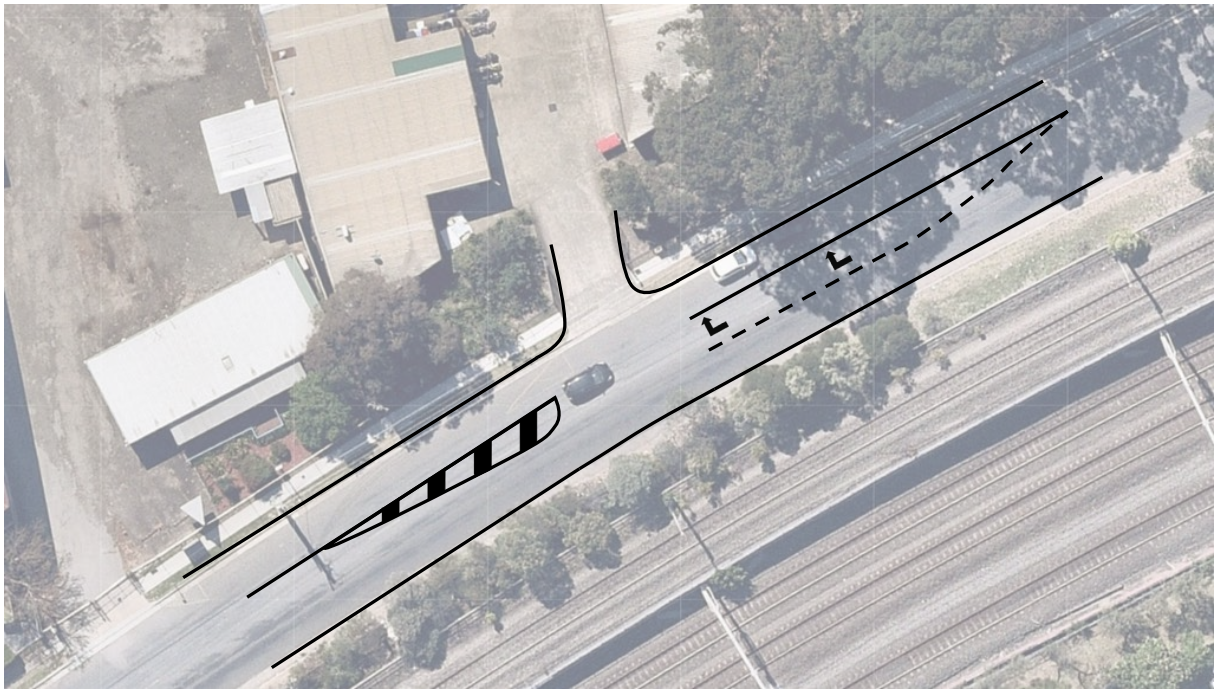


Figure 10: Schematic Design of the Eastern Access

Comparison with the SCT Consulting's Modelling Results

A review of the SCT and TTPP results indicates that the performance of the Pitt Street-Walpole Street intersection is consistent in the existing base case results in both models in the AM and PM peak hours. Both models show an average delay of 18 seconds (LoS B) in the AM peak hour, and an average delay of 15-16 seconds (LoS B) in the PM peak hour. The comparison of the SCT and TTPP results have validated the intersection performance in the existing base case.

The future base case results accounting for traffic growth are also consistent in both models for the Pitt Street-Walpole Street intersection in the AM and PM peak hours, despite the use of different sources for future traffic growth. SCT adopted ".ID" for the expected dwelling growth in the Merrylands-Holroyd area and converted to traffic volumes for distribution in the road network. In contrast, TTPP estimated the future traffic growth by using the TfNSW's STFM growth rates.

Both future base case models show an average delay of 21-25 seconds (LoS B) in the AM peak hour, and an average delay of 16-22 seconds (LoS B) in the PM peak hour. The comparison of the SCT and TTPP results have validated the intersection performance in the future base case albeit TTPP results indicate a higher delay and therefore are more conservative in the PM peak.

The future base case results accounting for traffic growth and the subject development (i.e. without the approved development) are consistent in both models for the Pitt Street-Walpole Street intersection in the AM peak hour, with an average delay of 23-25 seconds (LoS B). However, TTPP's future base case results with higher delays (i.e. additional 6 seconds as compared with the SCT results) have carried through to show a more notable difference in the PM peak hour in conjunction with the proposed development. As a result, the delays would tip over the LoS to a higher level at LoS C.

Other future scenarios are not directly comparable given SCT Consulting did not include the approved developments in Pitt Street and Neil Street in a cumulative assessment.

The SCT modelling also included other intersections as shown in Table 6 with most intersections forecasted to perform acceptably with LoS C or better, except for the Pitt Street-Neil Street intersection which is forecasted to operate at LoS F in Year 2030, regardless of the proposed development. Clearly, the poor performance at the Pitt Street-Neil Street intersection is not associated with the proposed development and Council should give consideration to develop measures to address the capacity issue. It appears that Council approved these developments in the knowledge that the Pitt Street–Neil Street intersection would operate above capacity.

It is not known if the approved developments referred to in Table 3 have, as part of their approval, been asked to contribute to improvements at the Pitt Street-Neil Street intersection.

It is also of note that SCT's model reiterates that the intersections of Woodville Road-Parramatta Road and Woodville Road-Crescent Street operate at LoS C or better even in the future design year with the proposed Crescent Street development. This aligns with TTPP's previous modelling at those 2 intersections and RMS's own traffic expert in the recent Land & Environment Court Matter.

Table 6: SCT Intersection Performance

Scenario 2: Future year (2030) with background traffic growth only

Intersection	AM peak				PM peak			
	Volume	Delay (s)	LoS	DoS	Volume	Delay (s)	LoS	DoS
Woodville Road / Parramatta Road*	6,208	37.5	C	0.77	6,239	34.3	C	0.79
Woodville Road / Crescent Street*	3,814	14.0	A	0.64	4,186	17.2	B	0.56
Walpole Street / Brickworks Drive	900	6.1	A	0.37	806	5.9	A	0.38
Pitt Street / Walpole Street	2,557	25.2	B	0.97	2,503	15.9	B	0.65
Pitt Street / Neil Street	3,299	60.6	E	0.90	3,912	70.6	F	0.97
Merrylands Road / Woodville Road	3,837	26.0	B	0.82	4,254	25.1	B	0.88

Scenario 3: Future year (2030) with background traffic growth and 1 Crescent St development traffic

Intersection	AM peak				PM peak			
	Volume	Delay (s)	LoS	DoS	Volume	Delay (s)	LoS	DoS
Woodville Road / Parramatta Road*	6,535	40.6	C	0.80	6,716	37.1	C	0.84
Woodville Road / Crescent Street*	4,196	31.7	C	0.89	4,769	24.2	B	0.77
Walpole Street / Brickworks Drive	1,012	6.1	A	0.46	1,227	5.8	A	0.54
Pitt Street / Walpole Street	2,862	22.7	B	0.81	2,923	22.1	B	0.96
Pitt Street / Neil Street	3,485	76.1	F	1.02	4,168	99.7	F	1.06
Merrylands Road / Woodville Road	3,931	30.3	C	0.86	4,399	31.1	C	0.88

Source: SCL Consulting

TTPP Aimsun Modelling

Detailed Aimsun modelling is included in Attachments 1 and 2.

Attachment 1 includes the calibration report as requested by TfNSW and Attachment 3 includes an updated traffic modelling memo.

It is of note that subarea matrices were provided by TfNSW for 2021 and 2031 from the STFM model to enable TTPP to consider a future year scenario. The net growth between the 2021 and 2031 matrices was added to the base model traffic to produce a 2031 future demand. These forecasts often overpredict the volume of traffic as the models are not constrained by network capacities. However we note that these unconstrained strategic model forecasts predict a 20% growth in traffic over 10 years. We believe therefore that this means that our modelling provides a conservative estimate of future conditions.

Extracts from the modelling results are shown below in Table 7 and Table 8 below. These models show the base 2019 model compared with the 2031 with traffic growth and RMS upgrades and the 2031 project case with RMS upgrades, background traffic, Tiberius traffic and Tiberius upgrades.

Table 7: Aimsun modelling - Intersection level of service (morning peak hour 7:45am – 8:45am)

Approach	Average Delay	LoS	Average Delay	LoS	Average Delay	LoS
	Base		2031 Future		2031 with Development	
Woodville Road / Crescent Street						
Woodville Road Northbound	16	B	26	B	23	B
Crescent Street	77	F	38	C	41	C
Woodville Road Southbound	10	A	5	A	6	A
Intersection	**21**	**B**	**20**	**B**	**21**	**B**
Parramatta Road/Church Street						
Woodville Road Northbound	34	C	30	C	31	C
Woodville Road Northbound Slip Lane	15	B	6	A	12	A
Church Street Southbound	62	E	35	C	40	C
Church Street Southbound Slip Lane	24	B	8	A	11	A
Parramatta Road Westbound	80	F	57	E	96	F
Parramatta Road Westbound Slip Lane	33	C	44	D	66	E
Intersection	**46**	**D**	**31**	**C**	**43**	**D**
Church Street / M4 Exit ramp						
Church Street Northbound	21	B	32	C	31	C
Church Street Southbound	28	C	33	C	39	C
M4 Motorway exit ramp	101	F	132	F	83	F
Intersection	**63**	**E**	**74**	**F**	**54**	**D**

Table 8: Aimsun modelling - Intersection level of service (evening peak hour 4:45pm – 5:45pm)

Approach	Average Delay	LoS	Average Delay	LoS	Average Delay	LoS
	Base		2031 Future		2031 with Development	
Woodville Road / Crescent Street						
Woodville Road Northbound	6	A	14	B	16	B
Crescent Street	47	D	35	C	33	C
Woodville Road Southbound	4	A	6	A	10	A
Intersection	7	A	12	A	15	B
Parramatta Road/Church Street						
Woodville Road Northbound	29	C	36	C	28	B
Woodville Road Northbound Slip Lane	2	A	14	A	15	B
Church Street Southbound	31	C	38	C	34	C
Church Street Southbound Slip Lane	6	A	11	A	9	A
Parramatta Road Eastbound	190	F	60	E	64	E
Parramatta Road Eastbound Slip Lane	60	E	45	D	44	D
Intersection	55	D	36	C	34	C
Church Street / M4 Exit ramp						
Church Street Northbound	17	B	22	B	30	C
Church Street Southbound	30	C	63	E	45	D
M4 Motorway exit ramp	106	F	44	D	48	D
Intersection	64	E	47	D	42	C

These summary tables show that even in 2031, both Parramatta Road/Church Street and Woodville Road / Crescent Street operate at Level of Service D or better. This correlates with the findings of Council's peer reviewer (SCT) and that of Councils own expert in the Land & Environment Court case concerning land acquisition from the subject site.

The motorway ramps appear to be relatively unaffected by the proposal.

Summary and Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- A cumulative assessment has been undertaken with consideration to the comments raised by TfNSW, Councils and the peer reviewer.
- Intersection analysis has been undertaken taking into account the background traffic growth, and additional traffic volumes associated with the planning proposal and other approved developments in Pitt Street and Neil Street.
- The potential traffic generation of the subject development has been estimated based on the revised trip generation rates. As such, the proposed development would generate a net change of 840 vph during the morning peak hour and 961 vph during the evening peak hour. These trips have been distributed across the road network based on the JTW 2018 data, with 50-55% of trips assigned to/from Pitt Street and 45-50% of trips assigned to Woodville Road.
- The potential traffic generation of the approved developments in Pitt Street and Neil Street is in the order of 273 vph in the AM peak hour and 212 vph in the PM peak hour. These trips have been distributed across the road network based on the JTW 2018 data.
- The Pitt Street-Walpole Street and Pitt Street-Merrylands Road intersections are expected to operate at LoS C or better in the AM and PM peak hours. These results are slightly different from the peer review (SCT Consulting) modelling results for the Pitt Street-Walpole Street intersection as TTPP has now adopted a more conservative approach to traffic generation estimates in response to the planning authorities and peer reviewer's comments. Notwithstanding, the local intersections are expected to operate acceptably even with the additional traffic volumes associated with the approved and the proposed developments.
- The intersection of Pitt Street-Neil Street intersection has been shown to operate above capacity in Year 2030 without the subject developments or those which have been recently approved and identified by TTPP in this report.
- The three site accesses on Crescent Street are expected to perform at LoS C or better. A 25m long right turn bay is recommended to provide on Crescent Street to facilitate the right turn movement into the site at the western and eastern site accesses, without overspilling to the adjacent through lane.

- The Aimsun modelling shows that with the development, even in 2031, both Parramatta Road/Church Street and Woodville Road / Crescent Street operate at Level of Service D or better. This correlates with the findings of Council's peer reviewer (SCT) and that of Councils own expert in the Land & Environment Court case concerning land acquisition from the subject site.
- The motorway ramps appear to be relatively unaffected by the proposal.

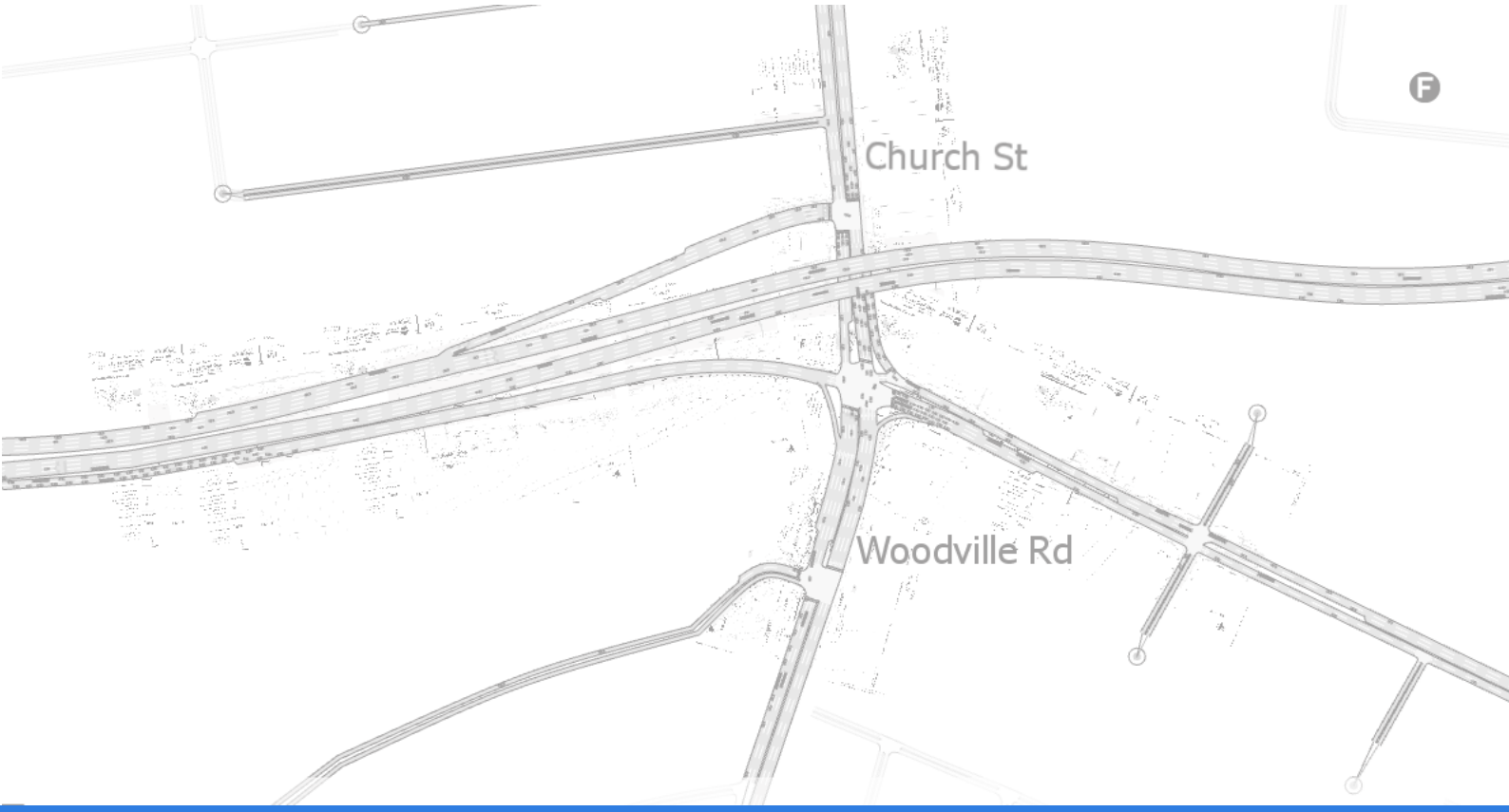
We trust the above is to your satisfaction. Should you have any queries regarding the above or require further information, please do not hesitate to contact the undersigned on 8437 7800.

Yours sincerely,

Ken Hollyoak
Director

Attachment One

Aimsun Calibration Report



Crescent Parklands
Model Development Report

Prepared for:

Tiberius (Holroyd) Pty Ltd

30 October 2020

The Transport Planning Partnership

E: info@ttpp.net.au

Crescent Parklands

Model Development Report

Client: Tiberius (Holroyd) Pty Ltd

Version: version 1

Date: 30 October 2020

TTPP Reference: 16241

Quality Record

Version	Date	Prepared by	Reviewed by	Approved by	Signature
01	30/10/2020	S.Read	K.Hollyoak	Ken Hollyoak	

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APPENDICES

1 Introduction

The Transport Planning Partnership (TTPP) has been commissioned by Tiberius (Holroyd) Pty Ltd to undertake Aimsun Micro-simulation modelling for the Crescent Parklands Development planning proposal. This report sets out the development and calibration of a micro-simulation model based on the Parramatta Road Corridor Urban Transformation Strategy (PRCUTS) meso-scopic model that was developed GTA Consultants.

1.1 Background

The model has been calibrated for micro-simulation as requested by TfNSW to test the traffic impact on the surrounding road network of a development at 1 Crescent Street, Holyroyd.

The subject site is located at 1 Crescent Street, Holroyd and is located approximately 1km south of Parramatta city centre. The site fronts Crescent Street and is enclosed by Parramatta Road/M4 Motorway to the north and Woodville Road to the east. The neighbouring sites directly to the north and west of the site include a recreational sporting field, and light industrial land uses, respectively.

The site was formerly operated by WesTrac as a modern industrial facility providing administration offices, amenities, training facilities, workshops, machine servicing bays, spare parts warehousing, and on-site parking for specialist heavy earthmoving equipment and motor vehicles. The use has now ceased.

According to the Cumberland Council (former Holroyd Council) Local Environmental Plan (LEP) 2013 the subject site is zoned as B5 Business Development. The surrounding properties predominately include mixed density housing (low, medium and high density), public recreation, and light industrial uses.

The planning proposal includes the demolition of the existing industrial building and the construction of a new high-density mixed-use development.

It is intended that the proposal will seek to rezone the site to deliver a high-density mixed-use development, as summarised in Table 1.1.

Table 1.1 Development Schedule

Use	Size
Residential	1109 - 1255 units
Retail (shopping centre)	7,752.5 m^2
Office	7,752.5 m^2

Figure 1.1 presents the indicative masterplan layout of the planning proposal.

Figure 1.1 Indicative Masterplan Layout

As shown in the above figure, three vehicular access points are proposed. The access driveway closest to the Woodville Road intersection would be predominately used by retail development. The remaining two access points will generally be used by residential components. All three access roads will provide two-way vehicular flows.

1.2 Project Objective

In response to TfNSW / Council and other submissions additional micro-simulation modelling has been undertaken to test impacts of the proposed development at 1 Crescent Street.

The objective of this project is to assess the traffic and transport impacts of the proposed development on the road network. In particular the model is to assess the impacts on:

- Woodville Road / Crescent Street
- Parramatta Road / Woodville Road/ Church Street / M4 Westbound entry ramp
- Church Street / M4 Eastbound exit ramp.
-

1.3 Scope of Work

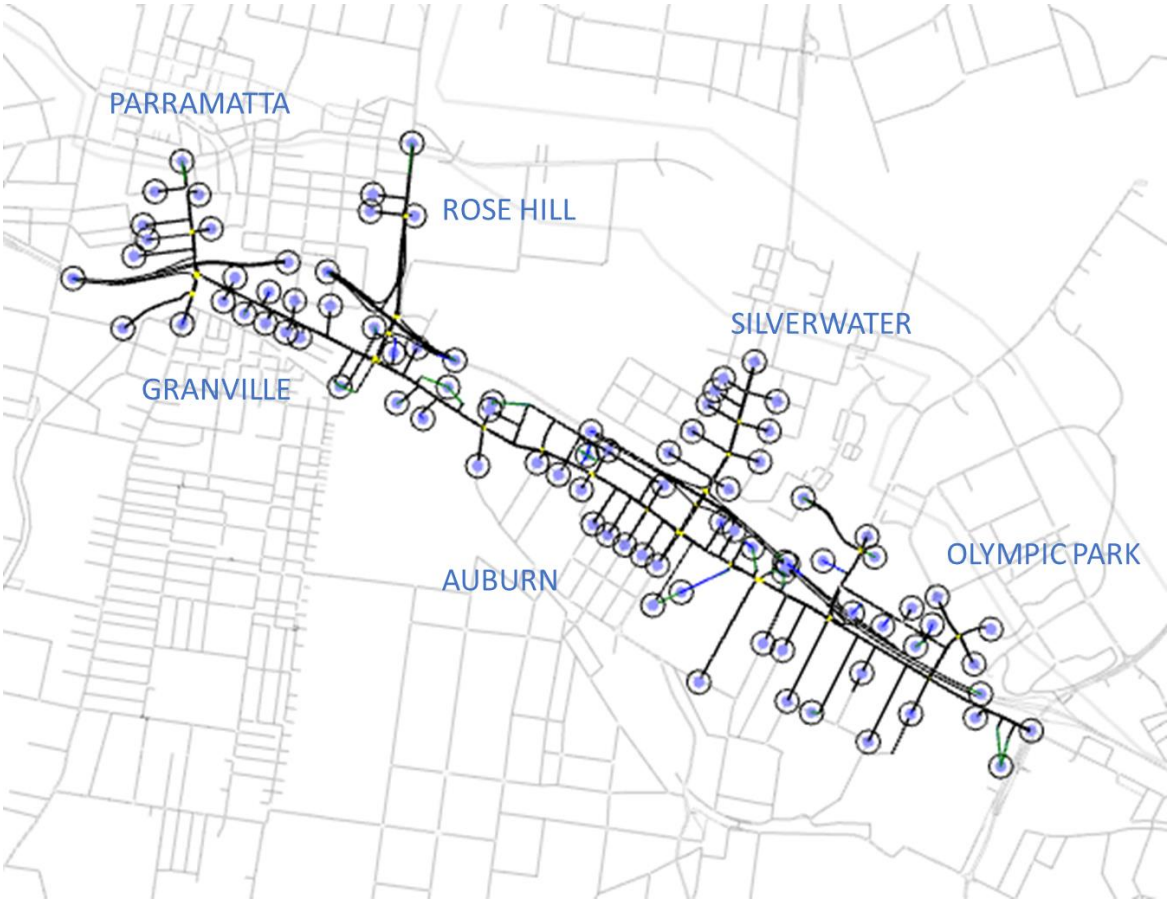
The scope of the modelling covers:

- Morning Peak from 7:00am – 9:00am
- Evening Peak from 4:00pm – 6:00pm
- Includes light vehicles, heavy vehicles and buses

1.4 Study Area

The model area covers the Parramatta Road Corridor from Church Street to Olympic Park based on the PRCUTS model as shown in Figure 1.2.

Figure 1.2: PRCUTS Model Area



The focus for this study is the area of Church Street from Marion Street to Parramatta Road, Parramatta Road between Church Street and James Ruse Drive and Woodville Road and Crescent Street.

1.5 Report Outline

This report has been prepared in accordance with the Roads and Maritime technical direction for Operational Modelling Reporting Structure (TDT 2017/001). The report is structured as follows:

Section 2 – Existing Conditions – background information about the study area.

Section 3 – Model Assumptions – the modelling assumptions, settings and calibration and validation targets.

Section 4 – Calibration Results – presents the calibration and validation results for the model and the core area.

Section 4 – Model Limitations – sets out the limitations for using this model.

Section 5 – Conclusion

2 Existing Conditions

2.1 Traffic Surveys

Traffic data was provided from the PRCUTS modelling project. This included:

- Classified Turn Counts – 30 August 2018
- Travel Time Surveys – 30 August 2018

2.1.1 Intersection counts

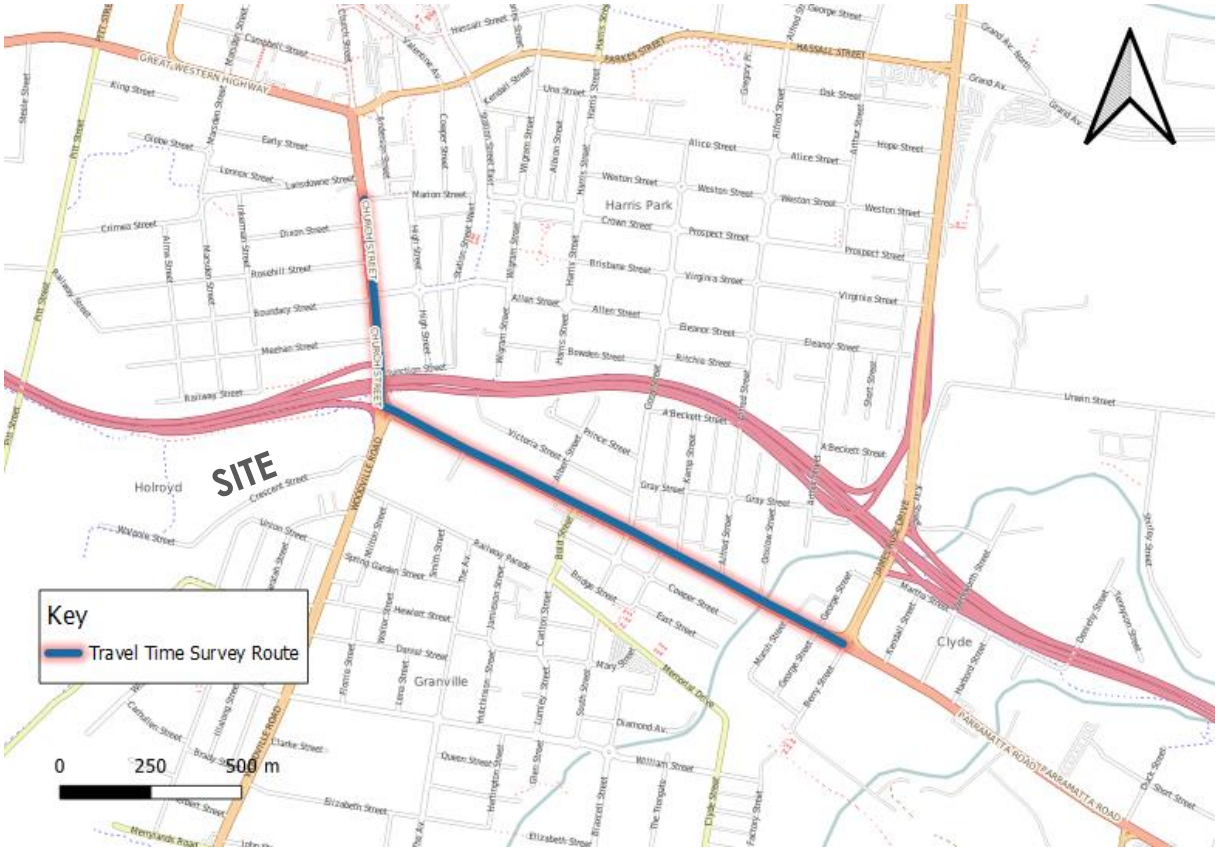
The locations for the 33 intersection counts were:

- 1 Parramatta Road/ Woodville Road Signals
- 2 Bold Street/ Parramatta Road Signals
- 3 Bold Street/ Cowper Street Give-way
- 4 Good Street/ Parramatta Road Signals
- 5 Alfred Street/ Parramatta Road Signals
- 6 Carlton Street/ Railway Parade Signals
- 7 James Ruse Drive/ Parramatta Road Signals
- 8 James Ruse Drive/ M4 Interchange Signals
- 9 Parramatta Road/ Woodville Road/ Church Street/ M4 Motorway Signals
- 10 Crescent Street/ Woodville Road (Identified Frame Area) Signals
- 11 William Street/ Woodville Road Signals
- 12 William Street/ Lumley Street Give-way
- 13 Pitt Street/ Walpole Street Signals
- 14 Great Western Highway/ Marion Street Signals
- 15 Greater Western Highway/ Boundary St/ Raymond St Signals
- 16 James Ruse Drive/ Prospect Street Signals
- 17 Parramatta Road/ Wentworth Street Signals
- 18 Rawson Street/ Parramatta Road/ Duck Street Signals
- 19 Station Road/ Parramatta Road Signals
- 20 Parramatta Road/ St Hilliers Road/ Silverwater Road Signals
- 21 St Hilliers Road/ Rawson Street Signals
- 22 Birnie Avenue/ Parramatta Road Signals

- 23 Stubbs Street/ Parramatta Road Signals
- 24 Hill Road/ Parramatta Road. Signals
- 25 Olympic Drive/ Boorea Street Signals
- 26 Parramatta Road/ John Street Signals
- 27 Silverwater Road/ M4 Interchange Signals
- 28 Carnarvon Street/ Silverwater Road Signals
- 29 Hill Road/ John Ian Wing Parade Signals
- 30 Birnie Avenue/ Edwin Flack Avenue Signals
- 31 Parramatta Road/ Campus Business Park Signals
- 32 Rawson Street/ South Parade Signals
- 33 Rawson Street/ Station Road Signals

Travel time surveys were undertaken along Church Street and Parramatta Road. The route is shown in Figure 2.1.

Figure 2.1: Travel Time Survey Route



2.2 Congestion Locations

Congestion on the road network is mostly around the intersection of Woodville Road / Parramatta Road / Church Street and Parramatta Road.

In the morning peak congestion on Parramatta Road was observed westbound to Church Street. In the opposite direction congestion was observed southbound on Church Street and eastbound on Parramatta Road on approach to James Ruse Drive. This is shown in Figure 2.2.

In the evening peak the queue westbound on Parramatta Road from Church Street extends further east from Church Street. This is shown in Figure 2.3.

Figure 2.2: Weekday Morning Congestion

Figure 2.3: Weekday Evening Congestion

2.3 Road Network

The key roads in the study are:

Crescent Street

Crescent Street is a local road with an east-west configuration and a 10m wide carriageway. It is a two-way road with one travel lane provided in each direction. Within the vicinity of the site double-line marking divides the opposing traffic lanes. It currently allows access from all directions to/from the site.

The sign-posted speed limit on Crescent Street is 50 km/h. Along the site frontage on-street parking is not provided, however, about 140m in length of unrestricted parking that could accommodate some 20 car spaces is provided south-west of the site.

Woodville Road

Woodville Road is classified as a state road and is aligned in a north-south direction. Proximal to the site, Woodville Road is a six-lane median divided road with a carriage width of approximately 19m. The sign-posted speed limit is 60 km/h.

Up to 300m south of the site, Woodville Road operates as a clearway between Monday and Friday, specifically from 6:00am - 10:00am and 3:00pm - 7:00pm.

Parramatta Road

Parramatta Road is also a state road providing two traffic lanes in each direction. Parramatta Road has a speed limit of 60 km/h and is generally configured in an east-west direction. Proximal to the site, clearways are in operation along Parramatta Road from Monday to Friday during peak times.

The following intersections currently exist in the vicinity of the site:

- Crescent Street / Woodville Road (signalised)
- Church Street / Parramatta Road / Woodville Road (signalised).
- M4 Eastbound exit ramps

3 Model Assumptions

3.1 Overview

The model has been based on the PRCUTs Meso-scopic model using the same network and traffic demands.

3.2 Modelling Platform

The models have been developed in Aimsun Version 8.4.0 using the micro-simulations.

3.3 Time Period

Time periods from:

- 7:00am – 9:00am
- 4:00pm – 6:00pm

For both the morning and evening models a 30 minute warmup period has been applied.

3.4 Assignment Type

The assignment has been based on the path files from the Meso-scopic model. Notwithstanding, the amount of route choice in the model has effectively been constrained by the M4 Motorway being cut so that there is no route choice between Parramatta Road and the M4 Motorway.

3.5 Vehicle Types

The vehicle types have been adopted from the Greater Sydney Aimsun model with no changes.

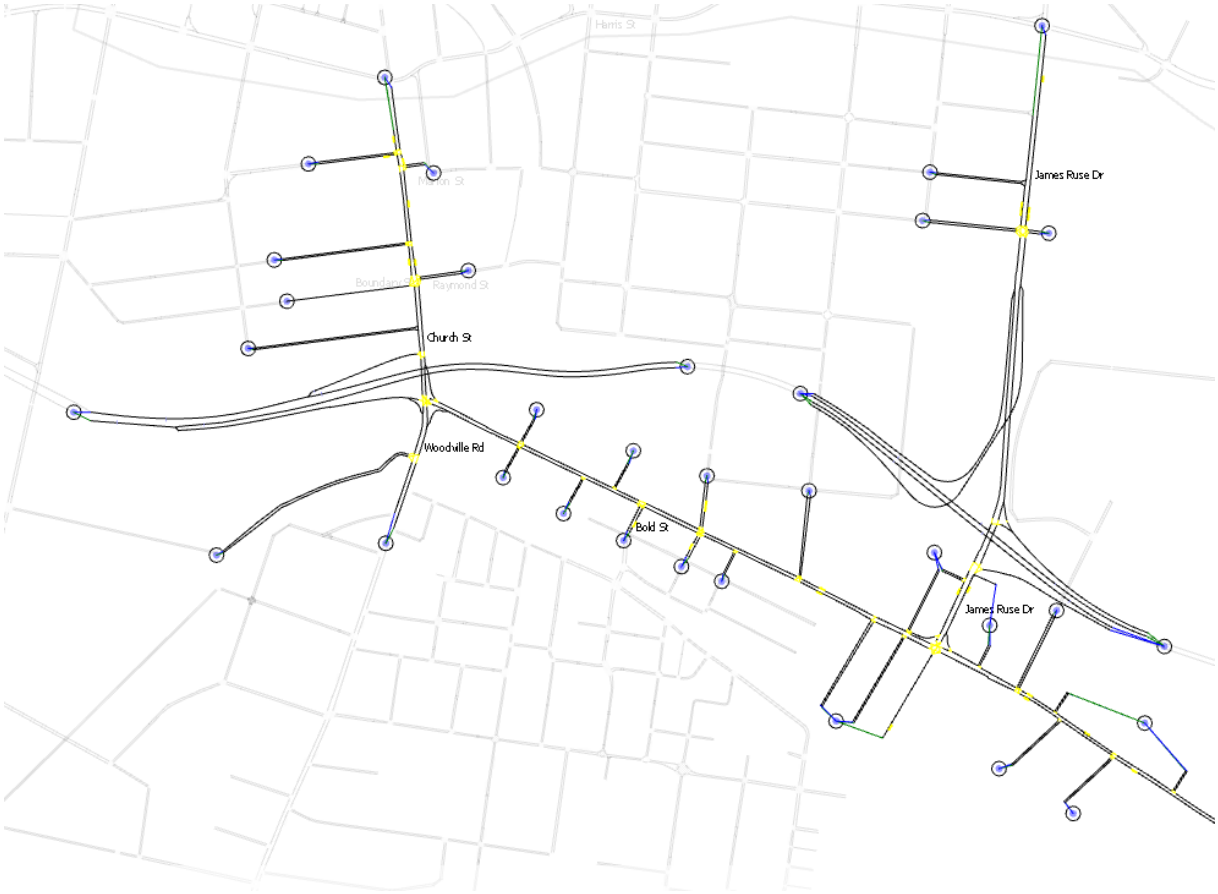
3.6 Traffic Zones / Inputs

The centroid configuration has been based on the PRCUTS model and has not been modified.

3.7 Road Types

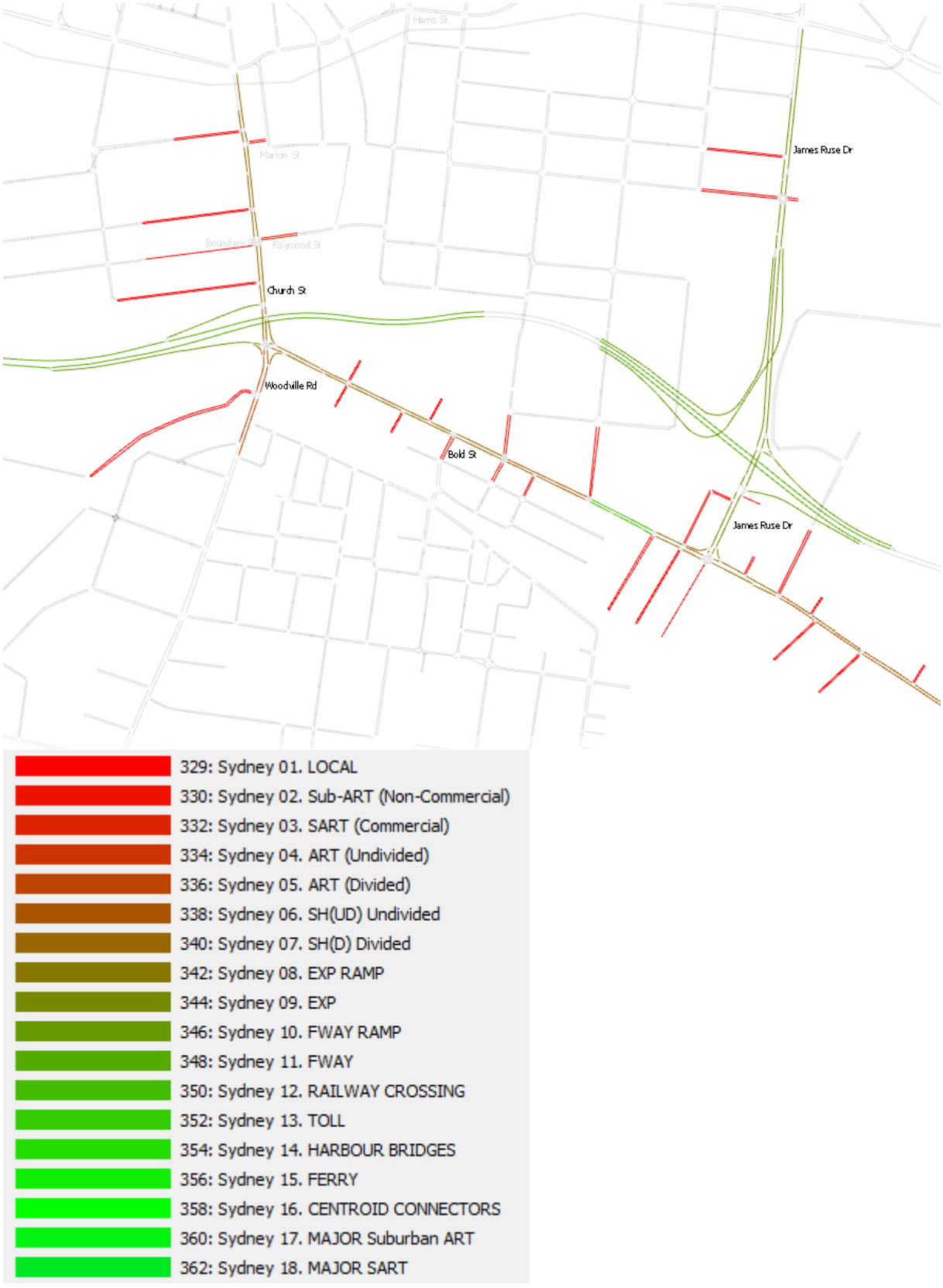
The road types are consistent with the PRCUTS Model and have not been modified. The centroid locations near the project site are shown in Figure 3.1.

Figure 3.1: Centroid Locations



The road types have not been changed from the PRCUTS model. The road types are shown in Figure 3.2.

Figure 3.2: Road Types



3.8 Speed Profiles

The speed profiles have been adopted from the Greater Sydney Aimsun Model with no changes.

Light Vehicles

	Mean	Deviation	Minimum	Maximum
Max Acceleration	3.00 m/s2	0.20 m/s2	2.60 m/s2	3.40 m/s2
Normal Deceleration	4.00 m/s2	0.25 m/s2	3.50 m/s2	4.50 m/s2
Max. Deceleration	6.00 m/s2	0.50 m/s2	5.00 m/s2	7.00 m/s2
Safety Margin Factor	1.00	0.00	1.00	1.00

Heavy Vehicles

	Mean	Deviation	Minimum	Maximum
Max Acceleration	0.80 m/s2	0.25 m/s2	0.60 m/s2	1.00 m/s2
Normal Deceleration	2.00 m/s2	0.50 m/s2	2.00 m/s2	4.00 m/s2
Max. Deceleration	3.50 m/s2	0.30 m/s2	3.20 m/s2	3.80 m/s2
Safety Margin Factor	1.00	0.00	1.00	1.00

3.9 School Zones

A 40km per hour speed limit has been applied on Parramatta Road for the Auburn North Public School and does not affect the evening peak model which begins after 4:00pm. The school zone has been applied using the school zone policy and comes into effect at 8:00am.

3.10 Traffic Signals

Traffic signals timing has been based on the PRCUTS model which in turn was derived from recorded SCATS signal timings. Modifications were made to the offsets of key intersections to reflect the coordination of the traffic signals.

In addition, the actuated signal logic was used for the intersection of Church Street / Parramatta Road / Woodville Road to reflect the bus phase which is only called when a bus arrives. Likewise, the intersection of Bold Street and Parramatta Road was also coded as actuated for the same reason.

3.11 Public Transport

The bus routes have been adopted from the PRCUTS model with no changes. This was in turn derived from the POP mesoscopic model.

3.12 Demand Assumptions

Traffic demands were adopted from PRCUTS model. Minor manual changes to the demands were made to meet the core area calibration criteria however, this is unlikely to have changed the pattern or trip distribution of the matrix.

3.13 Trip Length Distribution

The demands have been directly adopted from the PRCUTS model.

3.14 Traffic Profiles

The models have 15 minute time slices. These time slices create the profile of traffic based on the traffic count data. The profiles for the morning and evening peaks are shown in Figure 3.3 and Figure 3.4 for the morning and evening peak respectively.

Figure 3.3: Morning Peak Traffic Profiles

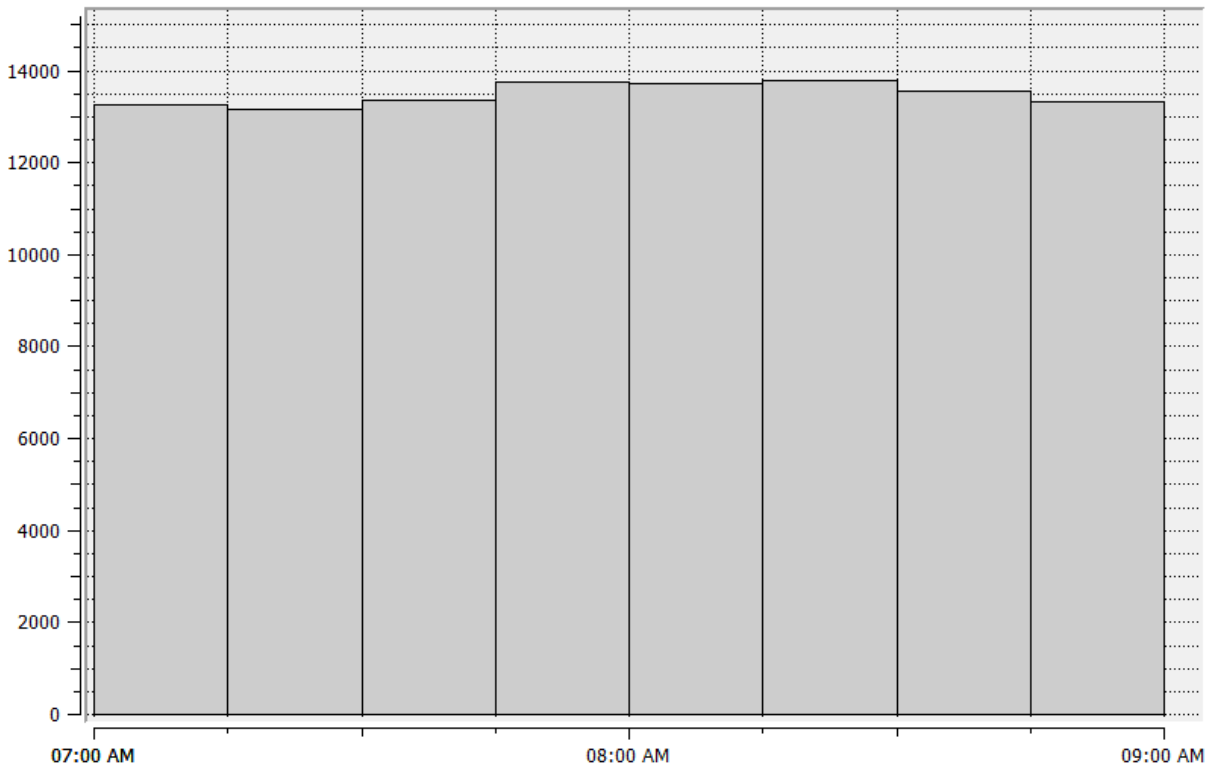
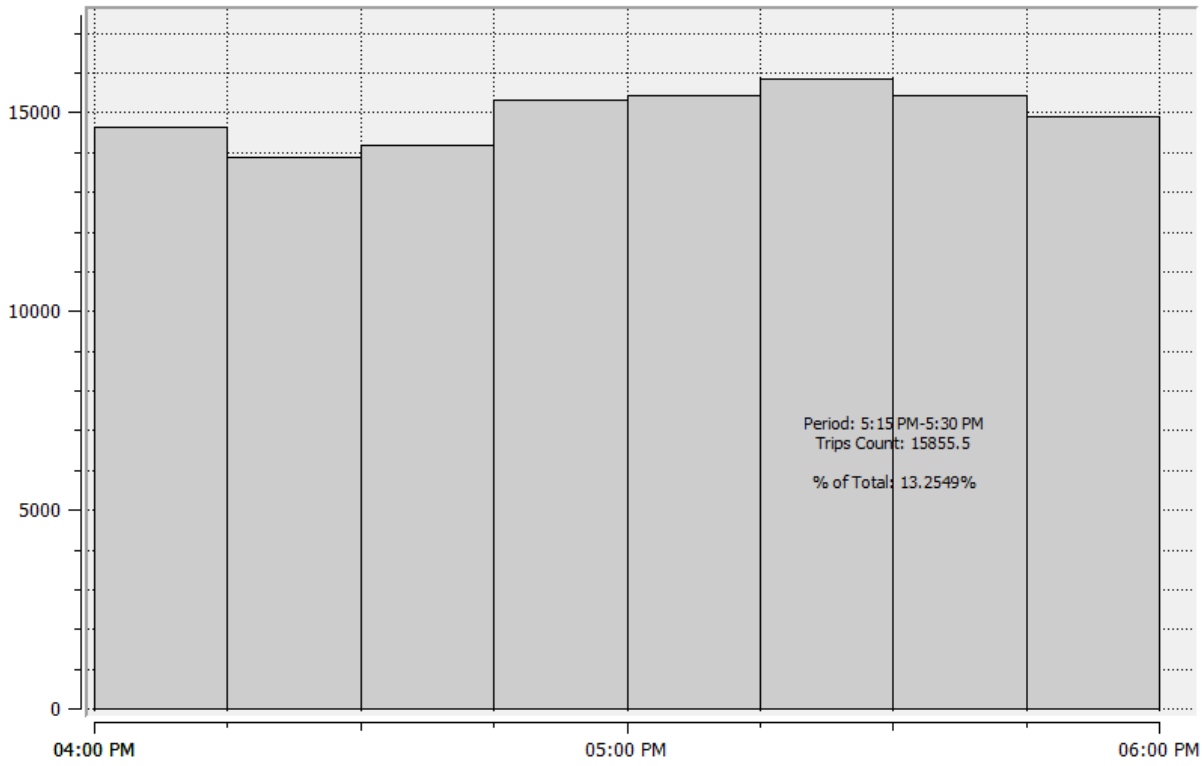


Figure 3.4: Evening Peak Traffic Profiles



3.15 Pedestrians and Cyclists

Pedestrians and cyclists have not been included in the model as the core area of the model is not within high pedestrian activity area.

3.16 Calibration and Validation Targets

The following sets out the calibration and validation targets that have been adopted.

3.16.1 Calibration

The calibration criteria have been based on the RMS Modelling guidelines for micro-simulation models.

Calibration of the base model has adopted the following targets from the guidelines:

- 85% of all turns with a GEH of less than 5
- 100% of all turns with a GEH of less than 10
- Linear regression R^2 value > 0.9

The GEH statistic is a measure of goodness of fit used by traffic modellers. Using the GEH Statistic avoids some problems that occur when using simple percentages to compare two sets of volumes. This is because the traffic volumes vary over a wide range. For example, the mainline of a freeway/motorway might carry 5000 vehicles per hour, while one of the on-ramps leading to the freeway might carry only 50 vehicles per hour (in that situation it would not be possible to select a single percentage of variation that is acceptable for both volumes). The equation for GEH is an empirical formula:

$$GEH = \sqrt{\frac{2(M-C)^2}{M+2}}$$

Where:

M = the modelled traffic flow for one hour

C = the observed traffic flow for one hour

The lower the GEH is the closer the model is to the observed traffic flows.

3.16.2 Core Area Calibration

The calibration of a core area has been used to ensure the model is more robust in the area that would be directly impacted by the development.

The core area calibration targets from the Roads and Maritime Services Guidelines is:

- Flows < 99 – to be within 10 vehicles or the observed value
- Flows 100 – 999 – to be within 10% of the observed flows
- Flows 1000 to 1999 to be within 100 vehicles of observed value
- Flows > 2000 to be within 5 % of observed values
- 100% percent of observations to be within tolerance limits

3.16.3 Validation

Validation of the models has been based on travel times on Church Street and Parramatta Road. The target for travel time validation is +/- 15% of the observed travel times.

4 Model Stability

To ensure that the models have not been biased and to take into account random variation the models have been run for 5 random seed values as prescribed by Transport for NSW. These random seed values are:

- 560
- 28
- 7771
- 86524
- 2849

Seed numbers begin the sequence of random numbers that is used to generate the release patterns from the centroids. Model stability has been assessed based on the model Vehicle Hours Travelled (VHT). The median VHT has been adopted as the representative result on which the calibration results have been based.

The morning peak model stability is shown in Table 4.1.

Table 4.1: Morning Peak Model Stability

Seed Value	VHT
560	6004
28	5892
2849	6485
86429	5909
7771	6115
Median	6004 (seed 560)
Standard Deviation	243

The median seed value was seed 28 and the standard deviation was 243.

The evening peak stability is shown in Table 4.2.

Table 4.2: Evening Peak Model Stability

Seed Value	VHT
560	6817
28	7073
2849	7232
86429	7017
7771	6939
Mean	7017 (Seed 86429)
Standard Deviation	155

The median seed value for the evening peak is 86429 and standard deviation of 155.

5 Calibration and Validation Results

5.1 Overview

The following section presents the model calibration and validation in accordance with the TfNSW guidelines to the targets that have been described in Section 3.

5.2 Model Calibration

5.2.1 Model Calibration All Turns GEH Statistic

The model as a whole has been calibrated to turn counts for the whole model. There were 211 turn counts used in the model. The results of the turn calibration are shown in Table 5.1

Table 5.1: Model Calibration GEH Statistic

Time Period	GEH < 5	GEH > 10
Morning Peak Period		
7:00am – 8:00am	96.7%	100%
8:00am – 9:00am	95.7%	100%
Evening Peak Period		
4:00pm – 5:00pm	91.9%	100%
5:00pm – 6:00pm	92.4%	100%

In all time periods the model exceeds the calibration criteria. In the evening peak the data was missing for two count locations at the eastern extremity of the model at the intersection of Birnie Avenue and Edward Flack Avenue in Olympic Park. These turns are located furthest away from the subject site have low flows and have minimal impact on the models purpose.

The observed flows have been plotted against the modelled flows and a trend line added with an intercept of 0. The plots for the morning peak are shown in Figure 5.1 and Figure 5.2.

Figure 5.1: Morning Peak Volume Plot (7:00am – 8:00am)

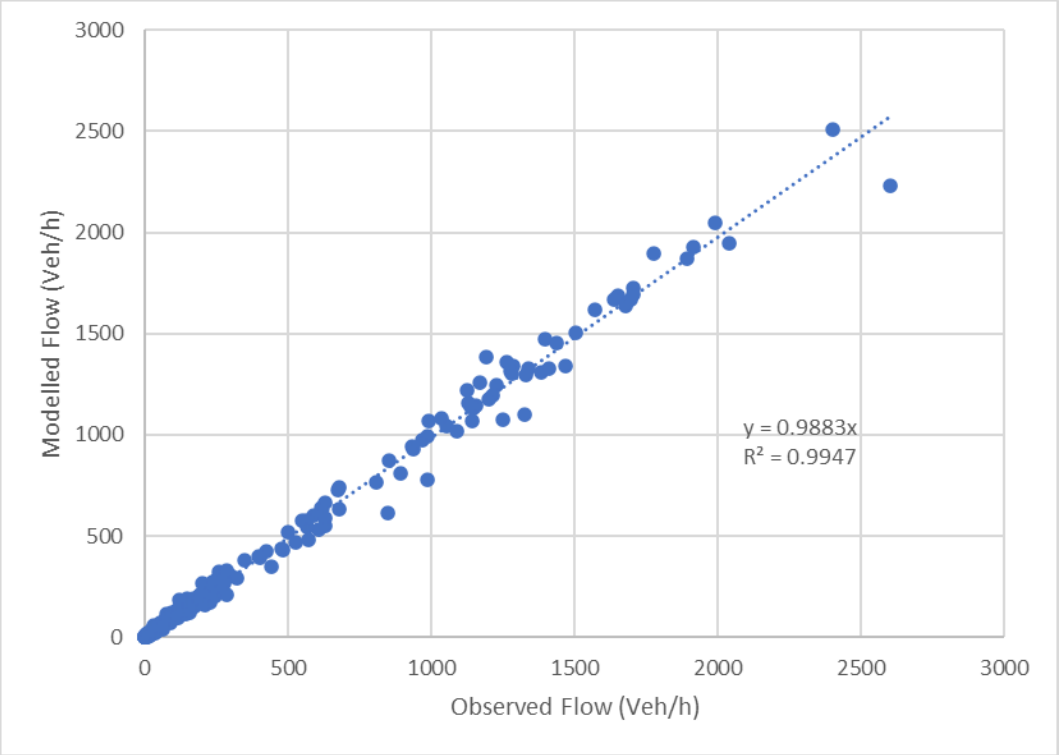
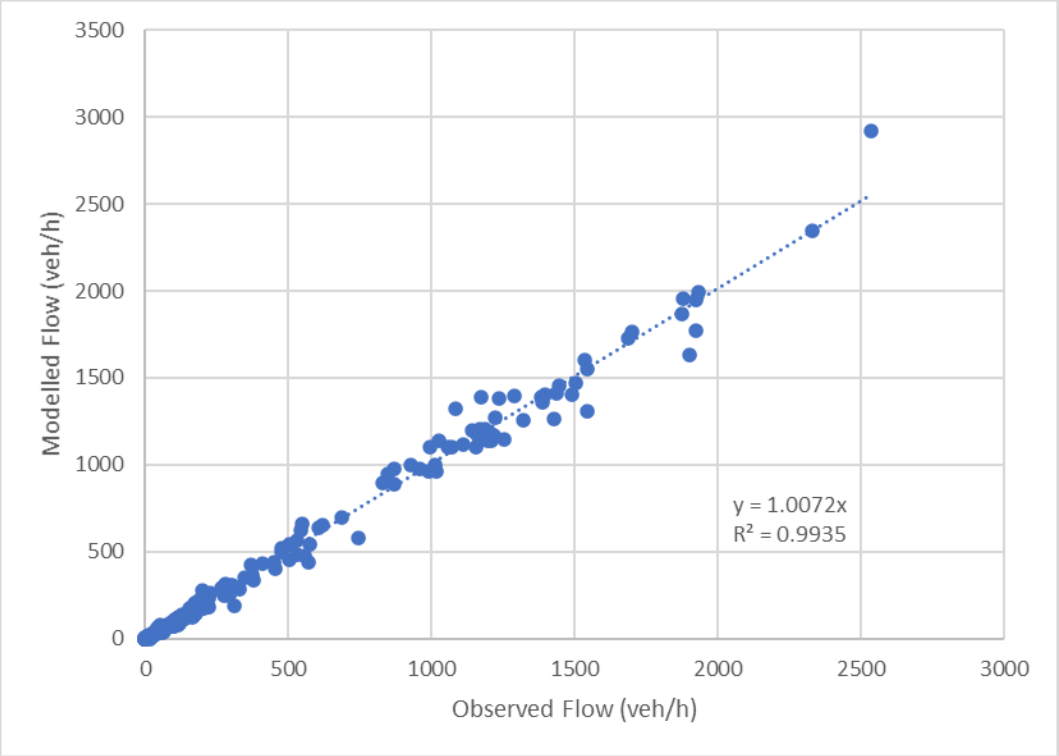


Figure 5.2: Morning Peak Volume Plot (8:00am – 9:00am)



In both the morning peak periods the model shows a strong correlation with the observed traffic flows and exceeds the calibration criteria for both $R^2 > 0.9$ and the slope close to 1.

The evening peak period graphs are shown in Figure 5.3 and Figure 5.4 for the hours starting 4:00pm and 5:00pm respectively.

Figure 5.3: Evening Peak Volume Plot (4:00pm – 5:00pm)

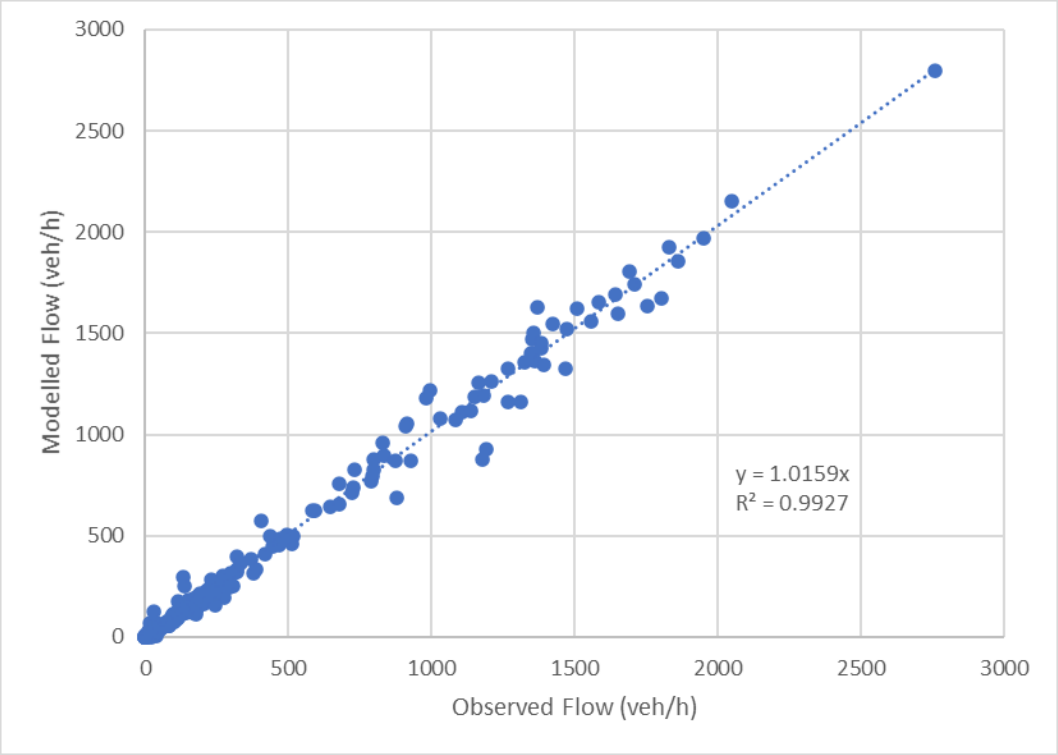
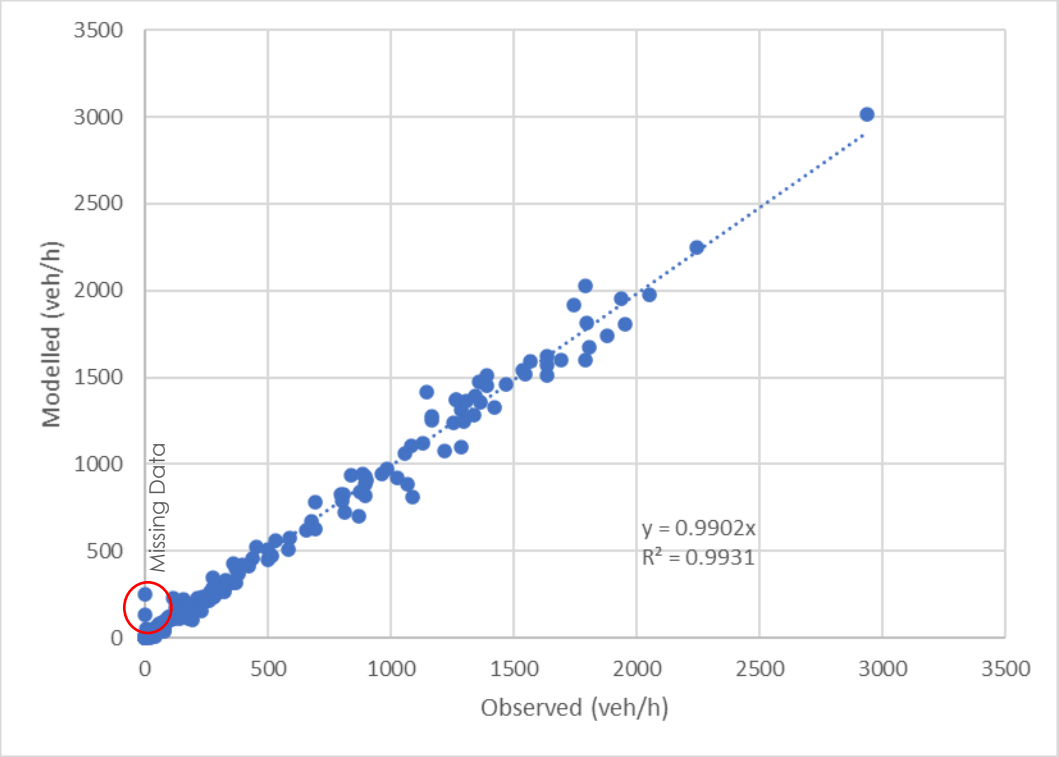


Figure 5.4: Evening Peak Volume Plot (5:00pm – 6:00pm)



In the evening peak model the calibration exceeds the criteria for $R^2 > 0.9$ and the slope is close to 1.

The overall model is considered to be calibrated and exceeds the relevant targets for the model as whole.

5.2.2 Model Core Area Calibration

The model has been calibrated in more detail for a core area. The purpose of the model is to test the impacts the Crescent Parklands and therefore the core area has been adopted to include the intersections of:

- Church Street / M4 Exit Ramp (intersection 1)
- Church Street / Parramatta Road / Woodville Road / M4 Entry Ramp (intersection 2)
- The Crescent / Woodville Road (intersection 3)

This core area is shown in Figure 5.5.

Figure 5.5: Core Area

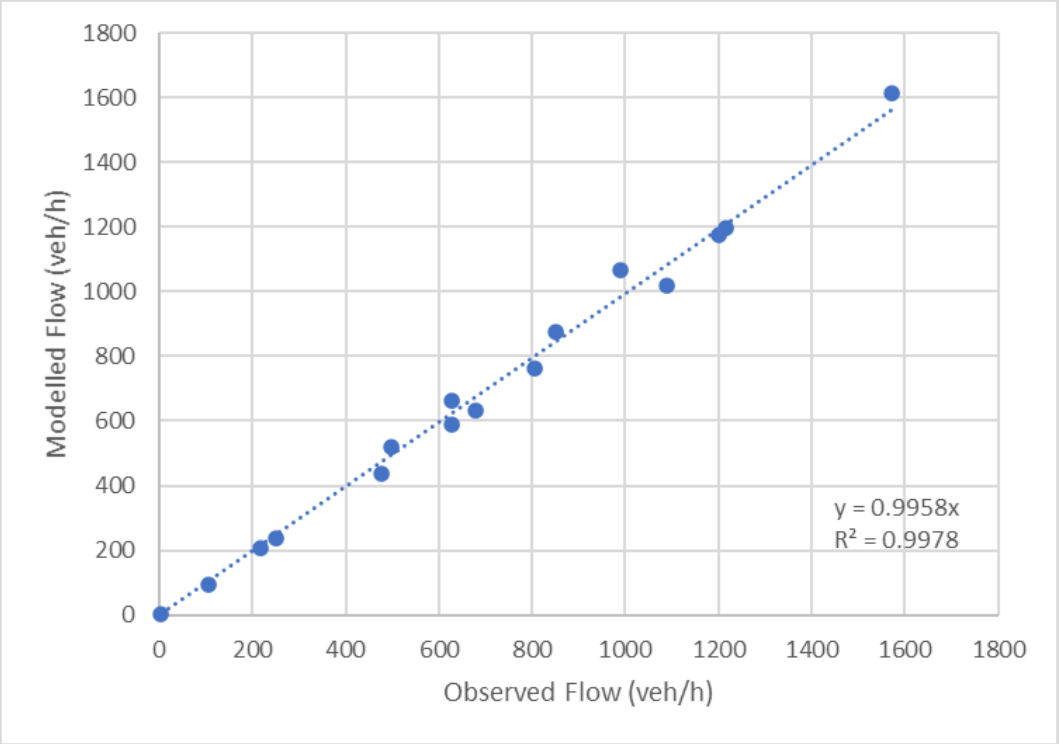
The comparison of turn counts between the modelled and the observed is shown in Table 5.2.

Table 5.2: Morning Peak Core Area Model Calibration (7:00am – 8:00am)

	Turn	Observed	Modelled	Difference	% Difference`	Meets Criteria
Intersection 1	Church Street Northbound Through	852	875	23	3%	True
	M4 Exit Ramp Left Turn	478	435	43	9%	True
	Church Street Southbound Through	678	631	47	7%	True
	M4 Exit Ramp Right turn	1215	1197	18	1%	True
	Church Street Through	806	763	43	5%	True
Intersection 2	Woodville Road Right Turn	627	590	37	6%	True
	Woodville Road Through	628	665	37	6%	True
	Parramatta Road Right Turn	218	208	10	5%	True
	Parramatta Road through	1088	1020	68	6%	True
	Church Street Left Turn	990	1068	78	8%	True
	Parramatta Road Left turn	499	519	20	4%	True
Intersection 3	Woodville Road Southbound Through	1200	1176	24	2%	True
	Woodville Road Northbound Left Turn	4	3	1	25%	True
	Woodville Road Southbound Right Turn	105	95	10	9.5%	True
	Woodville Road Northbound Through	1573	1615	42	3%	True
	The Crescent Left Turn	251	239	12	5%	True

In the first hour, 7:00am – 8:00am, all of the turns meet the criteria. The volume plot is shown in Figure 5.6.

Figure 5.6: Core Area Volume Plot (7:00am – 8:00am)



The R^2 for the first hour exceeds the 0.95 target and the slope is close to 1.

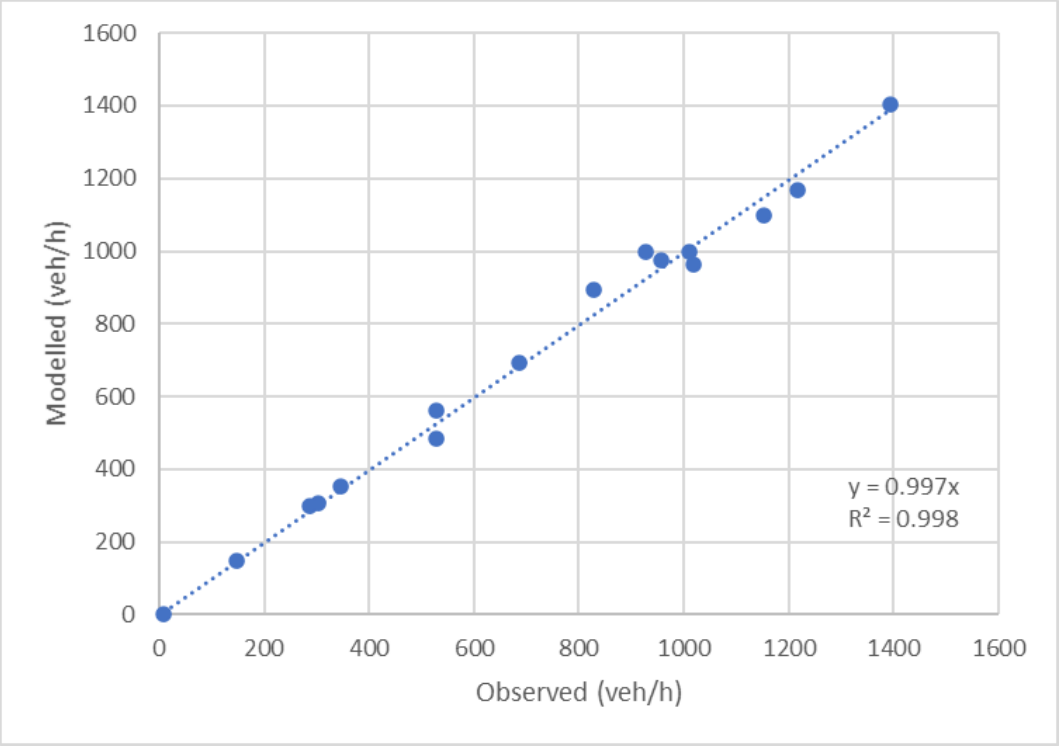
The results for the second hour are shown in Table 5.3.

Table 5.3: Morning Peak Core Area Model Calibration (8:00am – 9:00am)

	Turn	Observed	Modelled	Difference	% Difference`	Meets Criteria
Intersection 1	Church Street Northbound Through	1012	999	13	1%	True
	M4 Exit Ramp Left Turn	528	485	43	8%	True
	Church Street Southbound Through	829	894	65	8%	True
	M4 Exit Ramp Right turn	1154	1100	54	5%	True
	Church Street Through	1018	964	54	5%	True
Intersection 2	Woodville Road Right Turn	529	561	32	6%	True
	Woodville Road Through	686	693	7	1%	True
	Parramatta Road Right Turn	303	308	5	2%	True
	Parramatta Road through	927	998	71	8%	True
	Church Street Left Turn	956	974	18	2%	True
	Parramatta Road Left turn	346	353	7	2%	True
Intersection 3	Woodville Road Southbound Through	1216	1169	47	4%	True
	Woodville Road Northbound Left Turn	8	2	6	75%	True
	Woodville Road Southbound Right Turn	148	148	0	0%	True
	Woodville Road Northbound Through	1395	1404	9	1%	True
	The Crescent Left Turn	288	298	10	3%	True

In the second hour each of the turns in the core area satisfy the core area calibration requirements. The volume plot is shown in Figure 5.6.

Figure 5.7: Core Area Volume Plot (8:00am – 9:00am)



The R^2 for the second hour exceeds the 0.95 criteria.

The model meets the core area calibration requirement in both hours of the model and is considered to be well calibrated.

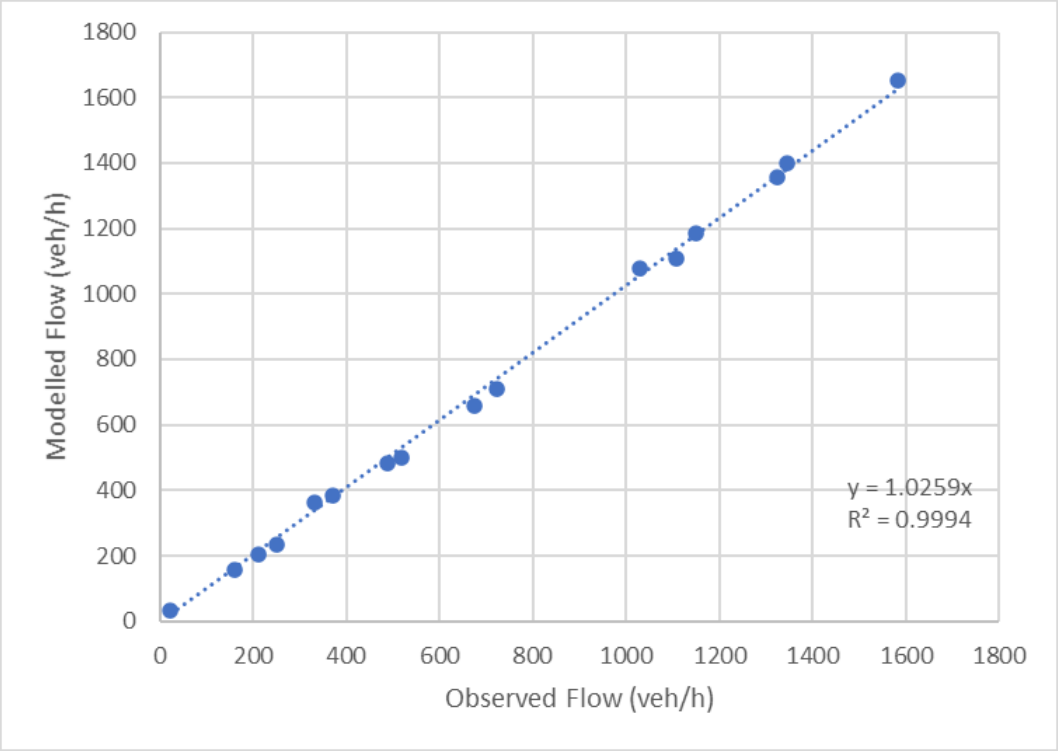
The results for the evening peak first hour are shown in Table 5.4.

Table 5.4: Evening Peak Core Area Model Calibration (4:00pm – 5:00pm)

	Turn	Observed	Modelled	Difference	% Difference`	Meets Criteria
Intersection 1	Church Street Northbound Through	852	855	3	0%	True
	M4 Exit Ramp Left Turn	478	515	37	8%	True
	Church Street Southbound Through	678	654	24	4%	True
	M4 Exit Ramp Right turn	1215	1130	85	7%	True
	Church Street Through	806	771	35	4%	True
Intersection 2	Woodville Road Right Turn	627	635	8	1%	True
	Woodville Road Through	628	663	35	6%	True
	Parramatta Road Right Turn	218	208	10	5%	True
	Parramatta Road through	1088	1020	68	6%	True
	Church Street Left Turn	990	1018	28	3%	True
	Parramatta Road Left turn	499	542	43	9%	True
Intersection 3	Woodville Road Southbound Through	1200	1196	4	0%	True
	Woodville Road Northbound Left Turn	4	4	0	0%	True
	Woodville Road Southbound Right Turn	105	105	0	0%	True
	Woodville Road Northbound Through	1573	1617	44	3%	True
	The Crescent Left Turn	251	274	23	9%	True

The first hour of the evening peak meets the targets for the core area calibration. The observed and modelled flows have been plotted and are shown in Figure 5.8.

Figure 5.8: Core Area Volume Plot (4:00pm – 5:00pm)



The plot shows that the R^2 exceeds 0.95 target.

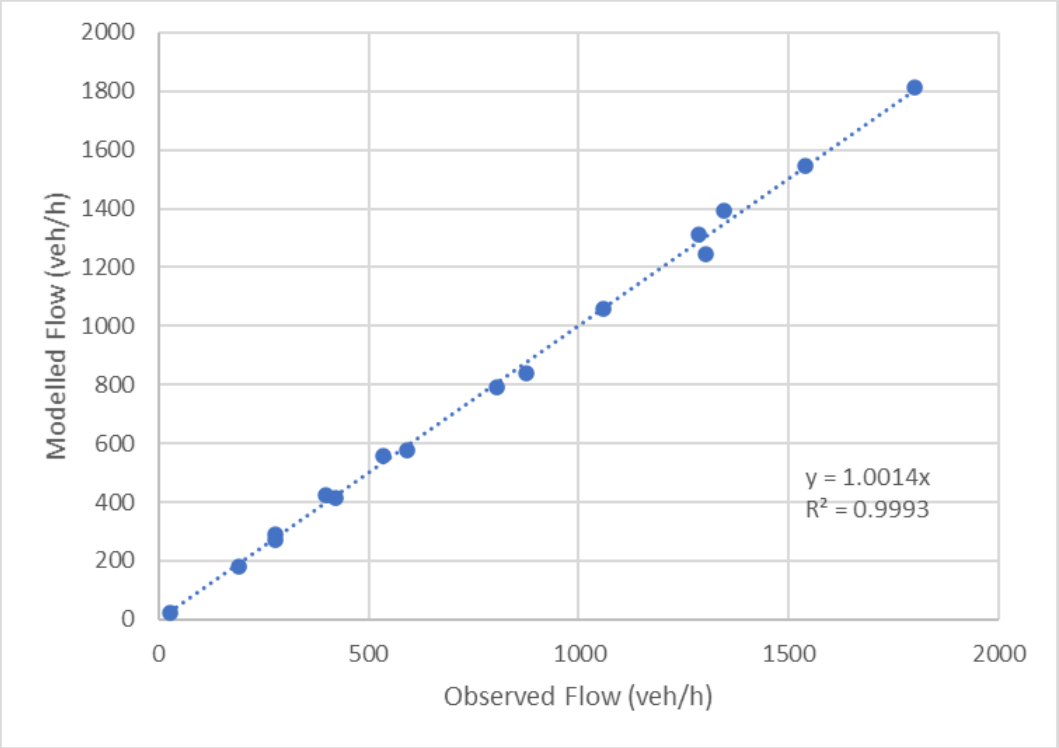
The second hour core area results are shown in Table 5.5.

Table 5.5: Evening Peak Core Area Model Calibration (5:00pm – 6:00pm)

	Turn	Observed	Modelled	Difference	% Difference`	Meets Criteria
Intersection 1	Church Street Northbound Through	852	855	3	0%	True
	M4 Exit Ramp Left Turn	478	515	37	8%	True
	Church Street Southbound Through	678	654	24	4%	True
	M4 Exit Ramp Right turn	1215	1130	85	7%	True
	Church Street Through	806	771	35	4%	True
Intersection 2	Woodville Road Right Turn	627	635	8	1%	True
	Woodville Road Through	628	663	35	6%	True
	Parramatta Road Right Turn	218	208	10	5%	True
	Parramatta Road through	1088	1020	68	6%	True
	Church Street Left Turn	990	1018	28	3%	True
	Parramatta Road Left turn	499	542	43	9%	True
Intersection 3	Woodville Road Southbound Through	1200	1196	4	0%	True
	Woodville Road Northbound Left Turn	4	4	0	0%	True
	Woodville Road Southbound Right Turn	105	105	0	0%	True
	Woodville Road Northbound Through	1573	1617	44	3%	True
	The Crescent Left Turn	251	274	23	9%	True

The model meets the targets for the core area in the second hour of the evening peak. The volumes for the second hour are plotted in Figure 5.9.

Figure 5.9: Core Area Volume Plot (5:00pm – 6:00pm)



The R^2 for the second hour also meets the target of 0.95.

In each of the hours modelled the core area has been calibrated to exceed the targets set out by Transport for NSW. The model is considered to be well calibrated for the core area that has been adopted.

5.3 Model Validation Travel Time

The model validation has been based on travel times on Church Street and Parramatta Road between Marion Street and James Ruse Drive. The results for the morning peak periods are shown in Figure 5.10, Figure 5.11, Figure 5.12 and Figure 5.13. The graphs show the average observed travel times with 15% variability as well as the fastest and slowest recorded travel times. In each hour the travel time falls within the 15% of the average observed travel times.

Figure 5.10: Morning Peak Travel Time Eastbound (7:00am – 8:00am)

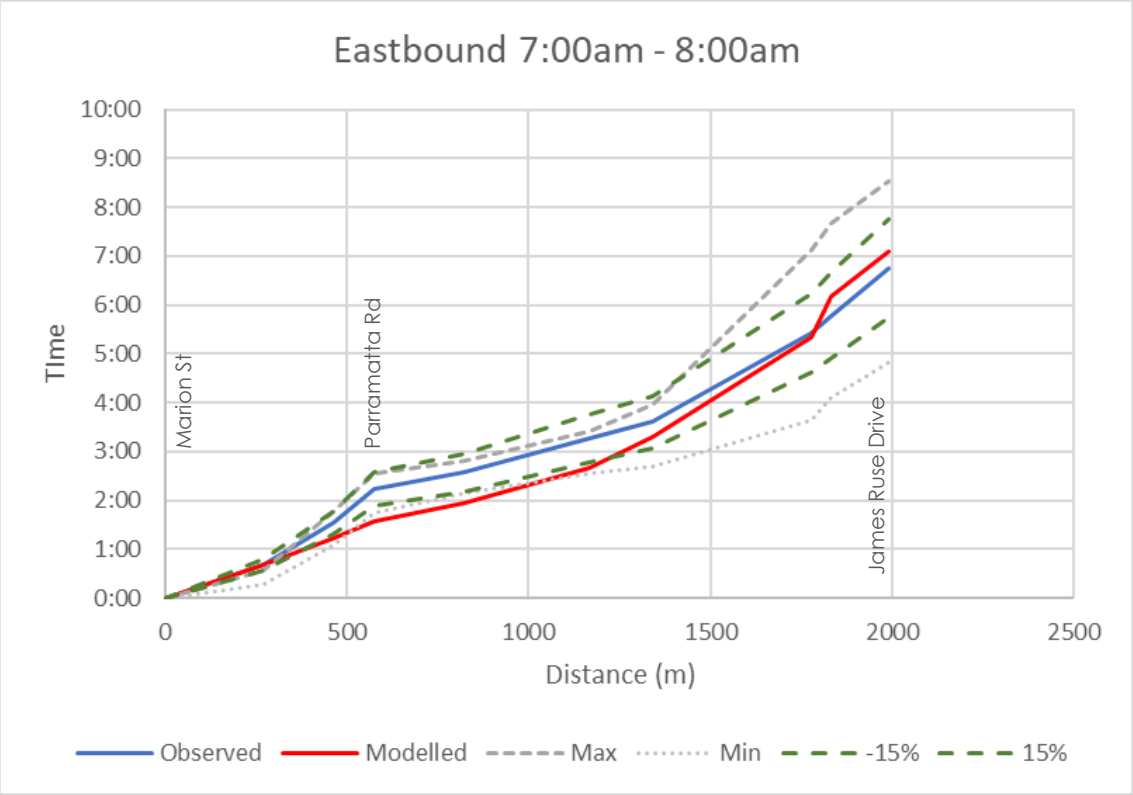


Figure 5.11: Morning Peak Travel Time Eastbound (8:00am – 9:00am)

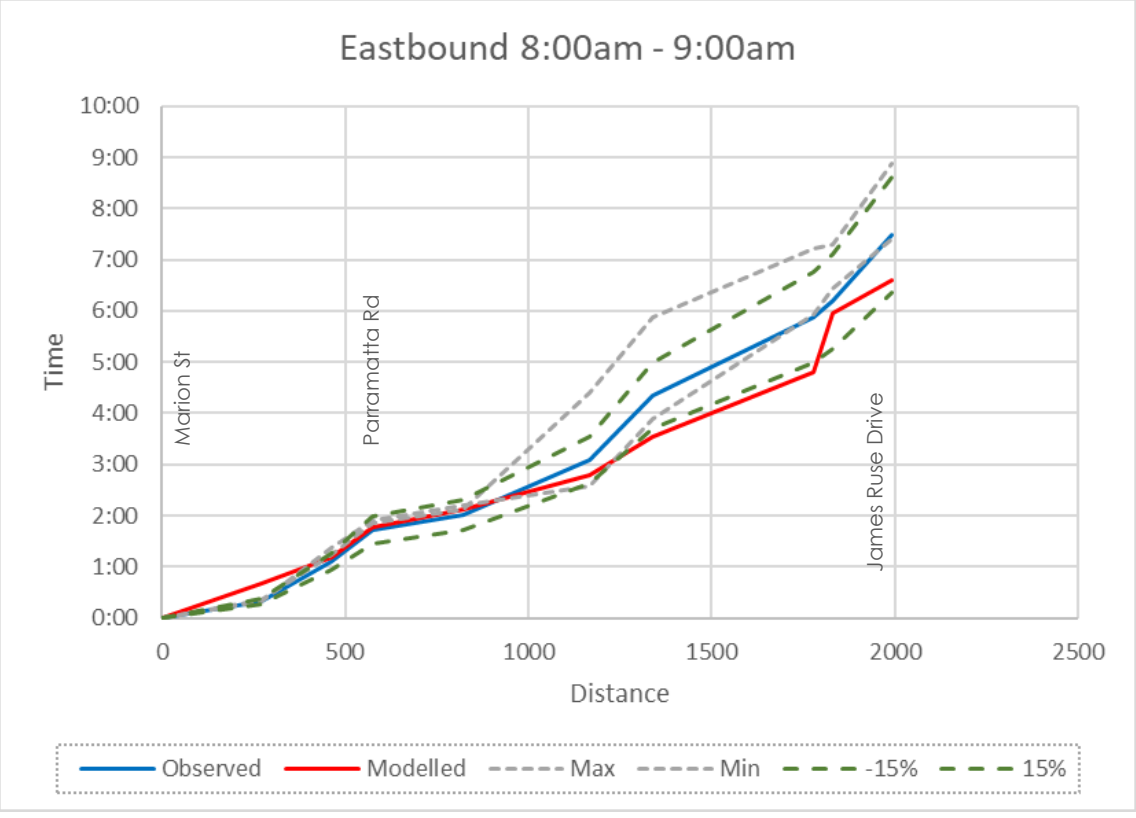


Figure 5.12: Morning Peak Travel Time Westbound (7:00am – 8:00am)

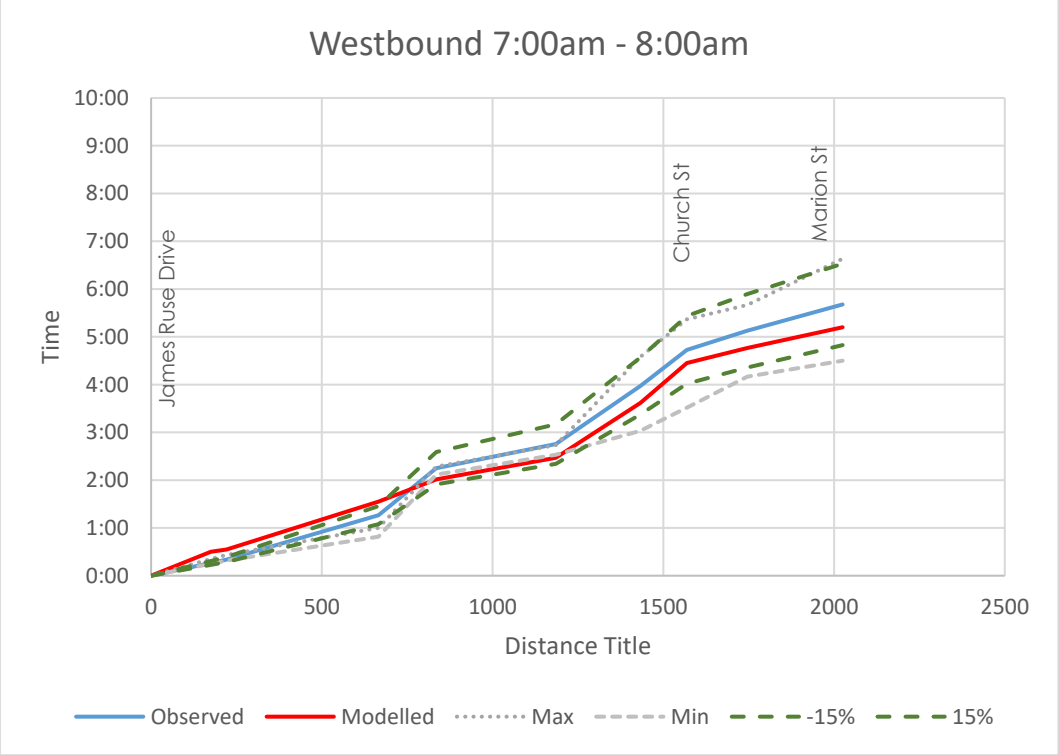
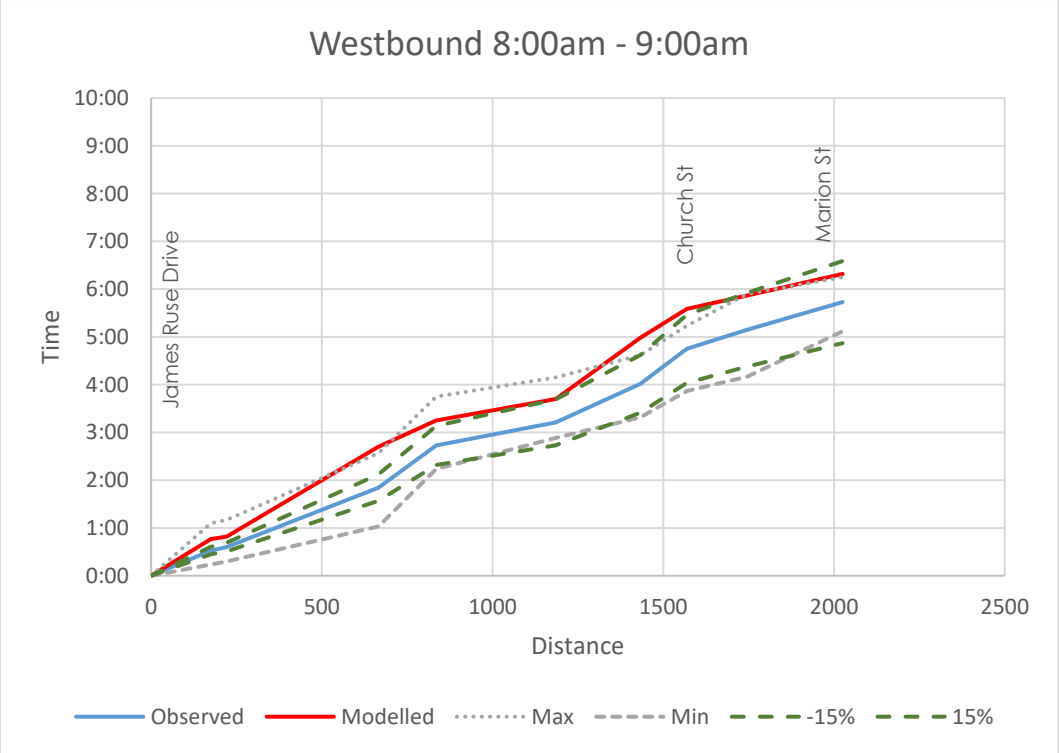


Figure 5.13: Morning Peak Travel Time Westbound (8:00am – 9:00am)



In the morning peak the modelled travel times reflect the observed travel times and are completed withing the 15% of the observed travel time for all hours..

The evening peak travel times are shown in Figure 5.14, Figure 5.15, Figure 5.16 and Figure 5.17.

Figure 5.14: Evening Peak Travel Time Eastbound (4:00pm – 5:00pm)

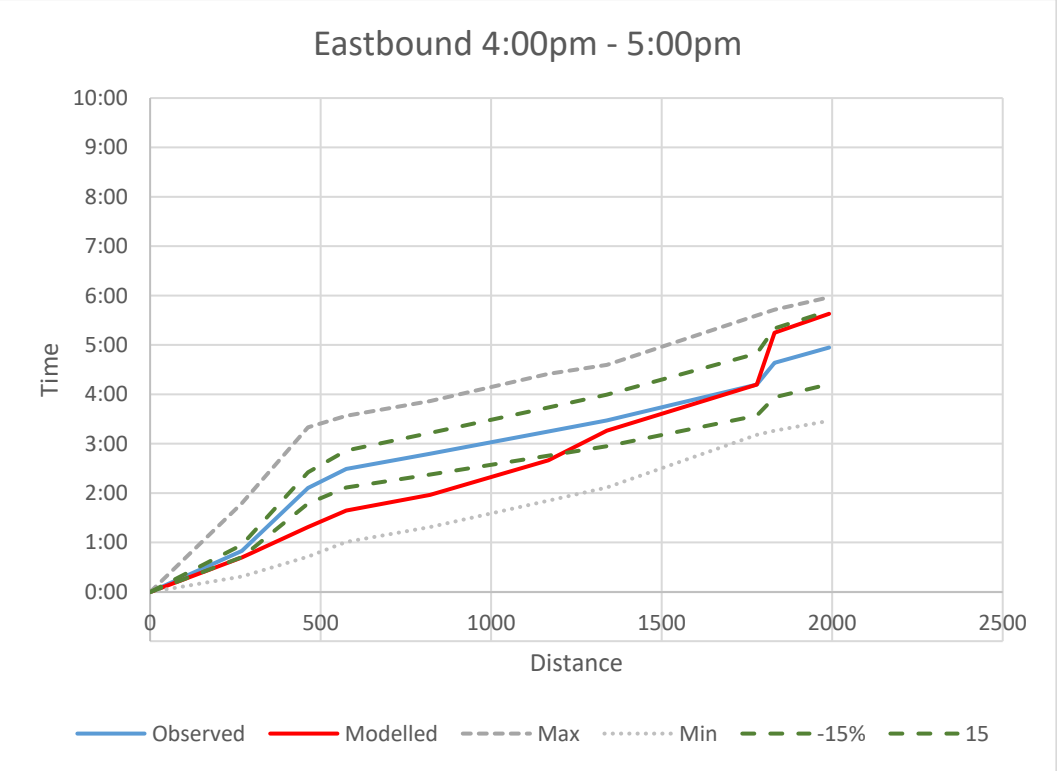


Figure 5.15: Evening Peak Travel Time Eastbound (5:00pm – 6:00pm)

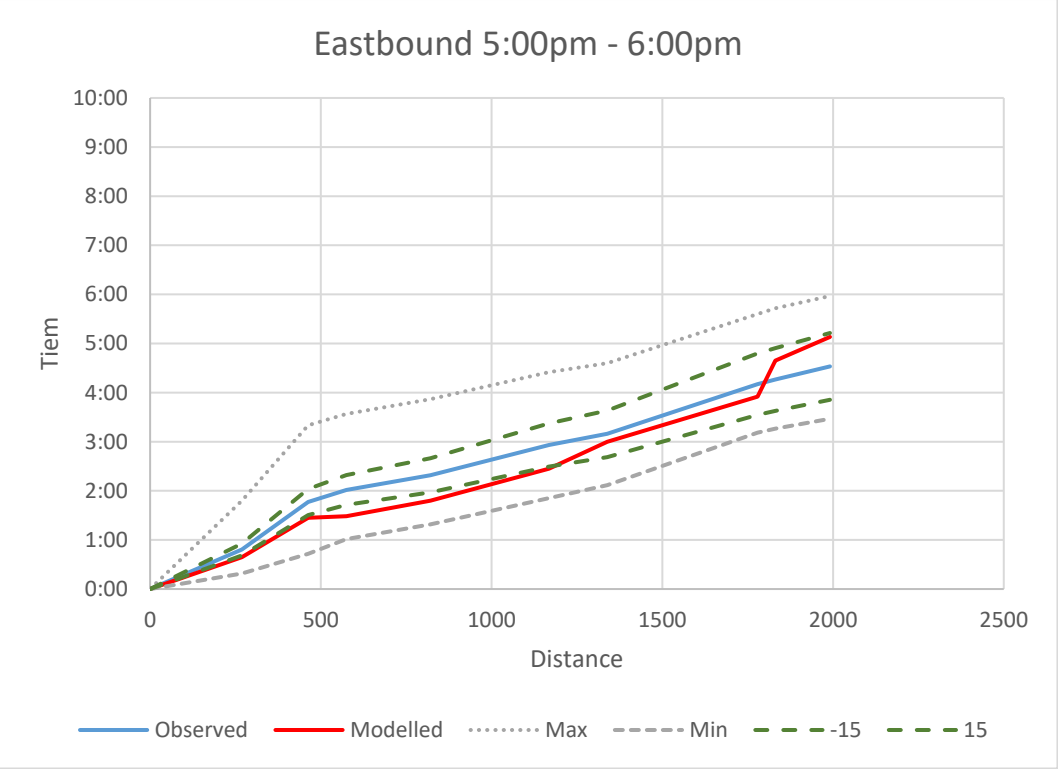


Figure 5.16: Evening Peak Travel Time Eastbound (4:00pm – 5:00pm)

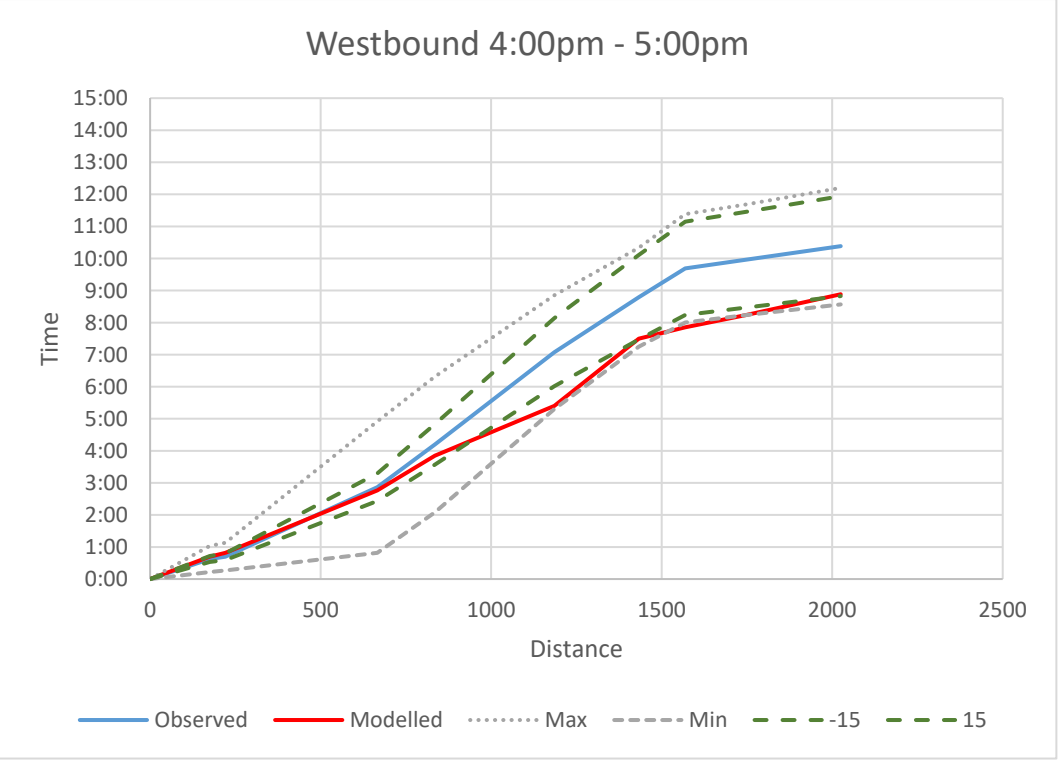
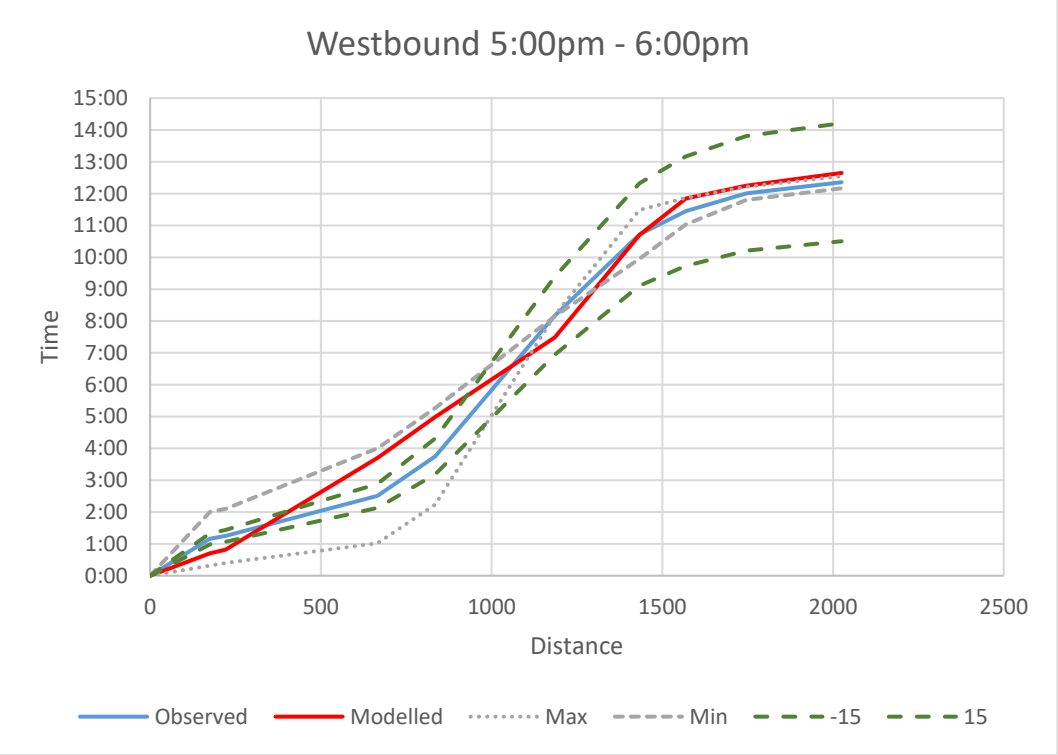


Figure 5.17: Evening Peak Travel Time Eastbound (5:00pm – 6:00pm)



Evening peak validation falls within the 15% tolerance for the end of the trip. It is noted that the second hour which is the peak has a very close replication of the observed travel times.

The model is considered to be validated for both the morning and evening peak periods replicating the congestion and travel times that were observed in the travel time surveys.

5.4 Calibration and Validation Conclusion

The model calibration and validation results meet the criteria and show that he model is able to replicate the exiting traffic conditions and can be used for testing of future scenarios.

6 Model Limitations

The model has been calibrated for the purpose of testing the impacts of the Crescent Parklands Development. It is well calibrated and validated for the eastern section of the model near Church Street and James Ruse Drive.

The model inherited from the PRCUTS model has limited route choice due to the structure of the model and would not test the diversion of traffic from the M4 Motorway or be sensitive to future changes in tolls or congestion in the model.

7 Conclusion

TTPP has calibrated and validated a micro-simulation model based on the PRCUTS Mesoscopic model. The model was calibrated and validated based on the Roads and Maritime Services (now TfNSW) modelling guidelines.

The model has been run for 5 random seeds in both the morning and evening peak periods and results presented here are based on the median run.

The model has been calibrated to achieve the criteria for GEH and R^2 for turns and a core area has been calibrated which meets core area requirements. Validation of the model has been undertaken based on travel times. The model shows a strong correlation with the travel times.

The model is considered well calibrated and suitable for the purpose of modelling the impacts of the Crescent Parklands Development.

Appendix A

Model Plot


F

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Attachment Two

Aimsun Modelling Results

Memorandum

From: Stephen Read

Date: 30 October 2020

TTPP REF: 16241

RE: CRESCENT PARKLANDS 1 CRESCENT STREET, HOLROYD
AIMSUN MICROSIMULATION MODELLING

The Transport Planning Partnership(TTPP) was commissioned by Tiberius (Holroyd) Pty Ltd to provide traffic advice in relation to the 1 Crescent Street, Holroyd development. This technical note summarises the micro-simulation modelling undertaken to test the impacts of the planning proposal.

Background

Tiberius (Holroyd) Pty Ltd has submitted a Planning Proposal for a mixed-use development at 1 Crescent Street, Holroyd. It is intended that the proposal will seek to rezone the site to deliver a high-density mixed-use development, comprising some 1,109 – 1,255 residential apartments that will be complimented with large areas of passive and active open space, and a retail and commercial area to service the local community.

The site location is shown in Figure 1 while the site boundary is shown in Figure 2.

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Suite 402, 22 Atchison Street
ST LEONARDS NSW 2065

Figure 1: Site location

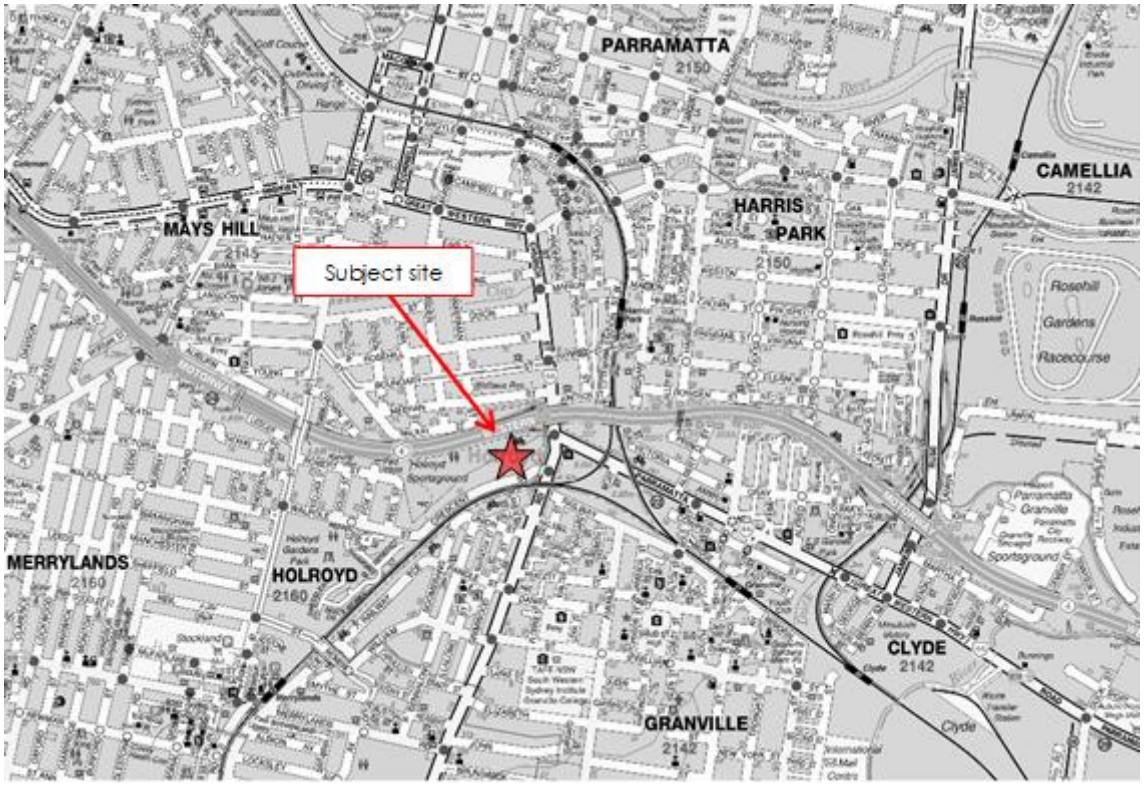


Figure 2: Site boundary

Assumptions

The modelling has relied on an Aimsun model of the Auburn area that was developed by GTA consultants. The model was provided by the Roads and Maritime Services (Roads and Maritime) and has been calibrated as a micro-simulation model with the focus on the Woodville Road and Church Street section of the model.

To accommodate the forecast traffic volumes and recognition of the increase in capacity of some intersections in the future the signal timing has been optimise to improve the network performance. This was is response to comments from TfNSW.

Modelling

The model extents are shown in Figure 3. The model covers Parramatta Road from Church Street to west of Homebush Bay Drive. Route choice in the model has been limited by the M4 being cut at locations between interchanges. Models were run as 'one shots' based on the mesoscopic paths. For each scenario five (5) random seeds were run and the median Vehicle Hours Travel (VHT) was used to select the representative run.

Figure 3: Model extents

Scenarios

Three scenarios have been modelled for the morning and evening peak traffic periods of 4:00pm – 6:00pm in the evening and 7:00am – 9:00am in the morning. The following section describes the scenarios. A summary of what is included in the scenarios is shown in Table 1.

Table 1: Model scenario summary

To/From Directions	Upgrade of Parramatta Road / Church Street and M4 exit Ramp	Upgrade of Crescent Street and Woodville Road	2031 Traffic Growth	Development traffic
Base scenario	×	×	×	×
2031 Future	✓	×	✓	×
2031 with Development	✓	✓	✓	✓

Base

The base scenario is the base model as provided and calibrated as a micro-simulation model. The model has been refined and calibrated as a micro-simulation with focus on the core area around Church Street and Woodville Road. A calibration report has been produced that documents the calibration of the base model in conformance with the TfNSW standards.

2031 Future Scenario

The scenario assumes:

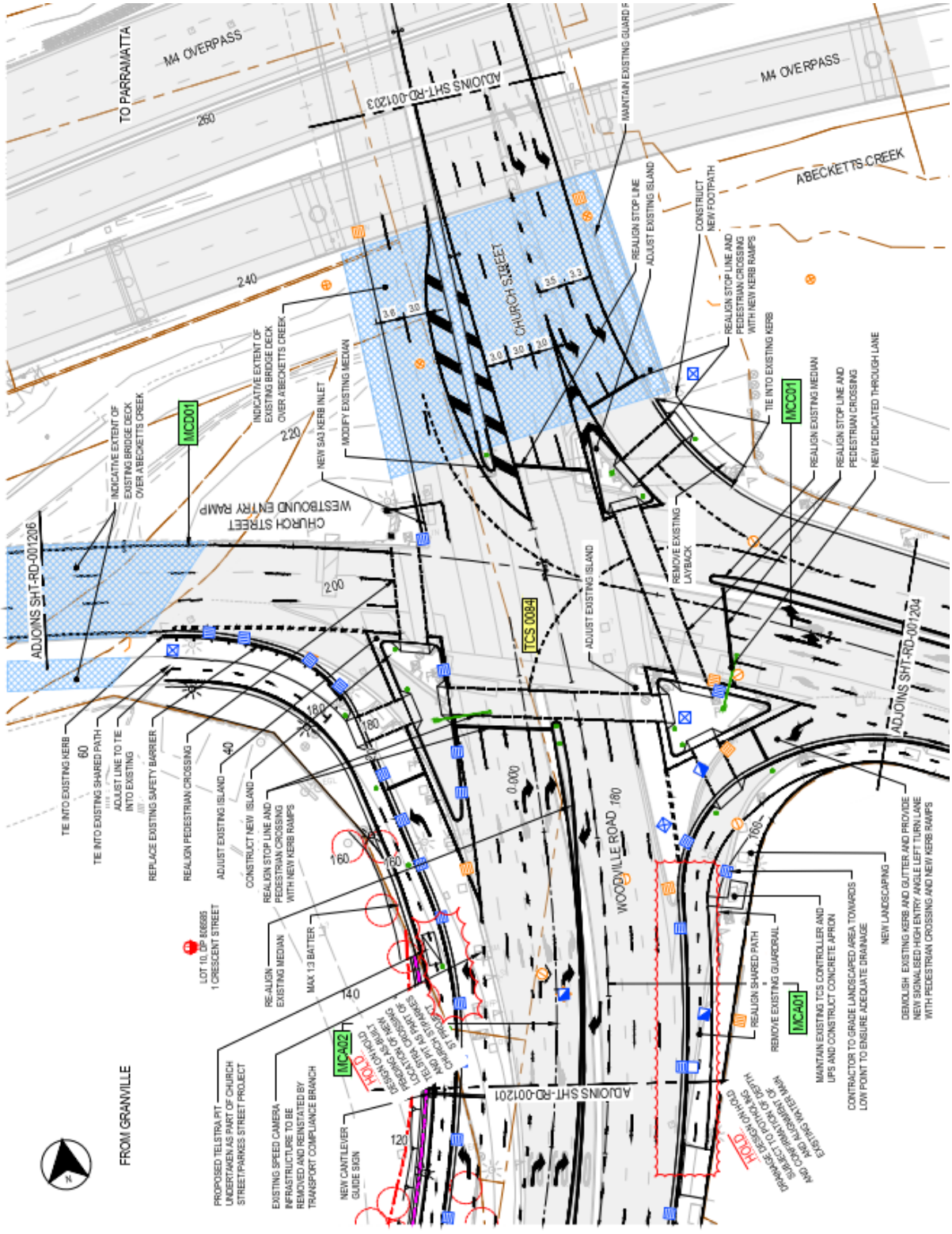
- Upgrade to Crescent Street intersection with Woodville Road.
- Upgrade of the M4 exit ramp to Church Street
- Upgrade of the intersection of Church Street/ Woodville Road / Parramatta Road.

In order to improve the existing traffic conditions, it is proposed to upgrade the following key intersections:

- Parramatta Road and Woodville Road (signalised)
- Woodville Road and the Crescent Street intersection (signalised).

Figure 4 shows an indicative updated design layout of the Parramatta Road / Woodville Road intersection as provided by TfNSW.

Figure 4: Layout of the Upgraded Parramatta Road and Woodville Road Intersection



Source: Transport for NSW

The key features of the upgrade at the Parramatta Road and the Woodville Road intersection include:

- Provision of an additional westbound right turn lane and an additional westbound through lane in Parramatta Road
- Provision of an additional right turn lane on the Woodville Road approach to the intersection
- Conversion of the northbound shared through and right turn lane into a through lane in the Woodville Road approach to the intersection.

2031 Future Scenario with Development Traffic

This scenario includes the upgrade of the intersection of Woodville Road and Crescent Street. Figure 5 shows an indicative updated design layout of the Woodville Road/ Crescent Street intersection.

Figure 5: Indicative layout of the Upgraded Woodville Road and Crescent Street Intersection

Source: GTA Consultants

Key features of the upgrade at the Woodville Road and The Crescent intersection include:

- Provision of an additional eastbound left turn lane in Crescent Street to create three lane left turn.
- Provision of an extension to the existing dual left turn bay from 30m to 140m in length on The Crescent

Provision of a right turn bay on Crescent Street approaching the site from Woodville Road.

2031 Background Traffic Growth

Subarea matrices were provided by TfNSW the years 2021 and 2031 from the STFM model. The net growth between the 2021 and 2031 matrices were added to the base model traffic to produce a 2031 future demand. The forecasts often over predict the volume of traffic as the models are not constrained by network capacities.

Table 2: Total Number of Trips by Year

Period	Base Model	3031	Growth %
Morning	107,853	129,906	20%
Evening	119,994	145,599	21%

The unconstrained strategic model forecasts a 20% growth in traffic over 10 years. A two hour difference plot for the morning and evening peaks is shown in Figure 6 and Figure 7 respectively.

Figure 6: Difference Plot – 2021 - 2031 Morning Peak (2hrs)

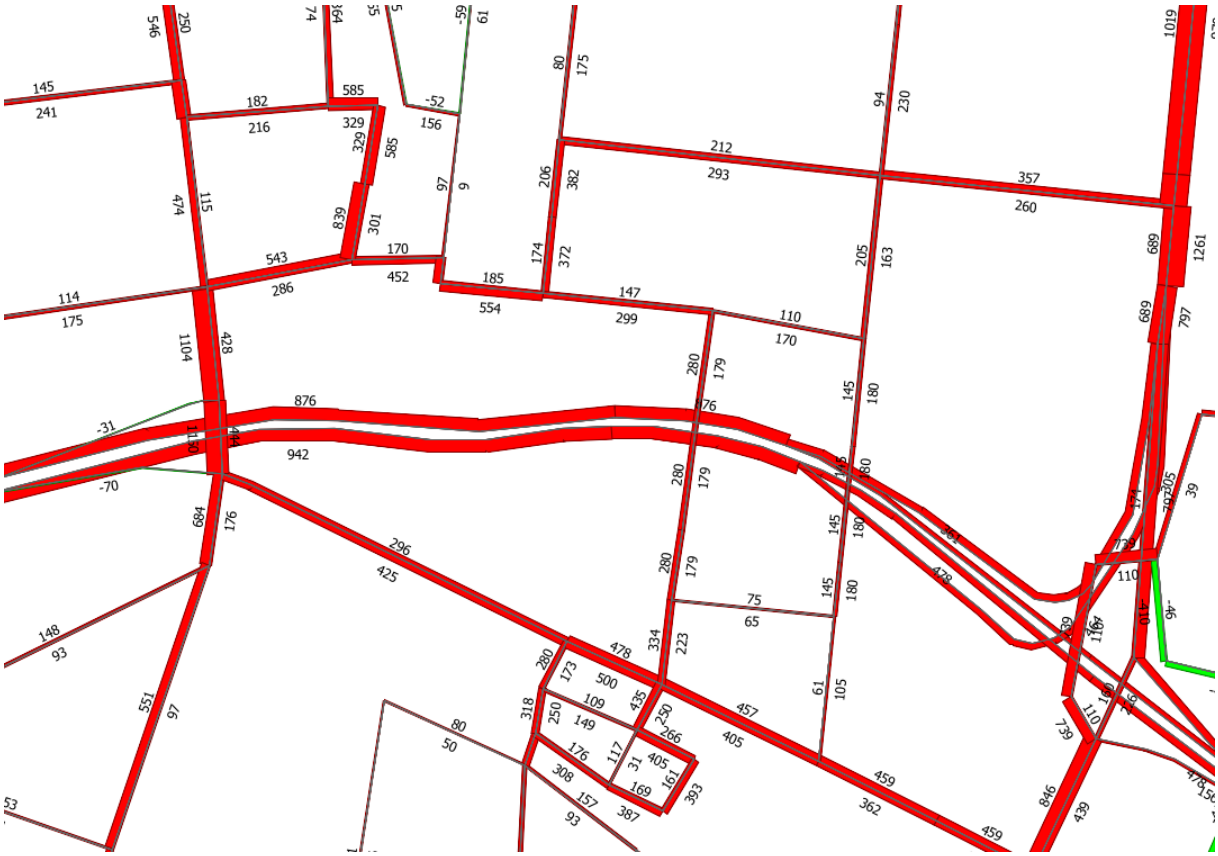


Figure 7: Difference Plot – 2021 - 2031 Evening Peak (2hrs)

The forecasts show large increases in traffic on Church Street north of the M4 Motorway exit ramp. There is also a significant increase in traffic on James Ruse Drive of which most appears to go to or from Parramatta Road.

Development Traffic Generation

The traffic generation calculation has been revised in response to the comments received from TfNSW, Councils and SLR Consulting on the proposed development. An extract of the comments is shown as follows:

1. A total traffic generation of peak hour vehicle trips per hour (vtph) of 635 and 952 in AM and PM peak respectively was used to assess the traffic generating impact of the planning proposal on the adjacent road network. . However, it is noted the total retail traffic generation of 922 PM vtph (based on a rate of 12.3 trips per 100m^2) and 461 vtph AM (based on 50% of PM peak) has been heavily discounted to 549 PM vtph and 274 vtph AM trips based on the following:
   a) A 20% reduction factor is applied to the above trip rates for retail and office uses to account for trips, which will be contained within the site boundary.

   TfNSW advises that former Roads and Maritime Services commissioned updated trip generation surveys of small suburban shopping centres in 2018 (i.e. less than 10,000m^2 GFA). As part of this trip generation surveys, vehicles were counted entering and exiting the surveyed sites, which means that linked trips were additional trips confined within each surveyed site. . For example, for the Glenwood Shopping Village (less than 10,000m^2 GFA), identified a trip rate of 12.7 trips per 100m^2 and linked trips were additional trips.

TTPP has discussed this matter with the ACE peer reviewer (SLR Consulting) with regard to the traffic generation calculations used in this addendum report.

Traffic Generation – Residential

Traffic generation was estimated based on a rate of 0.29 trips/unit/hour which has been agreed by the authorities, hence no changes have been made to traffic generation associated with the residential component of the development.

Traffic Generation – Retail

The retail traffic generation has been revised based on the Roads and Maritime (currently TfNSW) Trip Generation Surveys Small Suburban Shopping Centres Analysis Report and Data Report, Bitzios Consulting (November 2018). SLR Consulting agreed with the use of following retail traffic generation rates based on the average rates for all surveyed Sydney sites greater than 2,000 m^2 GLFA:

- 7.84 trips/100m^2 GLFA in the AM peak hour
- 10.77 trips/100m^2 GLFA in the PM peak hour

Given the TfNSW suburban shopping centre sites are isolated and do not have substantial amount of residential developments around and therefore generate a high level of car based trips.

By contrast, the planning proposal would serve the basic retail needs and contain a substantial number of trips within the site without creating vehicular trips. Having said this, in order to address TfNSW's comments, TTPP has decreased the trip reduction factor to compensate for trips between the residential development and retail development from 20% to 10% which has been agreed by the ACE peer reviewer (SLR Consulting).

The assumption of 10% is considered more conservative than the 20% originally used by TTPP but we note that Parramatta Westfield is located within a 5-10 minute drive as is Merrylands

Town Centre, and consequently it is anticipated that the catchment of the retail development proposed will be relatively local within those people wanting more shopping opportunities travelling to Parramatta or Merrylands.

Traffic Generation – Office

The office traffic generation has been revised based on the RMS (TfNSW) Technical Direction (TDT 2013/04a):

- 1.6 trips per 100m^2 GFA in the AM peak hour
- 1.2 trips per 100m^2 GFA in the PM peak hour

The use of a 20% trip reduction to compensate for trips between the commercial and the retail has been reduced to a more conservative 5% reflecting the multi-purpose trips associated with workers who visit the retail shops and/or live in the residential component of the site. The use of 5% trip reduction has also been agreed by the ACE peer reviewer (SLR Consulting).

Traffic Generation – Summary

A summary of traffic generation is provided as follows in Table 3.

Table 3: Summary of Traffic Generation (1 Crescent Street)

Land use	Yield	AM Peak Hour		PM Peak Hour		Trip Reduction Rate
		Trip Rate	Traffic Generation	Trip Rate	Traffic Generation	
Residential	1,255 units	0.29 trips/unit	364	0.29 trips/unit	364	0%
Retail	5,627 m2 GLFA	7.84 trips/100m2 GLFA	397	10.77 trips/100m2 GLFA	545	10%
Office	7,503 m2 GFA	1.6 trips/100m2	114	1.2 trips/100m2	86	5%
Existing Industrial Site Traffic	-	-	-35	-	-34	-
Total	-	-	840 (+186)	-	961 (+5)	-

The subject development is expected to generate a net change of 840 vph in the AM peak hour and 961 vph in the PM peak hour.

This is an increase of 186 vph and 5 vph in the respective AM and PM peak hours, as compared with the previous assessment primarily due to the use of lower trip reduction rates and the TfNSW small suburban shopping centre trip rates, as opposed to the previous assumption of 50% of PM peak retail trips.

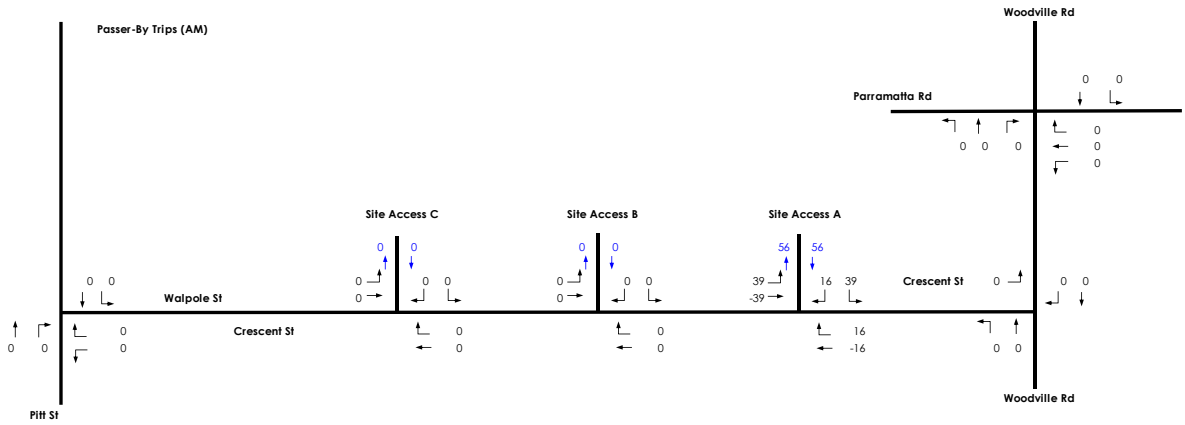
Passer-by Trips

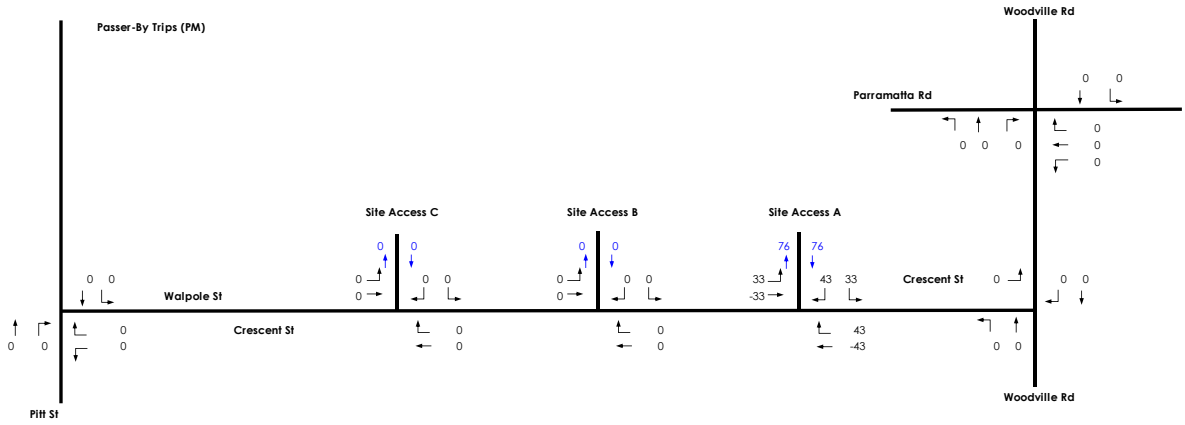
TfNSW commented on the application of passer-by trips. An extract of the comments is shown as follows:

> b) A 28% of retail generated trips will be "pass-by" trips (i.e. the new development is an intermediate stop on a trip that is made from an origin to a destination). This assumption is adopted from *Guide to Traffic Management Part 12: Traffic Impacts of Development* Commentary 8 – Linked Trips.
>
> Further, the 28% discount for "pass by" trips are still trips that will enter and exit the subject site and result in additional turning movements at the driveway, as well as additional turning movements at the intersection of Woodville Road/Crescent Street. For example, a motorist instead of heading in the
>
> southbound through carriageway of Woodville Road may instead turn right into Crescent Street to do shopping, which will add to the vehicle queue for this right turn movement and should be assessed.

Austroads Guide to Traffic Management Part 12: Traffic Impacts of Developments suggests 28% of the trip generation related to the retail use (greater than 3,000m^2) are undiverted (passer-by) drop in trips. This was applied to the retail traffic volumes which consist of traffic on Crescent Street that enters the site as an intermediate stop to another destination. Figure 8 shows the passer-by trip reduction on Crescent Street.

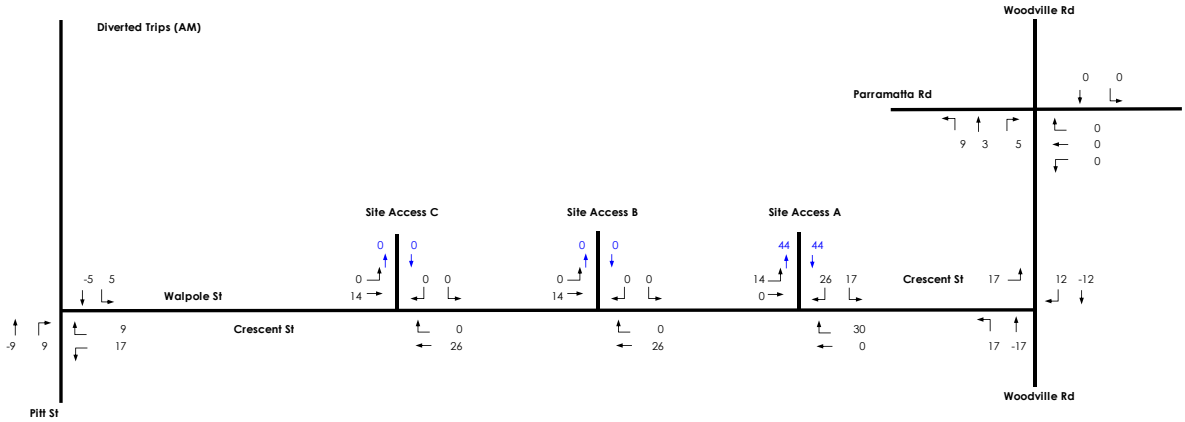
Figure 8: Passer-By Trips

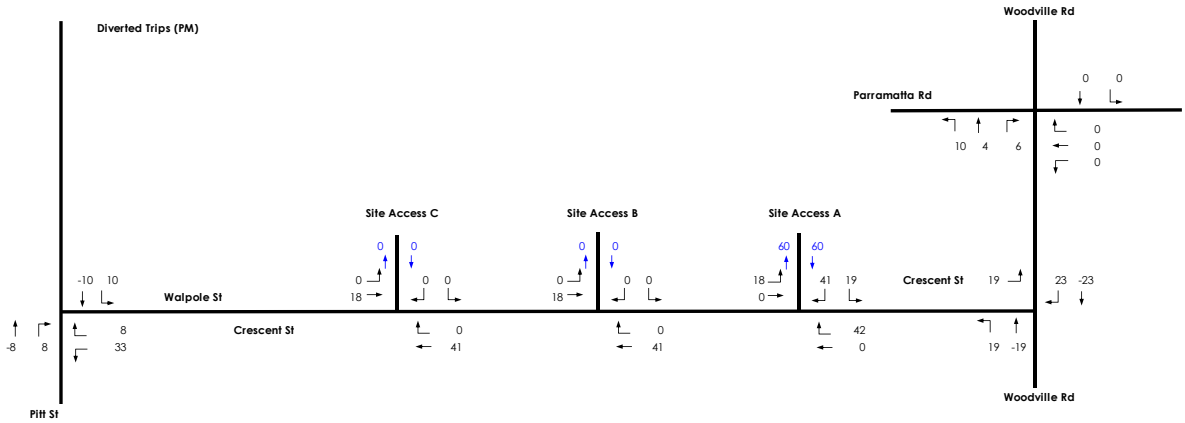




The same Austroads Guide also suggests 22% of the trip generation related to the retail use (greater than 3,000m^2) are diverted trips. This was applied to the retail traffic volumes that would be diverted from Woodville Road and Pitt Street as shown in Figure 9.

Figure 9: Diverted Trips





Traffic Distribution

The directional distribution for residential traffic has been assumed to be 20% inbound and 80% outbound during the AM peak period. These inbound/outbound percentages are reversed in the PM peak period.

For traffic arising from the commercial / retail functions, 50% of the traffic has been assumed to be inbound while the remaining 50% would be outbound during both the AM and PM peak hours.

The development traffic was distributed on the road network based on 2016 Journey to Work (JTW) data of the Holroyd area. The distribution factors are presented in Table 4.

Table 4: Traffic Distribution

To/From Direction	Commercial trips %	Residential trips %
Church St-North	9%	7%
M4/GWH-West	23%	7%
Parramatta Rd/M4-East	13%	36%
Walpole St-North	7%	18%
Walpole St-South	23%	31%
Woodville Rd-South	25%	0%
Total	100%	100%

These traffic distribution factors based on 2016 JTW data are similar to those shown in the 2011 JTW data that were adopted in the previous assessment.

TTPP has also reviewed of the retail impact assessment (2015) which suggested that the retail catchment, particularly the primary trade area, appears to be well dispersed in all directions, as opposed to a strong bias in one particular area. In light of this, the above trip distribution factors have been adopted for the directional split of retail traffic to/from the site.

As the Aimsun model is cut at the Crescent the model includes only traffic that travels immediately to the east. The additional traffic was profiled to the existing traffic profile with the peak hour equalling the trips traveling east from site and west to site. This traffic is summarised Table 5.

Table 5: Generated Traffic Added to the Aimsun Model (2hrs)

To/From Direction	Outbound Trips	Inbound Trips
Morning Peak	532	372
Evening Peak	321	684

Modelling Results

Model Stability

The median seed value was based on VHT. The results for VHT by seed value are shown in Table 6 and Table 7. Results are reported for the median seed value.

Table 6: Morning Peak VHT

Seed Value	Base	2031 Future	2031 Development
28	5892	9458	9479
560	6005	9598	9787
2849	6485	9469	9786
7771	6155	9428	9484
86429	5910	9200	9482

Table 7: Evening Peak VHT

Seed Value	Base	2031 Future	2031 Development
28	7073	10687	10866
560	6817	10778	10598
2849	7232	10838	10482
7771	6939	10616	10875
86429	7017	10887	10848

Intersection Level of Service

The operation of the key intersections has been assessed using the Aimsun model. The commonly used measure of intersection performance, as defined by the RTA (now Transport for NSW), is vehicle delay. Aimsun determines the average delay that vehicles encounter and provides a measure of the level of service based on the intersection average delay.

It should be noted that delay in a micro-simulation model is based on the delay experienced by vehicles on approach to the subject intersection. Results can vary considerably when compared to stand alone Sidra models as the delays from intersections downstream and influence the results of a subject intersection. Likewise, upstream capacity constraints can limit the amount of traffic flowing downstream and produce lower delay at the subject intersection.

Table 8 shows the criteria that has been adopted in assessing the level of service based on the RTA level of service criteria.

Table 8: Level of Service Criteria

Level of Service (LOS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity, accident study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

Intersection analysis was conducted for the key intersections based on the existing peak hour flows and the estimated future peak hour flows, with and without the proposed development traffic.

The results of the intersection performance for the morning peak are shown in Table 9.

Table 9: Intersection Level of Service (morning peak hour 7:45am – 8:45am)

Approach	Average Delay	LoS	Average Delay	LoS	Average Delay	LoS
	Base		2031 Future		2031 with Development	
Woodville Road / Crescent Street						
Woodville Road Northbound	16	B	26	B	23	B
Crescent Street	77	F	38	C	41	C
Woodville Road Southbound	10	A	5	A	6	A
Intersection	**21**	**B**	**20**	**B**	**21**	**B**
Parramatta Road/Church Street						
Woodville Road Northbound	34	C	30	C	31	C
Woodville Road Northbound Slip Lane	15	B	6	A	12	A
Church Street Southbound	62	E	35	C	40	C
Church Street Southbound Slip Lane	24	B	8	A	11	A
Parramatta Road Westbound	80	F	57	E	96	F
Parramatta Road Westbound Slip Lane	33	C	44	D	66	E
Intersection	**46**	**D**	**31**	**C**	**43**	**D**
Church Street / M4 Exit ramp						
Church Street Northbound	21	B	32	C	31	C
Church Street Southbound	28	C	33	C	39	C
M4 Motorway exit ramp	101	F	132	F	83	F
Intersection	**63**	**E**	**74**	**F**	**54**	**D**

The intersection performance shows that most of the intersections would perform satisfactorily with level of service D or better. It is noted that the M4 Motorway exit ramp queue can be unstable mostly due to the left turn traffic in the future. While the signal settings between the 2031 Future Model and the 2031 with development were the same the delay in the 2031 is much higher due to the random variability in the model and the particular seed run that was selected as the median run based on VHT.

The intersection performance for the evening peak is shown in Table 10.

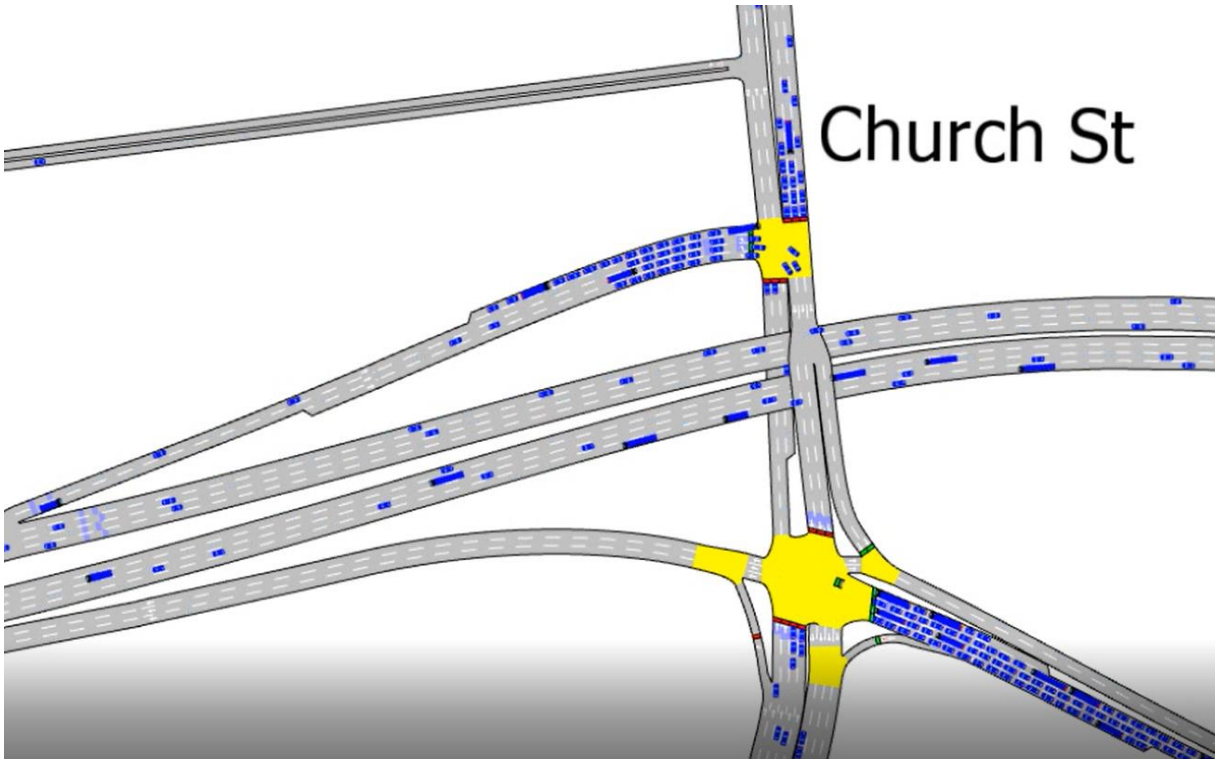
Table 10: Intersection Level of Service (evening peak hour 4:45pm – 5:45pm)

Approach	Average Delay	LoS	Average Delay	LoS	Average Delay	LoS
	Base		2031 Future		2031 with Development	
Woodville Road / Crescent Street						
Woodville Road Northbound	6	A	14	B	16	B
Crescent Street	47	D	35	C	33	C
Woodville Road Southbound	4	A	6	A	10	A
Intersection	7	A	12	A	15	B
Parramatta Road/Church Street						
Woodville Road Northbound	29	C	36	C	28	B
Woodville Road Northbound Slip Lane	2	A	14	A	15	B
Church Street Southbound	31	C	38	C	34	C
Church Street Southbound Slip Lane	6	A	11	A	9	A
Parramatta Road Eastbound	190	F	60	E	64	E
Parramatta Road Eastbound Slip Lane	60	E	45	D	44	D
Intersection	55	D	36	C	34	C
Church Street / M4 Exit ramp						
Church Street Northbound	17	B	22	B	30	C
Church Street Southbound	30	C	63	E	45	D
M4 Motorway exit ramp	106	F	44	D	48	D
Intersection	64	E	47	D	42	C

The evening peak models show more stable results with intersections operating at acceptable level of service D or better.

In the morning peak it was observed that queueing from the M4 Motorway exit ramp remained within ramp did not spill back to the main line of the motorway.

Figure 10: M4 Motorway exit ramp queue (8:45am)



Travel time

Model travel times were recorded in each direction along Church Street and Parramatta Road from Marion Street to James Ruse Drive.

The result for the morning peak models is shown in Table 11 and Table 12.

Table 11: Morning Peak Travel Times Eastbound 7:45am – 8:45am

Road	Side Street	Base	2031 Future	2031 with Development
Church St	Marion St	0:00	0:00	0:00
Church St	Raymond St	0:40	0:54	1:06
Church St	Western Mwy Off-Ramp	1:11	1:41	1:55
Church St	Parramatta Rd	1:43	1:55	2:06
Parramatta Rd	Mort St	2:04	2:18	2:29
Parramatta Rd	Bold St	2:45	3:38	3:39
Parramatta Rd	Good St	3:26	3:57	4:00
Parramatta Rd	Railway Crossing	4:27	5:54	5:54
Parramatta Rd	Marsh St	5:32	6:47	6:41
Parramatta Rd	James Ruse Dr	6:10	7:27	7:10

Table 12: Morning Peak Travel Times Westbound 7:45am – 8:45am

Route		Base	2031 Future	2031 with Development
Parramatta Rd	Berry St	0:00	0:00	0:00
Parramatta Rd	Marsh St	0:41	0:42	0:42
Parramatta Rd	Railway Crossing	0:44	0:45	0:46
Parramatta Rd	Good St	2:11	1:40	1:52
Parramatta Rd	Bold St	2:44	2:15	2:33
Parramatta Rd	Mort St	3:09	2:40	2:56
Parramatta Rd	Church St	4:27	3:53	4:01
Church St	Western Mwy Off-Ramp	5:07	5:07	5:12
Church St	Boundary St	5:24	5:30	5:33
Church St	Marion St	5:50	5:47	5:55

The model results for the morning peak period travel time show that the development would not have a significant impact on travel times. The travel times are plotted by distance in Figure 11 and Figure 12.

Figure 11: Eastbound Travel Times 7:45am - 8:45am

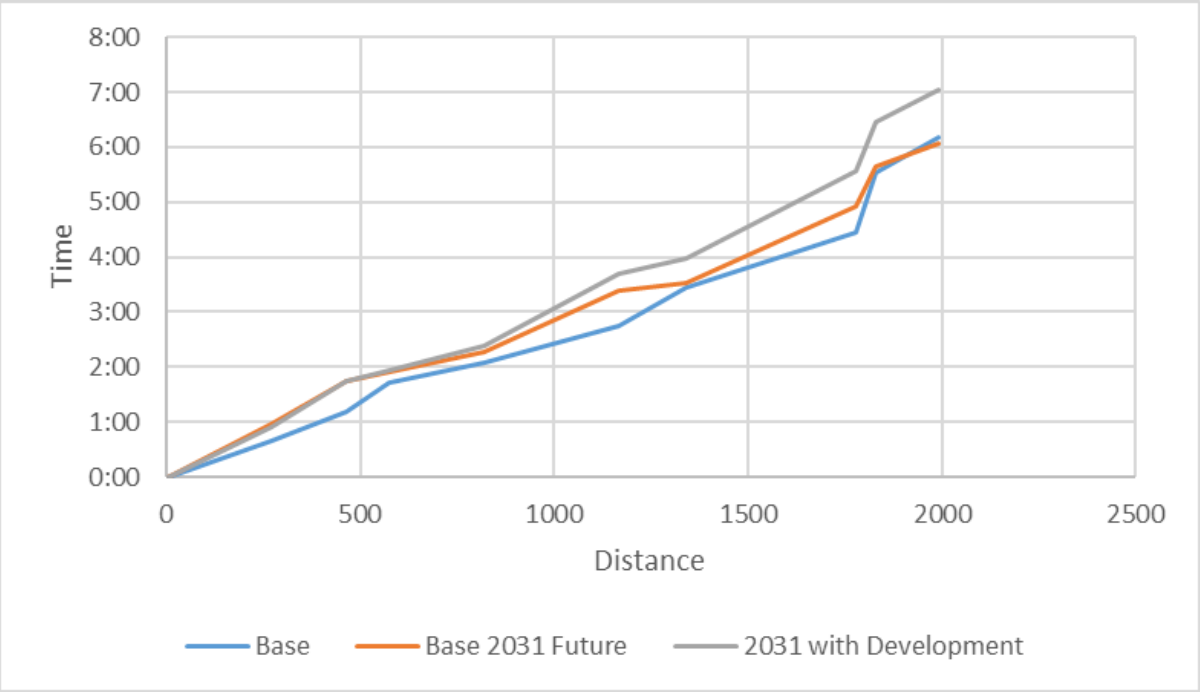
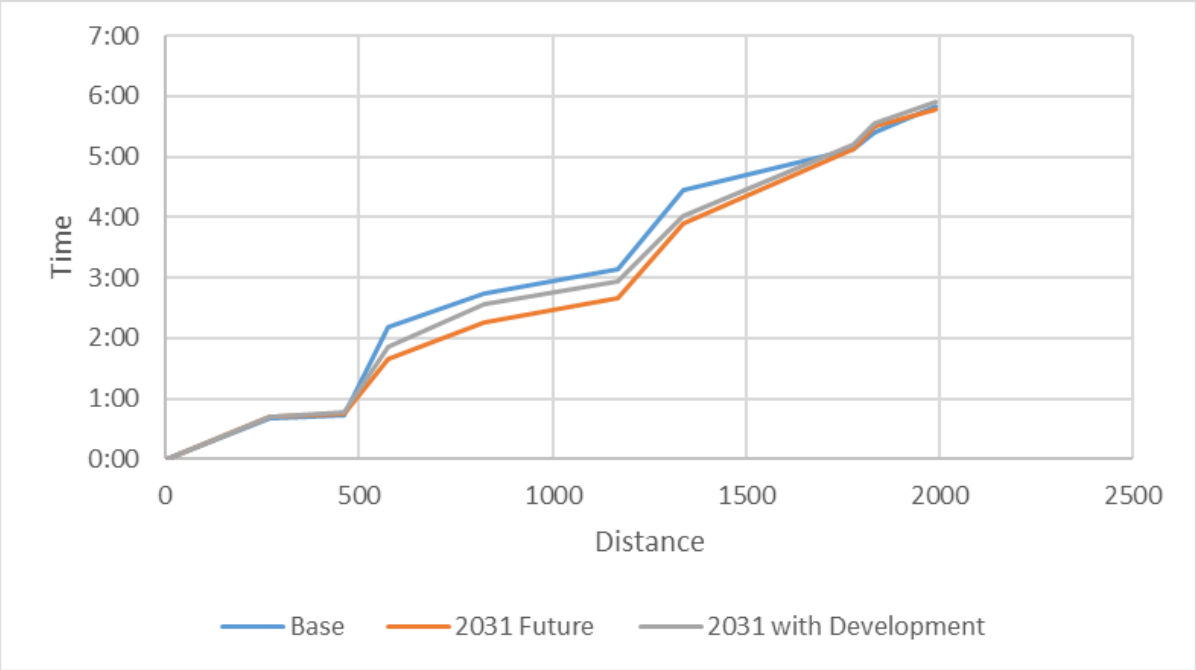


Figure 12: Westbound Travel Times 7:45am – 8:45am



The result for the morning peak models is shown in Table 13 and Table 14.

Table 13: Evening Peak Travel Times Eastbound 4:45pm – 5:45pm

Road	Side Street	Base	2031 Future	2031 with Development
Church St	Marion Street	0:00	0:00	0:00
Church St	Raymond Street	0:39	4:24	2:07
Church St	Western Mwy Off-Ramp	1:18	5:42	3:10
Church St	Parramatta Road	1:25	3:56	2:57
Parramatta Rd	Mort Street	1:44	4:18	3:22
Parramatta Rd	Bold Street	2:22	5:48	4:47
Parramatta Rd	Good Street	2:57	6:34	5:35
Parramatta Rd	Railway Crossing	4:05	7:51	7:27
Parramatta Rd	Marsh Street	5:03	8:25	8:35
Parramatta Rd	James Ruse Drive	5:31	8:51	9:09

Table 14: Evening Peak Travel Times Westbound 4:45pm – 5:45pm

Road	Side Street	Base	2031 Future	2031 with Development
Parramatta Rd	Berry Street	0:00	0:00	0:00
Parramatta Rd	Marsh Street	0:53	0:21	0:29
Parramatta Rd	Railway Crossing	1:01	0:24	0:33
Parramatta Rd	Good Street	4:29	1:30	2:23
Parramatta Rd	Bold Street	5:57	2:28	3:21
Parramatta Rd	Mort Street	8:42	2:53	3:48
Parramatta Rd	Church Street	11:53	4:17	5:09
Church St	Western Mwy Off-Ramp	13:06	4:39	5:45
Church St	Boundary Street	13:34	5:06	6:28
Church St	Marion Street	14:03	5:39	6:43

The travel time results for the evening peak indicate that the intersection upgrade of the Parramatta Road / Church Street intersection would reduce the westbound travel times significantly. However, the eastbound travel times would increase as a result of the capacity constraint at the intersection of Parramatta Road and James Ruse Drive.

Travel times are plotted against distance in Figure 13 and Figure 14.

Figure 13: Eastbound Travel Times 4:45pm - 5:45pm

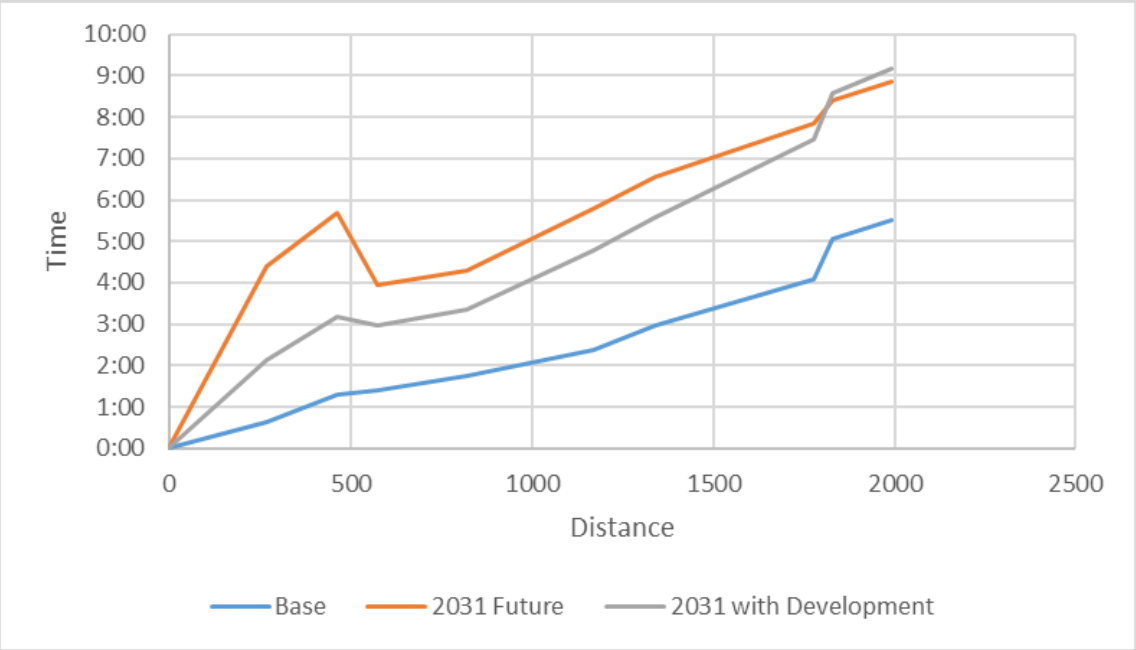


Figure 14: Westbound Travel Times 4:45am - 5:45am

The eastbound travel time show a 'hump' in travel time on the approach to Church Street. This is a result of the method for reporting travel times in the model by section and includes those vehicles queued to enter Woodville Road. Vehicles turning left onto Parramatta Road experience less delay which is why the travel times go down once past the turn from Church Street to Woodville Road.

Conclusion

TTPP have undertaken Aimsun micro-simulation modelling for the planning proposal of 1 Crescent Street, Holroyd. The modelling was based on a base model provided by Roads and Maritime.

Three scenarios were modelled, the base model, A 2031 scenario that included the intersection upgrades and a development case which includes the development traffic and upgrades Crescent Street. The intersection upgrades scenario included those upgrades being undertaken by RMS primarily at the intersection of Church Street/ Woodville Road / Parramatta Road and the upgrade of the M4 Motorway exit ramp / Church Street. The development case added those improvements at the intersection of Crescent Street and Woodville Road being undertaken by the developer and then adding the estimated development traffic.

The models covered the weekday morning and evening peak periods from 7:00am – 9:00am and 4:00pm – 6:00pm respectively.

The models show that the development traffic from the proposed Crescent Parklands Development would not have a significant impact on the road network when compared to the 2031 future model.

Attachment Three

Correspondence to UrbanGrwoth

Our Ref: 16241

5 December 2016

Tiberius (Holroyd) Pty Ltd
Suite 8.01, Level,
1 Castlereagh Street,
SYDNEY NSW 2000

Attention: Mr Kurt Robinson

Dear Kurt,

RE: 1 CRESCENT STREET, HOLROYD – PLANNING PROPOSAL

We are writing to you regarding your recent request that the Transport Planning Partnership (TTPP) undertake a preliminary assessment of the traffic likely to be generated by the UrbanGrowth recommendations for the above site in the context of the Parramatta Road Urban Transformation Strategy 2016 (PRUTS).

Architectus has provided TTPP with the following analysis of the likely development outcome proposed for the UrbanGrowth site and they have assumed the site is developed for the highest and best use.

- Bulky goods - 39,000sqm GFA
- Mixed use:
  - 5200sqm GFA retail
  - 29500sqm GFA residential (approx. 343 apartments)

(N.B. Assumptions used are that the mixed use is divided into 0.3:1 retail and 1.7:1 residential and that there would be 86sqm GFA / apartment (this was the number used for the planning proposal and equates to approx. 73.25sqm NSA per apartment)

Based upon the above yields I have calculated the "UrbanGrowth" proposal could have generated up to 1958 trips in the PM peak hour

		Weekday PM peak Traffic Generation Rate	Weekday PM Peak hour traffic generation
Bulky Goods	39000	2.7 2.7 Traffic movements per 100m2 Allow for 25% multivisiting	790
Retail	5200	15.5 Traffic movements 15.5 per 10m2	806
Residential	343	0.29 0.29 trips per peak	99
		TOTAL	**1695**

My assessment has been based upon the following

Bulky Goods (taken from RMS Guidelines to Traffic Generating Developments – Updated Traffic Surveys technical direction 2013	**Bulky goods retail stores** Six surveys were conducted in 2009. Two of the surveys were conducted within the Sydney urban area (one electrical goods and one furniture) and four within regional New South Wales (two electrical goods and two furniture). Summary vehicle trip rates are as follows: Weekday daily vehicle trips = 17 (including 1 heavy) vehicles per 100 m^2 of gross floor area) Weekday peak hour vehicle trips = 2.7 vehicles per 100 m^2 of gross floor area. (note that the morning site peak hour during weekdays does not generally coincide with the network peak hour.) Weekend day daily vehicle trips = 19 vehicles per 100 m^2 of gross floor area (minimal heavy vehicles) Weekend day peak hour vehicle trips = 3.9 vehicles per 100 m^2 of gross floor area. It is also noted that bulky goods sites generally have an area of 2000m2 to 6000m2 so a site with a size of 39,000m2 would need to be comprised of up to 10 individual stores. Consequently, there would be likely to be an element of multi-visiting of around 25%.
Mixed Use (taken from GTA traffic report for Crescent Parklands)	Traffic generation estimates for the proposed mixed use development have been sourced from the *Guide to Traffic Generating Developments* (RMS 2002) & its supplementary technical direction (TDT 2013/04a). The following peak hour traffic generation rates have been used: ○ High density residential flat buildings – 0.29 trips per unit for AM/PM (N.B. Whilst TDT 13/04a has suggested that traffic generation could be as low as 0.16 peak hours trips when close to a railway line, the trip generation at this site is likely to be higher) ○ Retail (supermarket) – 155 trips per 1,000m^2 for PM using the multiple regression equation for different trade categories

The traffic report for the Tiberius Planning Proposal estimated the traffic generation for the planning proposal as outlined below.

Development Generated Traffic	Peak Hour Traffic (vehicles per hour)	
	AM Peak Hour	PM Peak Hour
Residential	544	544
Retail	217	434
Showroom	7	14
Childcare centre	49	43
Gym	54	54
Office/Medical	15	29
Total	+ 886	+ 1118
Current Industrial Site Traffic	**- 35**	**- 34**
Resultant Increase	**+ 851**	**+ 1084**

It can therefore be concluded that based upon the preliminary analysis of the PRUTS recommendations. if developed to its highest and best use, the site would result in traffic impacts some 50% greater than the Planning Proposal. (1695 for the UrbanGrowth proposal as opposed to 1118 for the Tiberius Planning proposal).

There is no certainty that RMS or Transport for NSW will support this level of additional traffic impact.

It has been demonstrated that the Planning Proposal can provide a traffic outcome (predicated upon the balance of employment and residential development) with manageable traffic impacts supported by well-considered transport solutions.

I trust the above is clear but should you require any else, do not hesitate to call.

Yours sincerely,

Ken Hollyoak
Executive Director

TRAFFIC PEER REVIEW LETTER, PREPARED BY SLR

30 October 2020

620.12646-L01-v1.1 TTPP Assumptions Peer Review 2020 10 30.docx

Tiberius (Holroyd) Pty Ltd
Suite 801
1 Castlereagh Street
Sydney NSW 2000

Attention: Huw Williams

Dear Huw

1 Crescent Street, Holroyd
TTPP Transport Impact Assessment Addendum
Assumptions Peer Review

Reference is made to your request to undertake a peer review of the assumptions informing the addendum traffic impact assessment recently prepared by TTPP to inform the planning proposal for a mixed-use development proposed to be located at 1 Crescent Street, Holroyd.

This letter has been prepared to formally document the outcomes of the completed peer review, which has considered the representativeness of the assumptions informing TTPP's recent assessment. A detailed peer review of the mechanics of the technical analysis has not been completed at this time.

Background Traffic Growth

The following observations in relation to the adopted traffic growth assumptions are made to assist road authorities in their review of the TTPP Addendum TIA:

- SLR considers that use of the STFM model to inform the traffic growth forecast is a generally sound approach, however SLR also considers that the resulting 20% forecast in this instance is quite aspirational. Specifically, it is unlikely that the broader network could accommodate such high growth in practice given the broader network constraints.
- It is instead expected that the growth in daily vehicle trips that eventuates over the forecasting period is likely to predominately occur during the off-peak and shoulder periods when the network has greater capacity to accommodate increased demands.
- Notwithstanding this, the adoption of a high growth rate by TTPP is conservative and therefore should provide road authorities confidence that a worst-case assessment has been completed.

Traffic Generation

The following observations in relation to the adopted traffic generation rates are made to assist road authorities in their review of the TTPP Addendum TIA:

- It is understood that the adopted residential traffic generation rate (0.29 trips/unit in both the AM and PM peaks) has previously been agreed with road authorities as being appropriate. Given the location of the site and the nature of the development, SLR also agrees that adoption of this residential traffic generation rate would be suitably representative subject to the final form of the development, in particular the ultimate parking provision.
- The adopted retail traffic generation rate (7.84 trips/100sq.m and 10.77 trips/100sq.m respectively in the AM and PM peaks) is also considered appropriate, if not conservative particularly in the AM period. The application of a 10% discount to the generic rate by TTPP to reflect the co-location of the proposed retail use within a mixed-use precinct including both complementary office and residential uses is considered appropriate. SLR considers that this discount is of a suitable scale to reflect that office workers employed in the precinct and residents residing in the precinct could readily fulfil a proportion of their retail needs within the precinct and hence would not need to travel off-site by motor vehicle.
- The adopted office traffic generation rate (1.6 trips/100sq.m and 1.2 trips/100sq.m respectively in the AM and PM peaks) is also considered appropriate, if not conservative subject to confirmation of the ultimate number of parking spaces associated with the office component. The application of a 5% discount to the generic rate by TTPP to reflect the co-location of the proposed office use within a mixed-use precinct which includes complementary retail and residential uses is considered appropriate.

Development Traffic Distribution

The following observations in relation to the adopted distribution of development traffic are made to assist road authorities in their review of the TTPP Addendum TIA:

- SLR considers that the use of Journey to Work data to inform the adopted residential trip distribution is likely to be representative.
- SLR considers that TTPP's adopted retail trade catchment does however potentially over-estimate the proportion of the retail trade likely to be drawn from the M4 motorway. SLR expects that the retail uses may have a more local catchment than that currently reflected within the TTPP modelling given the scale and convenience-based nature of the proposed retail offer. Consequently, SLR suspects that the traffic demands assumed to originate from or be destine for the M4 motorway may have potentially been over-estimated in the TTPP modelling.
- Such an approach should provide TfNSW confidence that the adopted assumptions reflect a worst-case assessment of the motorway.

Passer-by/Diverted Trips

The following observation in relation to the adopted proportion of passer-by/diverted trips is made to assist road authorities in their review of the TTPP Addendum TTIA:

- SLR considers that the values adopted for the percentage of passer-by/diverted trips informing the assessment are representative. Members of SLR's peer review team are familiar with the applicability of these values, having originally authored the associated research from which the Austroads values are drawn. It is noted that SLR has not checked the mechanics of how these trips have been coded within the micro-simulation model at this time, but superficially these trips appear to have been coded correctly by TTPP.

Summary

The outcomes of the peer review can be summarised as follows:

- The various input assumptions adopted by TTPP are generally considered representative if not conservative.
- The current assumption values should provide TfNSW confidence that the adopted assumptions reflect a worst-case assessment of the motorway
- SLR has not at this time reviewed the mechanics of the micro-simulation modelling completed by TTPP.

Should you have any queries in relation to the peer review please do not hesitate to contact me.

Yours sincerely

JEFFREY BACZYNSKI
Technical Director

URBIS