Meeting Date: **Tuesday 28 June 2022**
Location: **Council Chambers, Level 1A, 1 Pope Street, Ryde and Online**
Time: **6.00pm**

ATTACHMENTS FOR COUNCIL MEETING

Item **Page**

ITEM 7 (continued) **ATTACHMENT 1**

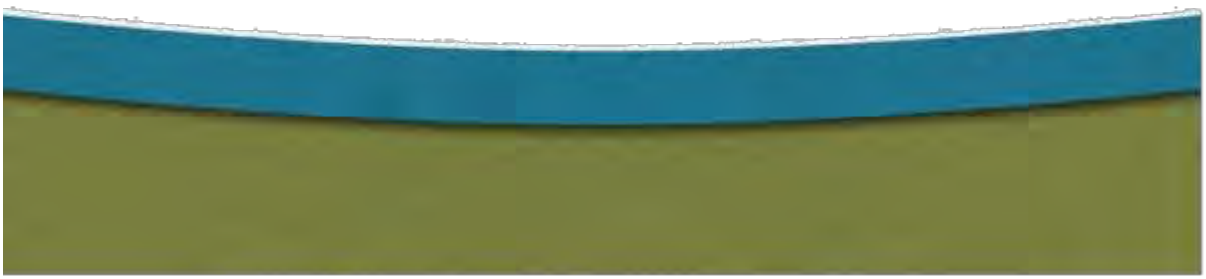
dfp
planning consultants

Planning Proposal

Amendment to Ryde Local Environmental Plan 2014 for Rezoning of Land from SP2 (Educational Establishment) to Part RE1 Public Recreation and Part C2 Environmental Conservation

22 Winbourne Street, West Ryde

Prepared for: School Infrastructure NSW
March 2022



ITEM 7 (continued) **ATTACHMENT 1**

Printed:	31 March 2022
File Name:	21295A Marsden High School/Reports/21295A_Planning Proposal_Marsden High School.docx
Project Manager:	N. Bartley
Client:	School Infrastructure NSW
Project Number:	21295A

Document Control

Version	Prepared By	Reviewed By	Issued To	Date
Draft	N. Bartley	S. Earp	SINSW	27 April 2021
Final	N. Bartley	S. Earp	SINSW	7 May 2021
Final V2	N. Bartley	S. Earp	SINSW + Council	21 May 2021
Final V3	N. Bartley	S. Earp	SINSW + Council	5 October 2021
Revised Final	N. Bartley	E. Robertshaw	SINSW	31 March 202231 March 2022

11 Dartford Road, Thornleigh NSW 2120
PO Box 230, Pennant Hills NSW 1715

P: 02 9980 6933
www.dfpplanning.com.au

DFP Planning Pty Limited
ACN 002 263 998

Contents

11 Dartford Road, Thornleigh NSW 2120
PO Box 230, Pennant Hills NSW 1715

P: 02 9980 6933
www.dfpplanning.com.au

DFP Planning Pty Limited
ACN 002 263 998

Contents

Tables

Contents

Figures

1 Introduction

1.1 Commission

DFP has been commissioned by School Infrastructure NSW (SINSW) on behalf of the Department of Education (DOE) to prepare this Planning Proposal for 22 Winbourne Street, West Ryde (the site). This Planning Proposal seeks to amend the 'land use zone' in Ryde City Local Environmental Plan 2014 as it currently applies to the site from SP2 Educational Establishment to part RE1 Public Recreation and part C2 Environmental Conservation.

1.2 Purpose of this Statement

The purpose of this report is to provide Council and the Department of Planning and Environment (DPE) with the necessary information to assess the Planning Proposal and for the Minister to make a Gateway Determination in accordance with section 3.34 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This Planning Proposal has been prepared in accordance with section 3.33 of the Environmental Planning & Assessment Act 1979 (EP&A Act), and 'A Guide to Preparing Planning Proposals' prepared by the NSW DPIE.

1.3 Supporting Documentation

This Revised Planning Proposal has been prepared by DFP based on the information listed below and a site inspection undertaken on 30 March 2021:

- Proposed Survey Plan prepared by LTS, dated 16 February 2021;
- Site Plan Lower prepared by COX Architecture, revision 2;
- Site Plan Upper prepared by COX Architecture, revision 2;
- Aboriginal Archaeological Due Diligence Assessment prepared by Comber Consultants, dated 29 January 2021;
- Acoustic Assessment prepared by Marshall Day Acoustics, dated 25 March 2021;
- Bushfire Opportunities and Constraints Assessment Report prepared by Abel Ecology, dated 1 March 2021;
- Transport Impact Assessment prepared by SCT Consulting, dated 25 March 2021;
- Response to Request for Information – Traffic, prepared by SCT Consulting, dated 20 September 2021;
- Transport Assessment Technical Advisory Note, prepared by SCT, dated 28 September 2021;
- Traffic Impact Assessment prepared by Bitzios, dated 30 March 2022
- Preliminary Heritage Report and Comparative Analysis prepared by Purcell, dated 15 April 2021;
- Preliminary Site (Contamination) Investigation prepared by Douglas Partners, dated December 2020;
- Detailed Site Investigation (Contamination) prepared by Douglas Partners, dated February 2021;
- Infrastructure Services Report prepared by WSP, dated 08.04.2021;
- Prescribed Ecological Actions Report (PEAR) prepared by Abel Ecology dated 16 April 2021;
- Flood Statement prepared by Henry & Hymas dated 01 April 2021; and
- Flood Study Report prepared by Quantum Engineers, dated 1 October 2021.

1 Introduction

1.4 Summary of Conclusions and Recommendations

This report concludes that the proposal to rezone the land from SP2 to RE1 and C2:

- is consistent with the Greater Sydney Regional Plan;
- is consistent with the North District Plan;
- is consistent with the Local Planning Strategies / Local Strategic Planning Statement; and
- is not inconsistent with relevant SEPPs and Section 9.1 Ministerial Directions.

Furthermore, the concept plan for the site demonstrates that environmental factors can be adequately addressed and subject to more detailed assessment at the DA stage.

Accordingly, we recommend that Council endorse this Planning Proposal and forward it to the Minister for Gateway Approval.

2 Background

2.1 Consultation Meetings

An online meeting was held with Council on 16 March 2021. Attendees and items discussed are outlined below.

Attendees:

- Dylan Govender – Council
- Naomi L'oste Brown – Council
- Nobel Haddad – SINSW
- Roman Pilch – SINSW
- Gina Gou - SINSW
- Stephen Earp - DFP Planning
- Natasha Bartley – DFP Planning

Introduction by DFP

1. The school will be closing at the end of Term 1, 2022;
2. Concept plans are being developed for potential future use of the site as a recreation facility (indoor and outdoor);
3. Works relate to Marsden High School site only, not Ermington Public School site;
4. A boundary adjustment is currently underway via exempt development to rectify an encroachment of Ermington Public School onto the Marsden High School site (this has since been completed);
5. The site has high value biodiversity in north-east corner;
6. A waterway is located in the north-east corner (open) then piped through site to the south-east corner; and
7. Preliminary investigations are underway regarding potential court numbers and supporting carparks.

Planning Proposal Discussions

- There are two (2) avenues to explore, being:
    - Recreational (indoor) and recreational (outdoor) via Schedule 1 additional permitted use; or
    - Rezone to RE1 Public Recreation (land would remain publicly owned).
- Council advised RE1 Public Recreation zone would be Council's preference and also queried whether a C2 Environmental Conservation zone had been considered for the high value biodiversity area.
- Council advised Minister may query why an additional permitted use is being sought when the RE1 zone suits the purpose of the proposed use.
- Council noted site could be rezoned back to SP2 zone if a school is proposed in future.
- SINSW queried whether a bus zone would be required by Council and whether this area could be utilised by netball facility (not purchased). Council advised they will investigate and respond separately.
- DFP provided key consultant reports for Council confirmation/ addition, including:
    - Survey;
    - LEP Draft Maps;
    - Flood Statement;

2 Background

- Ecology;
- Arborist Report;
- Traffic Impact Assessment;
- Contamination;
- Preliminary Site Investigation;
- Detailed Site Investigation;
- Remediation Action Plan;
- Aboriginal Due Diligence;
- Preliminary Acoustic Statement; and
- Infrastructure Service Report.

- Council advised the list looks to capture everything, however, will review in detail and advise if further reports are required;
- DFP queried the timing of DA lodgement after PP lodgement. Council advised preference is to wait for Gateway;
- SINSW discussed the option to demolish under Complying Development and separate DA for site remediation. Council agreed this was a good approach;
- DFP queried boundary adjustment and images/ Lot DP description of Planning Proposal and DA. DFP suggested using future boundary on images and consultant reports only referencing street address and not Lot/ DP. Council agreed to this approach, however advised that DA documents would require registration of lots and correct details;
- SINSW advised that all high biodiversity vegetation will be retained. Council advised Council may look at more appropriate zoning for high biodiversity value areas;
- Council suggested high level images in Planning Proposal only, not detailed images/ plans;
- Council suggested traffic and noise will be two main areas of concern to be addressed. Concept detail, keep basic but show key aspects (access, carparking, acoustic and external lighting); and
- SINSW advised the project is targeting a Green star 5 star for building.

Submission of Planning Proposal

The Planning Proposal was submitted to City of Ryde Council on 4 June 2021.

Request for Information

A request for information (RFI) was received from Council, dated 16 July 2021.

The RFI requested further information on traffic modelling and intersection modelling as well as compliance with Council DCP rates for car parking spaces and further information on flooding and overland flow.

In addition, Council further requested by email that the C2 zone be amended to reflect high value biodiversity boundary.

The above items have been addressed in this revised Planning Proposal report.

Request for Information

A second request for information was received from Council on 11 November 2021 which outlined a series of concerns regarding the traffic assessment assumptions as summarised below:

2 Background

- The information provided to date did not provide assurance about the level of traffic and parking impact resulting from the rezoning of the land.
- The impact of overflow parking resulting from the proposed facility is underestimated as the proposed parking rates provided are lower than the rates specified in the Development Control Plan - The traffic surveys that were supporting the traffic analysis were undertaken in February 2021 during Covid-19 restrictions and were shown to represent lower than usual traffic volumes when compared to SCATS data from 2019. The traffic surveys were not considered to be representative of typical traffic volumes.
- Further justification is required for the reduced traffic generation rate assumed during weekday PM peak period.
- Traffic generation in the previous assessment did not include the four indoor courts.
- Traffic modelling assumed upgrades to the layout of Victoria Road / Marsden Road intersection that will not necessarily be completed at the time of operation. The existing intersection layout should be used.
- It is unclear whether the current road and active transport infrastructure can support this land use.
- Additional measures should be considered to reduce reliance upon private vehicles (i.e., active and public transport).
- A revised TIA was prepared by Bitzios, which responds to the matters raised in Council's November RFI. There have been a number of discussions with Council's traffic engineers to confirm the assumptions to be applied with the TIA.

3 Site Context

3.1 Site Description

The site is located approximately 1.5km north-west of Meadowbank and 5km south-east of Macquarie Park. Vehicular and pedestrian access is currently via Winbourne Street and Brush Road. One (1) pedestrian refuge island is located on Winbourne Street just north of Farnell Street. Built form and the main car park area is located to the north-west of the site (**Figure 1**).

Figure 1 Site Location

The site is known as Marsden High School, 22 Winbourne Street, West Ryde. At the time of writing this report Marsden High School buildings and associated facilities currently occupy the site.

There is high value biodiversity vegetation on the north-eastern portion of the site and scattered trees/ cleared land to the remainder of the site (**Figure 2**). An open waterway exists to the north-east of the site, within the vegetated area, whereafter it is piped to the south-eastern corner of the site under Brush Road, after which it becomes an open watercourse (Archer Creek). The topography of the site falls from north/ north-west to south-east.

Figure 2 Site Context (with future boundary)

3 Site Context

Figure 3 Existing Bus Bay on Winbourne Street

Figure 4 Winbourne Street frontage

3 Site Context

Figure 5 Winbourne Street frontage

Figure 6 Existing Car Park adjacent to neighbouring properties to north of site

3 Site Context

Figure 7 Neighbouring fence to north of existing carpark

Figure 8 Piped waterway/ natural waterway – northern end

3 Site Context

Figure 9 Middle section of waterway

Figure 10 Middle section of waterway

3 Site Context

Figure 11 Southern end of open water course/ start of piped section to Maze Park

Figure 12 High value biodiversity area

3 Site Context

Figure 13 High value biodiversity area

Figure 14 Existing flood basin area to south-east of site

3 Site Context

Figure 15 Existing flood basin to south-east of site/ secondary parking

Figure 16 Sport field

3 Site Context

Figure 17 Existing built form

Figure 18 Existing built form

3 Site Context

Figure 19 Entry from Brush Road

3.2 Surrounding Development

The site is located in West Ryde, approximately 6km north-east of Parramatta and 4km north-west of Ryde. West Ryde is a developed area with little greenfield development opportunities.

Ermington Public School (SP2 Educational Establishment) is located immediately south of the site. Low density residential properties surround the site to the north, east and west (R2 Low Density Residential). Maze Park (RE1 Public Recreation) is located south-east of the site.

There are two (2) local heritage listed items within vicinity of the site, being the former School residence/ 1988 Ermington School Building and Maze Park.

3 Site Context

Figure 20 Neighbouring property to south on Winbourne Street

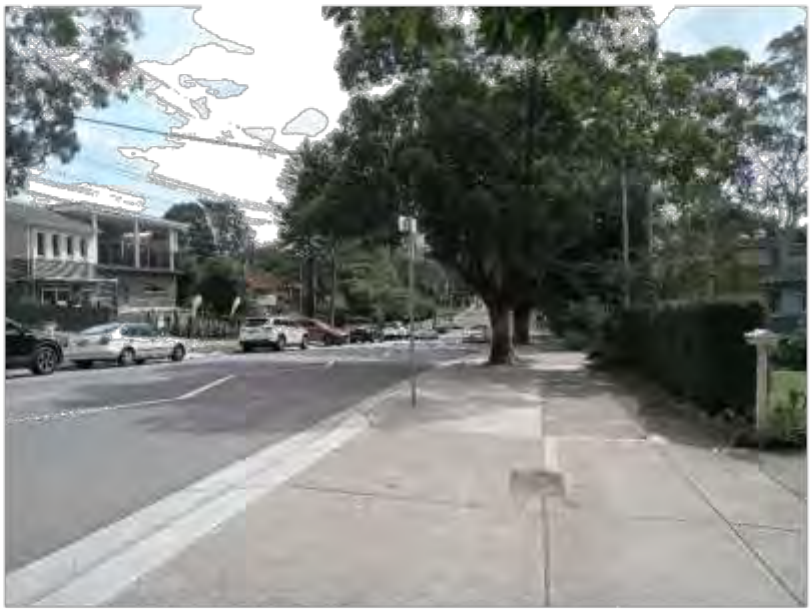


Figure 21 Winbourne Street looking north

3 Site Context

Figure 22 Brush Road looking south

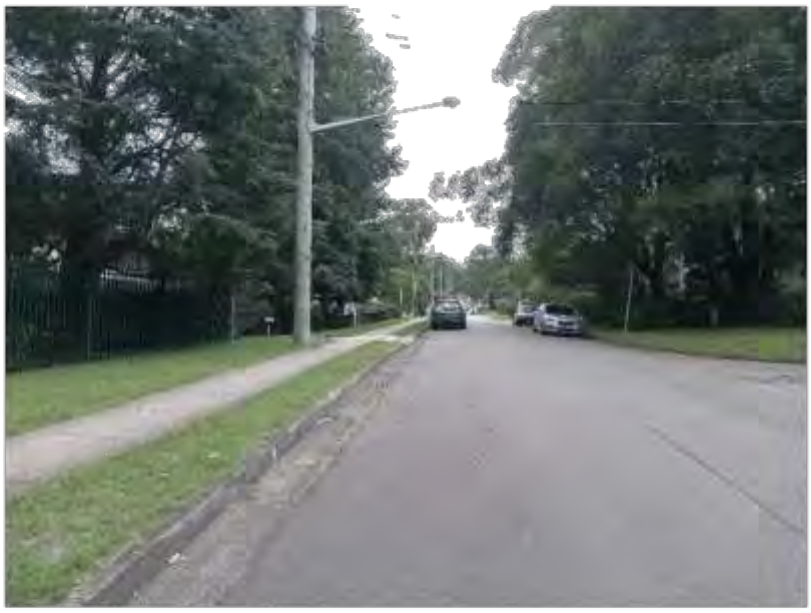


Figure 23 Brush Road looking north

3 Site Context

Figure 24 Adjacent properties Brush Road

4 Potential Development

4.1 Planning Proposal

The Planning Proposal includes:

- Rezoning part of the site to RE1 Public Recreation to provide for land suitable for proposed future use as recreational (indoor/ outdoor and associated uses);
- Rezoning part that part of the site identifies as having high value biodiversity to C2 Environmental Conservation to protect and enhance the ecological values of the this part of the site;
- Vehicular access via Winbourne Street;
- Amendment of Ryde Local Environmental Plan 2014 land zoning map.

The key development statistics of the site and the Planning Proposal are detailed in **Table 1**.

Table 1 Summary of Planning Proposal

Site Area	5.482ha
Proposed zones	Part RE1 Public Recreation and Part C2 Environmental Conservation
Intended future use	Netball Facility with indoor and outdoor courts, including parking and associated uses/ and ancillary works. Retention of high value biodiversity land
High Value Biodiversity	Approximately 9,100m² in the north-east corner. To be retained.
Proposed areas	RE1 zone – 4.5712ha C2 zone – 9,100m²

The following subsections provide a more detailed description of the concept proposal.

4.2 Concept Plan

It is intended to rezone part of the site RE1 to facilitate future use of the site for the purposes of a recreation facility. Recreation facilities are prohibited in the SP2 (educational Establishment) zone that currently applies to the site.

The future proposed use of the site upon rezoning to RE1 is for a recreational facility comprising 32 outdoor netball courts and an indoor facility which comprises 4 courts and ancillary uses. A DA will be lodged for the future use of the site for this purpose.

The existing school will be demolished. The current school will be relocated to Meadowbank Education Precinct.

The existing netball facilities (28 Courts) located in Meadowbank Park are proposed to be relocated to the subject site. The new facility will continue to be located within the Ryde LGA and would provide an additional eight (8) courts.

The intent behind seeking an C2 Environmental Conservation zone is to protect and enhance the high value biodiversity land identified in the north-eastern corner of the site.

The Concept Plan showing future potential development of the site has been prepared by COX Architecture and is depicted at **Figure 25**.

4 Potential Development

Figure 25 Proposed concept plan (Cox Architecture)

4.3 Biodiversity and Ecology

Abel Ecology has undertaken a Flora and Fauna Due Diligence and has prepared a Prescribed Ecological Actions Report (PEAR) for the proposal regarding existing vegetation on the site. **Figure 26** shows the areas of the site mapped and identified on site as having high biodiversity values. No works are being proposed within the area with high biodiversity values. Tree protection zones, including protection for structural root zones, will be identified for any future works.

4 Potential Development

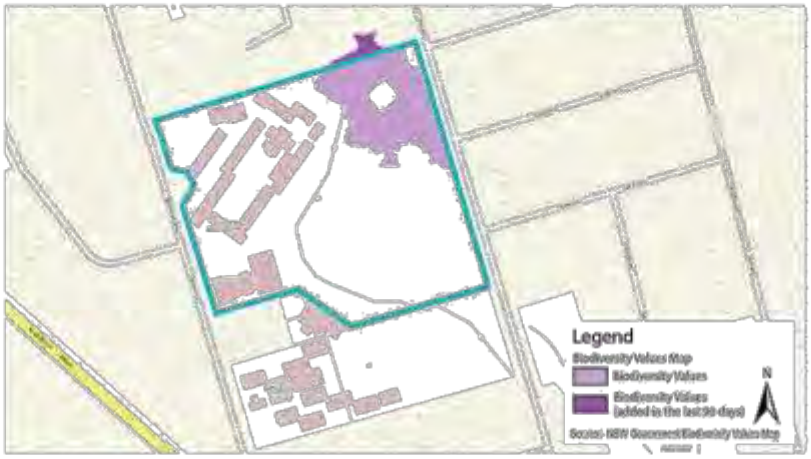


Figure 26 Biodiversity Values Map

4.4 Traffic and Parking

Following the initial submission of information and Council's subsequent feedback, a revised traffic and parking assessment has been prepared to address the matters raised by Council.

Vehicular access to the site is via Winbourne Street. There is sufficient space on the site to provide parking spaces for future development. On-street parking is located along the eastern side of Winbourne Street (along the frontage of the site) and the western side of Brush Road (along the site boundary and the boundary of Ermington Public School).

A pedestrian crossing is located on Winbourne Street, between Farnell Street and the existing bus/ drop off area to the existing school.

A Traffic Impact Assessment and Technical Advisory Note were prepared by STC Consultants in relation to the planning proposal and intended future use of the site.

The Technical Advisory Note addressed traffic modelling, background traffic growth and the Melrose Park Development, traffic generation from the future intended use of the site, and intersection performance. Modelling was undertaken on base and future year scenarios.

In addition to the Traffic Impact Assessment prepared by SCT, a further Traffic Impact Assessment was prepared by Bitzios to review similar facilities and respond to the matters raised in Council's RFI dated 11 November 2021.

The key findings of the Traffic Impact Assessment for the proposal are as follows:

- *The proposal includes rezone the subject site from SP2 Educational Establishments to RE1 Recreation. The proposal has the potential to include sports facility uses including up to 32 outdoor netball courts, 4 indoor multi sports courts and an ancillary gym.*
- *The existing high school will be demolished, resulting in a decrease in traffic and parking demand to the surrounding road network during typical school peak operating times on weekdays. Preliminary traffic analysis has been undertaken on the surrounding road network to respond to Council's concerns regarding its ability to accommodate the proposal. It is important to note that following the Planning Proposal, a separate Development Application and further Traffic Impact Assessment Report will be prepared*
- *The subject site is well supported by public and active transport facilities and strategically located near established residential areas of Denistone West, Eastwood and West Ryde as well as new residential growth suburbs of Melrose Park.*

4 Potential Development

- *Planned improvements to the public transport system along Victoria Road along with Council's cycleway rollout will further enhance the walk, cycle and public transport facilities to support the proposal*
- *Immediately surrounding the site, some pathways and crossings within the established residential areas to the east of the site incorporate some 'missing links'. Therefore, as part of the future development application it is recommended to investigate with Council the opportunity to address and improve pathways and crossing facilities connecting to the site*
- *A review of similar operating facilities has been undertaken to derive the expected practical operating scale and frequency for the purpose of traffic generation and to identify what transport measures are required to support the proposal. It is appropriate to consider the day-to-day transport operations of the facility be addressed while also considering the traffic capacity limitations and context of the surrounding road network. The use of the site for larger more infrequent events would however be subject to additional event management planning, travel demand management, and other mitigation measures to ensure that the impacts are appropriately managed, but permanent infrastructure is proportionate to the site operations and also economically viable.*
- *While Council's Development Control Plan does include a parking rate for Recreation Facilities (outdoor) at a rate of 3 spaces per court, this parking rate has been acknowledged by Council as not representative to meeting the practical demands for the proposal and specifically netball courts. Therefore in response to Council's position, benchmarking of parking rates at similar sites was undertaken to determine a practical parking rate that has been applied by both Council and also other jurisdictions. Based on the review of the similar netball facilities and considering the sites established transport facilities and road network operations, a parking provision of approximately 256 car parking spaces (8 spaces per outdoor court). is considered appropriate for the proposal and consistent with the operation of similar facilities throughout regional New South Wales and metropolitan Sydney. This parking provision would look to maximises the onsite parking to reduce impacts to the surrounding residents, while also managing the overall private vehicle trip generation accessing the site via Winbourne Street.*
- *Given the application relates to the Planning Proposal phase of the project, detailed parking layouts and associated internal transport components of the design are not yet defined. Therefore, the detailed transport components, parking areas as well as any external traffic works would be subject to further traffic impact assessment as part of the development application stage.*
- *The development of a Green Travel Plan (GTP) to support the site and its operations would be expected to be conditioned following the development application stage. The GTP would outline strategies to reduce the dependency on private vehicles and encourages travel mode behaviour change towards more sustainable travel options such as cycling, walking, carpooling and public transport.*
- *The primary vehicular access is proposed to be via Winbourne Street, which remains consistent with the current high school site operations. A review of the traffic impacts associated with the proposal demonstrates that irrespective of the proposal, Winbourne Street / Marsden Road intersection is impacted by peak period queueing back from Victoria Road to the south. Line marking and signage works were undertaken in 2017 to help formalise peak period traffic movements and manage queuing. The operations of this intersection and surrounding road network are shown within survey data to manipulate traffic distribution and discourage right turn movements out of Winbourne Street. Specifically, only 13% of trips exiting Winbourne Street turn right onto Marsden Road, while 87% exit left onto Marsden towards Victoria Road. This is an important factor for assessing the proposals likely traffic impacts to this intersection. When considering the road network operations and traffic generated by the proposal at this intersection, the road*

4 Potential Development

network will continue to operate in a similar manner with the inclusion of the proposal. Traffic modelling demonstrates that during both weekday peak period and weekend peak period operations of the Marsden Road / Winbourne Street intersection do not significantly worsen to a level that warrants additional mitigation measures to be imposed.

- *The surrounding road network includes a combination of major road corridors including Victoria Road and Marsden Road. These roads and intersections experience major traffic volumes during peak periods and are expected to see traffic growth and congestion in future years. Notwithstanding the above, planned infrastructure works by both Council and TfNSW in the area are focussed towards public transport and active transport infrastructure over conventional road capacity upgrades.*
- *Given the site layout and frontage to Brush Road, it is likely that some parking and traffic will seek to access the site from the east via Brush Road. It is therefore recommended that mitigation measures be implemented on the surrounding streets and as part of operational planning for the facility. These measures may include but not limited to:*
  - *Additional line marking and regulatory signage is installed to formalise parallel parking bays on Brush Road, maintain two-way traffic flow and ensure residents' driveways are not obstructed by visitors parking on street*
  - *The facility's Transport Access Guide (TAG), Green Travel Plan (GTP) and any Event Traffic Management Plans should clearly outline designated parking areas within the facility along with any temporary off-site parking arrangements and alternates transport modes.*

In view of these assessments, it is considered that the traffic, parking and transport impacts of the proposal can be appropriately managed to accommodate the proposed use that will be able to be developed following rezoning of the site. Detailed aspects of the site layout, traffic and associated transport infrastructure inclusions will be assessed and determined through a detailed Traffic Impact Assessment which will accompany the Development Application.

4.5 Stormwater and Flooding

Following the initial submission of information and Council's subsequent feedback, the following revised overland flow 'flood' assessment addresses the matters raised by Council following their initial assessment of the Planning Proposal.

Quantum Engineers has prepared an Overland Flow Flood Assessment (Synopsis) for the site, which analyses the local overland flooding in response to Council's comments. Hydraulic modelling was undertaken for both the pre and post development scenarios.

Overland flooding from the upstream catchment affects the site. Overland flooding enters and traverses the site mainly from the northern boundary via the upstream properties and western boundary (from Winbourne Street). The overland flow is then conveyed via a contained gully through the site before exiting onto Brush Road.

'TUFLOW' modelling was prepared using Council's 'TUFLOW' model for existing conditions and the civil site grading terrain prepared by Henry & Hymas to assess the impact of the proposed future development. The 'TUFLOW modelling was carried out to determine the flood behaviour within the catchment area and was deemed satisfactory to define the flood extent through the developed areas in the vicinity of the site. In ground stormwater drainage, pits and pipes located within the study area were incorporated into the 'TUFLOW model, with a 50% blockage to the in-ground drainage system.

Grass swales to be provided as part of the future redevelopment of the site will capture and drain the majority of the upstream overland flow to the proposed bioretention system. In addition, except for the lower terrace Netball Courts immediately adjacent Brush Road, all

4 Potential Development

other Netball Courts are positioned within Low Hazard Category and are not impacted by flood water.

The south-western corner of the site will be exposed to High Hazard during the 1% AEP and PMF storm events. During a PMF storm event, there will be sufficient time to evacuate this part of the site to higher ground.

A two-dimensional hydraulic model ('TUFLOW') was constructed for this study which modelled the overland flow from the local upstream catchment with a cell size of 3m x 3m (entire model). The 'TUFLOW' model was undertaken to simulate the overland flood contributing the subject site. The flood model was obtained from City of Ryde Council to ensure consistency with Councils Overland Flood Study (Parramatta River Ryde Sub Catchments).

The report concludes:

- *Utilising the 2D 'TUFLOW' hydraulic model, the flood behaviour during 1% AEP (100YR ARI) & PMF storm events was determined. The flood water depth, flood levels, provisional hydraulic hazard and velocities generated by the 'TUFLOW' model were assessed in this study. Our assessment has revealed 'negligible' increase in off-site floodwater depth from pre to post development scenarios.*
- *It is note that the proposed building is not directly impacted by both the 1%AEP and PMF flood extent*
- *Flood Warning System & Flood Warning Signage to be installed in an appropriate location to inform occupants of the danger of imminent flooding;*
- *The proposed Grass Swell along the southern boundary and northern boundary has been designed to collect & direct significant overland flow runoff from the impeding major storm events. The Grass Swell will be enclosed by open style fencing to restrict access to such areas affected by hazardous overland flows.*
- *Any boundary fence/wall over the estimated flood extent must be replaced with open type in order to allow unimpeded passage of overland floodwater.*
- *All Proposed Netball Courts are in Low Flood Risk Precinct except for the lower terrace Netball Courts which is within the High Hazard Category precinct as shown in Appendix A Figure A.3 and Figure A.7. Evacuation Access is available to higher ground on the subject site or to safe locations along Brush Road. Provided the evacuation route is less than 5minutes, these areas will not post any significant risk to future users. To alert users to an impeding flood event, a 'warning system' is to be installed which will sound an audible and visual alarm.*
- *A 'Flood Impact Assessment' was also undertaken to determine the impact of the proposed development on the behaviour of 1% AEP floodwaters. The off-site flood water level increase is contained within Council's road infrastructure along Brush Road which is able to satisfactorily convey major overland flow runoff. Most importantly, there is no significant impact to any upstream and downstream private properties*

Given the Planning Proposal relates to the rezoning of the site from SP2 Educational Establishment to Part RE1 Public Recreation and Part C2 Environmental Conservation, Quantum Engineering is of the view that this rezoning will reduce the overall population density of that land and will reduce flood liability of the property. Additionally, any future Development Applications will include a flood study will incorporating evacuation strategies and mitigation measures to address the potential flood risk to future users.

Although the modelling was prepared on a previous concept, the intent of modelling is to ascertain whether overland flow for post development on the site can meet the same targets as existing. Further modelling will be undertaken as part of a future DA once a detailed design for the development has been completed.

4 Potential Development

4.6 Acoustic

Marshall Day Acoustics has prepared an acoustic report to compare the acoustic characteristics of existing uses and associated uses with the proposed land use change.

Two (2) unattended noise loggers were used to measure background levels. The results of the measured noise level were considered to be typical for a suburban area.

The existence and operation of Marsden High School over the past 50 years means the noise amenity and characteristics associated with the school are an integral part of the noise environment at the surrounding residential receivers.

Review of the acoustic amenity and characteristics associated with an RE1 Public Recreation land use zone indicates that noise emissions from the development types permitted in an RE1 zone are likely to range in magnitude from quieter passive uses to more active uses such as sporting facilities.

Whilst activities permitted under the existing and proposed zones may differ, passive use of the site is likely to be compatible with the adjacent land uses.

Active use of the site based on the proposed zone is not expected to introduce any new significant noise source types; however, the report does provide acoustic considerations for active recreation, being:

- Primary noise control measures may be implemented through activity management or via physical noise controls; and
- For indoor facilities, the performance of the building façade may need to be considered as well as the emissions from external mechanical services.

The acoustic reports notes that the current and proposed future use:

> *"...feature sporting activities likely to comprise calls, shouts, whistles and elevated instruction. Buildings associated with both uses may feature internal amplified music and external mechanical services. Patrons/students are a feature of both uses. Noise from traffic and car park activities is also commo'.*
>
> *Acoustic differences may arise however when the timing of activities is considered, as public recreation activities may be expected to occur more prevalently during the evening and weekends than occurs for education facilities. The implementation of noise control measures such as physical noise controls and management processes may assist in ameliorating impacts".*

The Acoustic Report recommends further assessment of potential noise impacts at the future DA stage.

4.7 Heritage

Purcell has prepared a Preliminary Heritage report and Comparative Analysis for the site. The existing school is not listed on the NSW State Heritage Register, DoE's S170 register or Schedule 5 of Ryde LEP.

Two (2) locally significant heritage items are located proximate to the site (**Figure 27**), being:

- Former School Residence and 1887 Ermington School Building (12 Winbourne Street) – Item no 174; and
- Maze Park (100-108 Brush Road) – Item no 388.

The proposed rezoning of the site will not impact on these nearby heritage items.

Archival photographic recording of the existing school building is recommended prior to demolition.

4 Potential Development

Figure 27 Heritage Map

4.8 Geotechnical and Contamination (DSI)

Douglas Partners has undertaken a Detailed Site investigation (DSI) of the site. The site history information suggests that the site has been owned by the NSW Government and has been used as a school since at least the 1960s. Prior to becoming a school, the site appeared to have been vacant since at least the 1930s and it is unknown what the site may have been used for prior to this, although review of historical aerial imagery indicates the site may have been used for agricultural purposes.

Based on the outcomes of the DSI it is considered that the risk of significant or widespread contamination at the site is low to moderate, given the risk of asbestos on the ground or in the fill, other potential contaminants in the fill and some possible low-level application of herbicides and pesticides at the site.

In order to confirm that the site is suitable or can be made suitable for the proposed development (as required under SEPP (Resilience and Hazards 2021), Douglas Partners has recommended that an intrusive investigation is undertaken. The intrusive works would include a soil and groundwater assessment and depending on the proposed development design, a preliminary waste classification. Given the intrusive investigation is proposed to be undertaken prior to demolition of the buildings on site, a limited sampling program was recommended with additional sampling to be undertaken following demolition to assess the areas within the footprints of the buildings. An updated hazardous material building survey is also recommended for the site prior to renovation or demolition works.

4.9 Aboriginal Cultural Heritage

An Aboriginal Due Diligence was prepared by Comber Consultants. The report indicates that there is potential the site may contain subsurface Aboriginal objects.

As Aboriginal objects and sites may be located proximate to first order streams Comber Consultants has recommended that Archer Creek and the surrounding biodiversity land be retained as a conservation zone.

4 Potential Development

Figure 28 Recommended conservation zone (Comber Consulting)

An AHIMS search was undertaken, however as only a small number of assessments have been undertaken proximate to the site, only a few sites have been recorded, none of which were within the subject site.

4.10 Infrastructure Services

An Infrastructure Services report has been prepared by WSP which identifies services currently connected to the site. The power supply to the current site is serviced from Ausgrid substation S3276 located in Winbourne Street. The substation is a shared substation providing power to the school and other customers in the area.

Telstra has underground telecommunication assets located surrounding the site. NBN service is currently available to the site. The site is unencumbered of utility water mains and the site appears to be suitably serviced in its existing form. The existing Sydney Water' water mains infrastructure consists of water mains routed the entire length of the site in both Winbourne and Brush Streets.

The site has access to two Sydney Water assets:

- Winbourne Street – 100mm water service; and
- Brush Street – 100mm water service.

The site is encumbered by sewer mains traversing the eastern and southern boundaries and the site appears to be suitably serviced by the existing Sydney Water sewer mains infrastructure with an existing sewer junction connection located in the south-eastern corner being the low point of the site.

The site is encumbered by the following assets:

- Eastern boundary – 225mm VC sewer main falling towards the south along the watercourse alignment; and
- Southern Boundary – 225mm VC sewer main falling from west to east along the existing embankment.

4 Potential Development

The site is proximate to Jemena natural gas mains.

Based on these initial assessments, it is considered that the site is suitable for future use for the recreational purposes and subject to more detailed assessment at DA stage

5 Matters required by section 3.33 of the EP&A Act

5.1 Introduction

Section 3.33 of the EP&A Act relates to Planning Proposals and specifically, the matters that are to be addressed in a Planning Proposal. Specifically, section 3.33 states:

> *"(1) Before an environmental planning instrument is made under this Division, the planning proposal authority is required to prepare a document that explains the intended effect of the proposed instrument and sets out the justification for making the proposed instrument (the planning proposal).*
>
> *(2) The planning proposal is to include the following:*
>
> *(a) a statement of the objectives or intended outcomes of the proposed instrument,*
>
> *(b) an explanation of the provisions that are to be included in the proposed instrument,*
>
> *(c) the justification for those objectives, outcomes and provisions and the process for their implementation (including whether the proposed instrument will give effect to the local strategic planning statement of the council of the area and will comply with relevant directions under section 9.1),*
>
> *(d) if maps are to be adopted by the proposed instrument, such as maps for proposed land use zones; heritage areas; flood prone land—a version of the maps containing sufficient detail to indicate the substantive effect of the proposed instrument,*
>
> *(e) details of the community consultation that is to be undertaken before consideration is given to the making of the proposed instrument.*
>
> *(3) The Director-General may issue requirements with respect to the preparation of a planning proposal."*

The following subsections of this Planning Proposal address the requirements of section 3.33 of the EP&A Act.

5.2 Part 1 - Objectives or Intended Outcomes (section 3.33(2)(a))

5.2.1 Objectives and Outcomes

The intended objective or outcome of this Planning Proposal is:

- To rezone the site which is currently zoned SP2 Educational Establishment to part RE1 Public Recreation zone to accommodate future recreation land (and ancillary development) and open space and part C2 Environmental Conservation to protect and enhance high value biodiversity land located on the site.
- Retain current drainage storage areas on the site.
- Enhance the landscaping on the site.

5.3 Part 2 - Explanation of Provisions (section 3.33(2)(b))

5.3.1 Proposed Permissibility

The proposed outcome will be achieved through the amendments to Ryde Local Environmental Plan 2014 as outlined in **Table 2** below. Proposed Maps are also shown in **Section 5.8** of this report.

Table 2 Proposed Land Zone

Property Address	Current zoning	Proposed zoning
22 Winbourne Street, West Ryde (1 / 220808) – Note the site is currently undergoing a boundary adjustment and the Lot/ DP will change)	SP2 Educational Establishments	Part RE1 Public Recreation Part C2 Environmental Conservation

5 Matters Required by section 3.33 of the EP&A Act

5.4 Part 3 – Justification (section 3.33(2)(c))

5.4.1 Section A – Need for the Planning Proposal

5.4.1.1 Question 1 – Is the planning proposal a result of any strategic study or report?

The proposal has been prepared in response to the Ryde Local Strategic Planning Statement 2020 to *'protect, increase and enhance open space and recreation facilities to ensure residents of all ages, backgrounds and abilities can benefit'*.

5.4.1.2 Question 2 – Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

Rezoning the site is the best option to achieve redevelopment of the site for the purposes of a recreation facility. The Planning Proposal will achieve conservation of high value biodiversity areas and will provide additional recreational land for public use. The proposal is consistent with the Ryde Local Environmental Plan objectives of the RE1 Public Recreation zone and C2 Environmental Conservation zone as discussed in the **Table 3** and **4** below:

Table 3 The proposal's consistency with RLEP 2014 objectives for the RE1 zone

Objective	Comment
To enable land to be used for public open space or recreational purposes.	The concept proposal for the site is for recreational purposes, being indoor and outdoor netball courts with associated facilities.
To provide a range of recreational settings and activities and compatible land uses.	The provision of RE1 land is compatible with Maze Park which is located to the south-east of the site. Additional RE1 land offers future recreational facility opportunities for Ryde residents. The future use of the site for recreational purposes is not incompatible with the surrounding residential area.
To protect and enhance the natural environment for recreational purposes.	The concept design protects the high value biodiversity area on the north-eastern portion of the site

Table 4 The proposal's consistency with RLEP 2014 objectives for the C2 zone

Objective	Comment
To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.	The high value biodiversity land to the north-east of the site will be protected. No development is proposed in this area as part of the concept plan.
To prevent development that could destroy, damage or otherwise have an adverse effect on those values.	C2 zone prohibits land uses with the exception of Environmental Protection works, Environmental facilities, and Oyster aquaculture. The C2 zone would ensure no future development is undertaken on the high value biodiversity land.

5.5 Section B – Relationship to Strategic Planning Framework

5.5.1 Question 3 – Is the planning proposal consistent with the objectives and actions of the applicable regional or sub-regional strategy (including the Sydney Metropolitan Strategy and exhibited draft strategies)?

Greater Sydney Region Plan - A Metropolis of Three Cities

Whilst the subject site is not specifically identified in the GSRP, it is located within the area to which the Plan applies, and as such the objectives of the GSRP have been considered.

Table 5 demonstrates the consistency of the Planning Proposal in relation to the relevant provisions of the Regional Plan.

5 Matters Required by section 3.33 of the EP&A Act

Table 5 Greater Sydney Region Plan – A Metropolis of Three Cities	
A city supported by infrastructure	
Action	**Consistency**
Objective 3 Infrastructure adapts to meet future needs	Water, sewer, electricity, telecommunications and NBN are currently connected to the site. These services will remain available for future use of the site, although consultation with authorities may need to be undertaken as part of a future DA stage should an increase or re-alignment of any of these services be required.
A collaborative city – N/A	
A city for people	
Objective 6 Services and infrastructure meet communities' changing needs	Rezoning the site to part RE1 will service the community's needs to replace much needed social infrastructure within the local and surrounding areas.
Objective 7 Communities are healthy, resilient, and socially connected	Rezoning of the site to RE1 Public Recreation encourages a socially connected community by facilitating the provision of future recreational facilities.
Housing the city – N/A	
A city of great places	
Objective 11 Great places that bring people together	Provision of future recreational land provides opportunity to bring people together in a social setting.
Objective 13 Environmental heritage is identified, conserved and enhanced	There are no heritage items or conservation areas on the site. There are two local heritage listed items within vicinity of the site, being the former School residence/ 1988 Ermington School Building and Maze Park.
A well-connected city – N/A	
Jobs and skills for the city – N/A	
A city in its landscape	
Objective 25 The coast and waterways are protected and healthier	The natural waterway on the north-eastern part of the site will be retained in its natural form as part of the proposed C2 Environmental Conservation land. A Vegetation Management Plan can be prepared at later DA stage to protect the proposed C2 zoned land
Objective 27 Biodiversity is protected, urban bushland and remnant vegetation is enhanced	The high value biodiversity land on the north-eastern part of the site will be protected. No development is proposed in this area as part of the concept plan.
Objective 30 Urban tree canopy cover is increased	Conservation and rehabilitation of the high value biodiversity area on the north-eastern part of the site will increase the canopy cover over the proposed C2 Environmental Conservation zoned land.
Objective 31 Public open space is accessible, protected and enhanced	The site is accessible from Winbourne Street and Brush Road. Zoning of the land to RE1 Public Recreation will facilitate use by the wider community for recreational activities. Zoning the area of high value biodiversity to C2 Environmental Conservation will protect and enhance the biodiversity on the site.
An Efficient City	
Objective 33 A low-carbon city contributes to net-zero emissions by 2050 and mitigates climate change	Sustainability initiatives will be implemented in the detailed design of future development of the site.
Objective 34 Energy and water flows are captured, used and re-used	There is opportunity in detailed design to incorporate rainwater reuse for landscaping irrigation purposes.

5 Matters Required by section 3.33 of the EP&A Act

Table 5 Greater Sydney Region Plan – A Metropolis of Three Cities	
A city supported by infrastructure	
Action	**Consistency**
A resilient city – N/A	

North District Plan

The North District Plan (NDP 2018) sets out the planning priorities and actions for improving the quality of life for residents in Greater Sydney's North District. The local government area of the City of Ryde is located with the North District area. The NDP provides the means by which the Greater Sydney Region Plan can be implemented at a local level, by setting out the opportunities, priorities and actions for the growth and development of the North District.

This Planning Proposal supports the following NDP Planning Priorities in providing services and social infrastructure, socially connected communities and protecting and enhancing bushland and biodiversity.

Planning Priority N3 – "Providing services and social infrastructure to meet people's changing needs". THE NDP states that "Growth increases demand on existing services and infrastructure, including sport and recreation facilities that are, in some cases, at or nearing capacity" (NDP, p26).

This planning proposal will provide additional recreational land within the City of Ryde LGA and is considered to be consistent with Planning Priority N3.

Planning Priority N4 – "Fostering healthy, creative, culturally rich and socially connected communities". The NDP states that "Connectivity of, and access to, diverse open spaces and opportunities for recreational physical activity are also essential to improved mental and physical health outcomes. Sport and active lifestyles provide many social, cultural and health benefits. The Office of Sport is working in collaboration with key partners, including councils, to develop a Sport and Recreation Participation Strategy and a Sport and Recreation Facility Plan for each district during 2018 and 2019. The plans will include local and regional sport facilities, that provide a strong foundation for participation in sport and active recreation" (NDP p31).

The accompanying Concept Plan to this Planning Proposal identifies the intended future use of the site for recreational purposes, being indoor and outdoor netball courts with associated facilities. The intended future use of the site will contribute to improving the social connectivity of the community.

Planning Priority N16 – "Protecting and enhancing bushland and biodiversity". The NDP states "For the North District, conservation planning will focus on opportunities to protect and enhance areas of endangered and critically endangered ecological communities outside the Protected Natural Area, including areas of native vegetation close to existing national parks" (NDP, p102).

This Planning Proposal includes a C2 Environmental Management zone over the high value biodiversity land on the north-east corner of the site. It is considered the proposed C2 zone is consistent with Planning Priority N16 to "protect and enhance".

5 Matters Required by section 3.33 of the EP&A Act

5.5.2 Question 4 – Is the planning proposal consistent with a council's local strategy or other local strategic plan?

Ryde Local Strategic Planning Statement 2020

The Ryde LSPS is dated March 2020. The LSPS references a number of strategic plans and documents including the Draft West Ryde Urban Revitalisation Strategy and the North District Plan.

The LSPS contains a vision in relation to open space and recreation, being 'The City of Ryde's open space and recreation facilities will be protected, increased and enhanced to ensure residents of all ages, backgrounds and abilities can benefit'.

This Planning Proposal responds to the broad vision expressed in the LSPS by providing a recreation zone over part of the site, for future development for indoor and outdoor recreational purposes, whilst protecting the area of high value biodiversity to the north-east corner.

5.5.3 Question 5 – Is the planning proposal consistent with applicable State Environmental Planning Policies?

A checklist of all SEPPs is provided in **Appendix 1** which identifies which SEPPs are relevant to this Planning Proposal. The relevant SEPPs are discussed in turn below

NSW State and Premiers Priorities

The Premier's priorities represent the Government's commitment to making a significant difference to enhance the quality of life of the people of NSW. The following priorities apply to this proposal.

Greener Public Places

This priority aims to *increase the proportion of homes in urban areas within 10 minutes' walk of quality green, open and public space by 10% by 2023.*

Green open and public spaces include sports fields. Public spaces are considered to support health and wellbeing as well as environmental resilience.

The proposal responds to this priority through the inclusion of landscaping throughout the proposed concept plan and the retention of high value biodiversity on the site.

Greening our city

This priority aims to *increase the tree canopy and green cover across Greater Sydney by planting 1 million trees by 2022.*

> *Trees play an important role in creating great places for our communities, enhancing outdoor recreation and exercise opportunities and making the places we live and work greener, cooler and more connected. Green canopy enhances the amenity of local parks and streets and is crucial in providing vital shade that reduces ambient temperatures and mitigates the urban heat island effect.*
>
> *Trees improve local character and enhance property values. They extend habitat, increasing the biodiversity of cities serving as a home for animals and birds. Air quality is improved by removing fine particles from the air and trees mitigate the impact of climate change, acting as a storehouse for carbon dioxide.*

This proposal responds to this priority though a net increase in the number of trees over the site.

Environmental Protection and Biodiversity Conservation Act 199 (EPBC Act)

Part 3 Division 1 Subdivision C of the EPBC Act provides, amongst other things, that a person must not take an action that has, will have or is likely to have a significant impact on:

5 Matters Required by section 3.33 of the EP&A Act

- a listed threatened species included in the extinct in the wild, critically endangered, endangered or vulnerable categories; or
- a listed threatened ecological community included in the critically endangered or endangered categories.

Unless a *'controlled action'* approval has been granted under Part 9 Section 133 of the EPBC Act. The Commonwealth Minister for the Environment and Energy is responsible for the decision on such an approval.

The proposal includes some clearing of planted native and exotic vegetation. The vegetation to be cleared in on that part of the site which is proposed to be developed which is not mapped on the NSW Government Biodiversity Values Map.

NSW Department of Planning, Infrastructure and Environment (DPIE)

Heritage Act 1977

The *Heritage Act 1977* contains provisions relating to the protection of items of State heritage significance or items of potential significance.

No items or places of heritage significance are listed as being located on the site. Refer to Preliminary Heritage Report and Comparative Analysis prepared by Purcell.

National Parks and Wildlife Act 1974 (NPW Act)

The NPW Act contains provisions relating to the protection of native terrestrial fauna, flora and Endangered Ecological Communities (EEC) and contains the primary statutory controls relating to Aboriginal heritage in NSW.

An Aboriginal Archaeological Due Diligence has been prepared by Comber Consultants, which indicates that site has the potential to contain subsurface Aboriginal objects most notably the area around Archer Creek should not be impacted by any proposed works. Notwithstanding, Comber Consultants has identified several mitigation measures that will need to be considered and implemented as part of any future development on the site.

State Environmental Planning Policy (Transport and Infrastructure) 2021

Clause 2.121 of SEPP (Transport and Infrastructure) 2021 relates to traffic generating development and Schedule 3 of the SEPP identifies the types of traffic generating development to be referred to Transport for New South Wales (TfNSW). Schedule 3 includes 'development for any other purpose which generates 200 or more vehicles per hour'. The proposed development falls into this category.

Clause 2.121 only relates to the determination of DAs. Nevertheless, it is expected that the planning proposal will be referred to TfNSW and an assessment of potential traffic impacts on the road network has been considered in the Traffic Study prepared by SCT Consulting and the Traffic Impact Assessment prepared by Bitzios.

Division 5 of SEPP (T&I) 2021 relates to electricity transmission or distribution networks and contains provisions relating to exempt development, development without consent and notification requirements for certain works. The provisions primarily relate to works that might be carried out relating to this infrastructure and is not a matter relevant to the Planning Proposal.

Overhead powerlines are located on the western side of Winbourne Street and Brush Road. No overhead powerlines are located on the subject site.

5 Matters Required by section 3.33 of the EP&A Act

State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 4 - Remediation of Land of SEPP (Resilience and Hazards) 2021 applies to the site and is relevant to the Planning Proposal. Clause 4.1 sets out the objects of the policy:

> *(1) The object of this Policy is to provide for a State-wide planning approach to the remediation of contaminated land.*
>
> *(2) In particular, this Policy aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment:*
>
> *(a) by specifying when consent is required, and when it is not required, for a remediation work, and*
>
> *(b) by specifying certain considerations that are relevant in rezoning land and in determining development applications in general and development applications for consent to carry out a remediation work in particular, and*
>
> *(c) by requiring that a remediation work meet certain standards and notification requirements.*

Whilst the provisions in the SEPP relate to Development Applications (and not Planning Proposals), contamination has still been considered as part of this Planning Proposal. A Preliminary Site Investigation and Detailed Site Investigation have been undertaken by Douglas Partners as per Council's comments. The results of these investigations are discussed in **Section 4.8** of this report. The potential areas of environmental concern identified by Douglas Partners can be readily managed through the DA process.

State Environmental Planning Policy (Biodiversity and Conservation) 2021

This SEPP has amalgamated the following SEPPs and REPs into one SEPP:

- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017;
- SEPP (Koala Habitat Protection) 2020;
- SEPP (Koala Habitat Protection) 2021;
- Murray REP No. 2 – Riverine Land
- State Environmental Planning Policy No. 19 – Bushland in Urban Areas;
- State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011;
- State Environmental Planning Policy No. 50 – Canal Estate Development;
- Greater Metropolitan Regional Environmental Plan No. 2 – Georges River Catchment;
- Sydney Regional Environmental Plan No. 20 – Hawkesbury-Nepean River (No.2-1997);
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005; and
- Willandra Lakes Regional Environmental Plan No. 1 – World Heritage Property.

The site is not proximate to the Sydney Water drinking catchment, canal estate development, Georges River catchment, Hawkesbury-Nepean River, Sydney Harbour Catchment or Willandra Lakes. The site does not adjoin bushland reserved for a public purpose.

This Planning Proposal meets the aims Chapter 2 (Vegetation in Non-Rural Areas) through the provision of an C2 Environmental Conservation area to protect and enhance the high value biodiversity area to the north-east of the site. Trees within the proposed C2 zone will be conserved.

5 Matters Required by section 3.33 of the EP&A Act

The aims of Chapter 2 are:

(a) to protect the biodiversity values of trees and other vegetation in non-rural areas of the State, and

(b) to preserve the amenity of non-rural areas of the State through the preservation of trees and other vegetation.

There is no noted presence of koalas on the site and the likelihood of koalas on site is low due to the site's current use and surrounding residential development. This Planning Proposal does not seek any clearing of vegetation. Any vegetation removal will be undertaken at future development stage.

5.5.4 Question 6 – Is the planning proposal consistent with applicable Ministerial Directions (Section 9.1(2) directions)?

A checklist of all Section 9.1(2) Directions is provided in **Appendix 2** which identifies which local planning directions are relevant to this Planning Proposal. The relevant Directions are discussed in turn below in **Table 6**.

Table 6 Section 9.1(2) Directions

Direction	Response
Focus area 1: Planning Systems	
Implementation of Regional Plans Objective The objective of this direction is to give legal effect to the vision, land use strategy, goals, directions and actions contained in Regional Plans. Application This direction applies to a relevant planning authority when preparing a planning proposal for land to which a Regional Plan has been released by the Minister for Planning. Direction 1.1 (1) Planning proposals must be consistent with a Regional Plan released by the Minister for Planning. Consistency A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary), that: (a) the extent of inconsistency with the Regional Plan is of minor significance, and (b) the planning proposal achieves the overall intent of the Regional Plan and does not undermine the achievement of the Regional Plan's vision, land use strategy, goals, directions or actions.	As discussed in Section 5.5.1 this Planning Proposal is consistent with the 'Greater Sydney Region Plan. The Planning Proposal is therefore consistent with this s.9.1 direction
1.3 Approval and Referral Requirements Objective The objective of this direction is to ensure that LEP provisions encourage the efficient and appropriate assessment of development. Application This direction applies to all relevant planning authorities when preparing a planning proposal. Direction 1.3 (1) A planning proposal to which this direction applies must: (a) minimise the inclusion of provisions that require the concurrence, consultation or referral of development applications to a Minister or public authority, and	This Planning Proposal requires referral to Natural Resources Access Regulator.

5 Matters Required by section 3.33 of the EP&A Act

Table 6 Section 9.1(2) Directions

Direction	Response
(b) not contain provisions requiring concurrence, consultation or referral of a Minister or public authority unless the relevant planning authority has obtained the approval of: i. the appropriate Minister or public authority, and ii. the Planning Secretary (or an officer of the Department nominated by the Secretary), prior to undertaking community consultation in satisfaction of Schedule 1 to the EP&A Act, and (c) not identify development as designated development unless the relevant planning authority: i. can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary) that the class of development is likely to have a significant impact on the environment, and ii. has obtained the approval of the Planning Secretary (or an officer of the Department nominated by the Secretary) prior to undertaking community consultation in satisfaction of Schedule 1 to the EP&A Act. Consistency A planning proposal must be substantially consistent with the terms of this direction. Note: In this direction "public authority" has the same meaning as section 1.4 of the EP&A Act.	
1.4 Site Specific Provisions Objective The objective of this direction is to discourage unnecessarily restrictive site specific planning controls. Application This direction applies to all relevant planning authorities when preparing a planning proposal that will allow a particular development to be carried out. Direction 1.4 (1) A planning proposal that will amend another environmental planning instrument in order to allow particular development to be carried out must either: (a) allow that land use to be carried out in the zone the land is situated on, or (b) rezone the site to an existing zone already in the environmental planning instrument that allows that land use without imposing any development standards or requirements in addition to those already contained in that zone, or (c) allow that land use on the relevant land without imposing any development standards or requirements in addition to those already contained in the principal environmental planning instrument being amended. (2) A planning proposal must not contain or refer to drawings that show details of the proposed development. Consistency A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary) that the provisions of the planning proposal that are inconsistent are of minor significance	This Planning Proposal does not include any proposed site or development specific provisions.
Focus area 2: Planning Systems – Place based N/A	
Focus area 3: Design and Place	Blank when directions were made
Focus area 3: Biodiversity and Conservation	
3.1 Conservation Zones Objective	This Planning Proposal seeks to protect and conserve the area of high value biodiversity on the

5 Matters Required by section 3.33 of the EP&A Act

Table 6 Section 9.1(2) Directions

Direction	Response
The objective of this direction is to protect and conserve environmentally sensitive areas. Application This direction applies to all relevant planning authorities when preparing a planning proposal. Direction 3.1 (1) A planning proposal must include provisions that facilitate the protection and conservation of environmentally sensitive areas. (2) A planning proposal that applies to land within a conservation zone or land otherwise identified for environment conservation/protection purposes in a LEP must not reduce the conservation standards that apply to the land (including by modifying development standards that apply to the land). This requirement does not apply to a change to a development standard for minimum lot size for a dwelling in accordance with Direction 9.2 (2) of "Rural Lands". Consistency A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary) that the provisions of the planning proposal that are inconsistent are: (a) justified by a strategy approved by the Planning Secretary which: i. gives consideration to the objectives of this direction, and ii. identifies the land which is the subject of the planning proposal (if the planning proposal relates to a particular site or sites), or (b) justified by a study prepared in support of the planning proposal which gives consideration to the objectives of this direction, or (c) in accordance with the relevant Regional Strategy, Regional Plan or District Plan prepared by the Department of Planning and Environment which gives consideration to the objective of this direction, or (d) is of minor significance.	site through the Proposed C2 Environmental Conservation zone over that part of the site
Focus area 4: Resilience and Hazards	
4.1 Flooding Objectives The objectives of this direction are to: (a) ensure that development of flood prone land is consistent with the NSW Government's Flood Prone Land Policy and the principles of the Floodplain Development Manual 2005, and (b) ensure that the provisions of an LEP that apply to flood prone land are commensurate with flood behaviour and includes consideration of the potential flood impacts both on and off the subject land. Application This direction applies to all relevant planning authorities that are responsible for flood prone land when preparing a planning proposal that creates, removes or alters a zone or a provision that affects flood prone land. Direction 4.1 (1) A planning proposal must include provisions that give effect to and are consistent with: (a) the NSW Flood Prone Land Policy, (b) the principles of the Floodplain Development Manual 2005, (c) the Considering flooding in land use planning guideline 2021, and (d) any adopted flood study and/or floodplain risk management plan prepared in accordance with the principles of the Floodplain Development Manual 2005 and adopted by the relevant council.	Quantum Engineering has reviewed Direction 4.3 Flooding and notes the following: *'The flood model was obtained from City of Ryde Council to ensure consistency with Councils Overland Flood Study (Parramatta River Ryde Sub Catchments). The preparation of the report is consistent with the NSW Governments Flood Prone Land Policy, Local Government Flood Policy and generally meet the principles of the Floodplain Development Manual 2005 except for Item (6) (a) – 'A planning proposal must not contain provisions that apply to the flood planning area which permit development in floodway areas.' The lower netball courts terrace is located within Floodway Area.* *Given the planning proposal is to seek rezoning from SP2*

5 Matters Required by section 3.33 of the EP&A Act

Table 6 Section 9.1(2) Directions

Direction	Response
(2) A planning proposal must not rezone land within the flood planning area from Recreation, Rural, Special Purpose or Conservation Zones to a Residential, Business, Industrial or Special Purpose Zones. (3) A planning proposal must not contain provisions that apply to the flood planning area which: (a) permit development in floodway areas, (b) permit development that will result in significant flood impacts to other properties, (c) permit development for the purposes of residential accommodation in high hazard areas, (d) permit a significant increase in the development and/or dwelling density of that land, (e) permit development for the purpose of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate, (f) permit development to be carried out without development consent except for the purposes of exempt development or agriculture. Dams, drainage canals, levees, still require development consent, (g) are likely to result in a significantly increased requirement for government spending on emergency management services, flood mitigation and emergency response measures, which can include but are not limited to the provision of road infrastructure, flood mitigation infrastructure and utilities, or (h) permit hazardous industries or hazardous storage establishments where hazardous materials cannot be effectively contained during the occurrence of a flood event. (4) A planning proposal must not contain provisions that apply to areas between the flood planning area and probable maximum flood to which Special Flood Considerations apply which: (a) permit development in floodway areas, (b) permit development that will result in significant flood impacts to other properties, (c) permit a significant increase in the dwelling density of that land, (d) permit the development of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate, (e) are likely to affect the safe occupation of and efficient evacuation of the lot, or (f) are likely to result in a significantly increased requirement for government spending on emergency management services, and flood mitigation and emergency response measures, which can include but not limited to road infrastructure, flood mitigation infrastructure and utilities. (5) For the purposes of preparing a planning proposal, the flood planning area must be consistent with the principles of the Floodplain Development Manual 2005 or as otherwise determined by a Floodplain Risk Management Study or Plan adopted by the relevant council. Consistency A planning proposal may be inconsistent with this direction only if the planning proposal authority can satisfy the Planning Secretary (or their nominee) that: (a) the planning proposal is in accordance with a floodplain risk management study or plan adopted by the relevant council in accordance with the principles and guidelines of the Floodplain Development Manual 2005, or (b) where there is no council adopted floodplain risk management study or plan, the planning proposal is consistent with the flood study adopted by the council prepared in accordance with the principles of the Floodplain Development Manual 2005 or (c) the planning proposal is supported by a flood and risk impact assessment accepted by the relevant planning authority and is prepared	*Educational Establishment to RE1 Public Recreation, this will reduce the overall population density of that land and will reduce flood liability on the owner of this flood prone property. Additionally, the flood study will incorporate evacuation strategy and mitigation measures to address the potential flood risk to future users.* *We expect Council consider on merit basis the non-compliant item, having due regard for the proposed flood protection measures detailed in the flood study'.*

5 Matters Required by section 3.33 of the EP&A Act

Table 6 Section 9.1(2) Directions

Direction	Response
In accordance with the principles of the Floodplain Development Manual 2005 and consistent with the relevant planning authorities' requirements, or (d) the provisions of the planning proposal that are inconsistent are of minor significance as determined by the relevant planning authority.	
4.3 Planning for Bushfire Protection Objectives The objectives of this direction are to: (a) protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas, and (b) encourage sound management of bush fire prone areas. Application This direction applies to all local government areas when a relevant planning authority prepares a planning proposal that will affect, or is in proximity to, land mapped as bushfire prone land. This applies where the relevant planning authority is required to prepare a bush fire prone land map under section 10.3 of the EP&A Act, or, until such a map has been certified by the Commissioner of the NSW Rural Fire Service, a map referred to in Schedule 6 of that Act. Direction 4.3 (1) In the preparation of a planning proposal the relevant planning authority must consult with the Commissioner of the NSW Rural Fire Service following receipt of a gateway determination under section 3.34 of the Act, and prior to undertaking community consultation in satisfaction of clause 4, Schedule 1 to the EP&A Act, and take into account any comments so made. (2) A planning proposal must: (a) have regard to Planning for Bushfire Protection 2019, (b) introduce controls that avoid placing inappropriate developments in hazardous areas, and (c) ensure that bushfire hazard reduction is not prohibited within the Asset Protection Zone (APZ). (3) A planning proposal must, where development is proposed, comply with the following provisions, as appropriate: (a) provide an Asset Protection Zone (APZ) incorporating at a minimum: i. an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and ii. an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road, (b) for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the planning proposal permit Special Fire Protection Purposes (as defined under section 100B of the Rural Fires Act 1997), the APZ provisions must be complied with, (c) contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks, (d) contain provisions for adequate water supply for firefighting purposes, (e) minimise the perimeter of the area of land interfacing the hazard which may be developed, (f) introduce controls on the placement of combustible materials in the Inner Protection Area. Consistency A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Planning Secretary (or an officer of the Department nominated by the Secretary) that the council has obtained written advice from the Commissioner of the NSW Rural Fire Service to the effect that, notwithstanding the non-	Abel Ecology prepared a Bushfire Opportunities and Constraints Assessment Report for the site. Whilst the site is not mapped as bushfire prone land, High Value Biodiversity is located to the north-eastern corner of the site and as such Asset Protection zones has been recommended for any future use of the site.

5 Matters Required by section 3.33 of the EP&A Act

Table 6 Section 9.1(2) Directions

Direction	Response
compliance, the NSW Rural Fire Service does not object to the progression of the planning proposal.	
4.4 Remediation of Contaminated Land Objective The objective of this direction is to reduce the risk of harm to human health and the environment by ensuring that contamination and remediation are considered by planning proposal authorities	Remediation of land where required will be undertaken as part of future development applications.
Focus area 5: Transport and Infrastructure	
5.1 Integrating Land Use and Transport Objectives The objective of this direction is to ensure that urban structures, building forms, land use locations, development designs, subdivision and street layouts achieve the following planning objectives: (a) improving access to housing, jobs and services by walking, cycling and public transport, and (b) increasing the choice of available transport and reducing dependence on cars, and (c) reducing travel demand including the number of trips generated by development and the distances travelled, especially by car, and (d) supporting the efficient and viable operation of public transport services, and (e) providing for the efficient movement of freight.	A Traffic Impact Assessment has been prepared by Bitzios to address current and potential Traffic impacts from the rezoning and potential future use. Future DA's will include detailed Traffic Impact Assessments, including travel demand and reducing car dependency.
5.2 Reserving Land for Public Purposes Objectives The objectives of this direction are to: (a) facilitate the provision of public services and facilities by reserving land for public purposes, and (b) facilitate the removal of reservations of land for public purposes where the land is no longer required for acquisition.	This Planning Proposal seeks to provide land for recreational purposes through zoning part of the site RE1 Public Recreation. The RE1 zone permits indoor and outdoor recreational facilities with consent.
Focus area 6: Housing	N/A
Focus area 7: Industry and employment	N/A
Focus area 8: Resources and energy	N/A
Focus area 9: Primary Production	N/A

5.6 Environmental, Social and Economic Impact

5.6.1 Question 7 – Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

Much of the site has already been cleared for the construction of the existing educational establishment. The north-eastern area of the site which is mapped as comprising high value biodiversity, has been retained within the proposed C2 zone. The high value biodiversity area will be enhanced by the rehabilitation of the riparian corridor.

The draft zoning plan has regard for these biodiversity constraints and opportunities including:

- A broad riparian corridor will be retained along creek lines within the site;

dfp | Revised Planning Proposal | 22 Winbourne Street, West Ryde | March 2022 41

5 Matters Required by section 3.33 of the EP&A Act

- The primary constraint area of vegetation in the north-east of the site will be retained in the C2 – Environmental Conservation zone.

5.6.2 Question 8 – Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

In addition to the ecological effects, **Section 4** of this report has addressed the other potential environmental effects including:

- Flooding;
- Stormwater quality;
- Traffic;
- Bushfire;
- Contamination;
- Acoustic;
- Heritage, including Aboriginal cultural heritage; and
- Infrastructure Services.

5.6.3 Question 9 – Has the planning proposal adequately addressed any social and economic effects?

This Planning Proposal provides social and economic benefits through the provision of land for recreational purposes and open space.

Employment opportunities at future Development Application stages are anticipated from construction of infrastructure, and long-term employment opportunities through operation and maintenance of the recreational facility and maintenance and rehabilitation of the environmental conservation area.

Conservation and rehabilitation of riparian areas offers both employment opportunities and social benefits to the public.

Provision of recreational areas provide social benefits through proposed future sporting facilities for the development and wider community.

5.7 Section D – State and Commonwealth Interests

5.7.1 Question 10 – Is there adequate public infrastructure for the planning proposal?

The site is currently serviced by water, sewer, electricity, and telecommunications and NBN.

The site is encumbered by the following assets:

- *Eastern boundary – 225mm VC sewer main falling towards the south along the watercourse alignment*
- *Southern Boundary – 225mm VC sewer main falling from west to east along the existing embankment.*

Jemena Gas mains are available in the vicinity of the site but are not currently connected to the site.

5.7.2 Question 11 – What are the views of state and Commonwealth public authorities consulted in accordance with the Gateway determination?

This Planning Proposal will require public notification. Relevant government authorities will be notified during the exhibition period.

5 Matters Required by section 3.33 of the EP&A Act

5.8 Part 4 – Mapping (section 3.33(2)(d))

Figure 29 depicts the existing zone on the site and **Figure 30** depicts the proposed zones.

Figure 29 Existing zone map

Figure 30 Proposed zone map

5 Matters Required by section 3.33 of the EP&A Act

5.9 Part 5 - Community Consultation (section 3.33(2)(e))

Whilst it is a requirement to undertake statutory consultation relating to a Planning Proposal, we are of the opinion that this need not be extensive or prolonged and should not exceed 14 days, although this will be for Council and DPE to determine.

5.10 Part 6 – Project Timeline

The timeline for assessment, consultation and determination of this Planning Proposal will be for Council and DPE to determine however, we consider that it should be possible to expedite this Planning Proposal within the DPE's suggested timeframe of 6 months for a minor spot rezoning.

This section provides an environmental assessment of the proposed development in respect of the relevant matters for consideration under section 4.15(1) of the Environmental Planning and Assessment Act, 1979 (EP&A Act).

6 Conclusion

This Planning Proposal has been prepared on behalf of School Infrastructure NSW and seeks to rezone the land at 22 Winbourne Street from SP2 Educational Establishment to part RE1 Public Recreation and part C2 Environmental Conservation.

The Planning Proposal has been prepared based on consideration of environmental, bush fire, flooding and heritage constraints and the proposed zones have been applied to take into account those constraints.

This report and accompanying material have been prepared in accordance with section 3.33 of the EP&A Act and relevant Departmental guidelines.

This report concludes that the proposal to rezone the site from SP2 to RE1 and C2:

- is consistent with the Greater Sydney Regional Plan;
- is consistent with the North District Plan;
- is consistent with the Local Planning Strategies / Local Strategic Planning Statement; and
- is not inconsistent with relevant SEPPs and Section 9.1 Directions.

Accordingly, we recommend that Council endorse this Planning Proposal and forward it to the Minister for Gateway Approval.

ITEM 7 (continued) **ATTACHMENT 1**

APPENDIX 1

State Environmental Planning Policies

The following table provides a checklist of the relevant SEPPs applying to the land or the Planning Proposal. Discussion of the SEPPs relevant to the Planning Proposal is provided in **Section 5.5.3** of the Planning Proposal report.

Table 7 Consistency with applicable State Environmental Planning Policies

SEPP	Consolidated SEPP	Relevant to Planning Proposal
SEPP (Exempt and Complying Development Codes) 2008		No
SEPP (Design and Place) 2021	SEPP (Building Sustainability Index: BASIX) 2004	No
	SEPP No 65 – Design Quality of Residential Apartment Development	No
SEPP (Housing) 2021	SEPP (Affordable Rental Housing) 2009	No
	SEPP (Housing for Seniors and People with a Disability) 2004	No
	SEPP 70 – Affordable Housing	No
	SEPP 21 Caravan Parks	No
	SEPP 36 Manufactured Home Estates	No
SEPP (Planning Systems) 2021	SEPP (State and Regional Development) 2011	No
	SEPP (Aboriginal Land) 2019	No
	SEPP (Concurrences and Consents) 2018	No
SEPP (Industry and Employment) 2021	SEPP (Western Sydney Employment Area) 2009	No
	SEPP 64 – Advertising and Signage	No
SEPP (Biodiversity and Conservation) 2021	SEPP (vegetation in non-rural areas) 2017	Yes
	SEPP (Koala Habitat Protection) 2020	No
	SEPP (Koala Habitat Protection) 2021	No
	Murray REP No 2 – Riverine Land	No
	SEPP 19 (Bushland in Urban Areas)	No
	SEPP 50 (Canal Estate Development)	No
	SEPP (Sydney Drinking Water Catchment) 2011	No
	SREP 20 (Hawkesbury Nepean River (no2 – 1997)	No

ITEM 7 (continued) **ATTACHMENT 1**

Table 7 Consistency with applicable State Environmental Planning Policies

SEPP	Consolidated SEPP	Relevant to Planning Proposal
	SREP (Sydney Harbour Catchment) 2005	No
	Greater Metropolitan REO No 2 – Georges River Catchment	No
	Willandra Lakes REP No 1 – World Heritage Property	No
SEPP (Transport and Infrastructure) 2021	SEPP (Infrastructure) 2007	Yes
	SEPP (Educational Establishments and Childcare Facilities) 2017	No
	SEPP (Major Infrastructure Corridors) 2020	No
	SEPP (Three Ports) 2013	No
SEPP (Industry and Employment) 2021	SEPP (Western Sydney Employment Area) 2009	No
	SEPP 64 – Advertising and Signage)	No
SEPP (Primary Production) 2021	SEPP (Primary Production and Rural Development) 2019	No
	Sydney Regional Environmental Plan No 8 (Central Coast Plateau Areas) (Central Coast Plateau SREP)	No
SEPP (Resilience and Hazards) 2021	SEPP (Coastal Management) 2018	No
	SEPP 33 – Hazardous and Offensive Development	No
	SEPP 55 – Remediation of Land	Yes
SEPP (Resources and Energy) 2021	SEPP (Mining and Petroleum Production and Extractive Industries) 2007	No
	Sydney Regional Environmental Plan No 9 – Extractive Industries (No-2 – 1995)	No
SEPP (Precincts – Eastern Harbour City) 2021 (Eastern Harbour City SEPP)	SEPP (State Significant Precincts) 2005	No
	Darling Harbour Development Plan No. 1	No
	Sydney Regional Environmental Plan No 26 – City West	No
	Sydney Regional Environmental Plan No 16 – Walsh Bay	No

ITEM 7 (continued) **ATTACHMENT 1**

Table 7 Consistency with applicable State Environmental Planning Policies

SEPP	Consolidated SEPP	Relevant to Planning Proposal
	Sydney Regional Environmental Plan No 33 – Cooks Cove	No
	SEPP No 47 – Moore Park Showground	No
SEPP (Precincts – Central River City) 2021 (Central River City SEPP)	SEPP (State Significant Precincts) 2005	No
	SEPP (Sydney Region Growth Centre) 2006	No
	Sydney Regional Environmental Plan 24 – Homebush Bay Area	No
	SEPP (Kurnell Peninsula) 1989	No
	SEPP (Urban Renewal) 2010	No
SEPP (Precincts – Western Parkland City) 2021 (Western Parkland City SEPP)	State (Significant Precincts) 2005	No
	SEPP (Sydney Region Growth Centre) 2006	No
	SEPP (Western Sydney Aerotropolis) 2020	No
	SEPP (Penrith Lakes Scheme) 1989	No
	Sydney Regional Environmental Plan No 30 – St Marys	No
	SEPP (Western Sydney Parklands) 2009	No
SEPP (Precincts – Regional) 2021 (Regional SEPP)	State (Significant Precincts) 2005	No
	SEPP (Aviation Precincts) 2005	No
	SEPP (Kosciuszko National Park – Alpine Resorts) 2007	No
	SEPP (Gosford City Centre) 2018	No

ITEM 7 (continued) **ATTACHMENT 1**

APPENDIX 2

Directions under Section 9.1

The following table provides a checklist of the relevant Section 9.1 Directions. Discussion of the section 9.1 Directions relevant to the Planning Proposal is provided in **Section 5.5.4** of the Planning Proposal report.

Table 8 Compliance with Section 9.1 Directions

Direction		Relevant to Planning Proposal
Focus area 1: Planning Systems		
1.1	Implementation of Regional Plans	Yes
1.2	Development of Aboriginal Land Council land	No
1.3	Approval and Referral Requirements	Yes
1.4	Site Specific Provisions	Yes
Focus area1: Planning Systems – Place based		
1.5	Parramatta Road Corridor Urban Transformation Strategy	No
1.6	Implementation of North West Priority Growth Area Land Use and Infrastructure Implementation Plan	No
1.7	Implementation of Greater Parramatta Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	No
1.8	Implementation of Wilton Priority Growth Area Interim Land Use and Infrastructure Plan	No
1.9	Implementation of Glenfield to Macarthur Urban Renewal Corridor	No
1.10	Implementation of the Western Sydney Aerotropolis Plan	No
1.11	Implementation of Bayside West Precincts 2036 Plan	No
1.12	Implementation of Planning Principles for the Cooks Cove Precinct	No
1.13	Implementation of St Leonards and Crows Nest 2036 Plan	No
1.14	Implementation of Greater Macarthur 2040	No
1.15	Implementation of the Pyrmont Peninsula Place Strategy	No
1.16	North West Rail Link Corridor Strategy	No
1.17	Implementation of the Bays West Place Strategy	No
Focus area 2: Design and Place		Blank
Focus area 3: Biodiversity and Conservation		
3.1	Conservation Zones	Yes
3.2	Heritage Conservation	No
3.3	Sydney Drinking Water Catchments	No
3.4	Application of C2 and C3 Zones and Environmental Overlays in Far North Coast LEPs 26	No
3.5	Recreational Vehicle Areas	No

ITEM 7 (continued) **ATTACHMENT 1**

Table 8 Compliance with Section 9.1 Directions

Direction	Relevant to Planning Proposal
Focus area 4: Resilience and Hazards	
4.1 Flooding	Yes
4.2 Coastal Management	No
4.3 Planning for Bushfire Protection	Yes
4.4 Acid Sulfate Soils	No
4.5 Mine Subsidence and Unstable Land	No
Focus area 5: Transport and Infrastructure	
5.1 Integrating Land Use and Transport	Yes
5.2 Reserving Land for Public Purposes	Yes
5.3 Development near Regulated Airports and Defence Airfields	No
5.4 Shooting Ranges	No
Focus area 6: Housing	
6.1 Residential Zones	No
6.2 Caravan Parks and Manufactured Home Estates	No
Focus area 7: Industry and Employment	
7.1 Business and Industrial Zones	No
7.2 Reduction in non-hosted short-term rental accommodation period	No
7.3 Commercial and Retail Development along the Pacific Highway, North Coast	No
Focus area 8: Primary Production	
8.1 Mining, Petroleum Production and Extractive Industries	No
Focus area 9: Primary Production	
9.1 Rural Zones	No
9.2 Rural Lands	No
9.3 Oyster Aquaculture	No
9.4 Farmland of State and Regional Significance on the NSW Far North Coast	No

ITEM 7 (continued) **ATTACHMENT 3**

City of Ryde
Lifestyle and opportunity @ your doorstep

Department of Education C/o
DFP Planning Pty Ltd
PO Box 230
PENNANT HILLS NSW 1715

By email: nbartley@dfpplanning.com.au

16 July 2021

Our Ref: LEP2021/1/1/3 (D21/93055)

Dear Ms Bartley,

Planning Proposal to rezone 22 Winbourne Street, West Ryde from SP2 (Educational Establishment) to Part RE1 Public Recreation and Part E2 Environmental Conservation

I refer to the abovementioned planning proposal submitted by DFP Planning on 4 June 2021. A preliminary assessment of the planning proposal has been undertaken and has found that additional information is required prior to the application proceeding. The following additional information regarding traffic and parking, site flooding and clarifications are required prior to further assessment and reporting of this application to Council.

Critical information required:

Traffic and Parking

- The traffic generation for the subject proposal used in SCT Consulting's Traffic and Transport Impact Assessment has been estimated based on survey results from a 2009 traffic study (Transport Impact Assessment for the Meadowbank Park Netball Courts (2009)), which is more than 10 years old. There are concerns over the reliability of these survey results in being an accurate representation of the current operation, and the current travel habits/modes adopted by existing users of the Meadowbank Park netball courts or an accurate predictor of future traffic flows generated by the proposed recreational use.

- There needs to be greater clarity associated with the likely operational characteristics of the future indoor recreational use and its potential parking and traffic demand, which has not been assessed in SCT Consulting's traffic study.

Customer Service Centre
1 Pope Street, Ryde NSW 2112
(Within Top Ryde City shopping centre)

North Ryde Office
Level 1, Building 0, Riverview Business Park,
3 Richardson Place, North Ryde NSW 2113

Phone (02) 9952 8222 Fax (02) 9952 8070
Email cityofryde@ryde.nsw.gov.au
Post Locked Bag 2069, North Ryde NSW 1670
www.ryde.nsw.gov.au

ITEM 7 (continued) **ATTACHMENT 3**

City of Ryde
Lifestyle and opportunity @ your doorstep

- The periods in which the proposed recreational use is likely to generate the greatest traffic activity is expected to be generally outside of the peak traffic periods of the existing school development (being 8am – 9:30am and 2:30pm – 4:00pm). Whilst SCT Consulting's traffic study has concluded that the subject proposal is anticipated to generate slightly less traffic compared with the current land use over a weekly period, it has provided no assessment of the impact of the proposed recreational use during critical peak hour periods, in particular the weekday afternoon peak hour periods (approx. 5pm – 6pm) and the Saturday midday peak hour periods (approx.. 12pm – 1pm), when traffic flows are typically the heaviest (especially along Victoria Road and Marsden Road, which facilitates direct access into the site and surrounding precinct).

  In order to adequately assess the suitability of the change of zoning to RE1 it is required that **a traffic modelling assessment be undertaken for the following intersections**:

  - Victoria Road and Marsden Road/Wharf Road;
  - Marsden Road and Winbourne Street; and
  - Brush Road and Sindel Street.

  The traffic modelling assessment should be based on 2031 peak hour traffic volumes (with and without the development) and advise on potential mitigation strategies/road/intersection improvements to alleviate the impacts associated with the development. Traffic volumes must be considered on post-pandemic volumes and not be based on pandemic or lockdown traffic volumes.

  This assessment should also take into consideration the redevelopment of Melrose Park North precinct and then assess the appropriateness of the proposed upgrades recommended in the Melrose Park Transport Management and Accessibility Plan (TMAP) prepared by Jacobs in 2018 in particular the future upgrade of the intersection of Victoria Road and Marsden Road/Wharf Road.

- The planning proposal states; *"There is sufficient space on the site to provide parking spaces for future development. On-street parking is also available … which will have no impact to the street frontages of adjacent residential properties."*

  Whilst the site is within close proximity to bus services, it is expected that the large majority of patrons will travel to/from the site by car. The on-site

Customer Service Centre
1 Pope Street, Ryde NSW 2112
(Within Top Ryde City shopping centre)

North Ryde Office
Level 1, Building 0, Riverview Business Park,
3 Richardson Place, North Ryde NSW 2113

Phone (02) 9952 8222 Fax (02) 9952 8070
Email cityofryde@ryde.nsw.gov.au
Post Locked Bag 2069, North Ryde NSW 1670
www.ryde.nsw.gov.au

ITEM 7 (continued) **ATTACHMENT 3**

City of Ryde
Lifestyle and opportunity @ your doorstep

parking provision for such a facility should comply with Council's Development Control Plan. In this regard the Concept Plan should be reviewed to accommodate additional on-site parking.

A preliminary review of the surrounding street widths, particularly Brush Road, indicates that concentrated on-street parking on a weeknight and Saturdays would have a significant impact on the surrounding residents and flow of traffic within those streets.

An assessment of the off-street car parking provision necessary to support the future development is required to be provided. It is critical that there is adequate off-street car parking, including more than one vehicle entry and egress point, to support the peak demand generated by the proposed development and to minimise the impact on the surrounding streets and on-street parking, which are currently used by existing residents.

Flooding

It is noted that the application includes a flood statement prepared by Henry & Hymas on 1 April 2021. However, the land is subject to possible high-risk flooding, as such a **revised detailed flood study** is required to be submitted as part of the planning proposal application. The revised flood study is to be prepared in accordance with Council's Floodplain Management standards and should include:

- A scaled catchment plan highlighting full upstream catchment areas that generates the overland flows.
- Scale site plans showing the pre-developed (existing) and post-developed (proposed) 1% AEP flood extent and levels on the subject property.
- A 50% blockage factor with the existing underground stormwater system shall be allowed for the hydraulic analysis.
- The flood assessment must demonstrate that the proposed development will not impede the passage of floodwater to cause a rise (afflux) in the flood level upstream and/or increase the downstream velocities of flow for the flood standard. No structures and/or filling are permitted to be placed over any drainage easement and/or the 1 in 100yr overland floodpath.
- The establishment of 500mm freeboard for the proposed finished levels above the 1 in 100 year flood level.
- If the depth x velocity product of the overland floodwater exceeds 0.4m2/s, suitable open type fencing or other appropriate measures shall be used to restrict access to such areas affected by hazardous overland flows.
- Any boundary fence/wall over the estimated flood extent must be replaced with open type in order to allow unimpeded passage of overland floodwater.

Customer Service Centre
1 Pope Street, Ryde NSW 2112
(Within Top Ryde City shopping centre)

North Ryde Office
Level 1, Building 0, Riverview Business Park,
3 Richardson Place, North Ryde NSW 2113

Phone (02) 9952 8222 Fax (02) 9952 8070
Email cityofryde@ryde.nsw.gov.au
Post Locked Bag 2069, North Ryde NSW 1670
www.ryde.nsw.gov.au

City of Ryde
Lifestyle and opportunity @ your doorstep

- A longitudinal section (at vertical scale 1:50, horizontal scale to that of plan view) of the drainage system showing existing and proposed levels, flood levels, hydraulic data and all changes in grade.
- A minimum of five 1:50 scale cross-sections taken at right angles to the overland flowpath, showing both the existing and post-developed flow sections with all levels to AHD, drawn at the following chainages:

  a) at the upstream property boundary;
  b) where the existing and proposed structure/land is closest to the floodpath;
  c) at the downstream extent of the development work; and
  d) other cross-sections as needed if other parts of the system affect the site.

Note: Cross-sections must show existing and proposed levels, top water levels, hydraulic data, flood extents.

The flood study must be signed by the engineer declaring that the study has been undertaken in accordance with Australian Rainfall and Runoff, the NSW Floodplain Management Manual and Council's Floodplain Management Technical Standard. If the proposed development is within high risk flood zone then an evacuation management plans must be considered as part of this development.

General comments on Concept Development Plan

The following information is provided with respect to the Concept Development Plan. The Concept Plan is considered an important component of the proposal as it is a key tool in communicating the proposed future use of the land. It is important that it reflects the existing strategic framework.

- Indoor Sports Facilities Review (May 2020, Optium Planning Group).
  This Council adopted review proposed an expansion to the Marsden Indoor Centre by an additional 2 courts (total of 6 courts) by 2035. The concept plan should be amended to make provision for extension to a total of 6 courts and for the associated additional parking generation.

- Open Space Plan (July 2012, Cloustons Associates)
  This Plan identifies this facility as a level 1 or 2 park. The concept design should include a variety of uses/functions/facilities to maximise the community benefit of the proposal. These may include loop pathways for walking/cycling, picnic areas, aesthetic garden beds, grassed kick about areas, etc.

Customer Service Centre
1 Pope Street, Ryde NSW 2112
(Within Top Ryde City shopping centre)

North Ryde Office
Level 1, Building 0, Riverview Business Park,
3 Richardson Place, North Ryde NSW 2113

Phone (02) 9952 8222 Fax (02) 9952 8070
Email cityofryde@ryde.nsw.gov.au
Post Locked Bag 2069, North Ryde NSW 1670
www.ryde.nsw.gov.au

ITEM 7 (continued) **ATTACHMENT 3**

City of Ryde
Lifestyle and opportunity @ your doorstep

- Ryde Biodiversity Plan (December 2016, Ecological Australia). The site is located within an identified Local Connectivity corridor that connects two regions. The Concept Plan should maximise tree and vegetation canopy and make provisions for tree replacement planting at a ratio of 3 to 1.

- Council's Renewable Energy Targets and Sustainable Transport actions should be considered in the Concept Plan in relation to building design, alternate transport modes to move away from private vehicle use, EV charging points, etc.

- Urban heat island impacts. The proposal will significantly increase the coverage of the site with impervious, hardstand areas which will contribute significantly to the heat island impacts for the locality. Development Plans will need to demonstrate how this impact will be mitigated.

- The site is flood affected in the south-eastern corner. The planning proposal has included a "Flood Statement" flagging this matter. However, the Concept Plan will need to adequately address the flood safety aspects, including an emergency evacuation plan, of providing netball courts in this location as well as the stormwater flows and riparian matters for the watercourse in this vicinity.

The planning proposal assessment and processing will be held in abeyance until the critical information regarding traffic and parking have been submitted to Council for assessment.

A suitable timeframe for the submission of this additional information must be agreed to by Council within 21 days of the date of this letter.

Failure to submit the required information within the agreed timeframe will result in the reporting of the application to Council, based on the information in the submitted application, which may include a recommendation for refusal.

Should you have any queries regarding this application please contact Matthew Owens – Senior Strategic Planner.

Yours Sincerely

Dyalan Govender
Manager Urban Strategy

Customer Service Centre
1 Pope Street, Ryde NSW 2112
(Within Top Ryde City shopping centre)

North Ryde Office
Level 1, Building 0, Riverview Business Park,
3 Richardson Place, North Ryde NSW 2113

Phone (02) 9952 8222 Fax (02) 9952 8070
Email cityofryde@ryde.nsw.gov.au
Post Locked Bag 2069, North Ryde NSW 1670
www.ryde.nsw.gov.au

ITEM 7 (continued) **ATTACHMENT 4**

dfp
planning consultants

16 September 2021
Our Ref: 21295A.14_PP RFI Response

City of Ryde Council
Locked Bag 2069
North Ryde NSW 1670

LEP2021/1/1/3 (D21/93055) Planning Proposal to rezone 22 Winbourne Street, West Ryde from SP2 (Educational Establishment) to Part RE1 Public Recreation and Part E2 Environmental Conservation.

Dear Matthew,

Thankyou for your letter dated 16 July 2021. In conjunction with the Pre DA notes received, our project team has amended the concept design, which addresses the Flooding, Ecological and Traffic concerns raised in the Planning Proposal RFI.

In addition, our project team has also redefined the proposed E2 boundary, based on further discussion with Council and the project ecologist.

A revised Traffic and Transport Impact Assessment and Flood Advice are currently being prepared, which will be incorporated into the revised Planning Proposal. These will be submitted to Council in due course for Council's continued assessment of the Planning Proposal.

In the interim, below is a response against each point of Council's Planning Proposal RFI.

Traffic and Parking

Below is a response to Council's comments and how these items will be included in the revised traffic study.

1. *The traffic generation for the subject proposal used in SCT Consulting's Traffic and Transport Impact Assessment has been estimated based on survey results from a 2009 traffic study (Transport Impact Assessment for the Meadowbank Park Netball Courts (2009)), which is more than 10 years old. There are concerns over the reliability of these survey results in being an accurate representation of the current operation, and the current travel habits/modes adopted by existing users of the Meadowbank Park netball courts or an accurate predictor of future traffic flows generated by the proposed recreational use.*

Response

It is agreed that the benchmark of Council's Transport Impact Assessment for the Meadowbank Park Netball Courts (2009) is 12 years old. This is not an uncommon age for trip generation information. For instance, the most recent trip generation rates undertaken by TfNSW for residential and retail were conducted in 2010. The age of surveys shouldn't affect the testing of the suitability of the site.

11 Dartford Road Thornleigh NSW 2120
PO Box 230 Pennant Hills NSW 1715
P 02 9980 6933
www.dfpplanning.com.au
DFP Planning Pty Limited
ACN 002 263 998

ITEM 7 (continued) **ATTACHMENT 4**

The Development Application work will include a review of the current facilities at Meadowbank. This will hopefully also provide an opportunity for COVID 19 recovery to occur and travel behaviour to return to more normal travel patterns.

2. There needs to be greater clarity associated with the likely operational characteristics of the future indoor recreational use and its potential parking and traffic demand, which has not been assessed in SCT Consulting's traffic study.

Response

Further information will be provided in the updated transport assessment and resubmitted to Council.

The planning proposal aims for the site to have Netball uses, which we can provide further operational information in the updated planning proposal transport plan. Netball tends to be the highest intensity use of all sports uses, so fulfills the requirement for the assessment to assess the greatest intensity of use of the site.

3. The periods in which the proposed recreational use is likely to generate the greatest traffic activity is expected to be generally outside of the peak traffic periods of the existing school development (being 8am – 9:30am and 2:30pm – 4:00pm). Whilst SCT Consulting's traffic study has concluded that the subject proposal is anticipated to generate slightly less traffic compared with the current land use over a weekly period, it has provided no assessment of the impact of the proposed recreational use during critical peak hour periods, in particular the weekday afternoon peak hour periods (approx. 5pm – 6pm) and the Saturday midday peak hour periods (approx.. 12pm – 1pm), when traffic flows are typically the heaviest (especially along Victoria Road and Marsden Road, which facilitates direct access into the site and surrounding precinct).

- *- Victoria Road and Marsden Road/Wharf Road;*
- *- Marsden Road and Winbourne Street; and*
- *- Brush Road and Sindel Street.*

In order to adequately assess the suitability of the change of zoning to RE1 it is required that a traffic modelling assessment be undertaken for the following intersections.

The traffic modelling assessment should be based on 2031 peak hour traffic volumes (with and without the development) and advise on potential mitigation strategies/road/intersection improvements to alleviate the impacts associated with the development. Traffic volumes must be considered on post-pandemic volumes and not be based on pandemic or lockdown traffic volumes.

This assessment should also take into consideration the redevelopment of Melrose Park North precinct and then assess the appropriateness of the proposed upgrades recommended in the Melrose Park Transport Management and Accessibility Plan (TMAP) prepared by Jacobs in 2018 in particular the future upgrade of the intersection of Victoria Road and Marsden Road/Wharf Road.

Response

SCT Consulting will update the traffic study to include traffic modelling for the peak hours of 5pm-6pm on a weekday and a Saturday midday peak hour and resubmit this to Council. Given the long lead times in the planning proposal process, the overall process need not be held up while modelling is undertaken.

ITEM 7 (continued) **ATTACHMENT 4**

Traffic modelling will be undertaken for key intersections in the updated transport study. Surveys were collected in February 2021. The AADT counter on Victoria Road (Station 51235) shows that the weekly total traffic was 430,519. Compared with a week in 2019, this is similar. Most weeks in 2019 had a weekly trip total of between 417,000 – 435,000. Hence the surveys conducted are considered to have a level of traffic similar to pre-COVID-19 conditions.

The models will be updated to 2031 peak hour traffic volumes (with and without the development) and advise on potential mitigation strategies/road/intersection improvements to alleviate the impacts associated with the development if required.

The models will be updated to include the delivery of Melrose Park in the 2031 scenario.

4. *The planning proposal states; "There is sufficient space on the site to provide parking spaces for future development. On-street parking is also available which will have no impact to the street frontages of adjacent residential properties."*

Whilst the site is within close proximity to bus services, it is expected that the large majority of patrons will travel to/from the site by car. The on-site parking provision for such a facility should comply with Council's Development Control Plan. In this regard the Concept Plan should be reviewed to accommodate additional on-site parking.

A preliminary review of the surrounding street widths, particularly Brush Road, indicates that concentrated on-street parking on a weeknight and Saturdays would have a significant impact on the surrounding residents and flow of traffic within those streets.

An assessment of the off-street car parking provision necessary to support the future development is required to be provided. It is critical that there is adequate off-street car parking, including more than one vehicle entry and egress point, to support the peak demand generated by the proposed development and to minimise the impact on the surrounding streets and on-street parking, which are currently used by existing residents.

Response

SINSW has accepted Council's comment. The scheme includes an option to provide 296 parking spaces on site, which would fulfil the minimum Development Control Plan (DCP) requirements. Off-street parking would be used for demands over and above that anticipated by the DCP.

Due to the constraints of the ecological zone, it isn't possible to provide a second road entry point. The scheme currently has substantial queuing area for the exit point to mitigate the impact of queuing on car park operations. The team is also reviewing the potential to provide turning lanes at the entry / exit point to provide additional capacity.

Flooding

5. *It is noted that the application includes a flood statement prepared by Henry & Hymas on 1 April 2021. However, the land is subject to possible high-risk flooding, as such a revised detailed flood study is required to be submitted as part of the planning proposal application. The revised flood study is to be prepared in accordance with Council's Floodplain Management standards and should include:*
   - *A scaled catchment plan highlighting full upstream catchment areas that generates the overland flows.*
   - *Scale site plans showing the pre-developed (existing) and post-developed (proposed) 1% AEP flood extent and levels on the subject property.*

- *A 50% blockage factor with the existing underground stormwater system shall be allowed for the hydraulic analysis.*
- *The flood assessment must demonstrate that the proposed development will not impede the passage of floodwater to cause a rise (afflux) in the flood level upstream and/or increase the downstream velocities of flow for the flood standard. No structures and/or filling are permitted to be placed over any drainage easement and/or the 1 in 100yr overland floodpath.*
- *The establishment of 500mm freeboard for the proposed finished levels above the 1 in 100 year flood level.*
- *If the depth x velocity product of the overland floodwater exceeds 0.4m2/s, suitable open type fencing or other appropriate measures shall be used to restrict access to such areas affected by hazardous overland flows.*
- *Any boundary fence/wall over the estimated flood extent must be replaced with open type in order to allow unimpeded passage of overland floodwater.*
- *A longitudinal section (at vertical scale 1:50, horizontal scale to that of plan view) of the drainage system showing existing and proposed levels, flood levels, hydraulic data and all changes in grade.*
- *A minimum of five 1:50 scale cross-sections taken at right angles to the overland flowpath, showing both the existing and post-developed flow sections with all levels to AHD, drawn at the following chainages:*
  - *a) at the upstream property boundary;*
  - *b) where the existing and proposed structure/land is closest to the floodpath;*
  - *c) at the downstream extent of the development work; and*
  - *d) other cross-sections as needed if other parts of the system affect the site.*

Note: Cross-sections must show existing and proposed levels, top water levels, hydraulic data, flood extents.

The flood study must be signed by the engineer declaring that the study has been undertaken in accordance with Australian Rainfall and Runoff, the NSW Floodplain Management Manual and Council's Floodplain Management Technical Standard. If the proposed development is within high risk flood zone then an evacuation management plans must be considered as part of this development.

Response

Following completion of the schematic layout design documentation of the building footprint(s), carpark(s) & netball courts, a detailed 2D flood modelling study will be developed for the Development Application. The 2D flood model will form part of a coordinated detailed stormwater flood assessment and reporting.

The final flood study will address the points raised in the PP/PREDA advice (attached) and will similarly address the requirements outlined in City of Ryde Councils adopted 'Floodplain Management Plans' - in addition, the flood study will reference the 'Floodplain Management Manual (NSW Government, 2001)'.

The final 2D flood modelling study prepared by Quantum Engineers will address the requirements raised in the PP/Pre-DA comments (*dated 15th July 2021*) which includes:

- ***A scaled catchment plan highlighting full upstream catchment areas that generates the overland flows***
- ***Scale site plans showing the pre-developed (existing) and post-developed (proposed) 1% AEP flood extent and levels on the subject property***
- ***A 50% blockage factor with the existing underground stormwater system shall be allowed for the hydraulic analysis***

- *The flood assessment must demonstrate that the proposed development will not impede the passage of floodwater to cause a rise (afflux) in the flood level upstream and/or increase the downstream velocities of flow for the flood standard. No structures and/or filling are permitted to be placed over any drainage easement and/or the 1 in 100yr overland floodpath*
- *The establishment of 500mm freeboard for the proposed finished levels above the 1 in 100 year ARI (1% AEP) flood level*
- *If the depth x velocity product of the overland floodwater exceeds 0.4m2/s, suitable open type fencing or other appropriate measures shall be used to restrict access to such areas affected by hazardous overland flows*
- *Any boundary fence/wall over the estimated flood extent must be replaced with open type in order to allow unimpeded passage of overland floodwater*

General comments on Concept Development Plan

The following information is provided with respect to the Concept Development Plan. The Concept Plan is considered an important component of the proposal as it is a key tool in communicating the proposed future use of the land. It is important that it reflects the existing strategic framework.

1. *Indoor Sports Facilities Review (May 2020, Optium Planning Group).*
   This Council adopted review proposed an expansion to the Marsden Indoor Centre by an additional 2 courts (total of 6 courts) by 2035. The concept plan should be amended to make provision for extension to a total of 6 courts and for the associated additional parking generation.

Response

Design of the indoor court facility is not a consideration for a Planning Proposal. The concept plans represents how development may be capable of being carried out, but does not represent the final proposal. This matter will be considered as part of the detailed proposal in the Development Application.

2. *Open Space Plan (July 2012, Cloustons Associates)*
   This Plan identifies this facility as a level 1 or 2 park. The concept design should include a variety of uses/functions/facilities to maximise the community benefit of the proposal. These may include loop pathways for walking/cycling, picnic areas, aesthetic garden beds, grassed kick about areas, etc.

Response

The detailed use and layout of the site including pathways, garden beds etc, are not a consideration for a Planning Proposal, however these issues are noted and will be documented at DA stage. It is noted that uses such as pathways, garden beds etc should be incorporated into the design.

3. *Ryde Biodiversity Plan (December 2016, Ecological Australia).*
   The site is located within an identified Local Connectivity corridor that connects two regions. The Concept Plan should maximise tree and vegetation canopy and make provisions for tree replacement planting at a ratio of 3 to 1.

ITEM 7 (continued) **ATTACHMENT 4**

Response

Landscaping and tree canopy coverage is not a consideration for a Planning Proposal, however, this will be detailed at the DA stage, with a 2:1 replacement planting ratio as noted at Pre DA meeting No. 1

4. *Council's Renewable Energy Targets and Sustainable Transport actions should be considered in the Concept Plan in relation to building design, alternate transport modes to move away from private vehicle use, EV charging points, etc.*

Response

Renewable Energy Targets are not a consideration for a Planning Proposal, however, will be addressed at future DA stage.

5. *Urban heat island impacts. The proposal will significantly increase the coverage of the site with impervious, hardstand areas which will contribute significantly to the heat island impacts for the locality. Development Plans will need to demonstrate how this impact will be mitigated.*

Response

Urban heat island effects are not a consideration for a Planning Proposal, however, will be addressed at future DA stage.

6. *The site is flood affected in the south-eastern corner. The planning proposal has included a "Flood Statement" flagging this matter. However, the Concept Plan will need to adequately address the flood safety aspects, including an emergency evacuation plan, of providing netball courts in this location as well as the stormwater flows and riparian matters for the watercourse in this vicinity.*

Response

A detailed Flood Study will be submitted with the DA package. The Planning Proposal seeks to rezone the site to Part E2 Environmental Conservation and Part RE1 Public Recreation. Whilst a concept plan is being prepared, detailed plans will not be developed until further consultation with Council Pre Lodgement team has been undertaken. It is considered, any recreational development of the site, will adequately address flood safety aspects, including emergency evacuation plans, stormwater flows and riparian matters as part of future a future Development Application.

Yours faithfully
DFP PLANNING PTY LTD

N. Bartley

NATASHA BARTLEY
PRINCIPAL PLANNER

nbartley@dfpplanning.com.au

Reviewed:

ITEM 7 (continued) **ATTACHMENT 5**

City of Ryde
Lifestyle and opportunity @ your doorstep

Department of Education
C/o DFP Planning Pty Ltd
PO Box 230
PENNANT HILLS NSW 1715

By email: nbartley@dfpplanning.com.au

11 November 2021

Our Ref: LEP2021/1/3

Dear Ms Bartley,

Planning Proposal to rezone 22 Winbourne Street, West Ryde from SP2 (Educational Establishment) to Part RE1 Public Recreation and Part E2 Environmental Conservation

I refer to the planning proposal, lodged on 4 June 2021, to rezone land at 22 Winbourne Street, West Ryde from SP2 (Educational Establishment) to Part RE 1 Public Open Space and Part E2 Environmental Conservation. The intent of the rezoning is to develop the site for the purposes of a netball facility comprising 32 outdoor courts and an indoor facility comprising 4 courts and ancillary uses.

It is noted that additional information was submitted to Council on 5 October 2021. Preliminary assessment of the original and additional information has been undertaken which indicates that the proposed use will have significant impacts on the surrounding road and traffic network. Whilst some of these impacts may be addressed via the development application process, there are broader adverse road and traffic network impacts on the surrounding area that must be considered at this strategic, rezoning level.

The 2009 Meadowbank Park traffic study, on which the traffic and parking assessment for the proposed development is based, has identified the following operational characteristics:

- Each netball game is expected to generate, on average, an attendance (comprising players, referees, etc.) of approximately 20 people.
- The average vehicle occupancy for people travelling to netball games is two (2) persons per vehicle.

Based on the above operational characteristics, assuming that all netball courts are used during major competitions, the proposed 32 outdoor netball

Customer Service Centre
1 Pope Street, Ryde NSW 2112
(Within Top Ryde City shopping centre)

North Ryde Office
Level 1, Building 0, Riverview Business Park,
3 Richardson Place, North Ryde NSW 2113

Phone (02) 9952 8222 Fax (02) 9952 8070
Email cityofryde@ryde.nsw.gov.au
Post Locked Bag 2069, North Ryde NSW 1670
www.ryde.nsw.gov.au
ABN 81 621 292 610

ITEM 7 (continued) **ATTACHMENT 5**

City of Ryde
Lifestyle and opportunity @ your doorstep

courts could generate a maximum parking demand of 320 vehicles, which exceeds the car parking provision that is proposed to be provided on site.

The initial assessment of the proposal indicates that there will be a shortfall in on-site parking. The planning proposal states that the proposed parking is consistent with the Development Control Plan rate of "3 spaces per court" and "1 space per 20m^2 GFA for indoor facility" (being 32 x 3 = 96 + 4,000m^2/20m2 x 1 space = 200) totaling 296 spaces. However, this parking calculation is considered a minimum and is not sufficient for the operation of the proposed facility. The proposed "overflow" on-street parking would not be satisfactory as this would significantly impact the surrounding road network.

It is agreed that parking may be addressed at the development application stage, however, it is a symptom of a larger network problem that the rezoning of the site to RE1 Open Space will have on the surrounding road network. Some of the problems for the surrounding network are evident from the following:

1. In the additional information submitted on 5 October, the traffic surveys were undertaken on Saturday, 13 February 2021 and Tuesday, 16 February 2021, during which COVID-19 restrictions were still in place. Comparing the 2019 SCATS and the 2021 traffic volume data for the intersection of Victoria Road and Marsden Road/Wharf Road for the weekday PM peak hour period (5pm – 6pm), it is evident that the 2019 results are higher. The 2021 base traffic volumes for all surveyed intersections should be calibrated to the 2019 traffic volume data.

2. With regards to the estimated traffic generation, clarification is required on the following:

   - Further justification is required to be provided on the reduced traffic generation estimated for the weekday PM peak hour period.
   - Why was outbound traffic not considered for the weekday PM peak period to account for overlap between potential games/training sessions starting and finishing concurrently?
   - Why was the traffic potentially generated by the four (4) indoor courts not considered?

3. The supplementary traffic statement indicates that the traffic modelling has been calibrated with the degree of saturation set to be less than 1 for all intersections to prevent "over-predicting congestion under current conditions". This is not considered to be appropriate as it may not be an accurate representation of the current operational performance of the surrounding road network (i.e. the current congestion surrounding road network could be underestimated).

Customer Service Centre
1 Pope Street, Ryde NSW 2112
(Within Top Ryde City shopping centre)

North Ryde Office
Level 1, Building 0, Riverview Business Park,
3 Richardson Place, North Ryde NSW 2113

Phone (02) 9952 8222 Fax (02) 9952 8070
Email cityofryde@ryde.nsw.gov.au
Post Locked Bag 2069, North Ryde NSW 1670
www.ryde.nsw.gov.au
ABN 81 621 292 610

ITEM 7 (continued) **ATTACHMENT 5**

City of Ryde
Lifestyle and opportunity @ your doorstep

4. It is understood that at this stage there are no formal plans for the upgrade of the intersection of Victoria Rd and Marsden Rd/Wharf Rd under the arrangement depicted in Figure 1 of supplementary traffic statement, being an extract of the Jacobs' TMAP. As such, it is likely that the proposed development (if approved) would be operational before any long-term infrastructure measures outlined in Jacobs' TMAP has been implemented. In this regard, it is advised that the traffic modelling for the 2031 scenarios be updated based on the current layout of the intersection of Victoria Rd and Marsden Rd/Wharf Rd.

It is clear from Council's assessment to date that the highest and best use of the RE1 Public Recreation zone, being the proposed netball facility, will have adverse impacts on the capacity and operation of the surrounding road network. On the information available it remains unclear whether this impact can be accommodated by the available network. In particular, Council is seeking sufficient information relating to traffic impacts to be able to ascertain whether upgrades to intersections (such as and upgrade of Victoria Road and/or an upgrade of Marsden Road/Wharf Road) may be required earlier than currently planned to support any rezoning.

In order to minimise the potential spillover of parking onto the surrounding public roads and to encourage more people to travel to the site by active transport and reduce the potential traffic impacts, additional measures should be considered at the planning proposal stage, as without such measures Council does not consider that the site is suitable for rezoning for the proposed facility. Some additional measures for consideration may include, but not be limited to, the following:

- Adequate end of trip facilities (e.g. bicycle racks, showers, lockers, etc.) provided on site in accordance with the NSW Government's Planning Guidelines for Walking and Cycling.
- A shared use (pedestrian and cycle) path be provided along the eastern side of Winbourne St between Marsden Road and Hermoyne St.
- Appropriate full pedestrian crossing facilities across Brush Rd.
- Surrounding intersection upgrades be brought forward as a result of the proposed development

The proposed netball facility has the potential to be a valuable community asset to West Ryde and the surrounding community. However, such a community asset should also be supported by commensurate supporting infrastructure so that the community amenity is maintained and improved. It is concerning that the information provided with the planning proposal has been minimal and there seems to be a reluctance to provide the appropriate level of

Customer Service Centre
1 Pope Street, Ryde NSW 2112
(Within Top Ryde City shopping centre)

North Ryde Office
Level 1, Building 0, Riverview Business Park,
3 Richardson Place, North Ryde NSW 2113

Phone (02) 9952 8222 Fax (02) 9952 8070
Email cityofryde@ryde.nsw.gov.au
Post Locked Bag 2069, North Ryde NSW 1670
www.ryde.nsw.gov.au
ABN 81 621 292 610

ITEM 7 (continued) **ATTACHMENT 5**

City of Ryde
Lifestyle and opportunity @ your doorstep

information that will enable the assessment of this important facility on its strategic merit and in accordance with legislative requirements.

The above comments are raised for your consideration and Council recommends that we meet to discuss a way forward with the proposal. I will be seeking the assistance of Mr Kavanagh and Mr Petrie in this regard.

Please contact Council's Manager Urban Strategy, Mr Dyalan Govender on 9952 8188 to arrange a meeting to discuss the progression of this application.

Yours sincerely,

Liz Coad
Director City Planning and Environment

C.c.
Mr Michael Kavanagh – Senior Project Director, School Infrastructure NSW
Mr David Petrie – Director Harbour, City Planning Delivery Unit DPIE

Customer Service Centre
1 Pope Street, Ryde NSW 2112
(Within Top Ryde City shopping centre)

North Ryde Office
Level 1, Building G, Riverview Business Park,
3 Richardson Place, North Ryde NSW 2113

Phone (02) 9952 8222 Fax (02) 9952 8070
Email cityofryde.ryde.nsw.gov.au
Post Locked Bag 2069, North Ryde NSW 1670
www.ryde.nsw.gov.au
ABN 81 621 292 610

ITEM 7 (continued) **ATTACHMENT 6**

22 Winbourne Street, West Ryde

Planning Proposal - Traffic Impact Assessment

CBRE Project Management

30 March 2022

Gold Coast
Suite 26, 58 Riverwalk Avenue
Robina QLD 4226
P: (07) 5562 5377

Brisbane
Level 2, 428 Upper Edward Street
Spring Hill QLD 4000
P: (07) 3831 4442

Sydney
Studio 203, 3 Gladstone Street
Newtown NSW 2042
P: (02) 9557 6202

W: www.bitziosconsulting.com.au

E: admin@bitziosconsulting.com.au

Document Issue History

Report File Name	Prepared	Reviewed	Issued	Date	Issued to:
P5556.001 22 Winbourne Street TIA_DRAFT	A.Packer	A.Eke	A.Eke	25/03/2022	Nicholas Lawler, Nicholas.lawler@cbre.com
P5556.002 22 Winbourne Street TIA	A.Packer	A.Eke	A.Packer	30/03/2022	Nicholas Lawler, Nicholas.lawler@cbre.com
P5556.003 22 Winbourne Street TIA	A.Packer	A.Eke	A.Packer	30/03/2022	Nicholas Lawler, Nicholas.lawler@cbre.com

ITEM 7 (continued) **ATTACHMENT 6**

CONTENTS

Tables

Figures

Appendices

1. INTRODUCTION

1.1 Background

1.1.1 Purpose of Report

This report provides a supplementary traffic impact assessment (TIA) to address Council's RFI and complete their assessment of the Planning Proposal.

1.1.2 Project History

Below outlines a summary of the project history relating to the Planning Proposal application:

- A Planning Proposal was lodged with City of Ryde Council (CoRC) on 4 June 2021 seeking Council support for rezoning of the existing Marsden High School site from SP2 Infrastructure to part RE1 Public Recreation and part C2 Environmental Conservation (now known as C2 Environmental Conservation).
- A pre-DA meeting was held on 15 July 2021 concurrent to the Planning Proposal (PP) submission, resulting in details of the proposed concept design for the facility being provided to Council, in an effort to streamline the various statutory planning pathways.
- CoRC issued a Request for Information (RFI) #1 on 16 July 2021 in relation to traffic and parking issues
- CoRC issued a Request for Information (RFI) #2 on 11 November 2021 in relation to traffic and parking issues.

1.1.3 Transport Assessment Chronology of Events

Prior to the preparation of this assessment, the following transport assessment items have been undertaken (in chronological order):

- SCT Consulting completed a Rapid Transport Assessment for the proposal to inform the project team (16 February 2021). The RTA reviewed the transport components and considerations to support the development and helped inform the planning proposal.
- As part of the PP application, SCT Consulting completed a Traffic Impact Assessment (TIA) in March 2021. This was submitted with the PP on 4 June 2021.
- Council responded to the TIA (16 July 2021) with a request for further information (RFI). The RFI outlined the following concerns regarding the SCT Consulting TIA:
  - The traffic generation was based on survey results from 2009, raising concerns about its suitability to accurately represent current operation
  - There is a lack of clarity on the likely operational characteristics of the indoor netball courts
  - Traffic modelling was requested to provide details of the expected impacts of the development on the road network during the weekday evening peak (5PM – 6PM) and Saturday midday peak (12PM – 1PM).
  - The parking impacts to the surrounding streets were not well documented or justified. A detailed assessment of off-street car parking provision necessary to support the development should be provided.
- SCT Consulting provided a response to Council's RFI on 14 September 2021.
- Council issued a further RFI (#2) on 11 November 2021. The RFI outlined a series of concerns regarding the traffic assessment assumptions as summarised below:
  - The information provided to date did not provide assurance about the level of traffic and parking impact resulting from the rezoning of the land
  - The impact of overflow parking resulting from the proposed facility is underestimated as the proposed parking rates provided are lower than the rates specified in the Development Control Plan

- The traffic surveys that were supporting the traffic analysis were undertaken in February 2021 during Covid-19 restrictions, and were shown to represent lower than usual traffic volumes when compared to SCATS data from 2019. The traffic surveys were not considered to be representative of typical traffic volumes.
- Further justification is required for the reduced traffic generation rate assumed during weekday PM peak period
- Traffic generation in the previous assessment did not include the four indoor courts
- Traffic modelling assumed upgrades to the layout of Victoria Road / Marsden Road intersection that will not necessarily be completed at the time of operation. The existing intersection layout should be used.
- It is unclear whether the current road and active transport infrastructure can support this land use
- Additional measures should be considered to reduce reliance upon private vehicles (i.e. active and public transport)

- In response to Council's RFI, Bitzios Consulting were engaged to undertake a peer review of the Rapid Transport Assessment, Traffic Impact Assessment and Council's comments.
- A meeting on the 22nd of February 2022 was held between the project team, Bitzios Consulting and Council to discuss Council's concerns regarding the proposal and help determine what level of detail was required to be submitted as part of the planning proposal in order to give Council's officers comfort that the transport impacts of the proposal could be adequately addressed
- Bitzios Consulting then undertook review and assessment of the core assumptions associated to the traffic assessments to date. This included additional reviews of example site operations including the different scale and frequency of events as well as review the practical transport impacts for such facilities in line with the communities' reasonable expectations.
- A meeting was held with Council officers to present Bitzios Consulting's findings. Council then reviewed the operational information and provided feedback to inform both this traffic assessment for the Planning Proposal as well as scope for more detailed requirements as part of future development applications. A summary of Council's feedback is presented in **Appendix A.**

1.2 Scope

The scope of works for this Planning Proposal traffic impact assessment includes:

- Review of the existing site and operation, the surrounding road network, public transport and active transport
- Undertaking benchmarking of operations, traffic and parking impacts at similar netball facilities
- Assessment of the car parking provision based on similar netball facilities, the site specific transport system
- Estimation of the development traffic generation, distribution and impacts on the surrounding road network through detailed SIDRA intersection modelling
- Review and recommendation of walk, cycle and public transport facilities to support the proposal
- Identifying potential traffic and parking impact mitigations to support the intended land use and varying scale events
- Providing high level commentary on the operation and management of events on the site.

2. EXISTING CONDITIONS

2.1 Existing Site

The subject site is currently occupied by Marsden High School. Access is currently provided via Windbourne Street. The site is adjacent to residential dwellings, a childcare and a public primary school. The established nature of the existing school and adjacent primary school generate concentrated peak traffic periods during morning drop-off and afternoon pick-up periods.

Source: Nearmap

Figure 2.1: Subject Site Location

2.2 Surrounding Road Network

Details of the surrounding road network are outlined in Table 2.1 below.

Table 2.1: Surrounding Road Network Hierarchy

Road Name	Jurisdiction	No. of Lanes (Two-way)	Hierarchy	Divided	Posted Speed	Details
Winbourne Street	City of Ryde	2	Local	No	40km/hr	Primary access road (north-south) for the subject site
Marsden Road	TfNSW	4	Arterial	No	60km/h	North-south arterial road providing access to the site
Victoria Road	TfNSW	6	Arterial	Yes	70km/h	East-west arterial road providing access to the site

Road Name	Jurisdiction	No. of Lanes (Two-way)	Hierarchy	Divided	Posted Speed	Details
Brush Road	City of Ryde	2	Local	No	40km/h	North-south road fronting the subject site

The surrounding key intersections are identified in Figure 2.2 and detailed in Table 2.2.

Source: GoogleMaps

Figure 2.2: Surrounding Key Intersections

Table 2.2: Key Intersections

Intersection #	Intersection Name	Jurisdiction	Intersection Type
1	Victoria Road / Marsden Road	TfNSW	Signalised
2	Marsden Road / Winbourne Street	TfNSW	Priority-controlled
3	Victoria Road / Brush Road	TfNSW	Priority-controlled (left-in, left out)

2.3 Existing Traffic Operations and Observations

2.3.1 Overview

The existing high school located on the site is accessed primarily via Winbourne Street, where a kiss and drop (KnD) facility is provided along the site frontage from Hermoyne Street to No. 16 Winbourne Street. Informal access to the site is also available via Brush Road.

Data was collected to establish the existing traffic conditions and operation around the subject site, including:

- Dash camera footage taken via drive by of the subject site and surrounding road network during the existing school peak hours on 9th March, 2022

- Intersection counts at the 3 key intersections between 7:00AM – 9:00AM and 3:00PM – 6:00PM on 9th March 2022, and 8:00AM – 1:00PM on 12th March 2022.
- Queue counts to coincide with the intersection counts at Intersection #1 and 2
- 7-day tube counts undertaken on Winbourne Street and Brush Road commencing 9th March 2022.

The intersection count data, tube count data and queue count data are attached in **Appendix B.**

2.3.2 Network Peak Hours

Based on the traffic data collected, the current network peaks (based on two-way traffic movements) around the site are as follows:

- Key intersection 1 (Victoria Road / Marsden Road):
  - AM Peak: 8:00AM – 9:00AM
  - PM Peak: 5:00PM – 6:00PM
  - Weekend Peak: 11:45AM – 12:45PM
- Key intersection 2 (Marsden Road / Winbourne Street):
  - AM Peak: 8:00AM – 9:00AM
  - PM Peak: 3:00PM – 4:00PM
  - Weekend Peak: 11:30AM – 12:30PM
- Key intersection 3 (Victoria Road / Brush Road):
  - AM Peak: 7:45AM – 8:45AM
  - PM Peak: 4:45PM – 5:45PM
  - Weekend Peak: 12:00PM – 1:00PM
- Winbourne Street:
  - AM Peak: 8:00AM – 9:00AM
  - PM Peak: 3:00PM – 4:00PM
  - Weekend Peak: 11:00AM – 12:00PM
- Brush Road:
  - AM Peak: 8:00AM – 9:00AM
  - PM Peak: 3:00PM – 4:00PM
  - Weekend Peak: 12:00PM – 1:00PM

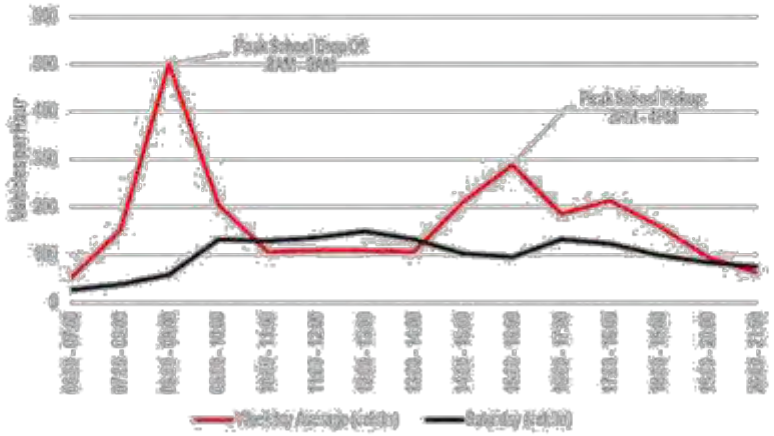
2.3.3 Existing Site Peak

Based on site observations and the current operating hours of Marsden High School, the existing site peak has been identified as 8:00AM – 9:00AM and 3:00PM – 4:00PM on weekdays. The existing site is not operational on weekends. Based on the above, the following conclusions can be made:

- The Marsden Road / Victoria Road intersection AM peak captures both commuter and high school drop off demand; however, the PM peak results only from commuters as it occurs after the high school operations cease (5:00pm – 6:00PM)
- The Winbourne Street / Marsden Road intersection peaks coincide with high school pick up and drop off (i.e. AM and PM peak).
- Similarly, the Winbourne Street and Brush Road peaks occur during the high school pick up and drop off
- The Brush Road / Victoria Road AM peak mostly aligns with school drop off; however, the PM peak results from commuters returning home, as it occurs later than school operational hours (4:45Pm – 5:45PM)
- Weekend peaks for all intersections / road links occur between 11AM – 1PM.

2.3.4 Winbourne Street Observations and Issues

There are high traffic volumes and low vehicle speeds during school peak hours on Winbourne Street. During weekends, traffic volumes reduce significantly and are primarily associated with surrounding residential based trip purposes. Average hourly weekday and weekend traffic volumes on Winbourne Street are highlighted in Figure 2.3 below.



Source: Matrix 7-day tube counts 9th March – 15th March 2022

Figure 2.3: Winbourne Street Two-way Hourly Traffic Volumes

Onsite observations revealed that the off-street bus facility north of Farnell Street on the western side of the subject site is utilised as an informal pick-up / drop-off area by parents. This creates a high volume of northbound right turns at this location, creating delays and queueing for southbound vehicles on Winbourne Street as shown in Figure 2.4 below.

Figure 2.4: Winbourne Street (Southbound) Observations – Utilisation of Bus Facility for Pick Up (3:04pm on 9 March 2022)

Additionally, vehicles were observed to queue back on Winbourne Street, waiting for an opportunity to exit onto Marsden Road and travel south to the Victoria Road intersection. Queueing data for the Winbourne Street / Marsden Road intersection indicated that queues of up to 17 vehicles (approx. 100m) occur in the southbound direction on Winbourne Street during both the AM and PM peak on weekdays. However, during weekends, minimal queueing was observed on this movement.

It is noted that the length of the right turn lane into Marsden Road only allows for approximately two vehicles to queue. Traffic count data at the intersection also indicates that during the commuter peak (5PM – 6PM), only 13% of vehicles exiting Winbourne Street into Marsden Road turn right, with the remaining 87% of vehicles turning left to continue to the Marsden Road / Victoria Road intersection.

2.3.5 Marsden Road Observations and Issues

Some queueing was observed in the southbound right turn lane on Marsden Road (north of the intersection with Victoria Road), as shown in Figure 2.5 below. This is attributed to the right turn movement onto Victoria Road heading westbound in the afternoon peak.

Figure 2.5: Marsden Road (Southbound) Observations – Queueing at Victoria Road Intersection (3:05pm on 9 March 2022)

Queueing data for the Winbourne Street / Marsden Road intersection indicated that queues of up to 17 vehicles (approx. 100m) extend north from the intersection during the AM peak. However, the maximum queueing on Marsden Road during the PM peak (approx.. 8 vehicles or 50m north of the intersection) occurred well after school pickup time (5:00PM – 6:00PM). On the weekends, minimal queueing was observed at this intersection.

2.3.6 Brush Road Observations and Issues

Brush Road experiences lower traffic demand related to school drop off and pick up compared to Winbourne Street, as indicated by the hourly traffic volumes shown in Figure 2.6 below.

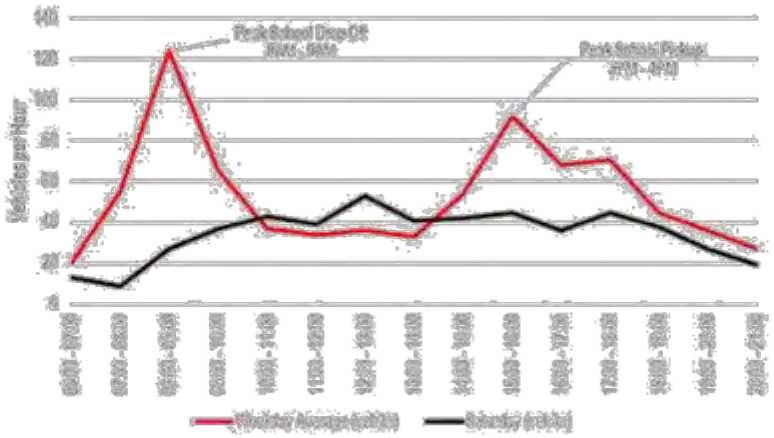


Figure 2.6: Brush Road Two-way Hourly Traffic Volumes

It was also noted that the northbound daily traffic on Brush Road was almost double the daily southbound traffic, so it is likely that the majority of parents utilising Brush Road for school pickup are continuing north rather than returning south to exit onto Victoria Road.

Due to on-street parking on both sides of Brush Road adjacent to the site frontage and the frequency of vehicles leaving the kerbside to enter the traffic lane, only a low speed can be maintained through Brush Road during site peak periods. Drivers must manoeuvre past each other as two-way access cannot be maintained when vehicles are parked on both sides of the road as shown in Figure 2.7.

Figure 2.7: Brush Road (Northbound) Observations – Constrained Road Width (3:00pm on March 9, 2022)

No queueing was observed from Brush Road into Victoria Road.

2.3.7 Existing Traffic Operation Summary

Key traffic impacts resulting from the existing site operation on the road network are summarised below:

- There is heavy traffic demand on Winbourne Street from 8AM – 9AM and 3PM – 4PM on weekdays, resulting in approx. 100m queues on Winbourne Street to the north of the Marsden Road / Winbourne Street intersection
- The majority (87%) of vehicles exiting Winbourne Street into Marsden Road are heading southbound during the afternoon commuter peak. The demand for the right turn into Marsden Road is low, likely due to route choice for the turning movement with less delays (i.e. left turn into Marsden Road) and the lack of space to queue for the right turn.
- There is some traffic impact to Brush Road on weekdays; however, the majority of the traffic is travelling northbound and is not as heavy as on Winbourne Street. No queueing was observed on Brush Road into Victoria Road.
- The traffic demand from the existing high school on weekdays does not determine the PM peak of the Victoria Road / Marsden Road intersection (5PM – 6PM)
- Some queuing (approx. 100m) occurs southbound on Marsden Road north of the Winbourne Street intersection during AM peak and may be resulting from the operation of the high school. However, the queueing in the PM peak (50m) occurs outside of school hours and is resulting from the commuter peak period (5PM – 6PM)
- There is no traffic impact from the existing site on the network during Saturdays.

2.4 Existing Parking Operation

2.4.1 Overview

As outlined in SCT Consulting's *Traffic and Transport Impact Assessment Report* and the *Rapid Transport Assessment*, on-street parking widely available in proximity to the subject site, as shown in Figure 2.8 below. This on-street parking is located along residential access and collector streets and apart form the existing school demands, does not exhibit any other major land uses or parking generators that result in high on-street parking utilisation.

Source: Marsden High School Netball Facility Rapid Transport Assessment (SCT Consulting, 2021)

Figure 2.8: On-street Parking Available in Proximity to the Subject Site

2.4.2 Background Parking Conditions

While existing parking surrounding the site associated with the school occurs during weekdays only and peaks during morning and afternoon periods, it is acknowledged that the period of when parking demands associated with the proposal will differ and be for a longer duration. Section 3 outlines the proposed facilities expected operations, with Section 5 reviewing the parking impacts and mitigation measures for further consideration through the development application phase to ensure the parking operations are acceptable to the communities expectations and do not result in any safety or amenity impacts to the surrounding area.

2.4.2.1 Winbourne Street Observations and Issues

Site observations during site peak hours revealed that the formalised kiss and drop zones along Winbourne Street are well utilised as shown in Figure 2.9 below. However, these parking impacts quickly dissipated after 9am and 4pm, with low parking occupancy observed on street after this time. As the school is not operational on weekends, there is low parking occupancy in the street on Saturdays.

Figure 2.9: Winbourne Street (Southbound) On-street Parking Utilisation for School Pickup (3:05pm on 9 March 2022)

2.4.2.2 Brush Road Observations and Issues

The informal parking opportunities along the subject site frontage on Brush Road are also well utilised during school peak periods, as shown in Figure 2.10 below.

Figure 2.10: Brush Road (Northbound) On-street Parking Utilisation for School Pickup (3:00pm on 9 March 2022)

As with Winbourne Street, these impacts very quickly dissipate after these peak periods, with low parking occupancy observed after 9am and 4pm on the weekdays, and on weekends.

While Brush Road provides an opportunity for on-street parking associated with the site, the width of the road does not support parallel parking on both side and maintain two-way traffic flow.

It is expected that irrespective of the parking provision accessed via Winbourne Street as part of the proposed facility, patrons will approach and access the facility from the east via Brush Road and its connecting streets. Therefore, improvements to parking and travel lane line marking to manage traffic flow, driveway accesses and provide designated parking areas is recommended along Brush Road and connecting streets to the east of the site.

2.5 Public Transport

The existing public transport links are described in detail in the SCT Consulting *Traffic Impact Assessment* Report. Overall and by virtue of the historical school land use over the site, the site is a well located to existing public transport services including both local services as well as higher frequency services along Victoria Road connecting to Parramatta and the City. Key bus routes surrounding the site are shown in Figure 2.11 below.

Source: Marsden High School Recreational Facility Planning Proposal Traffic and Transport Impact Assessment (SCT Consulting, 2021)

Figure 2.11: Key Bus Routes in Proximity to the Subject Site

The frequency of bus services is outlined in Table 2.3 below.

Table 2.3: Bus Routes and Frequencies

Bus Route	Route Description	Frequency
501	Parramatta to Central Pitt St via Victoria Rd	9 minutes during peaks on weekdays
513	Carlingford to West Ryde	30 mins during peak on weekdays
523	West Ryde to Parramatta	30 mins during peak on weekdays
543	Eastwood to West Ryde	1 service in AM and 1 in PM
544	Auburn to Macquarie Centre via Eastwood	30 mins during peaks on weekdays

The bus routes provide direct links to Eastwood, Parramatta, Carlingford, and Auburn.

Bus routes also connect to the West Ryde Rail Station provides connecting rail services every 15 minutes to / from Sydney CBD, Hornsby, and Gordon.

Additionally, the site is within a 15-20min walk from the proposed Stage 2 preferred route alignment of the Parramatta Light Rail service passing through Melrose Park, which will provide links to Rydalmere to the west and Olympic Park to the south. This project was announced in October 2017 and is currently in the planning and development stage.

2.6 Active Transport

2.6.1 Pedestrian Facilities

The surrounding pedestrian facilities are described in detail in the SCT Consulting *Traffic Impact Assessment* Report *(Dated 25th March 2021)*. Overall and by virtue of the historical school land use, the site is well connected to existing pathway facilities. Figure 2.12 below indicates the walk-up catchment within 1200m of the subject site.

Source: Marsden High School Recreational Facility Planning Proposal Traffic and Transport Impact Assessment (SCT Consulting, 2021)

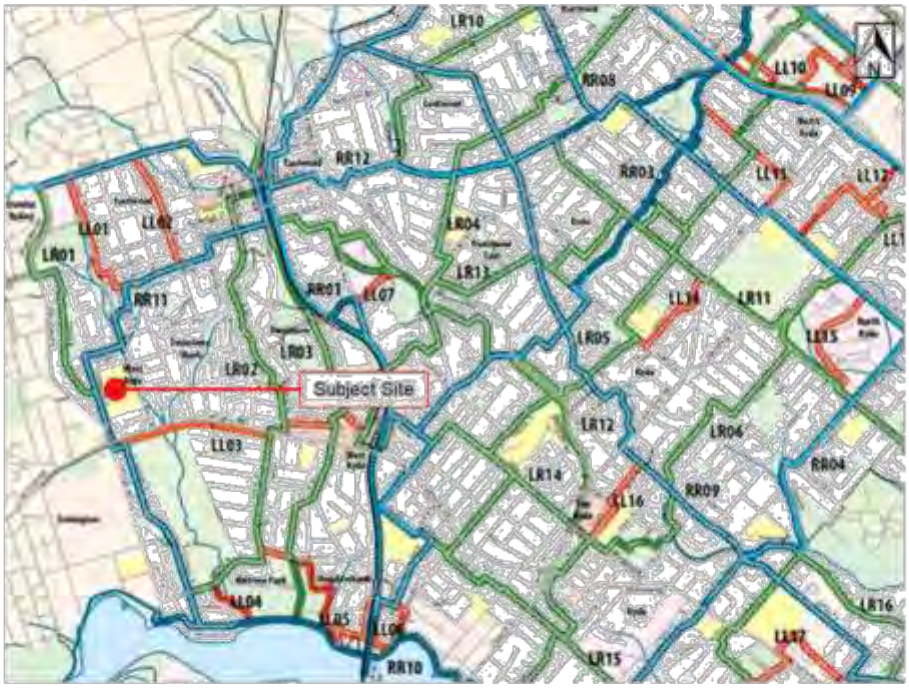
Figure 2.12: Walking Catchment Map

The subject site has a significant walk-up catchment potential, which provides an opportunity to support a lower private vehicle mode share for this proposed community facility. The existing pathway network does include some 'missing gaps' in proximity to the site. Updates to the pedestrian pathway facilities fronting and surrounding the site will be discussed further within Section 6.

2.6.2 Cycling Facilities

The nearby cycle facilities have previously been outlined in the SCT Consulting *Traffic Impact Assessment* Report. In summary, there are currently no dedicated cycling facilities in proximity to the site. The footpaths can be used by cyclists under the age of 16, along with their adult supervisors; however, the footpaths are narrow (<3m) and likely to result in conflicts between pedestrians and cyclists.

Winbourne Street and Hermoyne Street are identified as part of a planned regional bicycle route (RR11) that is intended to provide a north-south connection between Eastwood and the Parramatta Valley Cycleway (refer to Figure 2.13 below). This route has not yet been developed with infrastructure or wayfinding, and there is currently no estimate on when this route will be formally delivered.



Source: City of Ryde Bicycle Strategy and Masterplan (2014)

Figure 2.13: Key Cycling Routes

3. PLANNING PROPOSAL'S TRANSPORT AND OPERATIONAL CONSIDERATIONS

3.1 Overview

Given the application is for a Planning Proposal only, this section outlines the likely operational details of the proposal and how the transport aspects should be considered with respect to the subject site.

3.2 Indicative Proposed Future Development Components

The applicant is seeking to rezone the land from SP2 Educational Establishments to RE1 Public Recreation and part C2 Environmental Conservation. For the purpose of assessing the traffic and transport impacts of the proposal, a likely development inclusion has been prepared and may include:

- 32 outdoor netball courts
- 4 indoor multi sports courts
- A gym facility to be ancillary and associated with the multi-sports court facility.

Access is proposed both via Winbourne Street and to a lesser extent via Brush Road. The existing public bus stops and on-site bus pick up and drop off zone will be retained along Winbourne Street.

3.3 Proposed Site Operations and Benchmarking

3.3.1 Overview

The previous traffic reports utilised first principles assessments based on generalised advice from ERNA to determine the likely traffic and subsequent parking impacts of the proposed development. While this approach is generally considered reasonable in the absence of empirical data sets or detailed surveys, the assessments did not consider the temporal demand for the site over a standard day or week as well various use scenarios of intensity.

This section investigates the various factors that influence the use of the site for the purpose of assessing the site's transport needs. This includes:

- The different operational scenarios from day-to-day training use, through to major national event carnivals
- Review of other similar scale netball facilities across metropolitan and regional NSW
- Operational times and the various types of activities/events on the site
- Review of parking and traffic data collected for the existing ERNA site in 2018 and what site specific and behavioural factors that affected the transport operations
- Court occupancies and operational factors that influence the use of the courts
- Comparison of the proposed operations to the current use over the site being a high school.

3.3.2 Potential Operational Scenarios

For the purpose of understanding and managing the transport outcomes to support the planning proposal, three operational scenarios discussed with Council officers and include:

- **Scenario 1: Weekly Community Games and Training**
  - This scenario represents typical weekly operation and would include both weeknight training and Saturday competitions.

- Saturday competitions will be considered the peak day for this scenario, as court occupancies are likely to be highest on this day (the indoor courts will not be in use on Saturdays). These are expected to run between 8am and 5pm.
- Weekday training is likely to occur both during the school day as the site may be used for school sports, as well as after school training from 4pm – 6pm, with the main peak likely to occur in the evening.
- This scenario would apply during the netball season (April – September) yearly, and is the most frequently occurring usage scenario.
- The visitor catchment for this scenario includes visitors from within the local area or within nearby suburbs.

- **Scenario 2: Medium Events, e.g. Regional Competition**
  - This usage scenario represents an infrequent event occurring approximately 3 times per year between April and September
  - The events are expected to run between 8AM and 9PM at varying levels of intensity
  - Typically these events would occur on a weekend or a three-day weekend
  - Higher vehicle occupancies and number of spectators per court is assumed than Scenario 1
  - Higher reliance on buses is expected given the wider catchment of the event as well as the team structure of patrons and their spectators
  - The visitor catchment for this scenario includes visitors from within the local area and surrounding suburbs, as well as competitors or spectators from other regions. As such, higher vehicle occupancies and travel by bus / group travel is expected compared to day-to-day use
  - This scenario would be subject to an event management plan overlay and travel demand management strategies to accommodate the temporary increase in intensity and demand. Further details in Section 7.
- **Scenario 3: Large Events, e.g. National Competition**
  - This usage scenario represents a major event which would only occur once a year
  - Typically these events would occur on a weekend and would run at varying levels of intensity between 8AM and 9PM
  - These events may run in the evenings on the indoor courts only due to their elite status and higher spectator numbers compared to a standard court game
  - Higher vehicle occupancies are expected compared to day-to-day games
  - Higher reliance on buses is expected given the wider catchment of the event as well as the team structure of patrons and their spectators
  - A larger number of visitors / competitors will be travelling interstate via the airport, public transport, and private charter bus
  - The visitor catchment for this scenario includes competitors from other states and regions, and spectators from both the region and the local area.
  - This scenario would be subject to an event management plan overlay and travel demand management strategies to accommodate the temporary increase in intensity and demand. Further details in Section 7.

As the most common frequency scenario is Scenario 1 (weekly community games and training), it is considered reasonable that the site should accommodate for the traffic and parking demands of this scenario. These are discussed in further detail in Section 4 and 5 respectively.

The medium and high use scenarios are not regular occurrences and will be subject to additional event management planning, travel demand management, and other mitigation measures as discussed in Section 7 to ensure that the impacts are appropriately managed, but permanent infrastructure is proportionate to the site operations and also economically viable.

3.3.3 Similar Sites

A review of similar sites to the proposal was undertaken to benchmark the intended operation of the proposed development against that of existing and approved sites. Historical aerial photographs from Nearmap and Google 'popular times' were investigated at each of the similar sites to help inform the daily and weekly usage profiles, court occupancy, and parking occupancy and surrounding impacts.

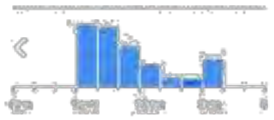
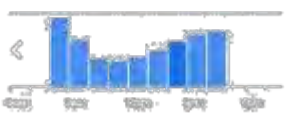
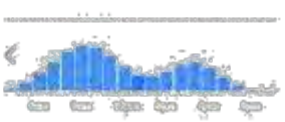
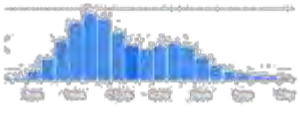
The findings from the benchmarking were used to inform the traffic and parking analysis to ensure that these assessments were representative of the likely intended operation of the site. These sites include:

- The existing Eastwood Ryde Netball Association netball courts at Meadowbank Park
- The Manly Warringah Netball Association (John Fisher Netball Courts)
- The Liverpool City Netball Association (Whitlam Leisure Centre)
- Sutherland Shire Netball Association (Bellingara Netball Courts).

3.3.4 Typical Daily and Weekly Usage Profiles

Google 'popular times' were investigated for each of the similar sites to identify the weekly peak periods. The findings are summarised in Table 3.1 below. It should be noted that 'popular times' were not available for all sites.

Table 3.1: Benchmarking Sites and Use Profiles

Site	Typical Weekday Profile	Typical Weekend Profile
Eastwood Ryde Netball Association		
Manly Warringah Netball Association		

As shown above, peak operation during the week typically occurs on Saturday morning, with another peak on Saturday afternoon and during the morning on weekdays.

This is consistent with the likely operation of the proposal, as school training will take place during the weekdays, after-school training will occur on weeknights, and competitions for various age groups will occur throughout the day on Saturday.

3.3.5 Court Occupancy

The historical aerial photographs of the selected sites demonstrated various court occupancies and parking demands that represented two of the three usage scenarios, as shown in Table 3.2.

Table 3.2: Court Occupancy for Various Scenarios

Site Location	No. of Off-street Parking Spaces	Scenario	Court Occupancy (Occupied / No. of Courts)	Car Parking Occupancy
Eastwood Ryde Netball Association	429 (shared with soccer fields, parks and cricket nets)	Sc2 - Regional Event	17 / 27 (63%)	High
		Sc 1 – weekday event	10 / 27 (37%)	Low / Medium
Manly Warringah Netball Association	19	Sc 2 – Regional Event	24 / 25 (96%)	High with Overflow Parking
Liverpool City Netball Association	~260 (shared with oval and park)	Sc 1 - Saturday games	26 / 32 (81%)	High
		Sc 1 weekday games	20 -25 / 32 (63 - 78%)	Medium - High
		Sc 2 – regional event	32 / 32 (100%)	High Overflow
Sutherland Shire Netball Association	~330 (shared with playground and oval)	Sc 1 – Saturday event	23 – 30 / 33 (70 - 90%)	Medium / Overflow

Examples of aerial photos indicating court usage and parking for various scenarios are shown in Figure 3.1, Figure 3.2, and Figure 3.3 below.

ITEM 7 (continued) **ATTACHMENT 6**

Source: Nearmap. Date: 18 July 2017

Figure 3.1: Scenario 1 Example (Weekday) – Eastwood Ryde Netball Association (Meadowbank Park)

ITEM 7 (continued) **ATTACHMENT 6**

Source: Nearmap. Date: 24 June 2017

Figure 3.2: Scenario 1 (Weekend) Example – Sutherland Shire Netball Association (Bellingara Netball Courts Centre)

Source: Nearmap. Date: 27 July 2014

Figure 3.3: Scenario 2 Example (Weekend) – Eastwood Ryde Netball Association

To summarise, typical court occupancies for the three scenarios were as follows:

- Scenario 1 – Standard Community Games Days and Training
  - Weekday – between 30 – 80%
  - Saturday – between 70 – 90%
- Scenario 2 – Carnivals: between 95 – 100%
- Scenario 3 – Large Scale National Events: 100% expected. Likely to depend on event scheduling / timing of premium match offerings. Maximum court occupancy at any time will be similar to Scenario 2, with court usage reducing to only one court for the final.

For the purpose of traffic and parking analysis detailed hereafter, the maximum court occupancy for Scenario 1 has been based on a conservative 90% on Saturdays, and 70% on weeknights during background peak periods.

3.3.6 Expected Peak Hours

For Scenario 1, the main site peak (i.e. the time at which 90% court occupancy is reached) is likely to occur on Saturdays from 9am – 11am based on the daily profiles outlined in Section 3.3.4 above.

However, based on the network peak hours, the critical time period for further traffic analysis on Saturdays would be in the middle of the day from 12PM – 1PM to coincide with the Victoria Road / Marsden Road intersection peak. Based on the daily profile data indicated by Google 'popular times', this would only represent a court occupancy of approximately two-thirds of the AM peak (60%). This would align with the expected change over between junior competition (morning) and senior competition (afternoon). It is understood that on a regular / average weekend game day utilising the outdoor courts, the indoor netball courts are not likely to be in competition use concurrently.

A smaller peak is expected to occur on weeknights between 4pm and 6pm for after-school and after-work training as indicated in the daily profiles above. It is expected that 70% court occupancy is reached during this time period. Based on the network peak hours, the critical time-period for the weekday evening training would be from 5 – 6PM.

It is noted that the proposed change in land use from a high school to a recreational facility results in a change in the timings of the site peaks, resulting in higher traffic volumes on Saturdays during the midday peak and on weeknights during the commuter peak. However, the proposed site peaks are likely to be spread over a longer time frame, rather than the concentrated morning and afternoon peaks as per the existing high school on the site.

3.3.7 Persons Per Court

For the purpose of understanding the person trip demands for the site, the estimated number of persons per court for various day-to-day scenarios are outlined in Table 3.3 below. These figures were provided by the operational consultants Otium and considered aspirational for the purpose of practical site operations.

Table 3.3: Persons Per Court

Scenario	No. of Players per Court	No. of Spectators per Court+	No. of Referees / Coaches per Court	Total Persons per Court
Saturday Competition	~16	10-30+	1-4^	~ 27-50
Weeknight Training	~16	16+	4^	~ 36

Source: Otium Operational Data

+: Spectators expected to be affiliated with players (family) or other games (pre or post) and therefore do not add to vehicular traffic

^: Referees would be expected to attend multiple games concurrently.

These numbers are a conservative assumption and are in line with the maximum operation of other types of facilities. It should be noted that some spectators, coaches and players may be present on site for multiple games and therefore may not leave the site after one game. In addition, referees would not be expected to attend one game, but rather attend recurring games over the course of a game day.

3.3.8 Typical Length of Games

Typically, netball matches are scheduled at one and a half hour (90 minute) intervals, which allows a 15-minute changeover period in between games as outlined in Bitzios Consulting's *Meadowbank Park Netball Traffic Impact Assessment* that details the operation of the existing Eastwood Ryde Netball Association. The proposed netball facility is also expected to operate in a similar manner.

3.4 Summary of Findings

Several usage scenarios were considered as part of the assessment; however, Scenario 1 (day-to-day operation on weekdays and weekends) will be the focus of the following traffic and parking assessment. Scenarios 2 and 3 (medium and large events) will be subject to event management overlays and planning to mitigate any potential impacts, as will be discussed in Section 7.

The proposed netball facility is intended to operate equivalent to similar facilities in the area in terms of peak hours, court occupancy, and number of persons on site. Therefore, the level of impact of the proposed change in land use is commensurate with the community's reasonable expectations for a facility of this nature. The benchmarking data collected is considered appropriate to further inform traffic and parking impact assessments and calculations detailed in latter sections of this report.

Based on this information, the impacts of the proposed land use will be spread over a larger period of time than the impacts of the existing school.

4. TRAFFIC ASSESSMENT

4.1 Assessment Context

The following traffic assessment assumes a day-to-day operational scenario. The purpose of the assessment is to determine the impacts of the proposed netball courts on the external road network. This requires that the proposal's impacts be determined at the anticipated 'year of opening' and at the 10-year design horizon. For the purpose of this assessment, the proposal's anticipated year of opening is 2024. As such, the 10-year design horizon year is 2034.

4.2 Assessment Area

Detailed analysis (SIDRA modelling) was undertaken on the following intersections to determine the impact of the proposed development:

- Intersection #1: Victoria Road / Marsden Road signalised intersection
- Intersection #2: Marsden Road / Winbourne Street priority-controlled intersection
- Intersection #3: Victoria Road / Brush Road priority-controlled intersection

Due to the proximity of intersections #1 and 2, these were modelled as a network, whilst intersection #3 was modelled as an individual site. Intersection movement summaries from the SIDRA modelling are attached in **Appendix F.**

4.3 Traffic Demands

The traffic demands to be modelled have been prepared for the following scenarios:

- **Year 2024 Weekday PM peak hour / Saturday peak hour, background traffic volumes:** determined by applying growth rates to the traffic survey data
- **Year 2024 Weekday PM peak hour / Saturday peak hour, design traffic volumes**: determined by combining background traffic and the development traffic
- **Year 2034 Weekday PM peak hour / Saturday peak hour, background traffic volumes:** determined by applying growth rates to the traffic survey data
- **Year 2034 Weekday PM peak hour / Saturday peak hour, design traffic volumes:** determined by combining background traffic and the development traffic.

4.4 Background Traffic

The following intersections were surveyed by Matrix on Wednesday 9th March 2022 between 7:00 AM to 9:00 AM and 15:00 PM to 18:00 PM, as well as on Saturday 12th March 2022 between 8:00 AM to 1:00 PM:

- Intersection #1: Victoria Road / Marden Road signalised intersection
- Intersection #2: Marsden Road / Winbourne Street priority-controlled intersection
- Intersection #3: Victoria Road / Brush Road priority-controlled intersection

The traffic survey data used in this traffic impact assessment has been provided in **Appendix B.**

Based on the intended site operation, site peak hours and existing network peak hours, the following 'worst case' peak hours for assessment were selected:

- Weekday PM Network Peak Hour: 5:00PM – 6:00PM
- Saturday Network Peak Hour: 11:45AM – 12:45PM

The selection of these peak periods also ensures that any background traffic from the existing high school is avoided in the analysis, as this land use will be removed from the site.

An annual compounding growth rate of 1.38% has been applied to Victoria Road, Wharf Road, and Marsden Road traffic volumes to forecast future background traffic, based on analysis of STFM modelling outputs from 2019 – 2026 on Victoria Road.

No growth has been applied to Brush Road or Winbourne Road as these have been assumed to be closed catchments with very little intensification of the existing local land uses.

The forecast background traffic has been provided in **Appendix C.**

4.5 Development Traffic Generation

4.5.1 Vehicle Occupancy

A vehicle occupancy of 2.5 persons per vehicle has been applied. This is based upon assessments undertaken at similar sites as well as advice from the potential user of the facility, Otium. SCT Consulting previously assumed a vehicle occupancy of 2.4 persons per vehicle in their *Rapid Transport Assessment* and *Traffic Impact Assessment*.

4.5.2 Mode Share

Typically, the mode share for netball courts is heavily reliant on private vehicles. Data provided by the operator (Otium) from surveys conducted at 7 similar facilities indicates that up to 90-95% of trips to netball courts are typically by private vehicle, with very low usage of public and active transport to this type of site.

However, as the goal of this development is to provide a recreational facility for the community that minimised the traffic generation utilising Winbourne Street during peak times, it is proposed to provide a proportionate level of on-site parking as a means to encourage visitors to make use of existing active and public transport facilities. The proximity of the proposed light rail corridor in Melrose Park, the bus stops on the site frontage, and the regional bicycle route on Winbourne Street further provide convenient connections to the facility. Therefore, a 90% mode share for private vehicles has been assumed.

4.5.3 Trip Rate per Court

As there is no standardised trip rate for netball courts, a first principles approach was used to calculate the number of vehicle trips. Based on the operational data outlined in Section 3.3 as well as the mode share considerations and vehicle occupancy outlined above, the number of vehicle trips per hour was calculated as shown in Table 4.1 below.

Table 4.1: Calculation of Trip Rate per Court

Day and Time	Maximum Court Occupancy for Day[1]	Likely Occupancy During Selected Period[2]	No. of Courts in Operation	Max. No of Persons Entering & Exiting the Site[3]	Two-way Vehicle Volumes per Hour[4]	Trip Rate / Court / Hr
Saturday 12PM - 1PM	90%	60%	20	1,280	461	23
Weekday 5PM – 6PM	70%	70%	22	1,408	507	23

[1] *Based on court occupancy benchmarking*
[2] *Factored court occupancy based on estimated daily profiles*
[3] *Assuming all players leave at termination of the game, all players / spectators arrive in the 15 minutes prior to a game, and one game changeover during peak hour. 16 players and 16 spectators were assumed per court.*
[4] *Assuming 90% private vehicle mode share and 2.5 occupants per vehicle*

This yields 461 vehicle trips during the weekend peak and 507 trips during the weeknight peak. It should be noted that all assumptions are conservative, resulting in a conservative traffic generation. The assessment does not account for visitors staying on site for multiple games (players and spectators).

4.5.4 Traffic Splits

Data sourced from a previous TIA report for the existing East Ryde Netball Association netball facilities in Meadowbank indicate that the In / Out split during peak traffic conditions was 54% / 46% per hour based on 2018 counts collected at the Andrew Street / Adelaide Street roundabout. Estimated vehicle trips in and out of the site are summarised in Table 4.2 below.

Table 4.2: Development Traffic Splits

Land Use	Weekday Peak Split		Saturday Peak Split		Weekday Peak Development Trips		Saturday Peak Development Trips	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Proposed netball courts	54%	46%	54%	46%	274	233	249	212

4.6 Traffic Distribution and Assignment

The traffic distribution for the proposed netball courts was determined using the following assumptions:

- 25% of trips to the site enter from the northern end of Brush Road, with half of those returning north via Brush Road
- 12.5% of trips to the site enter from the northern end of Windbourne Street, with the same percentage of trips returning north via Windbourne Street
- 25% of trips to the site enter from the northern side of Marsden Road
- 25% of trips to the site enter from the southern side of Marsden Road (via Victoria Road)
- 12.5% of trips to the site enter from Brush Road via Victoria Road
- 50% of trips leave the site southbound on Winbourne Street
- Existing left / right splits exiting Winbourne Street into Marsden Road were applied (i.e. 17% turning right and 83% turning left)
- Existing left / through / right splits exiting Marsden Road into Victoria Road were applied (i.e. 55% left, 17% through and 27% right)
- 25% of trips leave the site southbound on Brush Road onto Victoria Road

The traffic distribution is attached in **Appendix D**, and the resulting design traffic volumes (including background and development traffic) are attached in **Appendix E.**

4.7 Intersection Assessment

4.7.1 Intersection 1 - Victoria Road / Marsden Road Intersection

Figure 4.1 shows the geometric layout of Intersection 1.

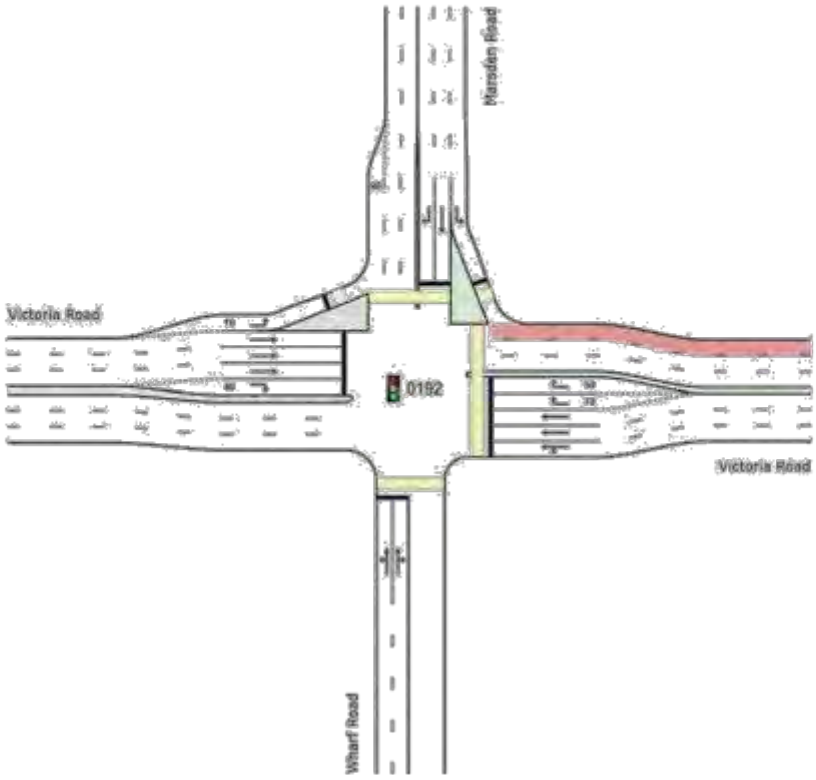


Figure 4.1: Intersection 1: Victoria Road / Marsden Road SIDRA Layout

The SIDRA results for Intersection 1 are summarised in Table 4.6.

Table 4.3: Victoria Road / Marsden Road SIDRA Results Summary

Peak Period	Year	Traffic Scenario	Victoria Road / Marsden Road		
			DOS	Average Delay (s)	95% Back of Queue (m)
Weekday PM Peak	2024	Forecast Background	0.94	51	396
		Design	0.98	60	458
	2034	Forecast Background	1.08	95	672
		Design	1.12	114	755
Weekend Peak	2024	Forecast Background	0.81	37	212
		Design	0.86	42	241
	2034	Forecast Background	0.92	47	303
		Design	0.97	59	374

It has been noted that the intersection is already approaching its capacity during the weekday PM peak in the 2024 forecast, as the DOS is >0.9. At the 10-year design horizon, the forecast background traffic demand exceeds the capacity of the intersection (DOS>1.0). Therefore, irrespective of the future development over the subject site, there are significant queues and delays at this intersection both at the year of opening and at the 10-year design horizon during peak periods. This peak period operation for Victoria Road is well known given its function as the primary urban arterial road north of the Parramatta River between Parramatta and Gladesville.

In regard to the impacts of the proposal, the results show that the proposal's traffic results in a minor increase in delay, with <10 seconds delay in the weekday PM peak at the year of opening and <20 seconds at the 10-year design horizon. Given the operations of the intersection, it is expected that patrons of the facility travelling to and from the site will consider these limitations when considering mode, travel time and route to the facility. Specifically, the grid network surrounding the site allows for other roads in the area to avoid localised congestion at this intersection, minimising the expected impacts to this intersection. Additionally, the promotion of alternate travel modes as outlined in the Green Travel Plan for this site will reduce the traffic demands resulting from the development.

Overall, the proposed development adds 203 vehicles to the intersection during the weekday PM peak and 185 vehicles to the intersection during the weekend peak. This represents an overall increase of 4% in traffic volumes through the intersection for both weekday PM peak and weekend peak at year of opening.

Given the above as well as TfNSW's future planning for Victoria Road to support Stage 2 of the Parramatta Light Rail, specific infrastructure upgrades are not recommended to be imposed at this location.

4.7.2 Intersection 2 - Marsden Road / Winbourne Street Intersection

Figure 4.2 shows the geometric layout of intersection 2.

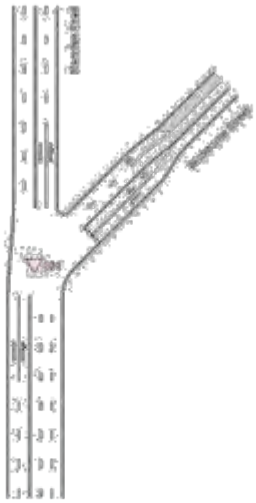


Figure 4.2: Intersection 2: Marsden Road / Winbourne Street SIDRA Layout

The SIDRA results for intersection 2 are summarised in Table 4.4. It is important to note that the operation of this Winbourne Street / Marsden Road intersection is impacted by peak period queueing

back from Victoria Road located to the south. Line marking and signage works were undertaken in 2017 to help formalise peak period traffic movements and manage queuing. The operations of this intersection and surrounding road network are shown within survey data to manipulate traffic distribution and discourage right turn movements out of Winbourne Street. Specifically, only 13% of trips exiting Winbourne Street turn right onto Marsden Road, while 87% exit left onto Marsden towards Victoria Road. This is an important factor for assessing the proposals likely traffic impacts to this intersection. When considering the road network operations and traffic generated by the proposal at this intersection, the road network will continue to operate in a similar manner with the inclusion of the proposal. Traffic modelling demonstrates that during both weekday peak period and weekend peak period operations of the Marsden Road / Winbourne Street intersection do not significantly worsen to a level that warrants additional mitigation measures to be imposed.

Specifically, the highest delay at the intersection is the right turn from Winbourne Street into Marsden Road. The modelling indicates that there is a minimal increase to delay resulting from the proposed development (<5 seconds at the 10-year design horizon during PM weekday peak).

The highest queues in the modelling result from northbound vehicles on Marsden Road queueing behind vehicles turning right into Winbourne Street; however, these queues are minimal (<10m, approximately equivalent to 1 vehicle).

Table 4.4: Marsden Road / Winbourne Street SIDRA Results Summary

Peak Period	Year	Traffic Scenario	Marsden Road / Winbourne Street		
			DOS	Average Delay (s)	95% Back of Queue (m)
Weekday PM Peak	2024	Forecast Background	0.18	16	5
		Design	0.28	18	7
	2034	Forecast Background	0.19	18	6
		Design	0.40	21	8
Weekend Peak	2024	Forecast Background	0.15	15	4
		Design	0.19	17	6
	2034	Forecast Background	0.17	17	4
		Design	0.26	20	7

4.7.3 Intersection 3 - Victoria Road / Brush Road Intersection

Figure 4.3 shows the geometric layout of Intersection 3.

Figure 4.3: Intersection 2: Victoria Road / Brush Road SIDRA Layout

It has been noted that during the PM peak on weekdays, a bus lane operates westbound on Victoria Road. A nominal 10 buses per hour were added to the kerbside lane, which was prioritised to buses only in the model. The SIDRA results for Intersection 1 are summarised in Table 4.5.

Table 4.5: Victoria Road / Brush Road SIDRA Results Summary

Peak Period	Year	Traffic Scenario	Victoria Road / Brush Road		
			DOS	Average Delay (s)	95% Back of Queue (m)
Weekday PM Peak	2024	Forecast Background	0.60	11	1
		Design	0.61	11	4
	2034	Forecast Background	0.69	13	1
		Design	0.70	13	5
Weekend Peak	2024	Forecast Background	0.51	8	1
		Design	0.52	9	3
	2034	Forecast Background	0.59	10	1
		Design	0.60	10	3

The results show that the development traffic results in negligible (<5 seconds) increase in delays. Whilst the highest delay occurs at the left turn out of Brush Road into Victoria Road, the delay is still low (<15 seconds) and the intersection is operating well under capacity both at year of opening and at the 10-year design horizon.

As such, no mitigation measures or upgrades are warranted.

4.8 Capacity Assessment – Winbourne St and Brush Rd

Winbourne Street and Brush Road are both classified as local roads. To determine the forecast daily traffic volumes on Winbourne Street and Brush Road, the weekly average hourly vehicle volumes collected via 7-day tube counts were used. No growth was applied as these roads are assumed to be closed catchments.

The calculated daily trip generation from the netball courts was then added to determine the design traffic, and compared with the environmental capacity of the road (sourced from RTA *Guide to Traffic Generating Developments*), as shown in Table 4.6 below.

Table 4.6: Road Capacity Assessment

Road	Road Type	Capacity (per lane one-way) (veh/hr)	2022 PM Peak Volumes	Development Generated Two-wayTraffic (veh/hr)	Design Traffic (veh/hr)
Winbourne Street	Local	600	215	175	390
Brush Road	Local	600	71	142	213

The capacity of both Winbourne Street and Brush Road is sufficient to accommodate the additional traffic resulting from the intended future use of the site following the proposed rezoning.

4.9 Summary of Traffic Impacts

The proposed removal of the existing high school results in a decrease in traffic demands on Winbourne Street and Brush Road from 8AM – 9AM and 3PM – 4PM during weekdays. Additionally, the highest traffic impact for the proposed land use is likely to be outside the network peak hours (i.e. on Saturday morning and afternoon), where the surrounding road network has sufficient capacity to accommodate the traffic demands from the proposed land use during a typical day-to-day usage scenario.

It has been noted that Victoria Road / Marsden Road intersection is already nearing its capacity in the 2024 base case during the weekday PM commuter peak; however, SIDRA modelling indicates that the expected impact of the proposed netball facility results in negligible increases (<10 seconds at year of opening, and <20 seconds at 10-year horizon) in delay at the intersection during the weekday PM peak. The development traffic represents only a 4% increase from year of opening background traffic at this intersection.

Victoria Road / Marsden Road will continue to operate at capacity thresholds during peak periods in future years irrespective of the proposal. The proposal's net traffic impacts to the overall performance of the intersection are considered negligible and not result in specific upgrades or mitigation measures to support the proposal.

It is likely that the existing delay at the Victoria Road / Marsden Road intersection during the PM commuter peak will factor into travel mode choice consideration for the site including patrons within the local walking and cycling catchment to consider walking or cycling to the site.

The Winbourne Street / Marsden Road intersection functions under capacity during both peak periods for the year of opening and 10-year design horizon. Minor queueing (<10m or one vehicle) is expected northbound on Marsden Road at the right turn into Winbourne Street; however, the expected delay from this is minimal (<5 seconds).

All other key intersections are functioning under their capacity in both the base case and design case for year of opening and 10-year design horizon during weekday PM peak and weekend peak, with negligible increases to delay resulting from the proposed land use. Additionally, Winbourne Street and Brush Road have sufficient capacity to accommodate the proposed change in land use during the site's peak periods.

Overall, the preliminary modelling demonstrates that the proposal can be accommodated within the surrounding road network and intersections. Further detailed analysis of the traffic impacts will be undertaken as part of the development application's traffic impact assessment report.

5. CAR PARKING ASSESSMENT

5.1 Car Parking Requirement and Provision

While Council's *Development Control Plan* does include a parking rate for Recreation Facilities (outdoor) at a rate of 3 spaces per court, this parking rate has been acknowledged by Council as not representative to meeting the practical demands for the proposal and specifically netball courts. Therefore in response to Council's position, benchmarking of parking rates at similar sites was undertaken to determine a practical parking rate that has been applied by both Council and also other jurisdictions. The example site parking rates are summarised in Table 5.1 below.

Table 5.1: Parking Rates from Similar Sites

Site Name	Parking Provided	No. of Netball Courts	Parking Rate per Court (On-site Parking Only)
Eastwood Ryde Netball Association (ERNA)	429 (shared with soccer fields, parks and cricket nets)	28	15.3 spaces per court
Manly Warringah Netball Association	22 on site; 214 on street parking bays on Abbott Road (shared with football club and oval)	25	9.44 spaces per court
Liverpool City Netball Association	~260 (shared with oval and park)	32	8.1 spaces per court
Sutherland Shire Netball Association	~330 (shared with playground and oval)	30	11.0 spaces per court
Tweed Netball Association	148 spaces; including 40 off-street parking spaces shared with Tennis Facility and 108 on-street parking spaces on surrounding streets	24	6.1 spaces per court
		Average Parking Rate	8.18 spaces per court

Based on the review of the similar netball facilities, the average parking provision rate equates to 8.18 spaces per netball court. It is important to note that many of the other facilities provide shared parking with other community land uses, which often operate at the same time (i.e. concurrent sport training and game days). Therefore, these sites would exhibit a higher overall parking demand than the subject site on Winbourne Street. With consideration to the local ERNA site, the parking provision located adjacent to the netball facility (L H Waud Sports Field) includes 208 parking spaces and equates to a rate of 7.4 spaces per court. This site also experiences shared parking utilisation for neighbouring sport uses as outlined in Section 3 for weekday and weekend operations.

Many of the example sites are also reliant and designed around the use of formalised on-street parking fronting the site or within the surrounding road network. This community-based parking layout to support the facility allows for use of the sites parking provision by other neighbouring users outside peak operational times.

With consideration to the above parking rates applied to similar scale facilities, as well as the subject site's location with respect to for a potential walk-up catchment associated with the surrounding community use, an on-site parking provision of at least 8 spaces per court is considered appropriate.

When calculating the parking provision, it is noted that both the indoor netball courts and gym are not expected to be stand-alone or additional parking generators during peak operations times (i.e. Saturday morning competition hours). This is due to the indoor courts being reserved for major / elite games only and the gym operating as ancillary to the facility. Therefore, for the purpose of peak parking demand for the 32 outdoor netball courts is considered appropriate to determine the parking requirements for the proposal.

Based on a provision of 32 outdoor netball courts, a parking requirement of approximately **256 car parking spaces (8 spaces per outdoor court).** is considered appropriate for the proposal and consistent with the operation of similar facilities throughout regional New South Wales and metropolitan Sydney. This parking provision would also maximise the on-site parking to reduce impacts to the surrounding residents, whilst also managing the overall private vehicle trip generation accessing the site via Winbourne Street.

5.2 Behavioural Factors Influencing External Parking Usage

Irrespective of the on-site parking provision and consistent with the operations of the existing high school on the site, it is likely that some patrons to the facility accessing the site from the east by private vehicle may choose to park on the eastern side of the facility via Brush Road and surrounding streets. This may be due to a combination of the following factors:

- Convenient on-street parking in close proximity to the eastern courts for either game day or training
- Trip distribution and route choice favouring local streets over Marsden Road and Victoria Road.

Based on these behavioural considerations, it is recommended that mitigation measures be implemented on the surrounding streets and as part of operational planning for the facility. These measures may include but not limited to:

- Additional line marking and regulatory signage is installed to formalise parallel parking bays on Brush Road, maintain two-way traffic flow and ensure residents' driveways are not obstructed by visitors parking on street
- The facility's Transport Access Guide (TAG), Green Travel Plan (GTP) and any Event Traffic Management Plans should clearly outline designated parking areas within the facility along with any temporary off-site parking arrangements and alternates transport modes. Further details are outlined in Section 7 and will be provided as part of the Development Application traffic report.

5.3 General Car Park Design Recommendations

Given the application relates to the Planning Proposal phase of the project, detailed parking layouts and associated internal transport components of the design are not yet defined. Therefore, it is recommended that the internal transport components, parking areas as well as any external traffic works be designed in accordance with:

- Council's Development Control Plan (DCP)
- Australian Standards AS2890 Parking Facilities.
- Australian Standards AS1742 Manual for Uniform Traffic Control Devices
- Austroads Guidelines.

6. ALTERNATIVE TRANSPORT ASSESSMENT

6.1 Pedestrian Access and Facilities Assessment

Given the site's historical use as a high school, the site is well located in an established residential are and generally well connected by surrounding pathway network. The key pedestrian desire lines to and from the subject site, as well as existing crossing locations, are shown in Figure 6.1 below.

Figure 6.1: Pedestrian Desire Lines and Existing Crossings

As shown above, pedestrian crossings on Winbourne Street and Brush Road will be retained as part of the proposal. Generally, the existing pedestrian network caters for the likely desire lines for the subject site. However, SCT Consulting's *Traffic and Transport Impact Assessment Report* identified several gaps in the pedestrian network surrounding the site, namely:

- Besides the school crossing adjacent to Ermington Public school, there are few formalised crossings on Brush Road to cater for east / west desire lines to and from the subject site
- Footpaths are only provided on one side of many of the east-west streets connecting with Brush Road (i.e. Sindel Street, Cheers Street, Tramway Street)
- Only one formal crossing is available on Victoria Road on the eastern leg of the Marsden Road / Victoria Road intersection

6.1.1 Pedestrian Access and Facility Recommendations

In order to improve pedestrian access and encourage higher usage of active transport to minimise traffic and parking impacts, the following upgrades are recommended in conjunction with the proposal:

- Providing an additional formalised crossing on Brush Road between Sindel Street and Cheers Street to facilitate safe pedestrian movements between the residential catchment to the west of the site and the site entry on Brush Road. This may be in the form of a pedestrian refuge island
- Formalising a shared path (minimum width 3m) through signage and line marking on Winbourne Street between Marsden Road and Hermoyne Street.

6.1.2 On Site Pedestrian Facilities Requirements

The following requirements for pedestrian facilities will apply to future designs of the proposed netball facility in order to comply with Council's *Development Control Plan* and AS2890.1:

- A pedestrian connection from both site frontages (i.e. Winbourne Street and Brush Road) to the building entrance will be required.
- The existing pedestrian footpaths along the site frontage (Winbourne Street, Brush Road) will be required to be retained post construction as per existing
- Pedestrian sight triangles will be required on both sides of the car park access/es to ensure sight visibility and pedestrian safety

6.1.3 On Site General Design Recommendations

The following design principles and recommendations should be considered as part of future development application stages to comply with Council's *Development Control Plan* and relevant Australian Standards:

- Line marked pedestrian paths should be provided within the carpark to the entrance of the facility
- Marked pedestrian crossings of the circulation aisles within the carpark should be provided.
- Bollards should be provided near any building accesses or pedestrian areas adjacent to traffic lanes.

6.2 Bicycle Access and Parking

6.2.1 Bicycle Access Assessment

As the subject site currently does not have any dedicated cycling paths in its vicinity, cycling access is limited to cyclists riding on the road network and juniors (under 16) riding on the footpaths. It is noted that school traffic and parking will reduced from Winbourne Street / Brush Road (except for Ermington Public School impacts) once the site is rezoned. In addition, the future delivery of the proposed Regional Bicycle Route (RR11) along Winbourne Street / Hermoyne Street would provide further cycling connectivity to the site from Eastwood and Parramatta.

The development therefore presents an opportunity to integrate with planned cycling links and infrastructure in the area.

6.2.2 Bicycle Access Recommendations

In order to better accommodate higher pedestrian activity as well as support cycling access along the frontage to the site, it is recommended to formalise the shared path (minimum width 2.5m) on the eastern side of Winbourne Street between Marsden Road and Hermoyne Street.

6.2.3 On Site Bicycle Facilities Requirements

The following requirements for cycling facilities will apply to future designs of the proposed netball facility in order to comply with Council's *Development Control Plan* and AS2890.3:

- A minimum of 10% of the minimum car parking requirement (i.e. 25 bicycle parking spaces) will be provided for visitors and employees
- Employee bicycle parking will be secure and undercover
- Visitor bicycle parking will be provided at a location that is visible at the entrance of the facility, designed so that visitors are able to lock at least the frame of the bicycle and one of the wheels to the bicycle parking device
- End-of-trip facilities (including at least one shower and change room) will be provided.

- A shared path link between the entrance of the facility and the footpaths on Brush Road and Winbourne Street will be provided.
- Wayfinding signage to the bicycle parking and end-of-trip facilities will be provided.

6.3 Public Transport Assessment

6.3.1 Public Bus Facilities

As outlined in Section 0 of the report, the subject site is surrounded by several bus stops which provide frequent service and links to and from several suburbs in the vicinity.

6.3.2 Private Bus / Coach Facilities

The existing on-site bus pick up and drop off area will be retained as part of the development with the capacity to accommodate at least one coach, as will the bus stops along both sides of Winbourne Street.

Additional capacity for buses and coaches will be included in the on-site parking design. Both permanent coach bays as well as flexible use parking bays (e.g. parallel parking bays that can be repurposed as bus bays during events) will be included. The demand for coach parking is likely to be low during day-to-day (Scenario 1) operations. For larger scale events, please refer to Section 7.

6.4 Green Travel Planning

For developments of this nature, the preparation of a Green Travel Plan (GTP) is recommended to support the facility by outlining strategies to reduce the dependency on private vehicles and encourages travel mode behaviour change towards more sustainable travel options such as cycling, walking, carpooling and public transport. Increased uptake of public transport and active transport can bring a number of benefits to employers, staff, local communities and the environment. These include:

- reduced congestion on surrounding roads and associated parking demands
- reduced emissions associated with private vehicle usage
- a healthier, more active and more productive community
- a greater sense of community among users if the facility
- reduction in car operating costs such as fuel and vehicle wear.

GTPs are designed to be used as 'live document' by the owner / operator of the facility. The GTP should be developed in consultation with users and transport stakeholders. It should also be monitored and updated on a regular basis (often annually) to monitor progress towards active transport mode share targets, incorporate new innovation in sustainable travel and review and updates strategies.

7. LARGER SCALE EVENTS AND TRAVEL DEMAND MANAGEMENT

7.1 Overview

Section 2 outlines the various scale of events and also frequency of use. While only occurring for limited days a year, regional (medium scale) and national (large scale) events will require additional event management overlays to occur over the site and surrounding transport system. Prior to any events, it is recommended that in addition to the Green Travel Plan (GTP) and event traffic and pedestrian management plan be developed and submitted to Council. As outlined in Section 3, the transport impacts of medium and larger scale events differ from day-to-day operations in several ways, namely:

- Visitors are travelling from a larger catchment outside greater Sydney, in some cases interstate and do so via public and group booked transport
- Vehicle occupancies are generally higher for major events as there are more spectators and groups. Based on similar projects, during events vehicle occupancies have been assessed at around 2.8-3.0 persons per vehicle
- Given the team nature of netball, larger groups commonly travel together if coming from another region, therefore increasing the demand for bus / coach parking and servicing will be greater that usual.

7.2 Event Traffic and Parking Management Strategies

For medium and large-scale events, it is expected that an event traffic and pedestrian management plan (ETPMP) would be development for the site. This may incorporate a overlay treatments to manage traffic demands and road network operations as well as off-site parking and transport services to connect to the site. To manage travel demands, the ETPMP may include:

- Providing travel advisory packages to visitors before the event promoting carpooling and catching the bus and rail services
- Partnering with Transport for NSW to provide supplementary bus services for special events
- Providing Park n Ride or shuttle buses to / from transport hubs, such as Meadowbank and West Ryde railway stations or the existing Meadowbank Park site
- Limiting on-site parking availability to event staff and shuttle buses / coaches and stating this to attendees prior to the event
- Repurposing on-site parking bays to bus / coach bays (e.g. parallel parking bays)
- Providing off site bus / coach parking
- Utilising nearby sites for overflow parking (e.g. Ermington Public School sports ground adjacent – approx.. 150 car spaces)
- Ensuring there is a pick-up / drop-off area within the site for a coach.

8. SUMMARY AND CONCLUSION

The key findings of the Traffic Impact Assessment for the proposed multi sports stadium to be located at 22 Winbourne Street, West Ryde are as follows:

- The proposal includes rezone the subject site from SP2 Educational Establishments to RE1 Recreation and part C2 Environmental Conservation (now known as C2 Environmental Conservation). The proposal has the potential to include sports facility uses including up to 32 outdoor netball courts, 4 indoor multi sports courts and an ancillary gym.
- The existing high school will be demolished, resulting in a decrease in traffic and parking demand to the surrounding road network during typical school peak operating times on weekdays. Preliminary traffic analysis has been undertaken on the surrounding road network to respond to Council's concerns regarding its ability to accommodate the proposal. It is important to note that following the Planning Proposal, a separate Development Application and further Traffic Impact Assessment Report will be prepared
- The subject site is well supported by public and active transport facilities and strategically located near established residential areas of Denistone West, Eastwood and West Ryde as well as new residential growth suburbs of Melrose Park.
- Planned improvements to the public transport system along Victoria Road along with Council's cycleway rollout will further enhance the walk, cycle and public transport facilities to support the proposal
- Immediately surrounding the site, some pathways and crossings within the established residential areas to the east of the site incorporate some 'missing links'. Therefore, as part of the future development application it is recommended to investigate with Council the opportunity to address and improve pathways and crossing facilities connecting to the site
- A review of similar operating facilities has been undertaken to derive the expected practical operating scale and frequency for the purpose of traffic generation and to identify what transport measures are required to support the proposal. It is appropriate to consider the day-to-day transport operations of the facility be addressed while also considering the traffic capacity limitations and context of the surrounding road network. The use of the site for larger more infrequent events would however be subject to additional event management planning, travel demand management, and other mitigation measures to ensure that the impacts are appropriately managed, but permanent infrastructure is proportionate to the site operations and also economically viable.
- While Council's *Development Control Plan* does include a parking rate for Recreation Facilities (outdoor) at a rate of 3 spaces per court, this parking rate has been acknowledged by Council as not representative to meeting the practical demands for the proposal and specifically netball courts. Therefore in response to Council's position, benchmarking of parking rates at similar sites was undertaken to determine a practical parking rate that has been applied by both Council and also other jurisdictions. Based on the review of the similar netball facilities and considering the sites established transport facilities and road network operations, a parking provision of approximately **256 car parking spaces (8 spaces per outdoor court).** is considered appropriate for the proposal and consistent with the operation of similar facilities throughout regional New South Wales and metropolitan Sydney. This parking provision would look to maximises the on-site parking to reduce impacts to the surrounding residents, while also managing the overall private vehicle trip generation accessing the site via Winbourne Street.
- Given the application relates to the Planning Proposal phase of the project, detailed parking layouts and associated internal transport components of the design are not yet defined. Therefore,

the detailed transport components, parking areas as well as any external traffic works would be subject to further traffic impact assessment as part of the development application stage.

- The development of a Green Travel Plan (GTP) to support the site and its operations would be expected to be conditioned following the development application stage. The GTP would outline strategies to reduce the dependency on private vehicles and encourages travel mode behaviour change towards more sustainable travel options such as cycling, walking, carpooling and public transport.
- The primary vehicular access is proposed to be via Winbourne Street, which remains consistent with the current high school site operations. A review of the traffic impacts associated with the proposal demonstrates that irrespective of the proposal, Winbourne Street / Marsden Road intersection is impacted by peak period queueing back from Victoria Road to the south. Line marking and signage works were undertaken in 2017 to help formalise peak period traffic movements and manage queuing. The operations of this intersection and surrounding road network are shown within survey data to manipulate traffic distribution and discourage right turn movements out of Winbourne Street. Specifically, only 13% of trips exiting Winbourne Street turn right onto Marsden Road, while 87% exit left onto Marsden towards Victoria Road. This is an important factor for assessing the proposals likely traffic impacts to this intersection. When considering the road network operations and traffic generated by the proposal at this intersection, the road network will continue to operate in a similar manner with the inclusion of the proposal. Traffic modelling demonstrates that during both weekday peak period and weekend peak period operations of the Marsden Road / Winbourne Street intersection do not significantly worsen to a level that warrants additional mitigation measures to be imposed.
- The surrounding road network includes a combination of major road corridors including Victoria Road and Marsden Road. These roads and intersections experience major traffic volumes during peak periods and are expected to see traffic growth and congestion in future years. Notwithstanding the above, planned infrastructure works by both Council and TfNSW in the area are focussed towards public transport and active transport infrastructure over conventional road capacity upgrades.
- Given the site layout and frontage to Brush Road, it is likely that some parking and traffic will seek to access the site from the east via Brush Road. It is therefore recommended that mitigation measures be implemented on the surrounding streets and as part of operational planning for the facility. These measures may include but not limited to:
  - Additional line marking and regulatory signage is installed to formalise parallel parking bays on Brush Road, maintain two-way traffic flow and ensure residents' driveways are not obstructed by visitors parking on street
  - The facility's Transport Access Guide (TAG), Green Travel Plan (GTP) and any Event Traffic Management Plans should clearly outline designated parking areas within the facility along with any temporary off-site parking arrangements and alternates transport modes.

Based on the above assessment, it is concluded that the traffic, parking and transport impacts of the proposal can be appropriately managed to accommodate the proposed rezoning of the site. Detailed aspects of the site layout and traffic all associated transport infrastructure inclusions will be assessed and determined through an additional Traffic Impact Assessment to accompany the Development Application.

ITEM 7 (continued) **ATTACHMENT 6**

Appendix A: Council RFI and Responses

ITEM 7 (continued) **ATTACHMENT 6**

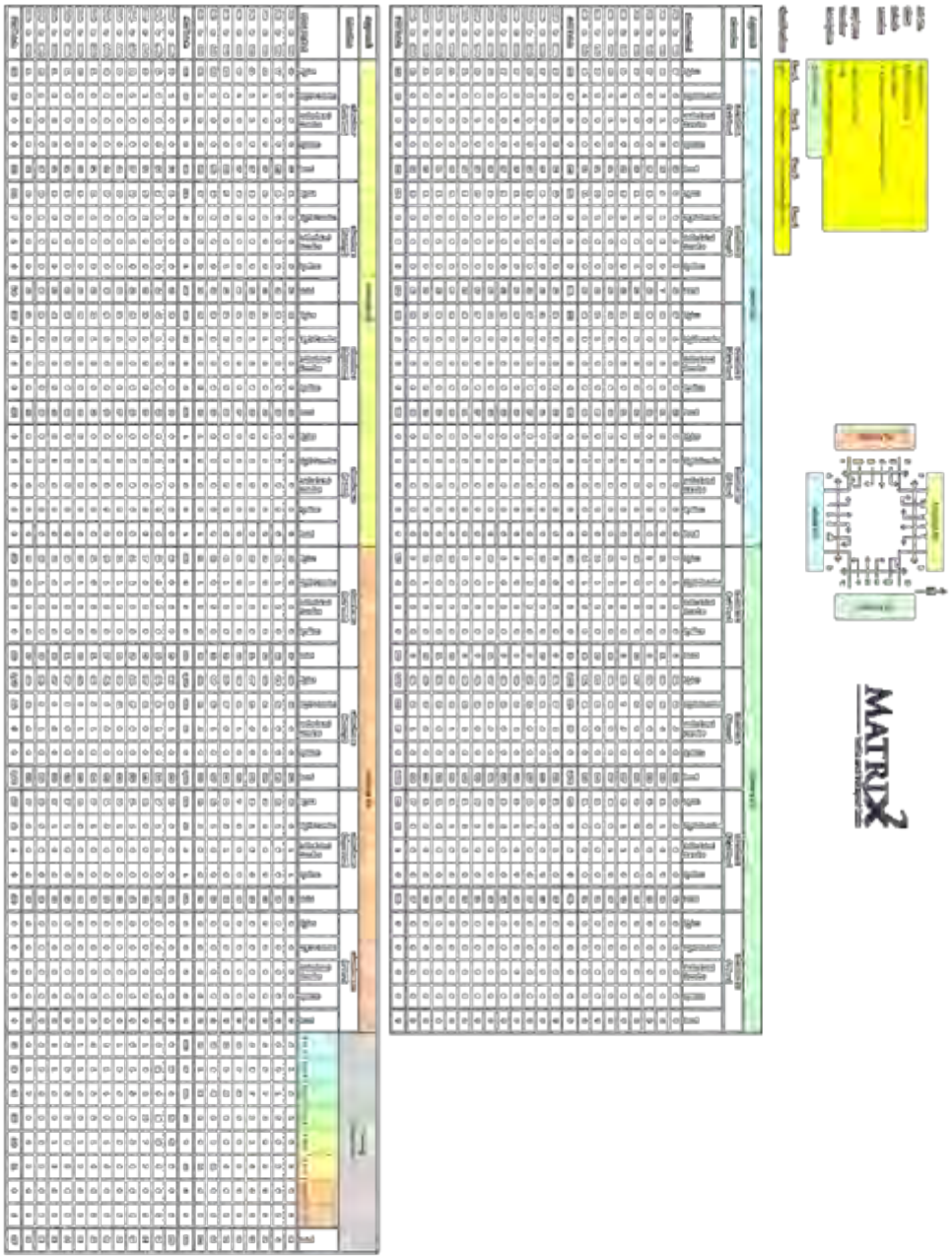
ITEM 7 (continued) **ATTACHMENT 6**

ITEM 7 (continued) **ATTACHMENT 6**

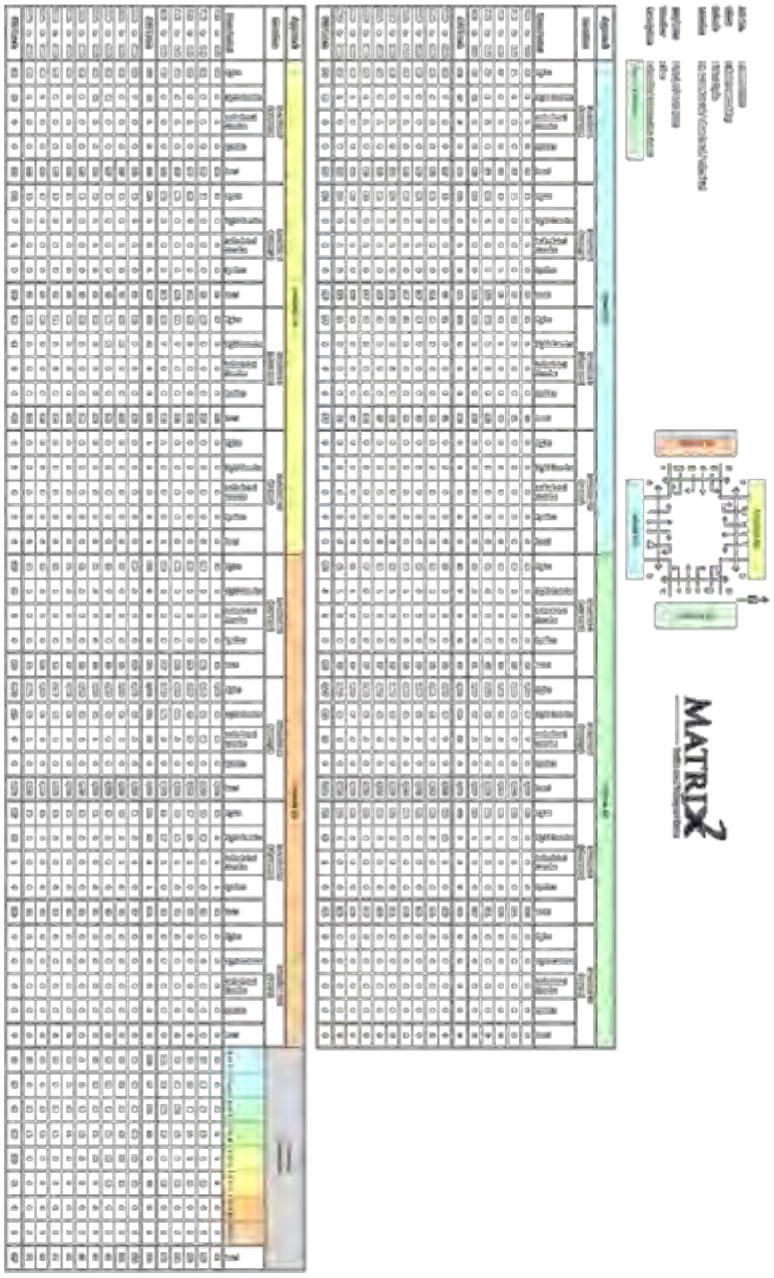
ITEM 7 (continued) **ATTACHMENT 6**

Appendix B: Traffic Volume Data

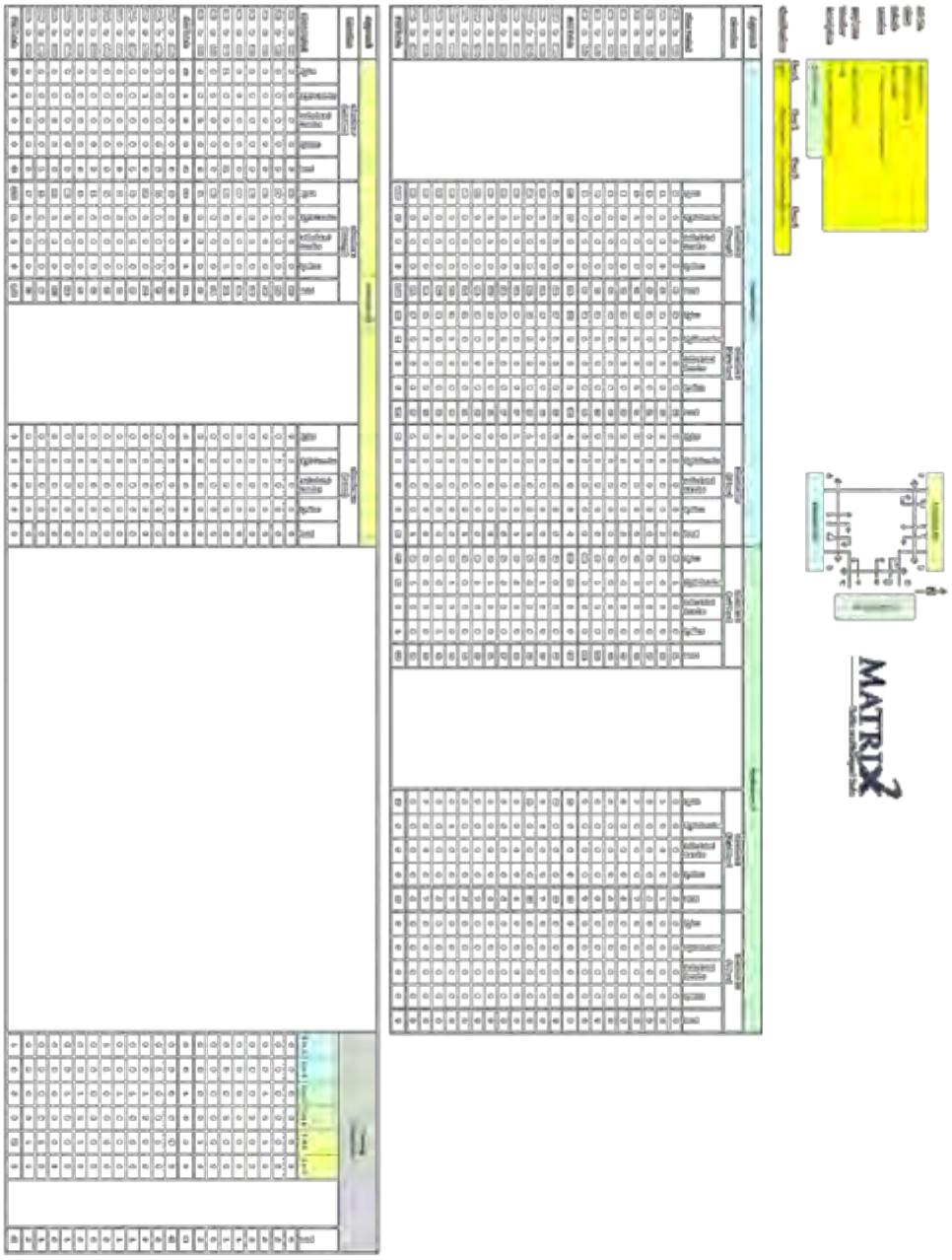
ITEM 7 (continued) **ATTACHMENT 6**



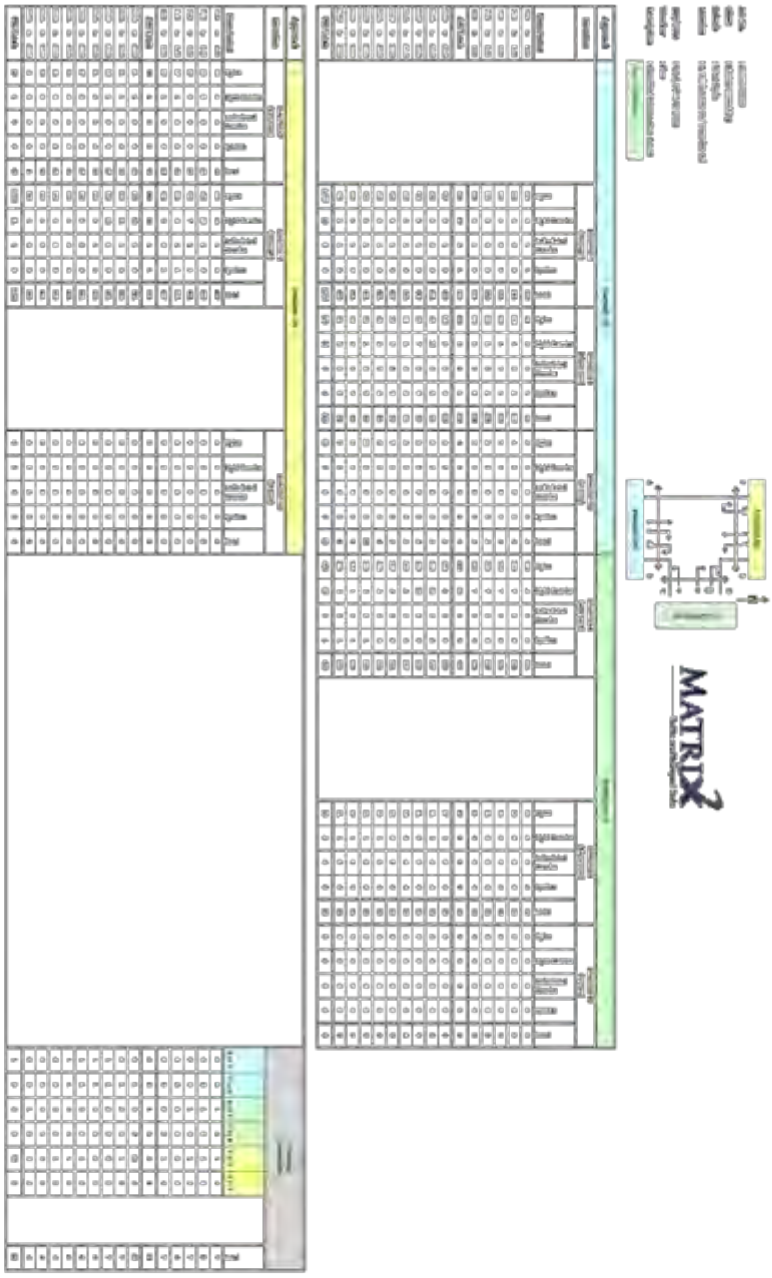
ITEM 7 (continued) **ATTACHMENT 6**



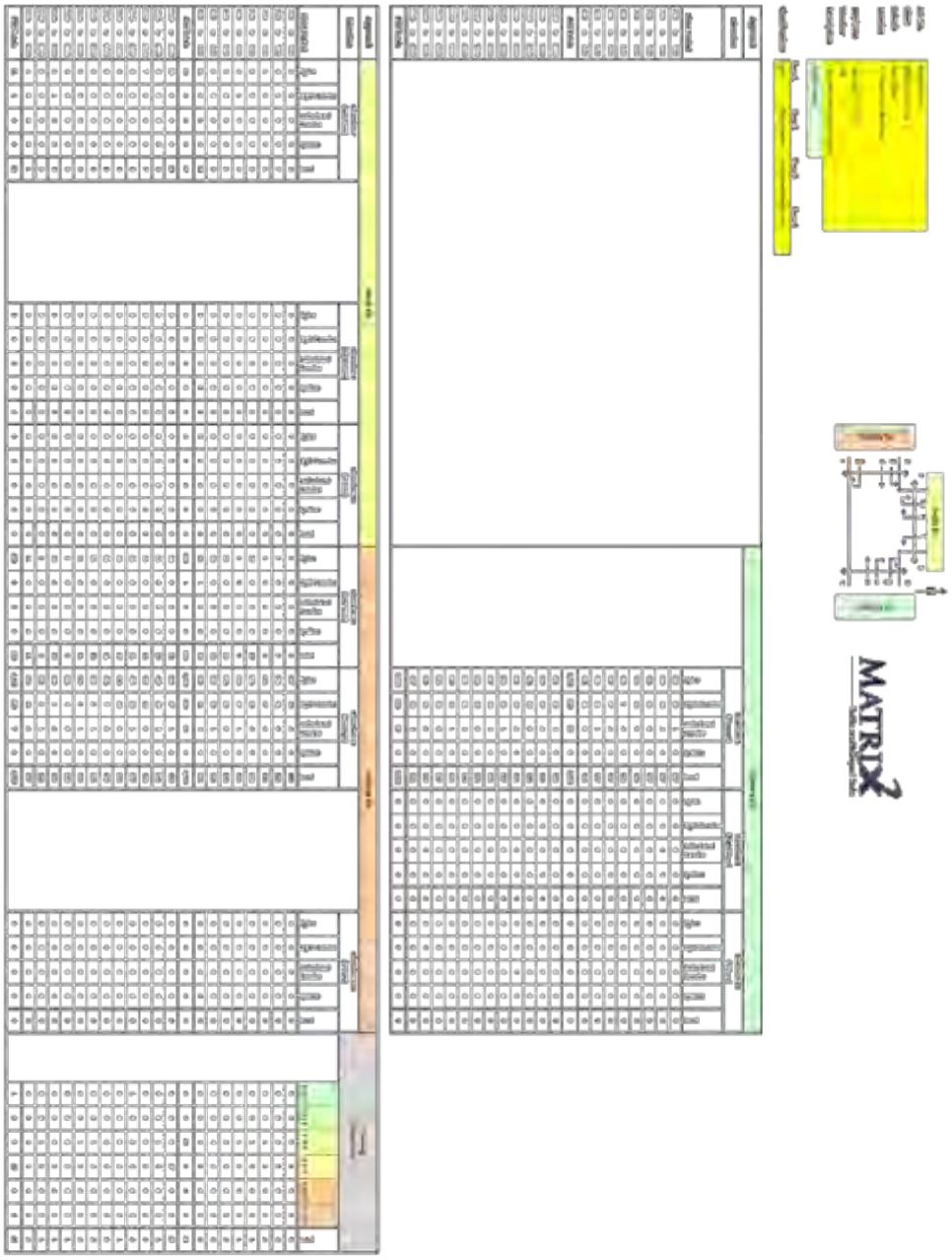
ITEM 7 (continued) **ATTACHMENT 6**



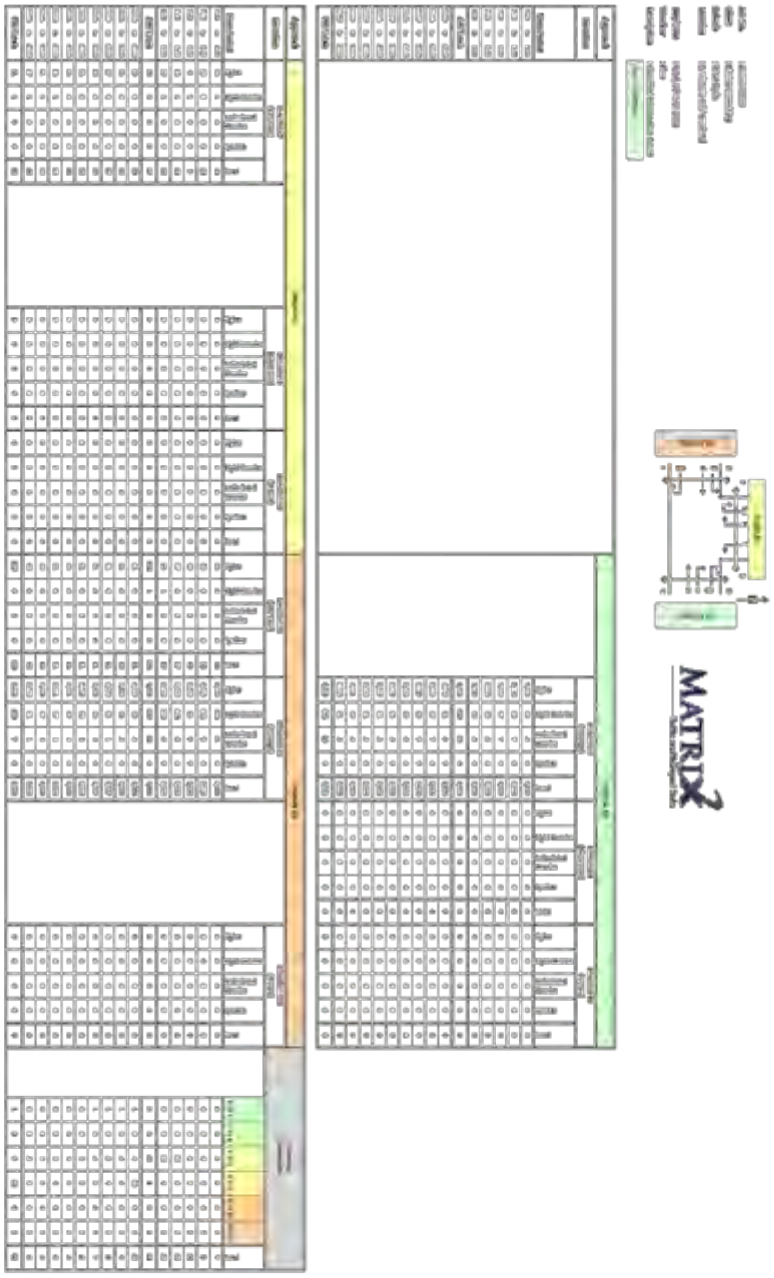
ITEM 7 (continued) **ATTACHMENT 6**



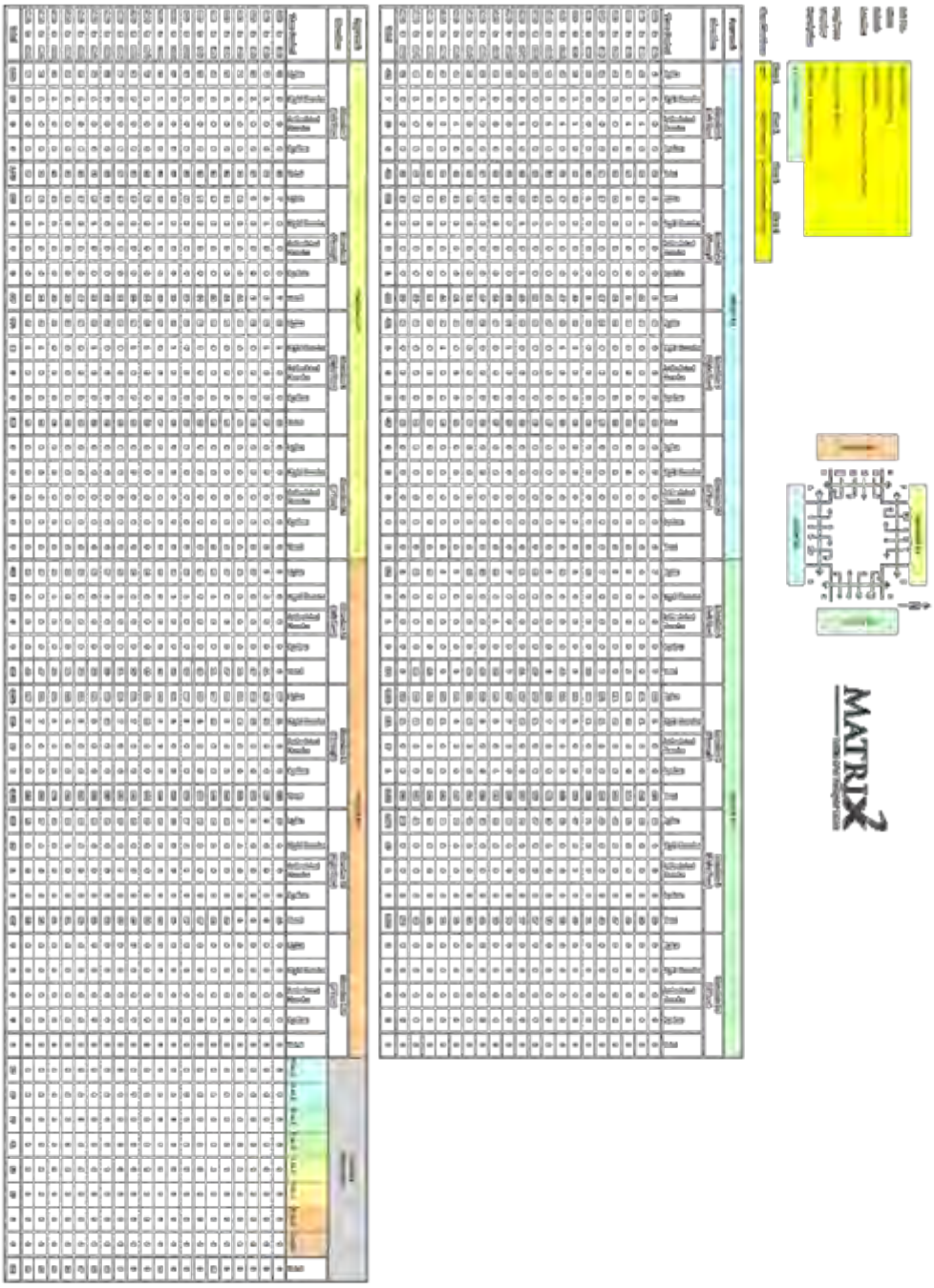
ITEM 7 (continued) **ATTACHMENT 6**



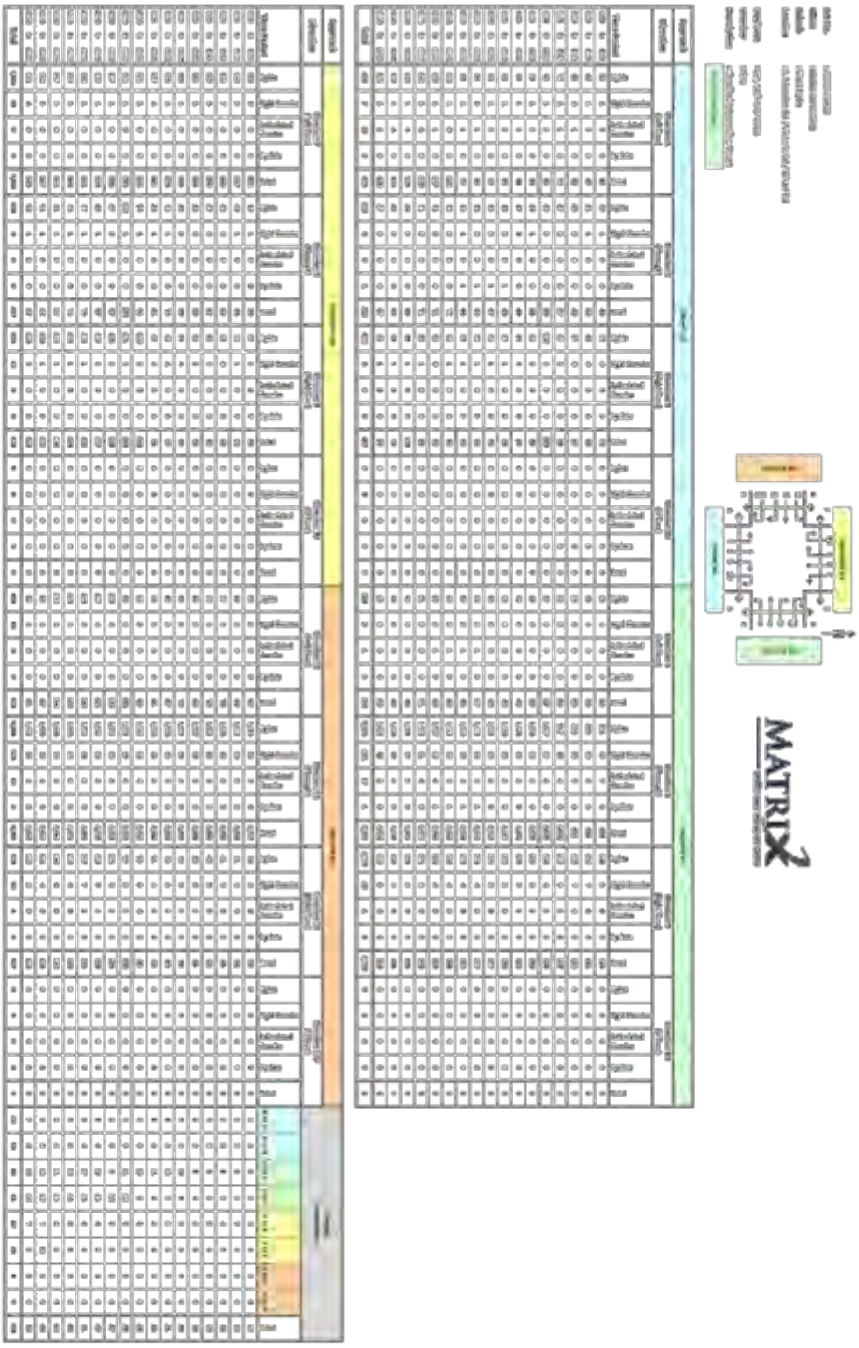
ITEM 7 (continued) **ATTACHMENT 6**



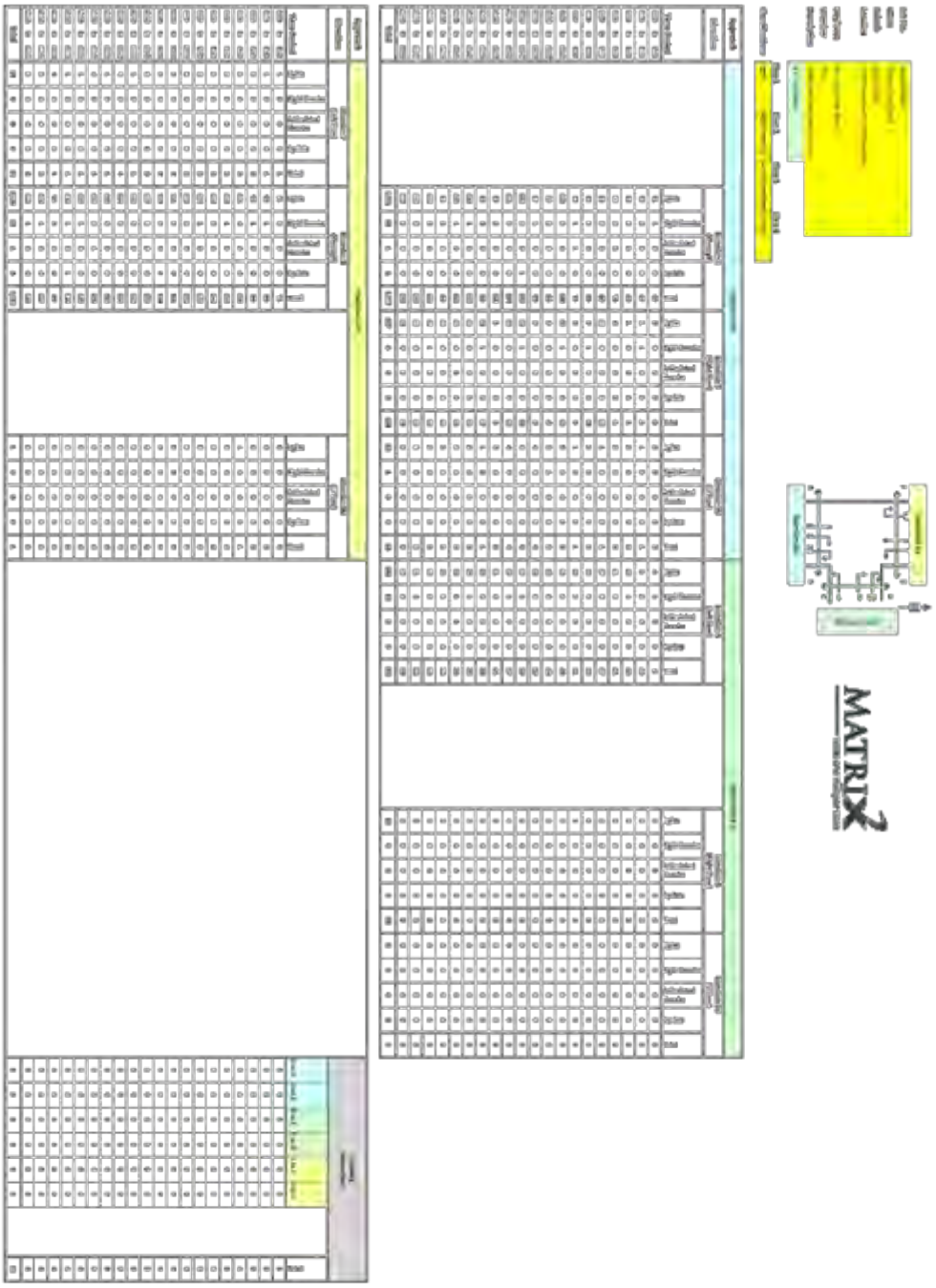
ITEM 7 (continued) **ATTACHMENT 6**



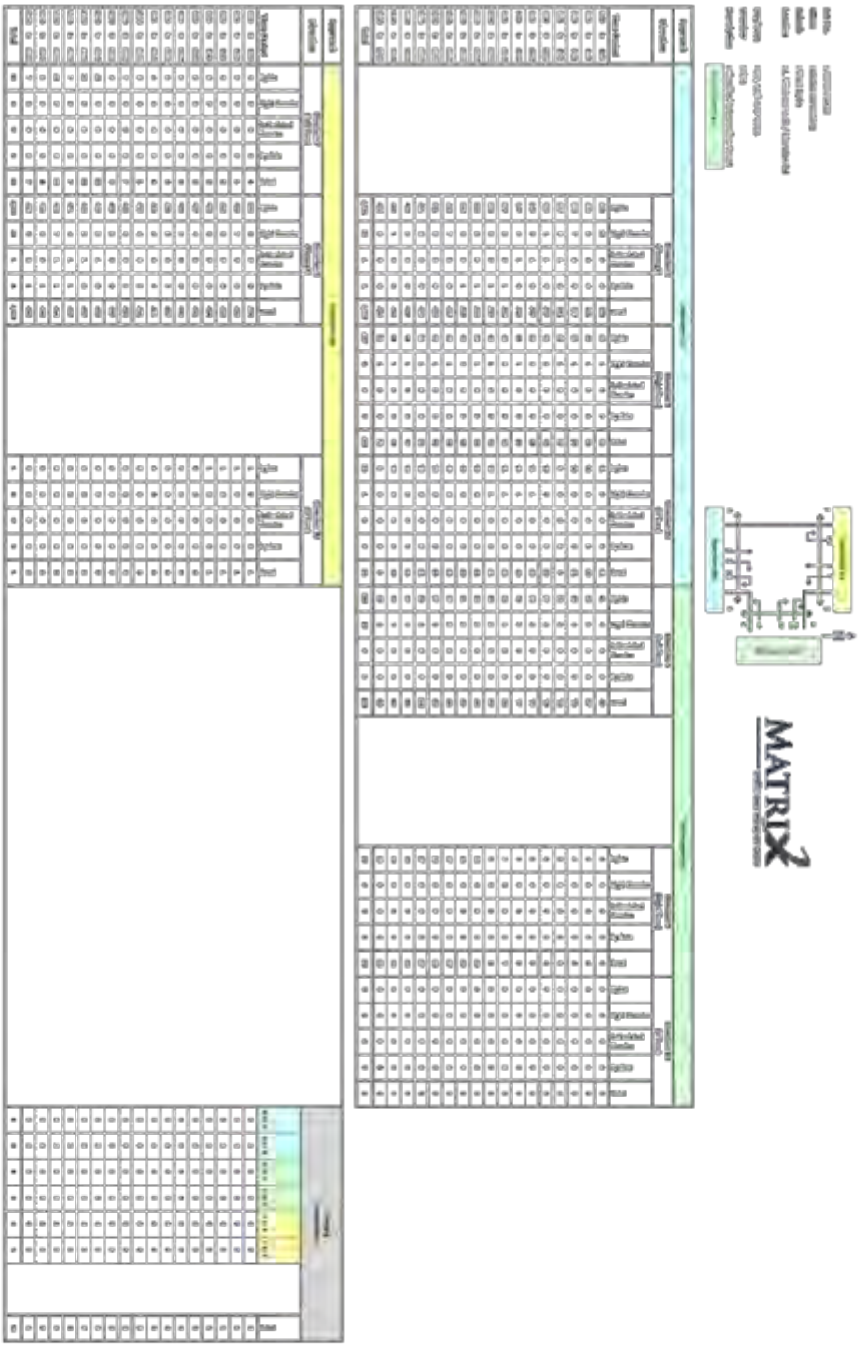
ITEM 7 (continued) **ATTACHMENT 6**



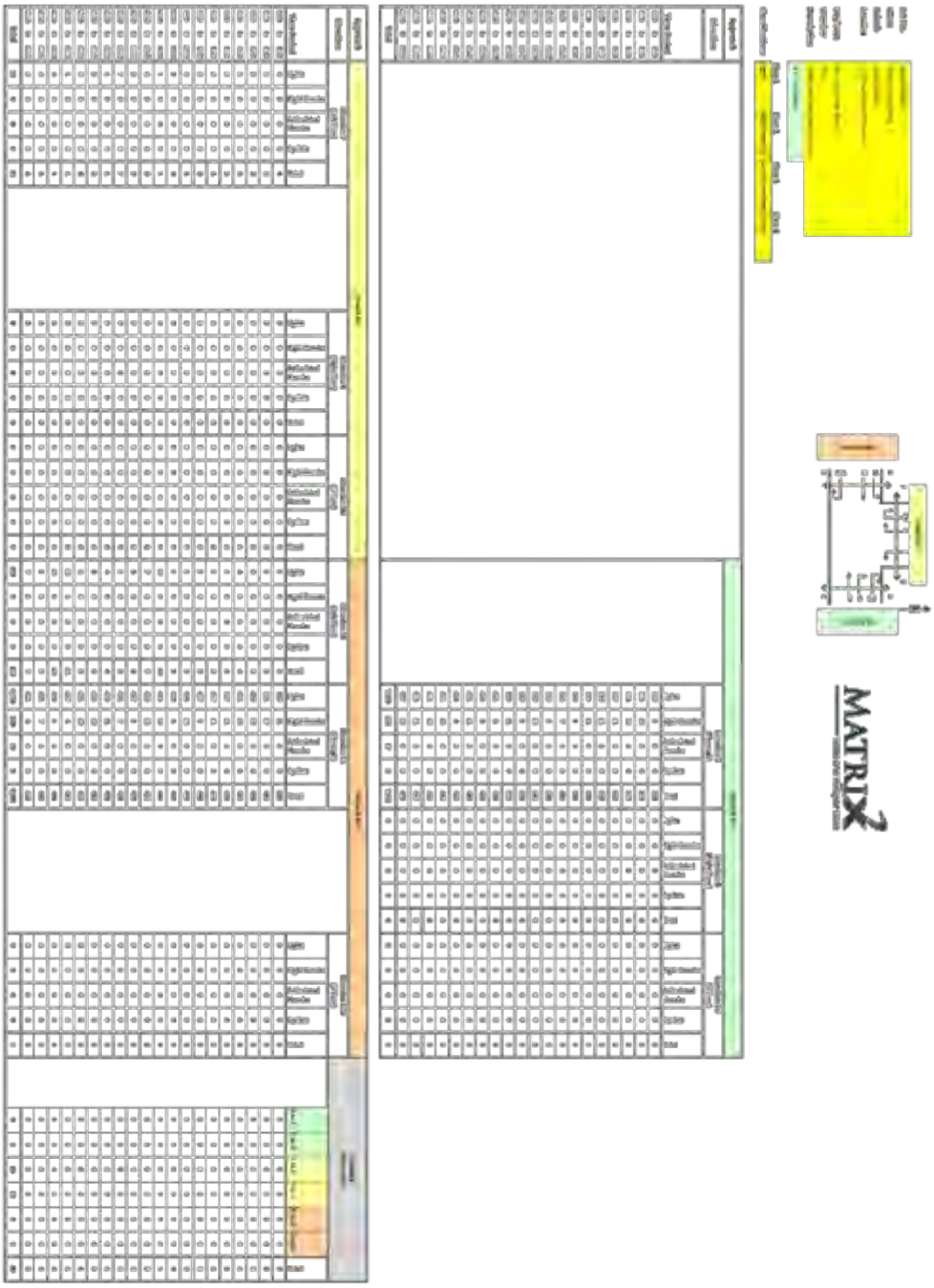
ITEM 7 (continued) **ATTACHMENT 6**



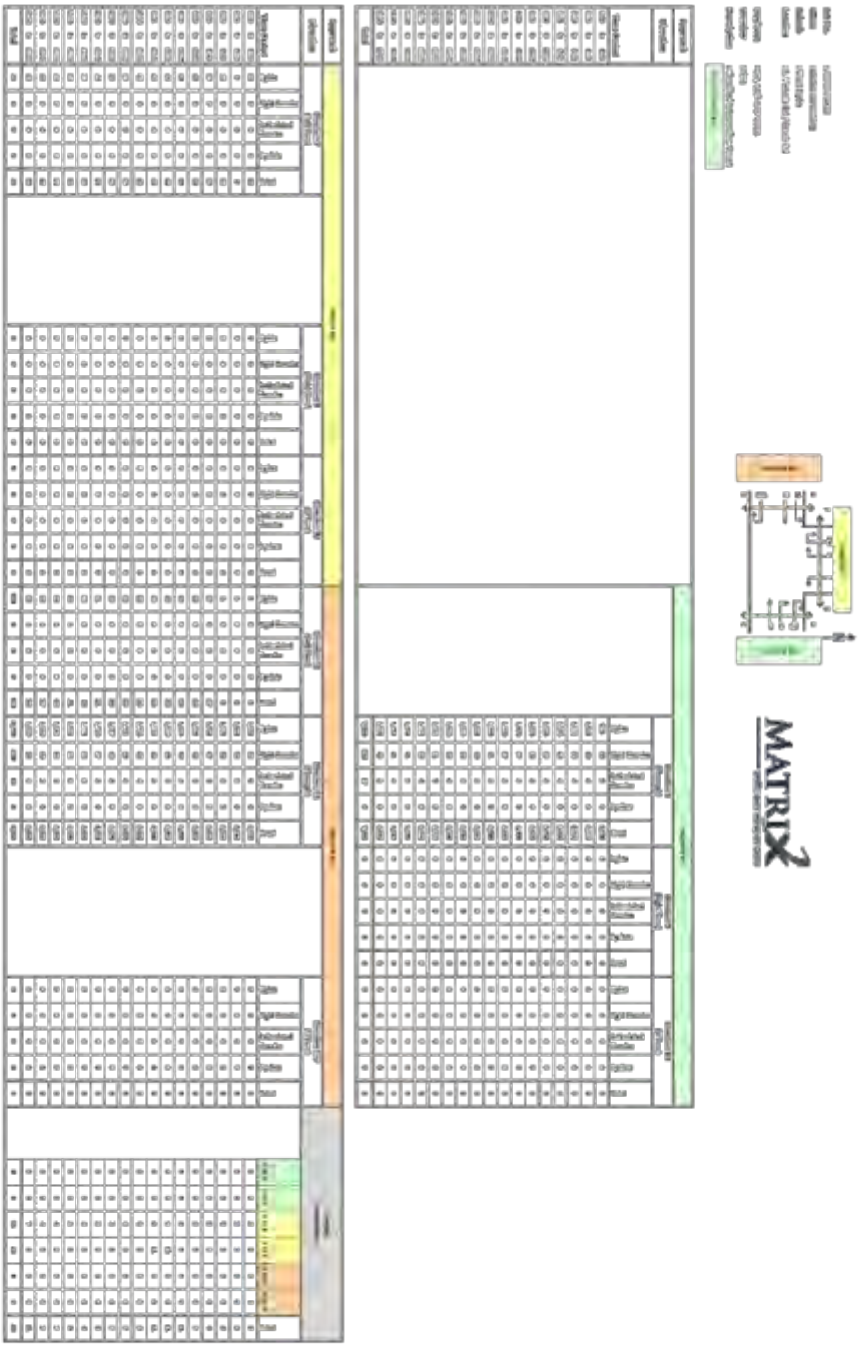
ITEM 7 (continued) **ATTACHMENT 6**



ITEM 7 (continued) **ATTACHMENT 6**



ITEM 7 (continued) **ATTACHMENT 6**



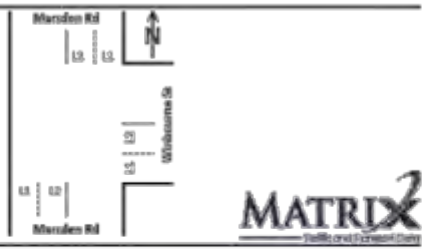
ITEM 7 (continued) **ATTACHMENT 6**

AM	North Leg (Marsden Rd)		East Leg (Wicksome St)		North Leg (Marsden Rd)	
	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2
7:00 to 7:05	0	1	1	0	12	0
7:05 to 7:10	0	1	0	1	0	0
7:10 to 7:15	0	1	1	0	0	0
7:15 to 7:20	0	1	1	1	3	0
7:20 to 7:25	0	1	1	0	1	0
7:25 to 7:30	0	2	2	0	0	0
7:30 to 7:35	0	1	2	0	0	0
7:35 to 7:40	0	1	2	1	4	0
7:40 to 7:45	0	2	3	1	0	0
7:45 to 7:50	0	1	2	0	0	0
7:50 to 7:55	0	5	2	1	7	0
7:55 to 8:00	0	2	2	1	5	0
8:00 to 8:05	0	2	3	1	4	0
8:05 to 8:10	0	2	1	1	0	0
8:10 to 8:15	0	3	1	1	3	0
8:15 to 8:20	0	2	2	1	4	0
8:20 to 8:25	0	2	2	0	4	0
8:25 to 8:30	0	5	4	1	10	0
8:30 to 8:35	0	3	9	1	11	0
8:35 to 8:40	0	5	12	1	17	0
8:40 to 8:45	0	4	13	2	17	0
8:45 to 8:50	0	5	18	12	17	0
8:50 to 8:55	0	4	17	13	4	2
8:55 to 9:00	0	2	17	1	17	2
MAX	0	5	17	13	17	2
MIN	0	1	0	0	0	0

PM	South Leg (Marsden Rd)		East Leg (Wicksome St)		North Leg (Marsden Rd)	
	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2
15:00 to 15:05	0	3	3	3	0	0
15:05 to 15:10	0	3	11	4	0	1
15:10 to 15:15	0	1	17	2	3	1
15:15 to 15:20	0	1	7	1	0	0
15:20 to 15:25	0	1	2	2	0	0
15:25 to 15:30	0	3	2	0	4	0
15:30 to 15:35	0	1	1	1	0	0
15:35 to 15:40	0	1	1	4	0	0
15:40 to 15:45	0	3	1	0	0	0
15:45 to 15:50	0	3	0	1	1	0
15:50 to 15:55	0	1	1	1	0	0
15:55 to 16:00	0	1	2	1	0	0
16:00 to 16:05	0	2	4	0	2	0
16:05 to 16:10	0	1	1	0	0	0
16:10 to 16:15	0	2	1	1	0	0
16:15 to 16:20	0	1	0	1	0	0
16:20 to 16:25	0	1	1	0	0	0
16:25 to 16:30	0	1	1	1	2	0
16:30 to 16:35	0	1	1	0	0	0
16:35 to 16:40	0	1	1	0	0	0
16:40 to 16:45	0	1	3	3	0	0
16:45 to 16:50	0	0	1	1	0	0
16:50 to 16:55	0	1	1	1	0	0
16:55 to 17:00	0	1	1	1	0	0
17:00 to 17:05	0	1	0	1	0	0
17:05 to 17:10	0	2	2	2	0	0
17:10 to 17:15	0	2	2	3	0	0
17:15 to 17:20	0	2	1	1	0	0
17:20 to 17:25	0	1	4	1	3	0
17:25 to 17:30	0	2	1	0	0	0
17:30 to 17:35	0	4	1	1	0	0
17:35 to 17:40	0	2	2	1	1	0
17:40 to 17:45	0	1	3	2	0	0
17:45 to 17:50	0	2	2	1	1	0
17:50 to 17:55	0	2	2	0	0	0
17:55 to 18:00	0	1	1	1	0	0
MAX	0	4	17	4	0	1
MIN	0	0	0	0	0	0

ITEM 7 (continued) **ATTACHMENT 6**

Client	Bitzios Consulting
Location	1. Wilsonne St/Marsden Rd
Date	Sat, 19th Mar 2022
Survey Time	6:00-13:00 (7hrs)
Description	Queue Length Survey



Time	South Leg (Marsden Rd)		East Leg (Wilsonne St)		North Leg (Marsden Rd)	
	Lane 1	Lane 2	Lane 1	Lane 2	Lane 1	Lane 2
6:00 to 6:05	0	0	0	0	0	0
6:05 to 6:10	0	0	1	1	0	0
6:10 to 6:15	0	0	0	0	0	0
6:15 to 6:20	0	0	0	1	0	0
6:20 to 6:25	0	0	2	1	4	0
6:25 to 6:30	0	1	1	0	1	0
6:30 to 6:35	0	1	1	0	0	0
6:35 to 6:40	0	0	2	0	0	0
6:40 to 6:45	0	1	1	1	0	0
6:45 to 6:50	0	0	1	1	0	0
6:50 to 6:55	0	1	1	0	0	0
6:55 to 7:00	0	1	2	0	0	0
7:00 to 7:05	0	1	1	0	2	0
7:05 to 7:10	0	1	2	0	3	0
7:10 to 7:15	0	1	1	0	0	0
7:15 to 7:20	0	4	2	0	0	0
7:20 to 7:25	0	2	1	0	0	0
7:25 to 7:30	0	1	2	0	0	0
7:30 to 7:35	0	1	2	1	1	0
7:35 to 7:40	0	0	1	0	1	0
7:40 to 7:45	0	1	0	0	1	0
7:45 to 7:50	0	1	2	1	0	0
7:50 to 7:55	0	2	3	1	2	0
7:55 to 8:00	0	0	1	0	0	0
8:00 to 8:05	0	1	1	1	2	0
8:05 to 8:10	0	2	1	1	4	0
8:10 to 8:15	0	1	1	0	2	0
8:15 to 8:20	0	1	1	1	0	0
8:20 to 8:25	0	2	0	0	5	0
8:25 to 8:30	0	1	1	0	3	0
8:30 to 8:35	0	1	0	0	0	0
8:35 to 8:40	0	1	2	1	0	0
8:40 to 8:45	0	2	3	1	2	0
8:45 to 8:50	0	0	1	0	0	0
8:50 to 8:55	0	1	1	1	2	0
8:55 to 9:00	0	1	2	0	0	0
9:00 to 9:05	0	2	1	1	4	0
9:05 to 9:10	0	1	2	1	2	0
9:10 to 9:15	0	1	1	1	0	0
9:15 to 9:20	0	0	0	0	0	0
9:20 to 9:25	0	1	2	1	0	1
9:25 to 9:30	0	1	1	1	4	0
9:30 to 9:35	0	2	0	1	0	1
9:35 to 9:40	0	1	2	0	0	0
9:40 to 9:45	0	1	0	1	0	0
9:45 to 9:50	0	1	2	1	3	0
9:50 to 9:55	0	2	1	1	4	0
9:55 to 10:00	0	1	1	1	0	0
10:00 to 10:05	0	1	1	1	5	0
10:05 to 10:10	0	2	1	0	10	0
10:10 to 10:15	0	1	1	1	1	0
10:15 to 10:20	0	0	0	0	1	0
10:20 to 10:25	0	2	1	1	0	0
10:25 to 10:30	0	1	2	1	0	0
10:30 to 10:35	0	2	0	1	0	0
10:35 to 10:40	0	1	2	0	0	0
10:40 to 10:45	0	1	1	0	0	0
10:45 to 10:50	0	1	1	0	0	0
10:50 to 10:55	0	1	1	1	0	0
10:55 to 11:00	0	1	1	1	0	0
Max	0	4	3	2	10	1
Min	0	0	0	0	0	0

ITEM 7 (continued) **ATTACHMENT 6**

Job No	AUNSW3220
Client	Bitzios
Site	Winbourne Street
Location	between Farnell Street and Marsden Road
Site No	2
Start Date	9-Mar-22
Description	Volume Summary
Direction	Combined

MATRIX
Traffic and Transport Data

Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	14-Mar	15-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar		
AM Peak	480	478	489	510	543	138	129		
PM Peak	293	250	320	297	329	149	111	2711	2382
0:00	5	11	7	6	4	18	28	7	11
1:00	7	4	4	2	7	9	14	5	7
2:00	3	2	2	2	4	14	5	3	5
3:00	5	4	7	4	5	4	6	5	5
4:00	7	5	7	6	5	5	7	6	6
5:00	30	21	26	27	22	15	4	25	21
6:00	56	54	49	46	56	27	12	52	43
7:00	135	130	183	150	160	38	39	152	119
8:00	480	478	489	510	543	58	63	500	374
9:00	205	206	205	226	184	133	100	205	180
10:00	131	98	102	100	104	129	116	107	111
11:00	118	109	102	99	114	138	129	108	116
12:00	90	137	104	115	99	149	109	109	115
13:00	96	130	92	91	123	132	99	106	109
14:00	217	250	201	190	197	103	111	211	181
15:00	293	207	320	297	329	95	82	289	232
16:00	160	178	194	200	199	132	89	186	165
17:00	186	217	236	214	222	124	81	215	183
18:00	137	183	149	169	163	99	80	160	140
19:00	78	93	95	96	113	84	77	95	91
20:00	53	49	74	55	75	74	55	61	62
21:00	32	40	52	53	54	49	50	46	47
22:00	23	33	32	27	46	44	36	32	34
23:00	20	20	28	28	27	39	19	25	26
Total	2567	2659	2760	2713	2855	1712	1411	2711	2382

7-19	2248	2323	2377	2361	2437	1330	1098	2349	2025
6-22	2467	2559	2647	2611	2735	1564	1292	2604	2268
6-24	2510	2612	2707	2666	2808	1647	1347	2661	2328
0-24	2567	2659	2760	2713	2855	1712	1411	2711	2382

AUNSW3220 West Ryde ATC **Volume Summary** 30/03/2022

ITEM 7 (continued) **ATTACHMENT 6**

Job No	AUNSW3220
Client	Bitzios
Site	Brush Road
Location	between Sindel Street and Eulalia Street
Site No	1
Start Date	9-Mar-22
Description	Volume Summary
Direction	Combined

MATRIX

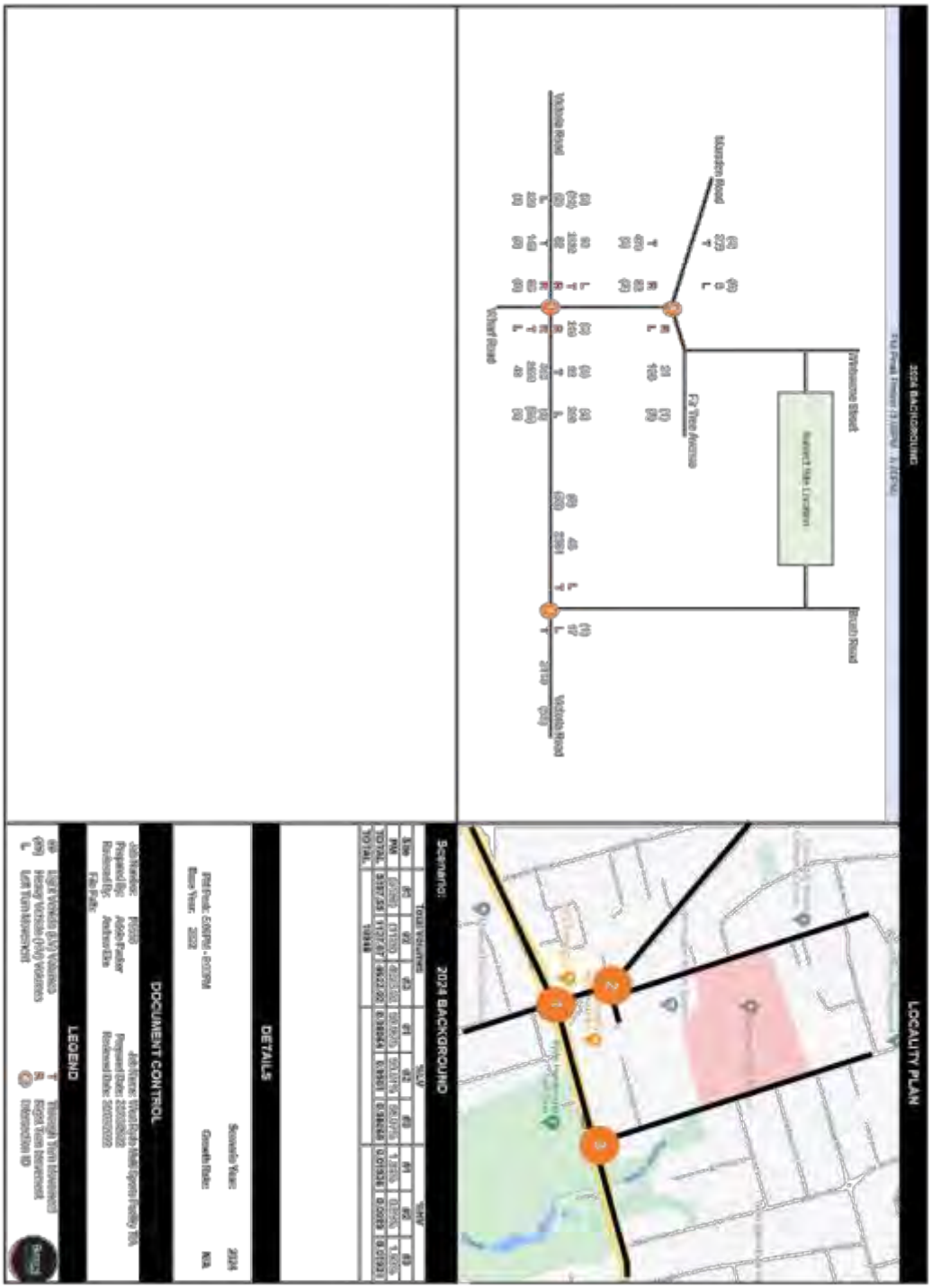
Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	14-Mar	15-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar		
AM Peak	114	147	110	132	116	43	39		
PM Peak	87	80	104	88	99	53	50	866	775
0:00	5	4	4	2	2	7	7	3	4
1:00	3	4	2	2	4	1	4	3	3
2:00	1	0	2	2	2	6	3	1	2
3:00	4	2	2	2	2	3	1	2	2
4:00	7	6	2	7	6	1	2	6	4
5:00	7	6	12	7	8	5	1	8	7
6:00	18	25	19	17	21	13	9	20	17
7:00	59	62	55	55	44	9	10	55	42
8:00	114	147	110	132	116	27	19	124	95
9:00	64	76	69	64	50	37	39	65	57
10:00	33	27	41	37	45	43	30	37	37
11:00	32	33	28	34	42	39	37	34	35
12:00	32	45	30	43	30	53	50	36	40
13:00	33	40	29	33	32	41	49	33	37
14:00	61	47	44	58	62	42	32	54	49
15:00	87	80	104	88	99	45	27	92	76
16:00	46	68	89	71	64	36	39	68	59
17:00	67	63	71	75	81	45	34	71	62
18:00	38	54	48	45	53	38	23	48	43
19:00	39	36	33	30	40	27	37	36	35
20:00	25	26	36	22	24	19	29	27	26
21:00	16	24	14	21	20	11	20	19	18
22:00	9	16	20	13	19	20	10	15	15
23:00	6	8	13	10	11	9	10	10	10
Total	806	899	877	870	877	577	522	866	775
7-19	666	742	718	735	718	455	389	716	632
6-22	764	853	820	825	823	525	484	817	728
6-24	779	877	853	848	853	554	504	842	753
0-24	806	899	877	870	877	577	522	866	775

AUNSW3220 West Ryde ATC **Volume Summary** 30/03/2022

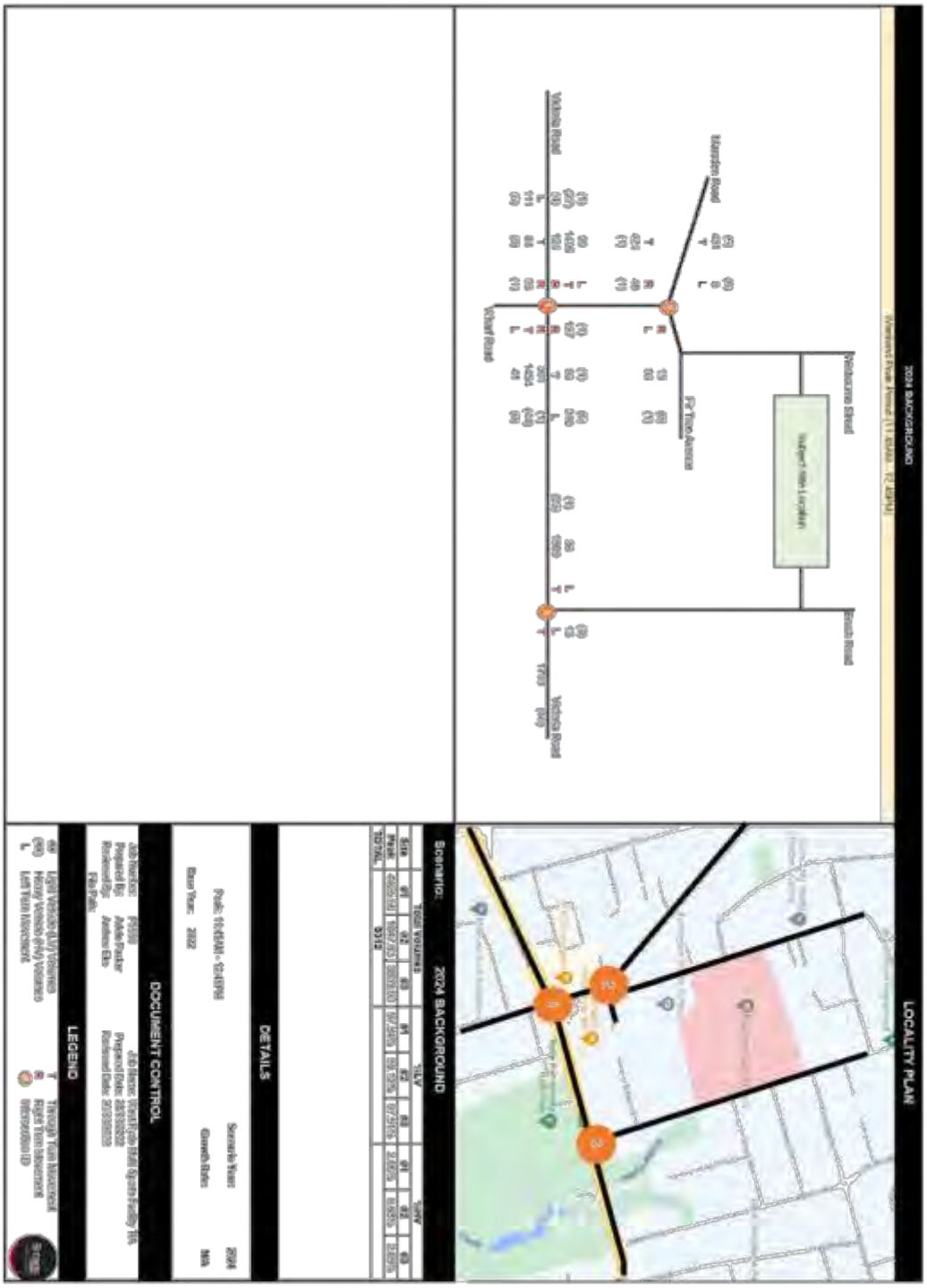
ITEM 7 (continued) **ATTACHMENT 6**

Appendix C: Forecast 2024 & 2034 Traffic Volumes

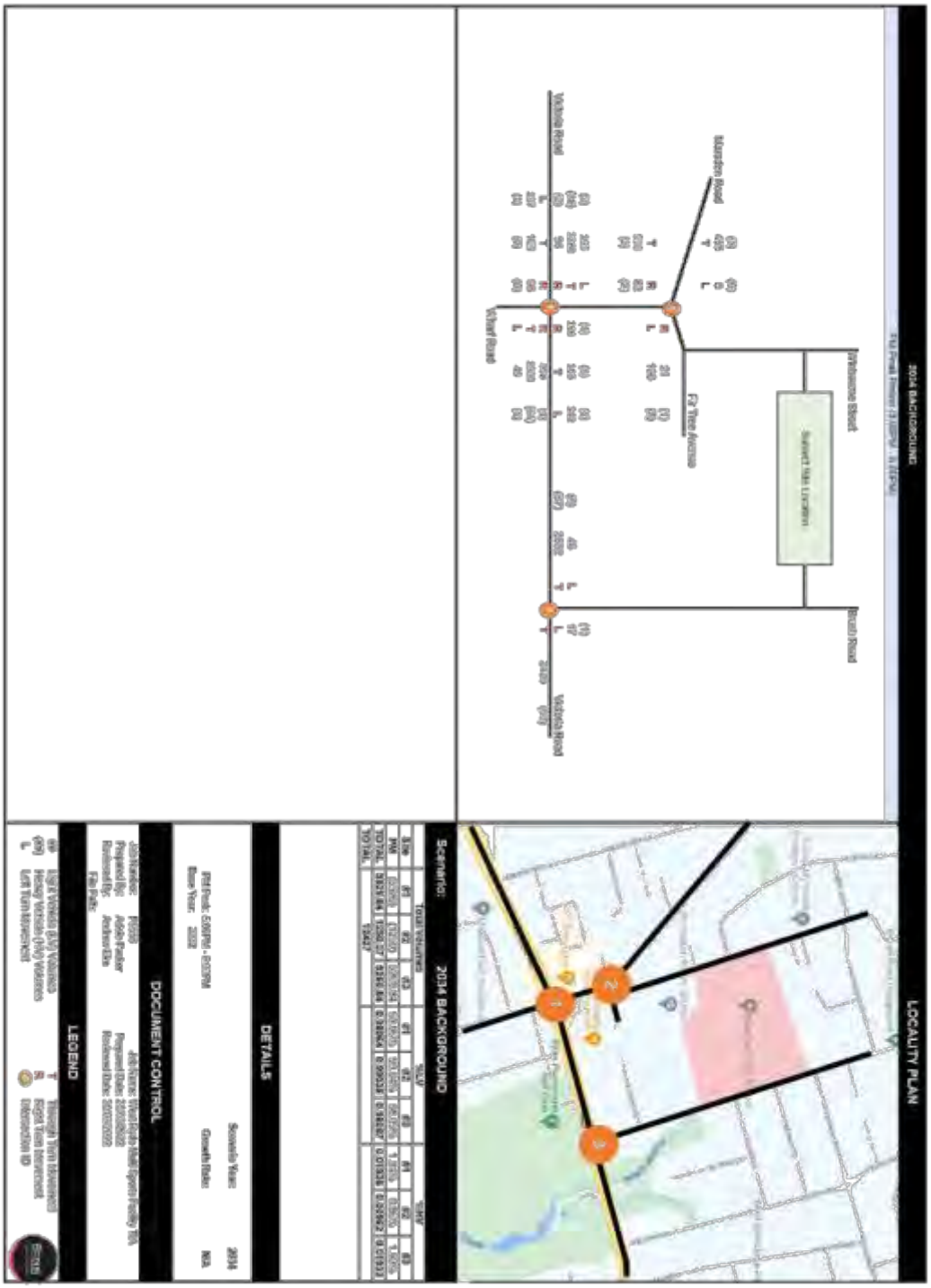
ITEM 7 (continued) **ATTACHMENT 6**



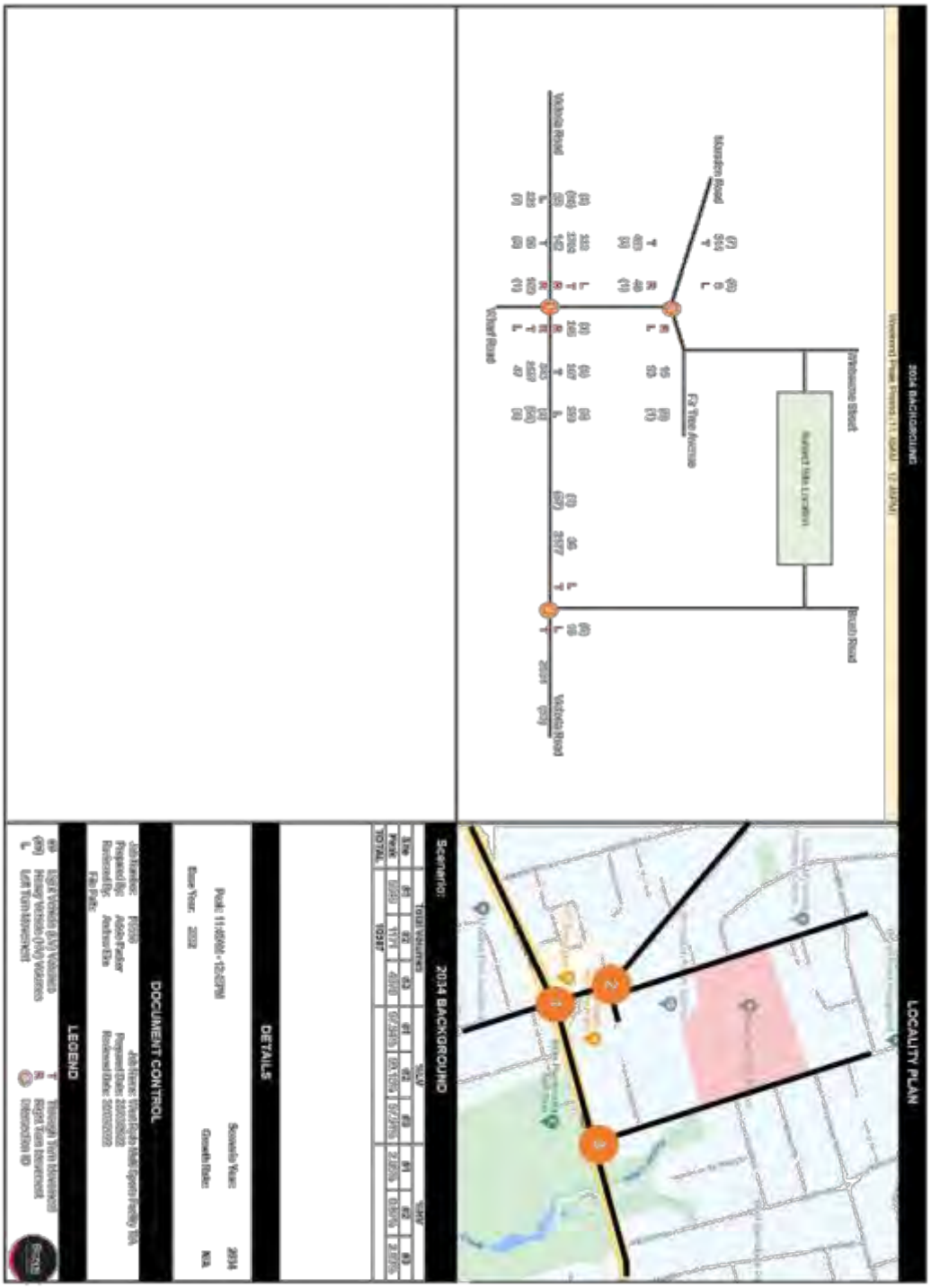
ITEM 7 (continued) **ATTACHMENT 6**



ITEM 7 (continued) **ATTACHMENT 6**



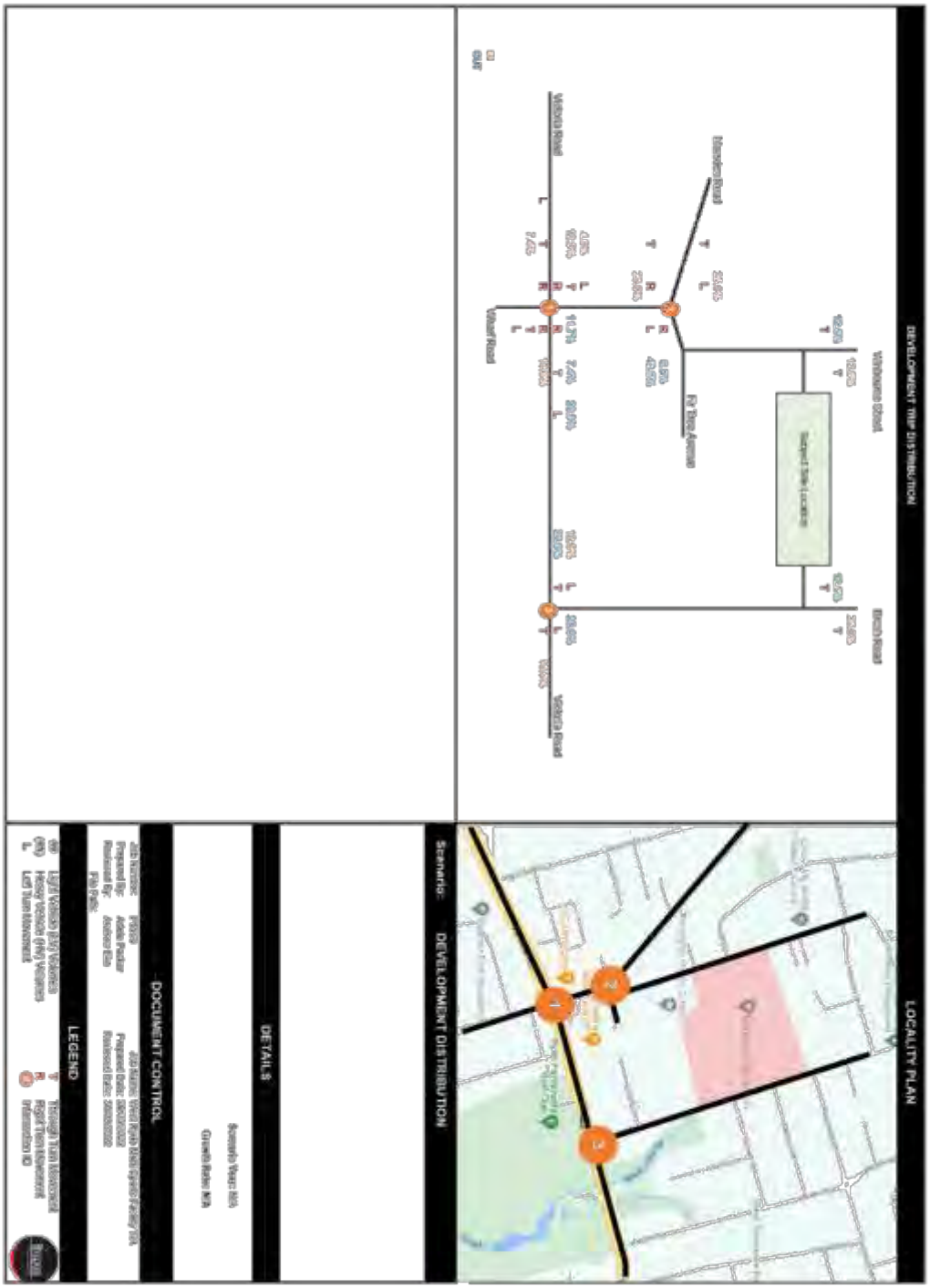
ITEM 7 (continued) **ATTACHMENT 6**



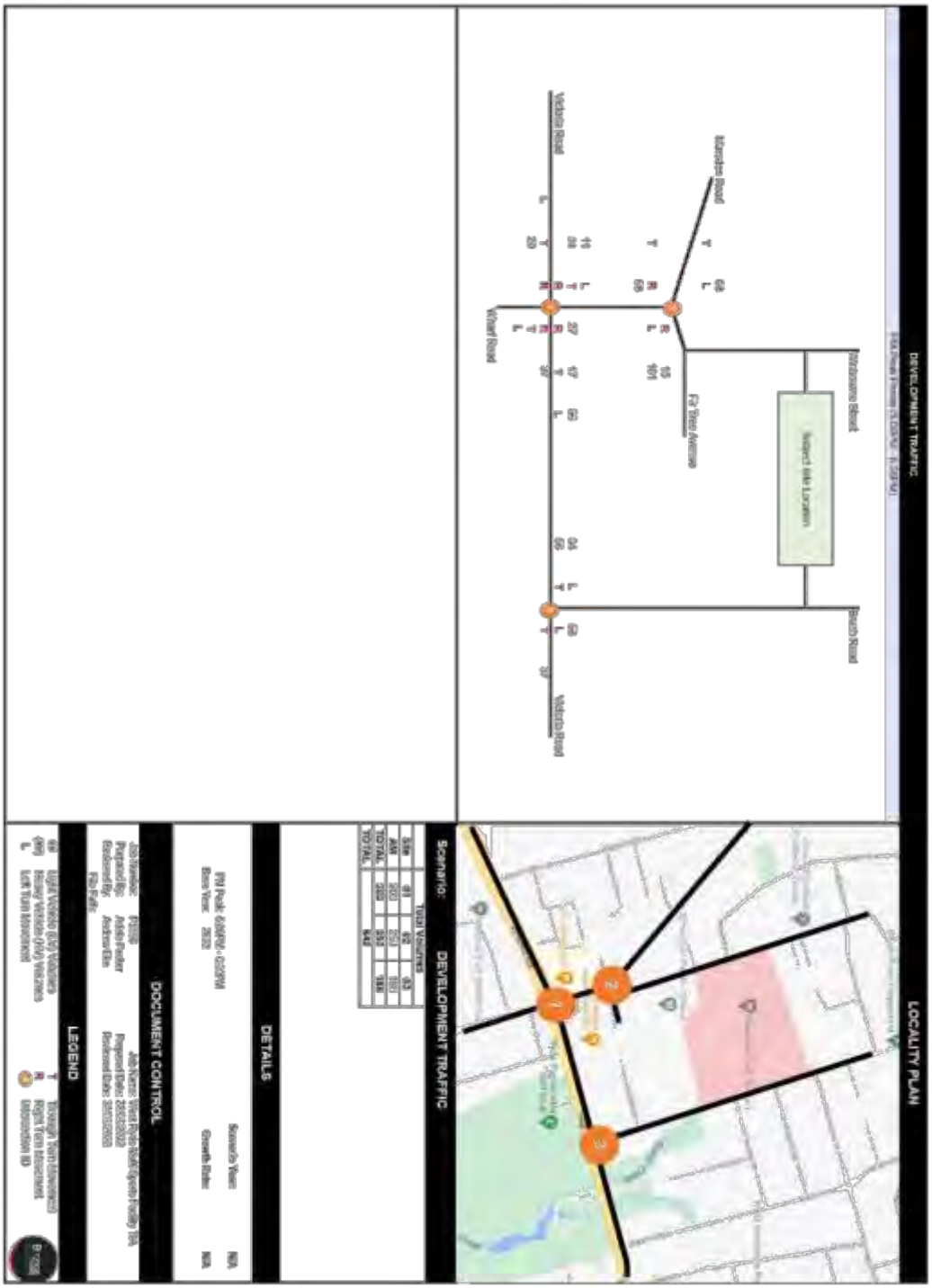
ITEM 7 (continued) **ATTACHMENT 6**

Appendix D: Development Traffic Distribution and Volumes

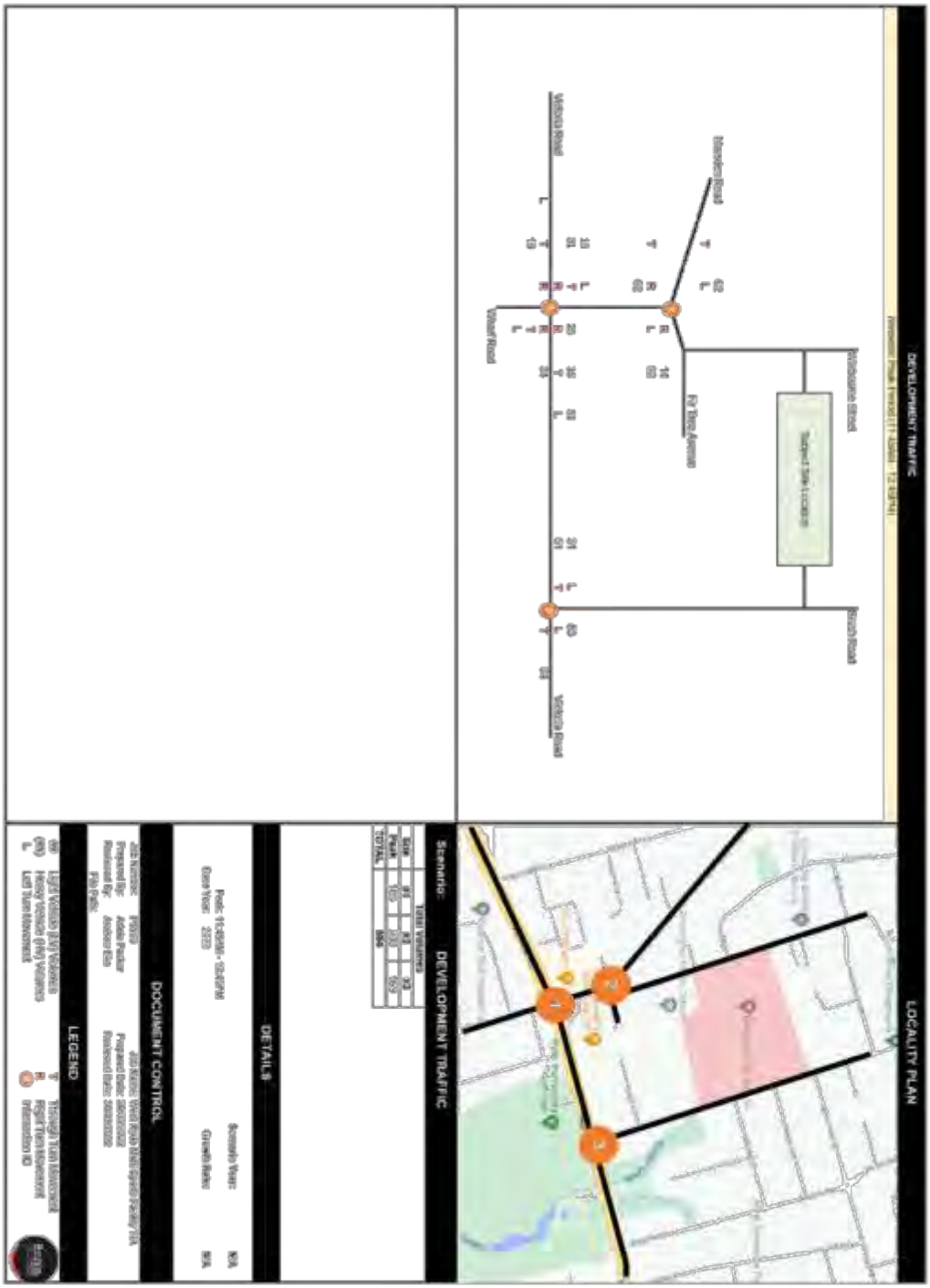
ITEM 7 (continued) **ATTACHMENT 6**



ITEM 7 (continued) **ATTACHMENT 6**



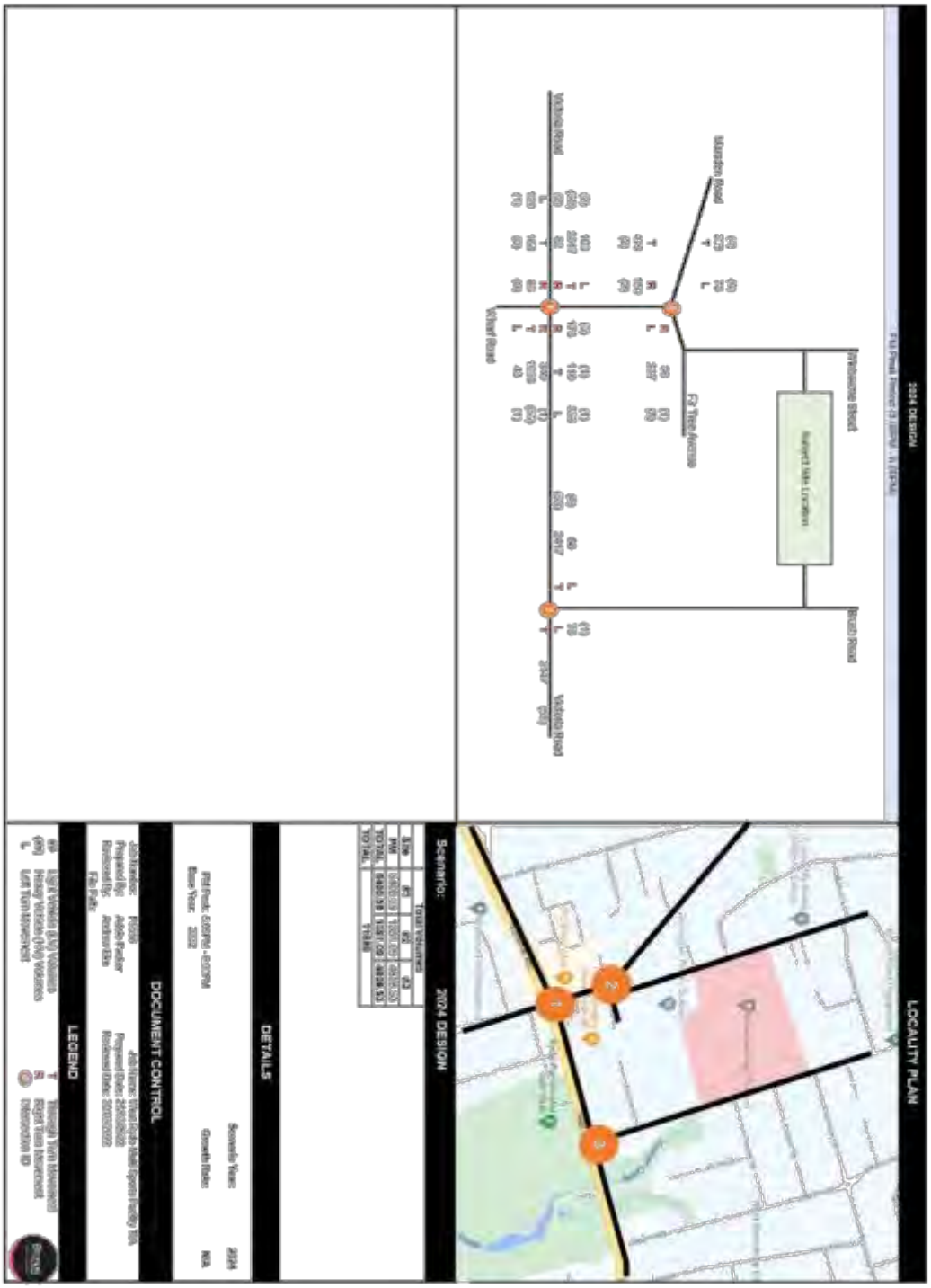
ITEM 7 (continued) **ATTACHMENT 6**



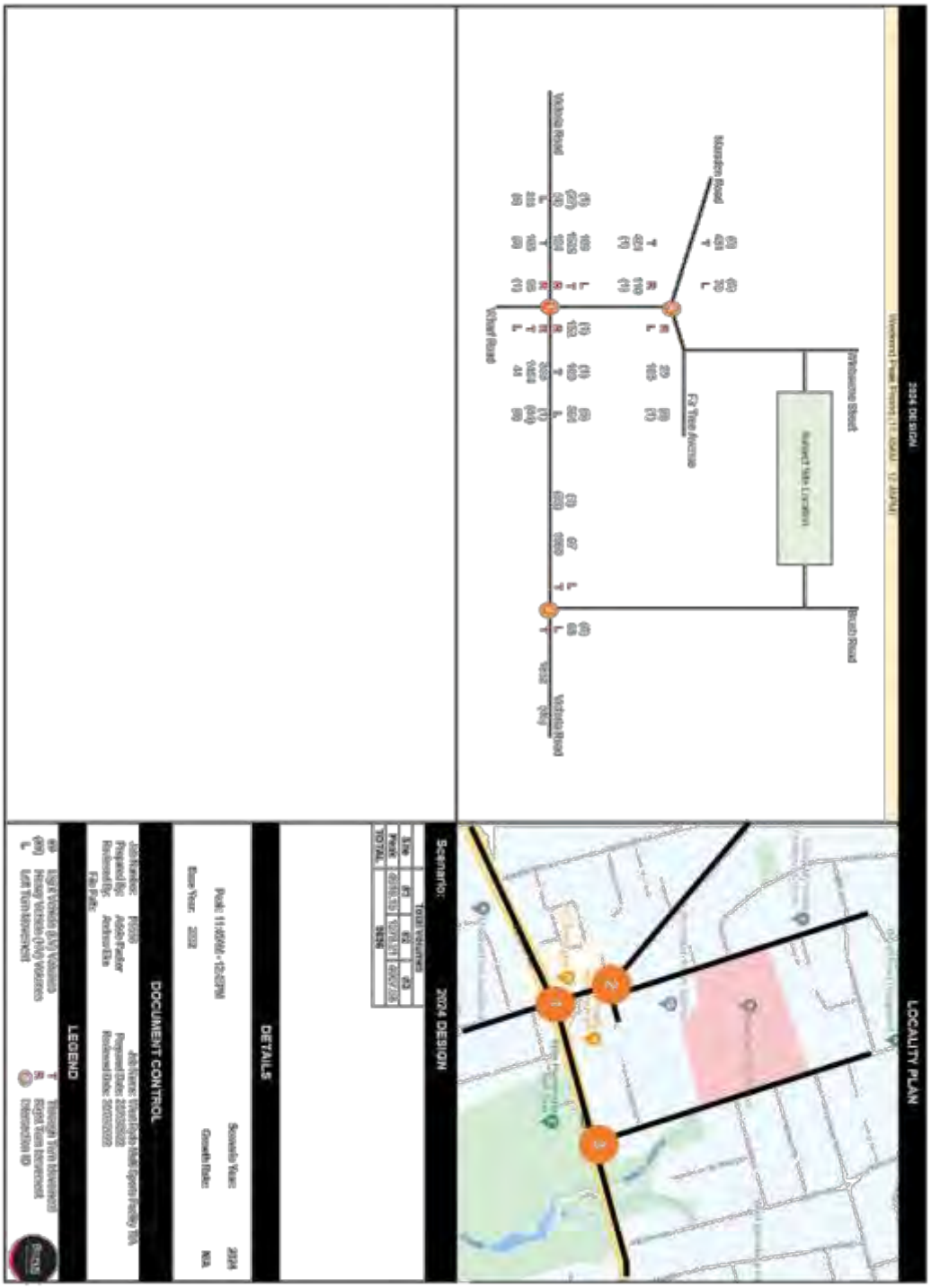
ITEM 7 (continued) **ATTACHMENT 6**

Appendix E: Design Case Traffic Volumes

ITEM 7 (continued) **ATTACHMENT 6**

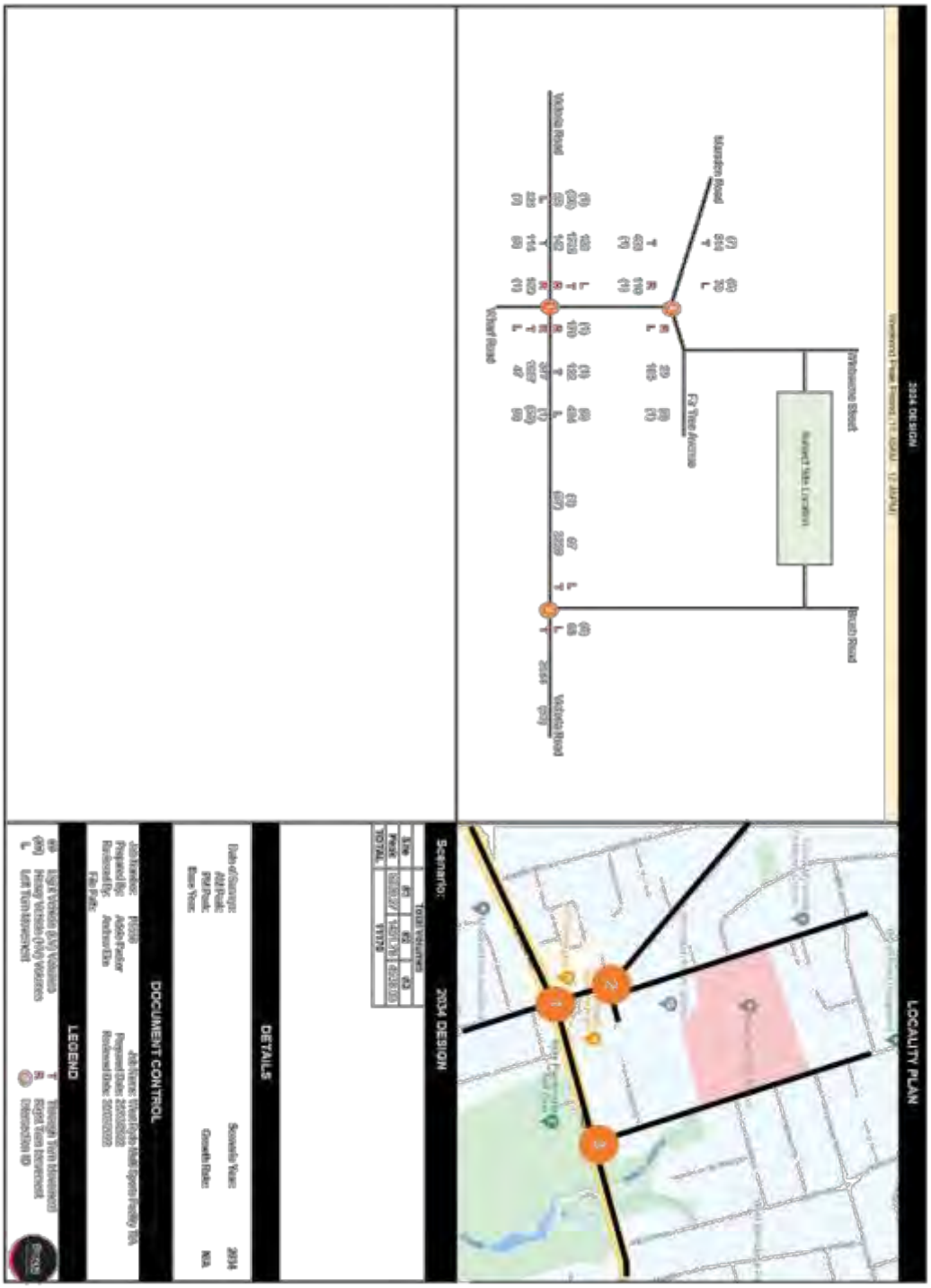


ITEM 7 (continued) **ATTACHMENT 6**



ITEM 7 (continued) **ATTACHMENT 6**

ITEM 7 (continued) **ATTACHMENT 6**



ITEM 7 (continued) **ATTACHMENT 6**

Appendix F: SIDRA Modelling Outputs

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: P5556 Intersection Models **Template: Movement Summary**

Site: 0192 [BG2024_Victoria Road / Marsden Road_PM Peak (Site Folder: BG2024_Weekday_PM)] **Network: 3 [BG2024_Weekday PM (Network Folder: BG2024)]**

BG 2024
Victoria Road / Marsden Road
PM Peak
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 122 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: E-W Major Intersection
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F
Output Phase Sequence: A, D, E, F

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS (Total veh/h)	HV (%)	ARRIVAL FLOWS (Total veh/h)	HV (%)	Deg Satn v/c	Aver Delay sec	Level of Service	95% BACK OF QUEUE (Veh veh)	(Dist m)	Prop Que	Effective Stop Rate	Aver No. Cycles	Aver Speed km/h
South: Wharf Road														
1	L2	127	0.8	127	0.8	0.510	54.0	LOS D	8.9	62.8	0.95	0.80	0.95	28.7
2	T1	156	0.0	156	0.0	*0.911	67.1	LOS E	14.6	102.4	0.99	1.02	1.30	17.6
3	R2	91	0.0	91	0.0	0.911	76.7	LOS F	14.6	102.4	1.00	1.08	1.41	26.5
Approach		374	0.3	374	0.3	0.911	65.0	LOS E	14.6	102.4	0.98	0.96	1.21	23.8
East: Victoria Road														
4	L2	46	2.3	46	2.3	0.827	42.7	LOS D	36.4	261.9	0.96	0.90	1.00	36.6
5	T1	1841	3.2	1841	3.2	0.827	36.0	LOS C	36.6	262.9	0.93	0.88	0.99	39.3
6	R2	329	0.3	329	0.3	*0.918	81.6	LOS F	11.6	81.3	1.00	0.99	1.48	17.2
Approach		2217	2.8	2217	2.8	0.918	42.9	LOS D	36.6	262.9	0.94	0.90	1.06	35.2
North: Marsden Road														
7	L2	317	0.3	317	0.3	*0.684	32.2	LOS C	12.3	86.5	0.96	0.83	0.96	33.2
8	T1	98	1.1	98	1.1	0.330	51.3	LOS D	5.3	37.2	0.93	0.75	0.93	23.6
9	R2	157	2.0	157	2.0	0.559	58.1	LOS E	8.8	62.9	0.97	0.81	0.97	20.6
Approach		572	0.9	572	0.9	0.684	42.6	LOS D	12.3	86.5	0.96	0.81	0.96	27.3
West: Victoria Road														
10	L2	99	2.1	99	2.1	0.472	29.6	LOS C	3.5	25.1	0.64	0.71	0.64	29.2
11	T1	2120	1.6	2120	1.6	*0.943	59.4	LOS E	55.8	395.6	0.98	1.10	1.26	30.7
12	R2	88	2.4	88	2.4	0.500	65.0	LOS E	5.2	37.1	0.99	0.78	0.99	26.6
Approach		2307	1.6	2307	1.6	0.943	58.3	LOS E	55.8	395.6	0.96	1.07	1.22	30.5
All Vehicles		5469	1.9	5469	1.9	0.943	50.9	LOS D	55.8	395.6	0.96	0.97	1.13	31.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [BG2024_Winbourne Street / Marsden Road_PM Peak (Site Folder: BG2024_Weekday_PM)]

Network: 3 [BG2024_Weekday PM (Network Folder: BG2024)]

BG2024
Winbourne Street / Marsden Road
PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS (Total veh/h)	DEMAND FLOWS (HV) %	ARRIVAL FLOWS (Total veh/h)	ARRIVAL FLOWS (HV) %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE (Veh. veh)	95% BACK OF QUEUE (Dist.) m	Prop. Que	Effective Stop Rate	No. Cycles	Aver. Speed km/h
South: Marsden Road														
2	T1	497	0.4	497	0.4	0.177	0.5	LOS A	0.8	5.3	0.10	0.07	0.10	58.3
3a	R1	88	2.4	88	2.4	0.177	6.7	LOS A	0.8	5.3	0.32	0.22	0.32	47.6
Approach		585	0.7	585	0.7	0.177	1.4	NA	0.8	5.3	0.14	0.09	0.14	56.4
NorthEast: Winbourne Street														
24a	L1	145	1.4	145	1.4	0.134	4.5	LOS A	0.5	3.6	0.31	0.53	0.31	44.2
26b	R3	23	4.5	23	4.5	0.075	15.9	LOS B	0.3	1.9	0.73	0.89	0.73	42.9
Approach		168	1.9	168	1.9	0.134	6.1	LOS A	0.5	3.6	0.37	0.58	0.37	43.9
North: Marsden Road														
7b	L3	8	0.0	8	0.0	0.114	6.6	LOS A	0.0	0.0	0.00	0.03	0.00	58.5
8	T1	424	1.0	424	1.0	0.114	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.7
Approach		433	1.0	433	1.0	0.114	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.7
All Vehicles		1186	1.0	1186	1.0	0.177	1.6	NA	0.8	5.3	0.12	0.13	0.12	55.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: P5556 Intersection Models **Template: Movement Summary**

Site: 0192 [DES2024_Victoria Road / Marsden Road_PM Peak (Site Folder: DES2024_Weekday_PM)]

Network: 7 [DES2024_Weekday PM (Network Folder: DES2024)]

DES 2024
Victoria Road / Marsden Road
PM Peak
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 122 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: E-W Major Intersection
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F
Output Phase Sequence: A, D, E, F

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS (Total veh/h)	HV (%)	ARRIVAL FLOWS (Total veh/h)	HV (%)	Deg Satn v/c	Aver Delay sec	Level of Service	95% BACK OF QUEUE (Veh veh)	(Dist m)	Prop Que	Effective Stop Rate	Aver No. Cycles	Aver Speed Km/h
South: Wharf Road														
1	L2	127	0.8	127	0.8	0.545	55.2	LOS D	9.4	66.0	0.96	0.80	0.96	28.4
2	T1	177	0.0	177	0.0	*0.975	80.5	LOS F	17.7	123.9	0.99	1.12	1.46	15.7
3	R2	91	0.0	91	0.0	0.975	94.1	LOS F	17.7	123.9	1.00	1.22	1.61	23.6
Approach		395	0.3	395	0.3	0.975	75.5	LOS F	17.7	123.9	0.98	1.04	1.34	21.6
East: Victoria Road														
4	L2	46	2.3	46	2.3	0.847	45.7	LOS D	38.2	274.7	0.97	0.94	1.05	35.6
5	T1	1841	3.2	1841	3.2	0.847	39.0	LOS C	38.3	275.8	0.95	0.92	1.03	38.0
6	R2	368	0.3	368	0.3	*0.948	87.8	LOS F	13.6	95.5	1.00	1.03	1.55	16.3
Approach		2256	2.7	2256	2.7	0.948	47.1	LOS D	38.3	275.8	0.96	0.93	1.12	33.4
North: Marsden Road														
7	L2	376	0.3	376	0.3	*0.785	35.4	LOS C	15.9	111.6	0.99	0.88	1.06	31.7
8	T1	117	0.9	117	0.9	0.393	51.9	LOS D	6.4	44.9	0.94	0.76	0.94	23.4
9	R2	185	1.7	185	1.7	0.659	59.4	LOS E	10.7	76.0	0.99	0.83	1.01	20.3
Approach		678	0.8	678	0.8	0.785	44.8	LOS D	15.9	111.6	0.98	0.85	1.03	26.5
West: Victoria Road														
10	L2	111	1.9	111	1.9	0.578	30.5	LOS C	4.0	28.6	0.65	0.72	0.65	28.7
11	T1	2157	1.6	2157	1.6	*0.981	77.3	LOS F	64.6	458.1	0.99	1.22	1.41	26.2
12	R2	88	2.4	88	2.4	0.462	63.7	LOS E	5.1	36.6	0.98	0.78	0.98	26.9
Approach		2356	1.6	2356	1.6	0.981	74.6	LOS F	64.6	458.1	0.97	1.18	1.36	26.3
All Vehicles		5684	1.9	5684	1.9	0.981	60.2	LOS E	64.6	458.1	0.97	1.03	1.22	28.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [DES2024_Winbourne Street / Marsden Road_PM Peak (Site Folder: DES2024_Weekday_PM)]

Network: 7 [DES2024_Weekday PM (Network Folder: DES2024)]

DES2024
Winbourne Street / Marsden Road
PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h]	[HV] %	ARRIVAL FLOWS [Total veh/h]	[HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]	[Dist.] m	Prop. Que	Effective Stop Rate	No. Cycles	Aver. Speed km/h
South: Marsden Road														
2	T1	497	0.4	497	0.4	0.222	0.4	LOS A	1.0	6.9	0.07	0.07	0.07	58.6
3a	R1	160	1.3	160	1.3	0.222	7.3	LOS A	1.0	6.9	0.48	0.48	0.48	45.1
Approach		657	0.6	657	0.6	0.222	2.1	NA	1.0	6.9	0.17	0.17	0.17	54.6
NorthEast: Winbourne Street														
24a	L1	252	0.8	252	0.8	0.279	4.3	LOS A	0.9	6.4	0.27	0.51	0.27	44.4
26b	R3	39	2.7	39	2.7	0.146	18.4	LOS B	0.5	3.6	0.78	0.91	0.78	41.7
Approach		291	1.1	291	1.1	0.279	6.2	LOS A	0.9	6.4	0.34	0.57	0.34	43.7
North: Marsden Road														
7b	L3	80	0.0	80	0.0	0.148	6.8	LOS A	0.0	0.0	0.00	0.24	0.00	56.6
8	T1	424	1.0	424	1.0	0.148	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	58.4
Approach		504	0.8	504	0.8	0.148	1.1	NA	0.0	0.0	0.00	0.11	0.00	57.9
All Vehicles		1452	0.8	1452	0.8	0.279	2.6	NA	1.0	6.9	0.14	0.23	0.14	53.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: P5556 Intersection Models **Template: Movement Summary**

Site: 0192 [BG2024_Victoria Road / Marsden Road_Sat Peak (Site Folder: BG2024_Saturday Peak)] **Network: 4 [BG2024_Saturday (Network Folder: BG2024)]**

BG 2024
Victoria Road / Marsden Road
Saturday Peak
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 111 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: E-W Major Intersection
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F
Output Phase Sequence: A, D, E, F

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS (Total veh/h)	HV (%)	ARRIVAL FLOWS (Total veh/h)	HV (%)	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE (Veh. veh)	(Dist.) m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wharf Road														
1	L2	123	5.1	123	5.1	0.427	47.3	LOS D	7.1	51.5	0.92	0.79	0.92	30.1
2	T1	88	0.0	88	0.0	*0.764	52.4	LOS D	9.4	66.2	0.98	0.87	1.10	20.3
3	R2	101	1.0	101	1.0	0.764	60.3	LOS E	9.4	66.2	1.00	0.90	1.16	29.8
Approach		313	2.4	313	2.4	0.764	53.0	LOS D	9.4	66.2	0.96	0.85	1.05	27.6
East: Victoria Road														
4	L2	43	0.0	43	0.0	0.761	37.9	LOS C	26.7	191.2	0.93	0.84	0.94	38.5
5	T1	1577	2.9	1577	2.9	0.761	31.2	LOS C	26.8	192.1	0.91	0.82	0.93	41.7
6	R2	318	0.3	318	0.3	*0.806	65.0	LOS E	9.3	65.1	1.00	0.90	1.24	20.4
Approach		1938	2.4	1938	2.4	0.806	36.9	LOS C	26.8	192.1	0.93	0.83	0.98	37.7
North: Marsden Road														
7	L2	332	1.6	332	1.6	*0.679	28.8	LOS C	11.5	81.4	0.95	0.83	0.95	34.8
8	T1	99	1.1	99	1.1	0.320	46.3	LOS D	4.8	34.1	0.93	0.74	0.93	24.9
9	R2	135	0.8	135	0.8	0.457	52.0	LOS D	6.8	47.7	0.95	0.79	0.95	22.2
Approach		565	1.3	565	1.3	0.679	37.4	LOS C	11.5	81.4	0.95	0.81	0.95	29.3
West: Victoria Road														
10	L2	105	1.0	105	1.0	0.409	29.6	LOS C	3.6	25.5	0.68	0.72	0.68	29.0
11	T1	1602	1.8	1602	1.8	*0.799	33.2	LOS C	29.8	211.8	0.91	0.84	0.96	40.8
12	R2	135	3.1	135	3.1	0.697	61.5	LOS E	7.5	53.9	1.00	0.84	1.10	27.4
Approach		1842	1.8	1842	1.8	0.799	35.1	LOS C	29.8	211.8	0.90	0.84	0.96	38.9
All Vehicles		4658	2.1	4658	2.1	0.806	37.3	LOS C	29.8	211.8	0.92	0.83	0.97	36.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [BG2024_Winbourne Street / Marsden Road_Sat Peak (Site Folder: BG2024_Saturday Peak)]

Network: 4 [BG2024_Saturday (Network Folder: BG2024)]

BG2024
Winbourne Street / Marsden Road
Saturday Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h]	[HV] %	ARRIVAL FLOWS [Total veh/h]	[HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]	[Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden Road														
2	T1	447	0.2	447	0.2	0.146	0.5	LOS A	0.5	3.6	0.10	0.05	0.10	58.4
3a	R1	52	2.0	52	2.0	0.146	7.1	LOS A	0.5	3.6	0.26	0.14	0.26	48.4
Approach		499	0.4	499	0.4	0.146	1.1	NA	0.5	3.6	0.11	0.06	0.11	57.2
NorthEast: Winbourne Street														
24a	L1	99	1.1	99	1.1	0.094	4.6	LOS A	0.3	2.4	0.33	0.54	0.33	44.2
26b	R3	16	0.0	16	0.0	0.047	14.6	LOS B	0.2	1.2	0.70	0.87	0.70	43.7
Approach		115	0.9	115	0.9	0.094	6.0	LOS A	0.3	2.4	0.38	0.58	0.38	44.1
North: Marsden Road														
7b	L3	8	0.0	8	0.0	0.129	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.5
8	T1	481	1.3	481	1.3	0.129	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.7
Approach		489	1.3	489	1.3	0.129	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.7
All Vehicles		1103	0.9	1103	0.9	0.146	1.2	NA	0.5	3.6	0.09	0.09	0.09	56.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: P5556 Intersection Models **Template: Movement Summary**

Site: 0192 [DES2024_Victoria Road / Marsden Road_Sat Peak (Site Folder: DES2024_Saturday Peak)] **Network: 8 [DES2024_Saturday (Network Folder: DES2024)]**

DES 2024
Victoria Road / Marsden Road
Saturday Peak
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 111 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: E-W Major Intersection
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F
Output Phase Sequence: A, D, E, F

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS (Total veh/h)	DEMAND FLOWS (HV) %	ARRIVAL FLOWS (Total veh/h)	ARRIVAL FLOWS (HV) %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE (Veh. veh)	95% BACK OF QUEUE (Dist.) m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wharf Road														
1	L2	123	5.1	123	5.1	0.464	48.5	LOS D	7.5	54.2	0.94	0.79	0.94	29.9
2	T1	108	0.0	108	0.0	*0.829	55.0	LOS D	10.6	74.7	0.98	0.92	1.17	19.8
3	R2	101	1.0	101	1.0	0.829	63.3	LOS E	10.6	74.7	1.00	0.97	1.26	29.1
Approach		333	2.2	333	2.2	0.829	55.1	LOS D	10.6	74.7	0.97	0.89	1.11	26.7
East: Victoria Road														
4	L2	43	0.0	43	0.0	0.799	41.9	LOS C	28.6	204.9	0.96	0.89	1.01	36.9
5	T1	1577	2.9	1577	2.9	0.799	35.2	LOS C	28.7	206.0	0.94	0.87	0.99	39.7
6	R2	354	0.3	354	0.3	*0.828	65.4	LOS E	10.4	73.1	1.00	0.91	1.26	20.3
Approach		1974	2.4	1974	2.4	0.828	40.7	LOS C	28.7	206.0	0.95	0.88	1.04	35.8
North: Marsden Road														
7	L2	385	1.4	385	1.4	*0.738	29.2	LOS C	13.7	96.8	0.96	0.86	0.99	34.6
8	T1	116	0.9	116	0.9	0.354	45.7	LOS D	5.6	39.7	0.93	0.75	0.93	25.1
9	R2	161	0.7	161	0.7	0.517	51.7	LOS D	8.1	57.1	0.96	0.80	0.96	22.3
Approach		662	1.1	662	1.1	0.738	37.5	LOS C	13.7	96.8	0.95	0.83	0.97	29.2
West: Victoria Road														
10	L2	116	0.9	116	0.9	0.509	31.5	LOS C	4.1	29.1	0.70	0.73	0.70	28.1
11	T1	1635	1.7	1635	1.7	*0.856	40.4	LOS C	34.0	241.4	0.94	0.93	1.08	37.4
12	R2	135	3.1	135	3.1	0.643	59.5	LOS E	7.3	52.6	1.00	0.82	1.05	27.8
Approach		1885	1.8	1885	1.8	0.856	41.2	LOS C	34.0	241.4	0.93	0.91	1.05	36.1
All Vehicles		4854	2.0	4854	2.0	0.856	41.5	LOS C	34.0	241.4	0.94	0.89	1.04	34.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [DES2024_Winbourne Street / Marsden Road_Sat Peak (Site Folder: DES2024_Saturday Peak)]

Network: 8 [DES2024_Saturday (Network Folder: DES2024)]

DES2024
Winbourne Street / Marsden Road
Saturday Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h]	DEMAND FLOWS [HV] %	ARRIVAL FLOWS [Total veh/h]	ARRIVAL FLOWS [HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]	95% BACK OF QUEUE [Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden Road														
2	T1	447	0.2	447	0.2	0.188	0.6	LOS A	0.9	6.0	0.09	0.08	0.09	58.2
3a	R1	117	0.9	117	0.9	0.188	7.6	LOS A	0.9	6.0	0.49	0.40	0.49	45.4
Approach		564	0.4	564	0.4	0.188	2.0	NA	0.9	6.0	0.18	0.15	0.18	55.0
NorthEast: Winbourne Street														
24a	L1	196	0.5	196	0.5	0.194	4.4	LOS A	0.7	4.9	0.31	0.53	0.31	44.3
26b	R3	31	0.0	31	0.0	0.106	17.1	LOS B	0.4	2.6	0.76	0.90	0.76	42.4
Approach		226	0.5	226	0.5	0.194	6.1	LOS A	0.7	4.9	0.37	0.58	0.37	43.8
North: Marsden Road														
7b	L3	74	0.0	74	0.0	0.155	6.7	LOS A	0.0	0.0	0.00	0.19	0.00	57.0
8	T1	481	1.3	481	1.3	0.155	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	58.6
Approach		555	1.1	555	1.1	0.155	0.9	NA	0.0	0.0	0.00	0.09	0.00	58.2
All Vehicles		1345	0.7	1345	0.7	0.194	2.3	NA	0.9	6.0	0.14	0.20	0.14	53.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: P5556 Intersection Models **Template: Movement Summary**

Site: 0192 [BG2034_Victoria Road / Marsden Road_PM Peak (Site Folder: BG2034_Weekday_PM)] **Network: 5 [BG2034_Weekday PM (Network Folder: BG2034)]**

BG 2034
Victoria Road / Marsden Road
PM Peak
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 122 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: E-W Major Intersection
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F
Output Phase Sequence: A, D, E, F

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS (Total veh/h)	HV (%)	ARRIVAL FLOWS (Total veh/h)	HV (%)	Deg Satn v/c	Aver Delay sec	Level of Service	95% BACK OF QUEUE (Veh veh)	(Dist m)	Prop Que	Effective Stop Rate	Aver No. Cycles	Aver Speed km/h
South: Wharf Road														
1	L2	145	0.7	145	0.7	0.581	54.8	LOS D	10.3	72.8	0.97	0.81	0.97	28.5
2	T1	178	0.0	178	0.0	*1.039	106.6	LOS F	22.4	157.1	0.99	1.25	1.66	12.7
3	R2	103	0.0	103	0.0	1.039	127.7	LOS F	22.4	157.1	1.00	1.38	1.87	19.2
Approach		426	0.2	426	0.2	1.039	94.0	LOS F	22.4	157.1	0.99	1.13	1.48	18.9
East: Victoria Road														
4	L2	53	2.0	53	2.0	0.943	66.2	LOS E	55.2	396.5	1.00	1.11	1.26	29.7
5	T1	2099	3.2	2099	3.2	0.943	59.8	LOS E	55.3	398.1	0.98	1.10	1.26	30.5
6	R2	376	0.3	376	0.3	*1.047	135.1	LOS F	17.8	125.1	1.00	1.18	1.95	11.4
Approach		2527	2.7	2527	2.7	1.047	71.1	LOS F	55.3	398.1	0.98	1.12	1.36	26.4
North: Marsden Road														
7	L2	361	0.3	361	0.3	*0.779	35.6	LOS C	15.3	107.3	0.99	0.88	1.06	31.6
8	T1	112	0.9	112	0.9	0.376	51.8	LOS D	6.1	42.8	0.94	0.76	0.94	23.5
9	R2	179	2.4	179	2.4	0.639	59.0	LOS E	10.3	73.3	0.99	0.82	1.00	20.3
Approach		652	1.0	652	1.0	0.779	44.8	LOS D	15.3	107.3	0.98	0.84	1.02	26.5
West: Victoria Road														
10	L2	113	1.9	113	1.9	0.648	32.5	LOS C	4.3	30.6	0.65	0.75	0.72	27.6
11	T1	2417	1.6	2417	1.6	*1.075	138.7	LOS F	94.7	671.6	1.00	1.57	1.84	17.3
12	R2	101	2.1	101	2.1	0.570	65.5	LOS E	6.0	42.7	1.00	0.78	1.00	26.5
Approach		2631	1.6	2631	1.6	1.075	131.4	LOS F	94.7	671.6	0.98	1.51	1.76	17.7
All Vehicles		6236	1.9	6236	1.9	1.075	95.3	LOS F	94.7	671.6	0.98	1.25	1.60	21.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [BG2034_Winbourne Street / Marsden Road_PM Peak (Site Folder: BG2034_Weekday_PM)]

Network: 5 [BG2034_Weekday PM (Network Folder: BG2034)]

BG2034
Winbourne Street / Marsden Road
PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h]	HV [ ] %	ARRIVAL FLOWS [Total veh/h]	HV [ ] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]	[Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden Road														
2	T1	566	0.4	548	0.4	0.192	0.6	LOS A	0.8	5.8	0.11	0.07	0.11	58.2
3a	R1	88	2.4	86	2.4	0.192	7.2	LOS A	0.8	5.8	0.35	0.20	0.35	47.4
Approach		655	0.6	633[N1]	0.7	0.192	1.5	NA	0.8	5.8	0.15	0.09	0.15	56.4
NorthEast: Winbourne Street														
24a	L1	145	1.4	145	1.4	0.166	4.5	LOS A	0.5	3.6	0.32	0.84	0.32	44.2
26b	R3	23	4.5	23	4.5	0.087	18.2	LOS B	0.3	2.2	0.77	0.91	0.77	41.8
Approach		168	1.9	168	1.9	0.166	6.4	LOS A	0.5	3.6	0.38	0.59	0.38	43.6
North: Marsden Road														
7b	L3	8	0.0	8	0.0	0.143	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	58.5
8	T1	484	1.1	484	1.1	0.143	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.7
Approach		493	1.1	493	1.1	0.143	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.7
All Vehicles		1316	1.0	1294[N1]	1.0	0.192	1.6	NA	0.8	5.8	0.12	0.12	0.12	55.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: P5556 Intersection Models **Template: Movement Summary**

Site: 0192 [DES2034_Victoria Road / Marsden Road_PM Peak (Site Folder: DES2034_Weekday_PM)]

Network: 9 [DES2034_Weekday PM (Network Folder: DES2034)]

DES 2034
Victoria Road / Marsden Road
PM Peak
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 122 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: E-W Major Intersection
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F
Output Phase Sequence: A, D, E, F

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS (Total veh/h)	HV (%)	ARRIVAL FLOWS (Total veh/h)	HV (%)	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE (Veh. veh)	(Dist.) m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wharf Road														
1	L2	145	0.7	145	0.7	0.617	55.9	LOS D	10.8	76.1	0.98	0.82	0.98	28.3
2	T1	199	0.0	199	0.0	*1.103	140.6	LOS F	28.3	198.3	0.99	1.39	1.87	10.2
3	R2	103	0.0	103	0.0	1.103	172.5	LOS F	28.3	198.3	1.00	1.56	2.15	15.4
Approach		447	0.2	447	0.2	1.103	120.4	LOS F	28.3	198.3	0.99	1.24	1.65	15.7
East: Victoria Road														
4	L2	53	2.0	53	2.0	0.965	76.0	LOS F	59.5	427.8	1.00	1.17	1.34	27.5
5	T1	2099	3.2	2099	3.2	0.965	69.6	LOS E	59.7	429.5	0.98	1.17	1.34	27.9
6	R2	415	0.3	415	0.3	*1.066	148.3	LOS F	20.8	146.3	1.00	1.21	2.02	10.4
Approach		2566	2.7	2566	2.7	1.066	82.5	LOS F	59.7	429.5	0.99	1.17	1.45	23.9
North: Marsden Road														
7	L2	420	0.3	420	0.3	*0.877	43.8	LOS D	20.6	144.3	1.00	0.96	1.20	28.3
8	T1	131	0.8	131	0.8	0.439	52.4	LOS D	7.2	50.6	0.95	0.77	0.95	23.3
9	R2	208	2.0	208	2.0	0.743	61.9	LOS E	12.5	89.0	1.00	0.87	1.09	19.7
Approach		759	0.8	759	0.8	0.877	50.2	LOS D	20.6	144.3	0.99	0.90	1.13	24.8
West: Victoria Road														
10	L2	124	1.7	124	1.7	0.745	39.9	LOS C	5.4	38.6	0.66	0.81	0.87	24.2
11	T1	2453	1.5	2453	1.5	*1.115	170.3	LOS F	106.4	754.5	1.00	1.73	2.05	14.7
12	R2	101	2.1	101	2.1	0.526	64.2	LOS E	5.9	42.1	0.99	0.78	0.99	26.8
Approach		2678	1.6	2678	1.6	1.115	160.2	LOS F	106.4	754.5	0.98	1.65	1.95	15.1
All Vehicles		6451	1.8	6451	1.8	1.115	113.6	LOS F	106.4	754.5	0.99	1.34	1.63	18.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

ITEM 7 (continued) **ATTACHMENT 6**

Site: 101 [DES2034_Winbourne Street / Marsden Road_PM Peak (Site Folder: DES2034_Weekday_PM)]

Network: 9 [DES2034_Weekday PM (Network Folder: DES2034)]

DES2034
Winbourne Street / Marsden Road
PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	No. Cycles	Aver. Speed km/h
South: Marsden Road														
2	T1	566	0.4	536	0.4	0.233	0.5	LOS A	1.1	7.6	0.09	0.08	0.09	58.4
3a	R1	160	1.3	151	1.4	0.233	7.8	LOS A	1.1	7.6	0.52	0.47	0.52	44.9
Approach		726	0.6	687 N1	0.6	0.233	2.1	NA	1.1	7.6	0.18	0.16	0.18	54.7
NorthEast: Winbourne Street														
24a	L1	252	0.8	252	0.8	0.399	4.2	LOS A	0.9	6.3	0.26	0.51	0.26	44.5
26b	R3	39	2.7	39	2.7	0.168	20.9	LOS B	0.6	4.1	0.82	0.92	0.82	40.6
Approach		291	1.1	291	1.1	0.399	6.4	LOS A	0.9	6.3	0.34	0.57	0.34	43.5
North: Marsden Road														
7b	L3	80	0.0	80	0.0	0.184	6.8	LOS A	0.0	0.0	0.00	0.25	0.00	56.5
8	T1	484	1.1	484	1.1	0.184	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	58.6
Approach		564	0.9	564	0.9	0.184	1.0	NA	0.0	0.0	0.00	0.09	0.00	58.1
All Vehicles		1581	0.8	1542 N1	0.8	0.399	2.5	NA	1.1	7.6	0.14	0.21	0.14	53.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: P5556 Intersection Models **Template: Movement Summary**

Site: 0192 [BG2034_Victoria Road / Marsden Road_Sat Peak (Site Folder: BG2034_Saturday Peak)] **Network: 6 [BG2034_Saturday (Network Folder: BG2034)]**

BG 2034
Victoria Road / Marsden Road
Saturday Peak
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 111 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: E-W Major Intersection
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F
Output Phase Sequence: A, D, E, F

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS (Total veh/h)	HV (%)	ARRIVAL FLOWS (Total veh/h)	HV (%)	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE (Veh. veh)	(Dist.) m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wharf Road														
1	L2	140	5.3	140	5.3	0.489	48.0	LOS D	8.2	59.5	0.94	0.80	0.94	30.0
2	T1	101	0.0	101	0.0	*0.874	57.4	LOS E	11.6	81.7	0.98	0.97	1.24	19.2
3	R2	116	0.9	116	0.9	0.874	66.9	LOS E	11.6	81.7	1.00	1.03	1.36	28.3
Approach		357	2.4	357	2.4	0.874	56.8	LOS E	11.6	81.7	0.97	0.92	1.16	26.7
East: Victoria Road														
4	L2	49	0.0	49	0.0	0.867	47.5	LOS D	36.3	260.0	0.99	0.99	1.12	34.9
5	T1	1797	2.9	1797	2.9	0.867	41.0	LOS C	36.4	261.3	0.97	0.97	1.11	37.1
6	R2	362	0.3	362	0.3	*0.918	75.5	LOS F	11.7	82.2	1.00	1.00	1.50	18.3
Approach		2208	2.4	2208	2.4	0.918	46.8	LOS D	36.4	261.3	0.97	0.98	1.17	33.5
North: Marsden Road														
7	L2	378	1.7	378	1.7	*0.774	32.0	LOS C	14.3	101.6	0.98	0.88	1.05	33.1
8	T1	114	0.9	114	0.9	0.367	46.7	LOS D	5.6	39.5	0.94	0.76	0.94	24.8
9	R2	154	0.7	154	0.7	0.521	52.6	LOS D	7.8	55.0	0.96	0.80	0.96	22.0
Approach		645	1.3	645	1.3	0.774	39.5	LOS C	14.3	101.6	0.97	0.84	1.01	28.5
West: Victoria Road														
10	L2	119	0.9	119	0.9	0.543	30.1	LOS C	4.1	29.0	0.68	0.73	0.68	28.9
11	T1	1825	1.7	1825	1.7	*0.910	49.0	LOS D	42.6	302.7	0.95	1.03	1.20	34.0
12	R2	154	2.7	154	2.7	0.793	64.5	LOS E	8.9	63.8	1.00	0.89	1.22	26.7
Approach		2098	1.8	2098	1.8	0.910	49.0	LOS D	42.6	302.7	0.94	1.00	1.17	33.2
All Vehicles		5308	2.0	5308	2.0	0.918	47.4	LOS D	42.6	302.7	0.96	0.97	1.15	32.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

ITEM 7 (continued) **ATTACHMENT 6**

Site: 101 [BG2034_Winbourne Street / Marsden Road_Sat Peak (Site Folder: BG2034_Saturday Peak)]

Network: 6 [BG2034_Saturday (Network Folder: BG2034)]

BG2034
Winbourne Street / Marsden Road
Saturday Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h]	[HV] %	ARRIVAL FLOWS [Total veh/h]	[HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh]	[Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden Road														
2	T1	509	0.2	509	0.2	0.165	0.5	LOS A	0.6	4.2	0.11	0.05	0.11	58.3
3a	R1	52	2.0	52	2.0	0.165	7.7	LOS A	0.6	4.2	0.28	0.13	0.28	48.3
Approach		561	0.4	561	0.4	0.165	1.2	NA	0.6	4.2	0.12	0.06	0.12	57.2
NorthEast: Winbourne Street														
24a	L1	99	1.1	99	1.1	0.111	4.7	LOS A	0.3	2.5	0.34	0.55	0.34	44.1
26b	R3	16	0.0	16	0.0	0.057	17.2	LOS B	0.2	1.4	0.76	0.90	0.76	42.3
Approach		115	0.9	115	0.9	0.111	6.4	LOS A	0.3	2.5	0.40	0.60	0.40	43.7
North: Marsden Road														
7b	L3	8	0.0	8	0.0	0.157	6.6	LOS A	0.0	0.0	0.00	0.02	0.00	58.5
8	T1	548	1.3	548	1.3	0.157	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.7
Approach		557	1.3	557	1.3	0.157	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.7
All Vehicles		1233	0.9	1233	0.9	0.165	1.2	NA	0.6	4.2	0.09	0.09	0.09	56.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: P5556 Intersection Models **Template: Movement Summary**

Site: 0192 [DES2034_Victoria Road / Marsden Road_Sat Peak (Site Folder: DES2034_Saturday Peak)] **Network: 10 [DES2034_Saturday (Network Folder: DES2034)]**

DES2034
Victoria Road / Marsden Road
Saturday Peak
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 111 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: E-W Major Intersection
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F
Output Phase Sequence: A, D, E, F

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS (Total veh/h)	HV (%)	ARRIVAL FLOWS (Total veh/h)	HV (%)	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE (Veh. veh)	(Dist.) m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wharf Road														
1	L2	140	5.3	140	5.3	0.523	49.1	LOS D	8.6	62.2	0.95	0.80	0.95	29.7
2	T1	120	0.0	120	0.0	*0.935	64.6	LOS E	13.5	95.2	0.99	1.05	1.38	18.0
3	R2	116	0.9	116	0.9	0.935	76.3	LOS F	13.5	95.2	1.00	1.14	1.53	26.4
Approach		376	2.2	376	2.2	0.935	62.4	LOS E	13.5	95.2	0.98	0.98	1.26	25.1
East: Victoria Road														
4	L2	49	0.0	49	0.0	0.910	57.0	LOS E	40.5	290.3	1.00	1.07	1.23	32.1
5	T1	1797	2.9	1797	2.9	0.910	50.5	LOS D	40.7	291.7	0.98	1.05	1.22	33.4
6	R2	398	0.3	398	0.3	*0.931	77.6	LOS F	13.2	92.4	1.00	1.02	1.52	17.9
Approach		2244	2.4	2244	2.4	0.931	55.5	LOS D	40.7	291.7	0.99	1.05	1.28	30.5
North: Marsden Road														
7	L2	432	1.5	432	1.5	*0.827	34.3	LOS C	17.3	122.6	1.00	0.92	1.12	32.0
8	T1	129	0.8	129	0.8	0.396	46.0	LOS D	6.4	44.8	0.93	0.76	0.93	25.0
9	R2	180	0.6	180	0.6	0.578	52.2	LOS D	9.2	64.6	0.97	0.81	0.97	22.1
Approach		741	1.1	741	1.1	0.827	40.7	LOS C	17.3	122.6	0.98	0.87	1.05	28.0
West: Victoria Road														
10	L2	129	0.8	129	0.8	0.642	33.5	LOS C	4.9	34.2	0.71	0.76	0.77	27.1
11	T1	1858	1.7	1858	1.7	*0.973	72.4	LOS F	52.7	374.3	0.98	1.20	1.44	27.3
12	R2	155	3.4	155	3.4	0.740	61.8	LOS E	8.7	62.7	1.00	0.86	1.14	27.3
Approach		2142	1.8	2142	1.8	0.973	69.3	LOS E	52.7	374.3	0.96	1.15	1.37	27.3
All Vehicles		5503	2.0	5503	2.0	0.973	59.3	LOS E	52.7	374.3	0.98	1.06	1.28	28.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

ITEM 7 (continued) **ATTACHMENT 6**

Site: 101 [DES2034_Winbourne Street / Marsden Road_Sat Peak (Site Folder: DES2034_Saturday Peak)]

Network: 10 [DES2034_Saturday (Network Folder: DES2034)]

DES2034
Winbourne Street / Marsden Road
Saturday Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Marsden Road														
2	T1	509	0.2	509	0.2	0.210	0.7	LOS A	1.0	7.1	0.11	0.08	0.11	58.0
3a	R1	117	0.9	117	0.9	0.210	8.3	LOS A	1.0	7.1	0.53	0.40	0.53	45.1
Approach		626	0.3	626	0.3	0.210	2.1	NA	1.0	7.1	0.19	0.14	0.19	55.1
NorthEast: Winbourne Street														
24a	L1	196	0.5	196	0.5	0.255	4.4	LOS A	0.7	4.9	0.31	0.84	0.31	44.3
26b	R3	31	0.0	31	0.0	0.130	20.3	LOS B	0.4	3.1	0.81	0.92	0.81	40.9
Approach		226	0.5	226	0.5	0.255	6.6	LOS A	0.7	4.9	0.37	0.59	0.37	43.4
North: Marsden Road														
7b	L3	74	0.0	74	0.0	0.190	6.7	LOS A	0.0	0.0	0.00	0.19	0.00	57.0
8	T1	548	1.3	548	1.3	0.190	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	58.7
Approach		622	1.2	622	1.2	0.190	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.3
All Vehicles		1475	0.7	1475	0.7	0.255	2.3	NA	1.0	7.1	0.14	0.18	0.14	54.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

USER REPORT FOR SITE

All Movement Classes

Project: P5556 Intersection Models **Template: Movement Summary**

Site: 101 [BG2024_Brush Road / Victoria Road_PM Peak (Site Folder: BG2024_Weekday_PM)]

BG2024
Brush Road / Victoria Road
PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Victoria Road														
5	T1	2175	65	2289	3.0	0.603	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	69.3
Approach		2175	65	2289	3.0	0.603	0.3	NA	0.0	0.0	0.00	0.00	0.00	69.3
North: Brush Road														
7	L2	18	1	19	5.6	0.042	10.8	LOS A	0.1	1.0	0.66	0.83	0.66	46.9
Approach		18	1	19	5.6	0.042	10.8	LOS A	0.1	1.0	0.66	0.83	0.66	46.9
West: Victoria Road														
10	L2	46	0	48	0.0	0.450	6.5	LOS A	0.0	0.0	0.00	0.04	0.00	65.9
11	T1	2394	33	2520	1.4	0.450	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	69.5
Approach		2440	33	2568	1.4	0.450	0.3	NA	0.0	0.0	0.00	0.01	0.00	69.4
All Vehicles		4633	99	4877	2.1	0.603	0.3	NA	0.1	1.0	0.00	0.01	0.00	69.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ITEM 7 (continued) **ATTACHMENT 6**

Site: 101 [DES2024_Brush Road / Victoria Road_PM Peak (Site Folder: DES2024_Weekday_PM)]

DES2024
Brush Road / Victoria Road
PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Victoria Road														
5	T1	2212	65	2328	2.9	0.614	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	69.2
Approach		2212	65	2328	2.9	0.614	0.3	NA	0.0	0.0	0.00	0.00	0.00	69.2
North: Brush Road														
7	L2	76	1	80	1.3	0.167	10.8	LOS A	0.6	4.0	0.68	0.85	0.68	47.7
Approach		76	1	80	1.3	0.167	10.8	LOS A	0.6	4.0	0.68	0.85	0.68	47.7
West: Victoria Road														
10	L2	80	0	84	0.0	0.467	6.5	LOS A	0.0	0.0	0.00	0.06	0.00	65.6
11	T1	2450	33	2579	1.3	0.467	0.2	LOS A	0.0	0.0	0.00	0.02	0.00	69.3
Approach		2530	33	2663	1.3	0.467	0.4	NA	0.0	0.0	0.00	0.02	0.00	69.2
All Vehicles		4818	99	5072	2.1	0.614	0.5	NA	0.6	4.0	0.01	0.02	0.01	68.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ITEM 7 (continued) **ATTACHMENT 6**

Site: 101 [BG2034_Brush Road / Victoria Road_PM Peak (Site Folder: BG2034_Weekday_PM)]

BG2034
Brush Road / Victoria Road
PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Victoria Road														
5	T1	2478	73	2608	2.9	0.688	0.4	LOS A	0.0	0.0	0.00	0.00	0.00	69.0
Approach		2478	73	2608	2.9	0.688	0.4	NA	0.0	0.0	0.00	0.00	0.00	69.0
North: Brush Road														
7	L2	18	1	19	5.6	0.053	13.0	LOS A	0.2	1.2	0.73	0.87	0.73	45.6
Approach		18	1	19	5.6	0.053	13.0	LOS A	0.2	1.2	0.73	0.87	0.73	45.6
West: Victoria Road														
10	L2	46	0	48	0.0	0.512	6.5	LOS A	0.0	0.0	0.00	0.03	0.00	65.9
11	T1	2729	37	2873	1.4	0.512	0.2	LOS A	0.0	0.0	0.00	0.01	0.00	69.4
Approach		2775	37	2921	1.3	0.512	0.3	NA	0.0	0.0	0.00	0.01	0.00	69.3
All Vehicles		5271	111	5548	2.1	0.688	0.4	NA	0.2	1.2	0.00	0.01	0.00	69.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ITEM 7 (continued) **ATTACHMENT 6**

Site: 101 [DES2034_Brush Road / Victoria Road_PM Peak (Site Folder: DES2034_Weekday_PM)]

DES2034
Brush Road / Victoria Road
PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Victoria Road														
5	T1	2515	73	2647	2.9	0.698	0.4	LOS A	0.0	0.0	0.00	0.00	0.00	68.9
Approach		2515	73	2647	2.9	0.698	0.4	NA	0.0	0.0	0.00	0.00	0.00	68.9
North: Brush Road														
7	L2	76	1	80	1.3	0.209	13.3	LOS A	0.7	5.0	0.76	0.90	0.80	46.2
Approach		76	1	80	1.3	0.209	13.3	LOS A	0.7	5.0	0.76	0.90	0.80	46.2
West: Victoria Road														
10	L2	80	0	84	0.0	0.529	6.5	LOS A	0.0	0.0	0.00	0.05	0.00	65.6
11	T1	2785	37	2932	1.3	0.529	0.2	LOS A	0.0	0.0	0.00	0.02	0.00	69.3
Approach		2865	37	3016	1.3	0.529	0.4	NA	0.0	0.0	0.00	0.02	0.00	69.1
All Vehicles		5456	111	5743	2.0	0.698	0.5	NA	0.7	5.0	0.01	0.02	0.01	68.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ITEM 7 (continued) **ATTACHMENT 6**

Site: 101 [BG2024_Brush Road / Victoria Road_Sat Peak (Site Folder: BG2024_Saturday Peak)]

BG2024
Brush Road / Victoria Road
Saturday Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Victoria Road														
5	T1	1855	56	1953	3.0	0.514	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	69.5
Approach		1855	56	1953	3.0	0.514	0.2	NA	0.0	0.0	0.00	0.00	0.00	69.5
North: Brush Road														
7	L2	15	0	16	0.0	0.025	8.4	LOS A	0.1	0.6	0.54	0.71	0.54	49.5
Approach		15	0	16	0.0	0.025	8.4	LOS A	0.1	0.6	0.54	0.71	0.54	49.5
West: Victoria Road														
10	L2	37	1	39	2.7	0.366	6.5	LOS A	0.0	0.0	0.00	0.04	0.00	65.0
11	T1	1942	33	2044	1.7	0.366	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	69.6
Approach		1979	34	2083	1.7	0.366	0.2	NA	0.0	0.0	0.00	0.01	0.00	69.5
All Vehicles		3849	90	4052	2.3	0.514	0.2	NA	0.1	0.6	0.00	0.01	0.00	69.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ITEM 7 (continued) **ATTACHMENT 6**

Site: 101 [DES2024_Brush Road / Victoria Road_Sat Peak (Site Folder: DES2024_Saturday Peak)]

DES2024
Brush Road / Victoria Road
Saturday Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Victoria Road														
5	T1	1888	56	1987	3.0	0.523	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	69.5
Approach		1888	56	1987	3.0	0.523	0.2	NA	0.0	0.0	0.00	0.00	0.00	69.5
North: Brush Road														
7	L2	68	0	72	0.0	0.114	8.6	LOS A	0.4	2.8	0.56	0.79	0.56	49.4
Approach		68	0	72	0.0	0.114	8.6	LOS A	0.4	2.8	0.56	0.79	0.56	49.4
West: Victoria Road														
10	L2	68	1	72	1.5	0.381	6.5	LOS A	0.0	0.0	0.00	0.06	0.00	65.1
11	T1	1993	33	2098	1.7	0.381	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	69.5
Approach		2061	34	2169	1.6	0.381	0.3	NA	0.0	0.0	0.00	0.02	0.00	69.3
All Vehicles		4017	90	4226	2.2	0.523	0.4	NA	0.4	2.8	0.01	0.02	0.01	68.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ITEM 7 (continued) **ATTACHMENT 6**

Site: 101 [BG2034_Brush Road / Victoria Road_Sat Peak (Site Folder: BG2034_Saturday Peak)]

BG2034
Brush Road / Victoria Road
Saturday Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Victoria Road														
5	T1	2114	63	2225	3.0	0.586	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	69.3
Approach		2114	63	2225	3.0	0.586	0.3	NA	0.0	0.0	0.00	0.00	0.00	69.3
North: Brush Road														
7	L2	15	0	16	0.0	0.030	9.5	LOS A	0.1	0.7	0.61	0.77	0.61	48.8
Approach		15	0	16	0.0	0.030	9.5	LOS A	0.1	0.7	0.61	0.77	0.61	48.8
West: Victoria Road														
10	L2	37	1	39	2.7	0.416	6.5	LOS A	0.0	0.0	0.00	0.03	0.00	65.0
11	T1	2214	37	2331	1.7	0.416	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	69.5
Approach		2251	38	2369	1.7	0.416	0.2	NA	0.0	0.0	0.00	0.01	0.00	69.5
All Vehicles		4380	101	4611	2.3	0.586	0.3	NA	0.1	0.7	0.00	0.01	0.00	69.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [DES2034_Brush Road / Victoria Road_Sat Peak (Site Folder: DES2034_Saturday Peak)]

DES2034
Brush Road / Victoria Road
Saturday Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Victoria Road														
5	T1	2147	63	2260	2.9	0.595	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	69.3
Approach		2147	63	2260	2.9	0.595	0.3	NA	0.0	0.0	0.00	0.00	0.00	69.3
North: Brush Road														
7	L2	68	0	72	0.0	0.133	9.8	LOS A	0.5	3.2	0.63	0.83	0.63	48.6
Approach		68	0	72	0.0	0.133	9.8	LOS A	0.5	3.2	0.63	0.83	0.63	48.6
West: Victoria Road														
10	L2	68	1	72	1.5	0.432	6.5	LOS A	0.0	0.0	0.00	0.06	0.00	65.2
11	T1	2265	37	2384	1.6	0.432	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	69.4
Approach		2333	38	2456	1.6	0.432	0.3	NA	0.0	0.0	0.00	0.02	0.00	69.3
All Vehicles		4548	101	4787	2.2	0.595	0.4	NA	0.5	3.2	0.01	0.02	0.01	68.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.