Figure 3: Existing Public Transport Map

Cycle Routes

There are currently limited cycling facilities and routes provided within the proximity of Loreto. However, Council are currently undertaking a review of the Hornsby Shire Bike Plan with the aim to prioritise the development of local connections to and from areas that will generate demand for cycling trips such as town centres, public recreation facilities, schools/colleges, rail stations and Hornsby Hospital.

2 Overview of Works

2.1 Staging and Duration of Works

Recognising the purpose of this CTMP, it is estimated that the total duration of the construction works will be approximately 1 and half years from the commencement date. The start date for construction will be determined when the status of this development reaches Construction Certificate (CC) stage. The following summarises key aspects of the construction stages:

- Demolition works are set to have a duration for 4 weeks.
- Excavation activities will continue for 12 weeks.
- General Construction and Concrete Pours are estimated to continue for 1 year. Peak construction activities are expected to occur during this stage of works – especially during Concrete Pours.
- External Finishes are expected to last for 10 weeks.
- Kerb and Footpath Works will be determined at a later date.

2.2 Hours of Operation

The type of work being undertaken will vary depending on the phase of construction and associated activities. This includes both construction and design personnel. Notwithstanding, all works will be undertaken in accordance with the CC conditions of consent. The following indicative timeframes are as follows:

- Monday to Friday (other than Public Holidays): 7:00am – 5:00pm.
- Saturday: Per the conditions of consent
- Sunday & Public Holidays: No works to be undertaken.

2.3 Proposed Site Access

During the Stage 1 Works, there will two site accesses, one located at the existing school carpark along Mount Pleasant Avenue and the second access located at the southern of the site accessed via the proposed haulage route across the school oval. **Figure 4** details the proposed vehicle access plan for the Site.

The different site access arrangements will be discussed in the following sections below.

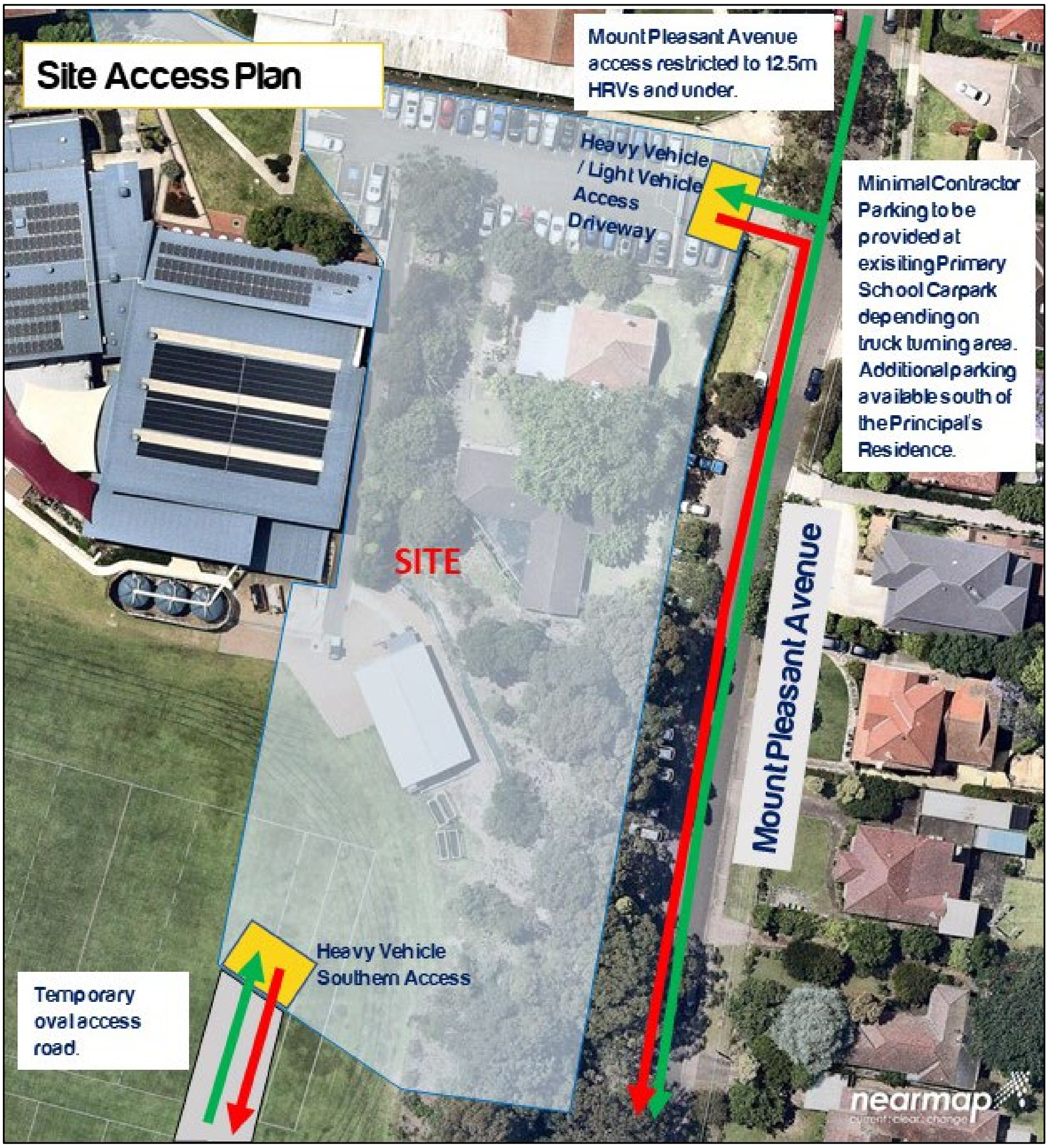


Figure 4: General Construction Site Access Plan

The largest vehicle accessing the Site will be a 19.6m Truck and Dog. However, this 19.6m Truck and Dog heavy vehicle size will be restricted to the southern heavy vehicle access which can only be accessed by the temporary oval access road. Heavy vehicles of 12.5m in length and less can access via the Mount Pleasant northern driveway. Appendix C demonstrates the required turning movements to access the Site.

Vehicle access to the Mary Ward building via the existing school roads will be restricted to only 6.4m SRVs and under. Appendix C showcases the required turning movements for a 6.4m SRV to enter and exit the Mary Ward site.

Contractor parking will be provided at the Primary School Carpark located directly north of the Site. Additional contractor parking will be relocated to the south of the Principal's Residence located to the south of Mount Pleasant Avenue. No on-street parking would be permitted for construction workers and this restriction has consistently been imposed by the school for all previous construction works.

Pedestrians attempting to cross the Site's heavy vehicle access are to be managed through signage, pedestrian barriers and traffic controllers.

Emergency vehicle access to and from the Site will be available at all times while the Site is occupied by construction workers. This process would be implemented through emergency protocols on the site which will be developed by the Contractor.

2.4 Construction Vehicle Access Routes

All construction vehicles would enter and exit the Site via the routes shown in **Figure 5**. The routes shown are to be utilised by all construction vehicles travelling to and from the site and represents the shortest route available - hence minimising the impacts of the construction process. A copy of the approved routes will be distributed by the Contractor to all drivers before their arrival to Site.

All vehicles above 12.5m in length (Truck and Dog movements) would access the construction site via Pennant Hills Road (Cumberland Highway) and Mount Pleasant Avenue.

- Route 1: From Pennant Hills Road heading northbound, right onto Mount Pleasant Avenue before turning right into the Site / or turn right into the temporary oval access road to access the Site.
- Route 2: From Pennant Hills Road heading southbound, left onto Mount Pleasant Avenue before turning right into the Site / or turn right into the temporary oval access road to access the Site.

For exiting the Site, all construction vehicles, inclusive of those over 12.5m in length, are to use either of the following two routes:

- Route 1: From the northern Site access, turn right onto Mount Pleasant Avenue, turn right onto the access road across the southern edge of the School Oval, turn right onto Osborn Avenue before turning right onto Pennant Hills Road to head northbound / southbound.
- Route 2: From the southern Site access, turn onto the access road across the southern edge of the School Oval, turn right onto Osborn Avenue before turning left onto Pennant Hills Road to head southbound / northbound.

Any oversized or over-mass vehicles travelling to and / or from the Site will be required to obtain a permit from the Roads and Maritime Services (RMS) and / or the National Heavy Vehicle Register (NHVR). Notwithstanding, this CTMP relates to general construction which does not seek the use of oversize vehicles. A separate application would be submitted to Council if required.

Swept paths (attached in **Appendix C**) demonstrate all critical turns at nearby intersections as outlined within **Figure 5.**

All construction vehicles associated with the construction project will enter and exit the Site in a forward direction.

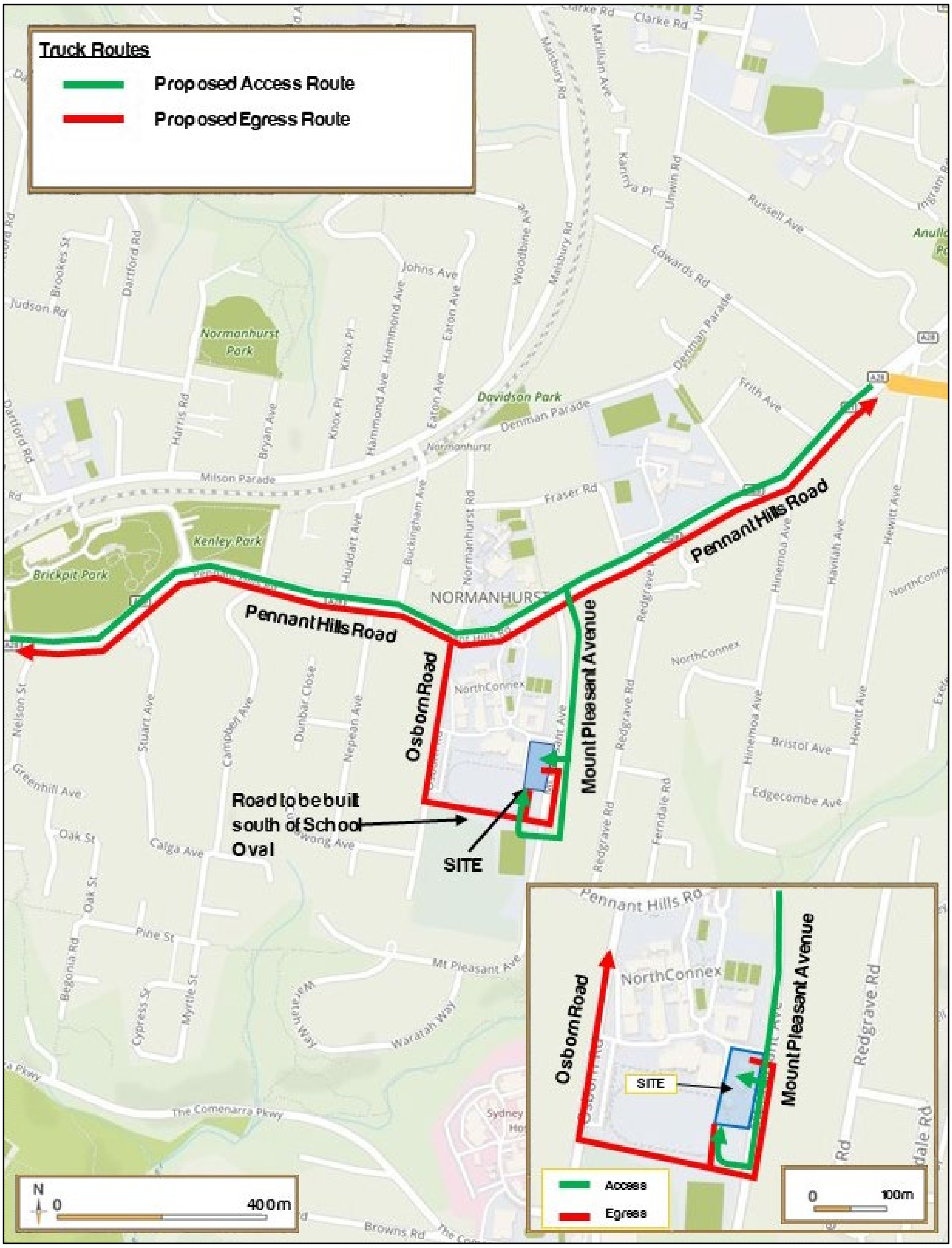


Figure 5: Construction Vehicle Route

2.5 New Osborn Road Through-Road Access (Construction Traffic Only)

A temporary connection is proposed on the southern edge of the oval to facilitate exiting truck movements from Mount Pleasant Avenue to Osborn Road. Currently, the final positioning and dimensions of the temporary oval access road has not been determined. However, it will be approximately located along the southern edge of the oval and connect with the construction site's southern access and the existing western oval carpark. **Appendix B**'s TCP showcases the assumed position of the proposed southern road. The largest vehicle to access this road will be a 19.6m Truck and Dog. Further consultation with Loreto and Council is expected to be undertaken to determine the exact location of the temporary construction through-site link.

2.6 Fencing Requirements

Security fencing will be erected along the entire boundary of the site and will be maintained for the duration of the construction program. The fencing is to ensure unauthorised persons are kept out of the Site. Site access gates would be provided along Mount Pleasant Avenue and will be closed at all times outside of the permitted construction hours. Fencing will be installed along both sides of the access road being built between Mount Pleasant Avenue and Osborn Road to the south of the School Oval.

Hoarding layout and timings may change throughout the development, however prior approval shall be sought from Loreto Normanhurst and Council.

2.7 Materials Handling

It is proposed that all material loading will occur within the construction site boundary. Equipment, materials and waste will be kept within the construction site boundary. Should materials handling be required from the public roadway then prior approval shall be sought and obtained from Hornsby Shire Council.

2.8 Site Management

Site management will be required to notify adjacent properties of any temporary traffic restrictions and measures being implemented at least fourteen (14) days in advance.

Some works may be required within the roadway during the external finishes stage. These works would most likely be undertaken at night or during off peak periods to limit any interaction with peak traffic conditions along Mount Pleasant Avenue.

Any Traffic Control measures necessary for these works will be submitted to Council for approval and 14 days' notice would be provided to adjoining property owners as required by Council. Pedestrian amenities and footpaths will be kept to serviceable conditions during the construction periods.

Remediation of any damaged footpaths and pedestrian facilities will be undertaken at the discretion of Council.

2.9 Site Plan

Figure 6 provides the layout for the Site during the excavation period, **Figure 7** details the layout for the general construction phase and

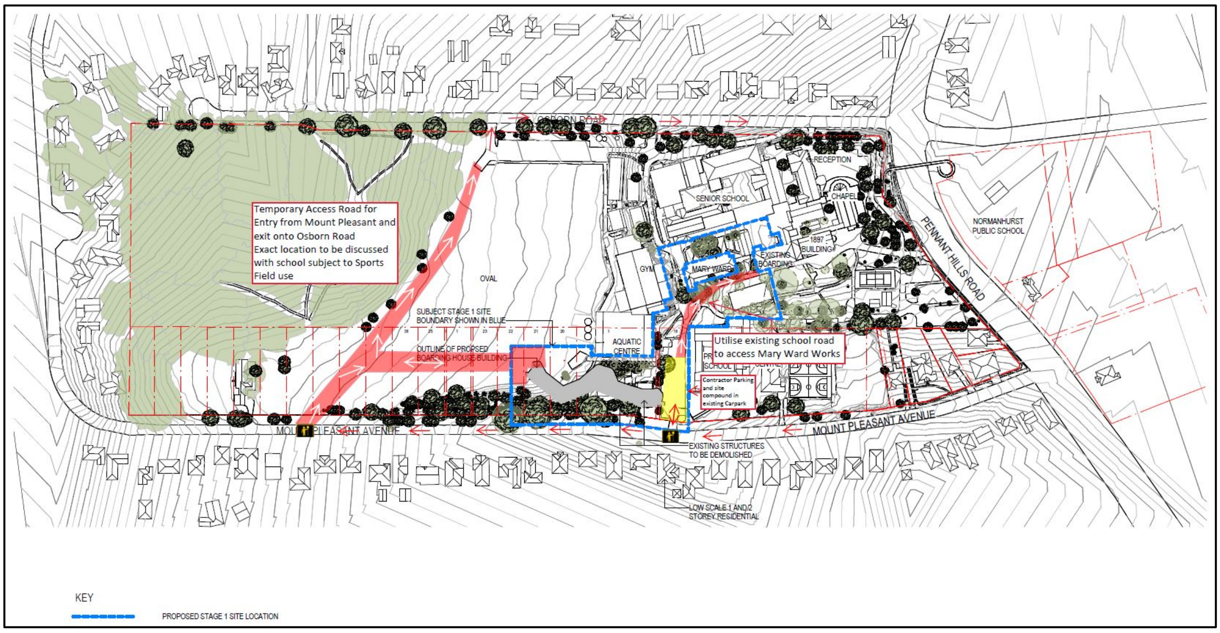


Figure 8 illustrates the indicative temporary oval access road and the general Stage 1 Works. The figures illustrate the main Site accesses to be used and the location of the internal roads and offices.

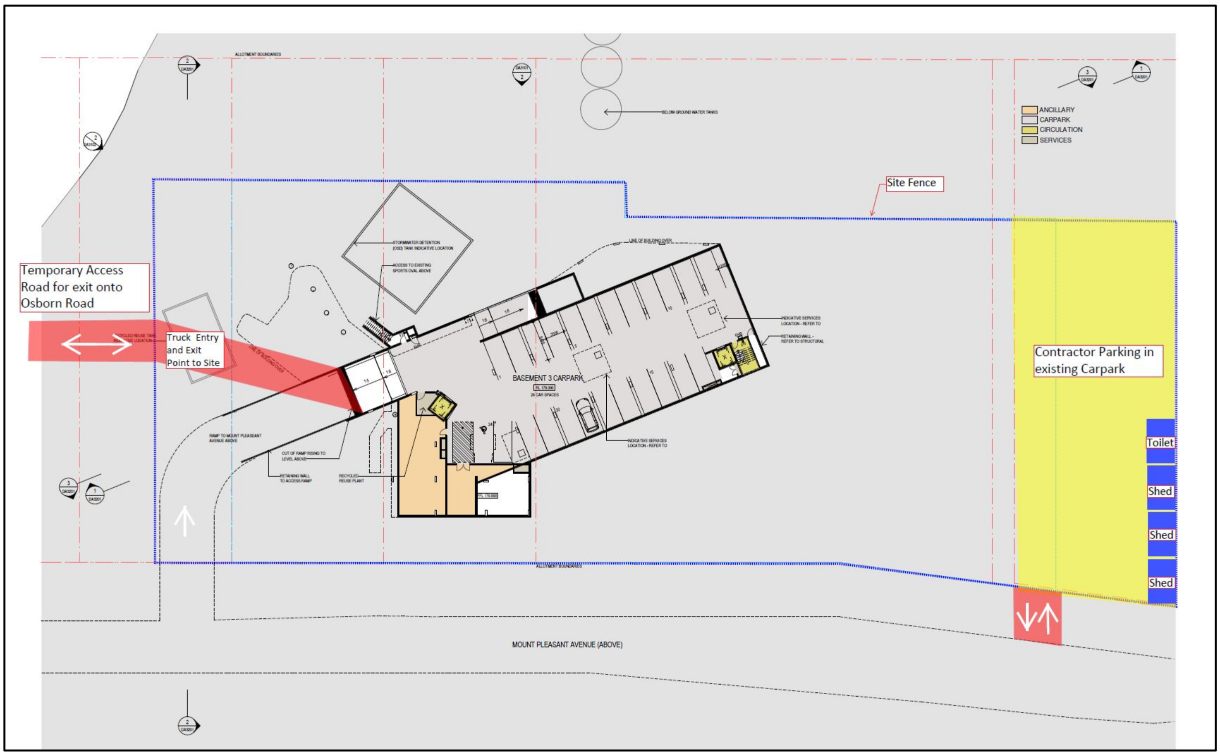


Figure 6: Excavation Stage Site Plan

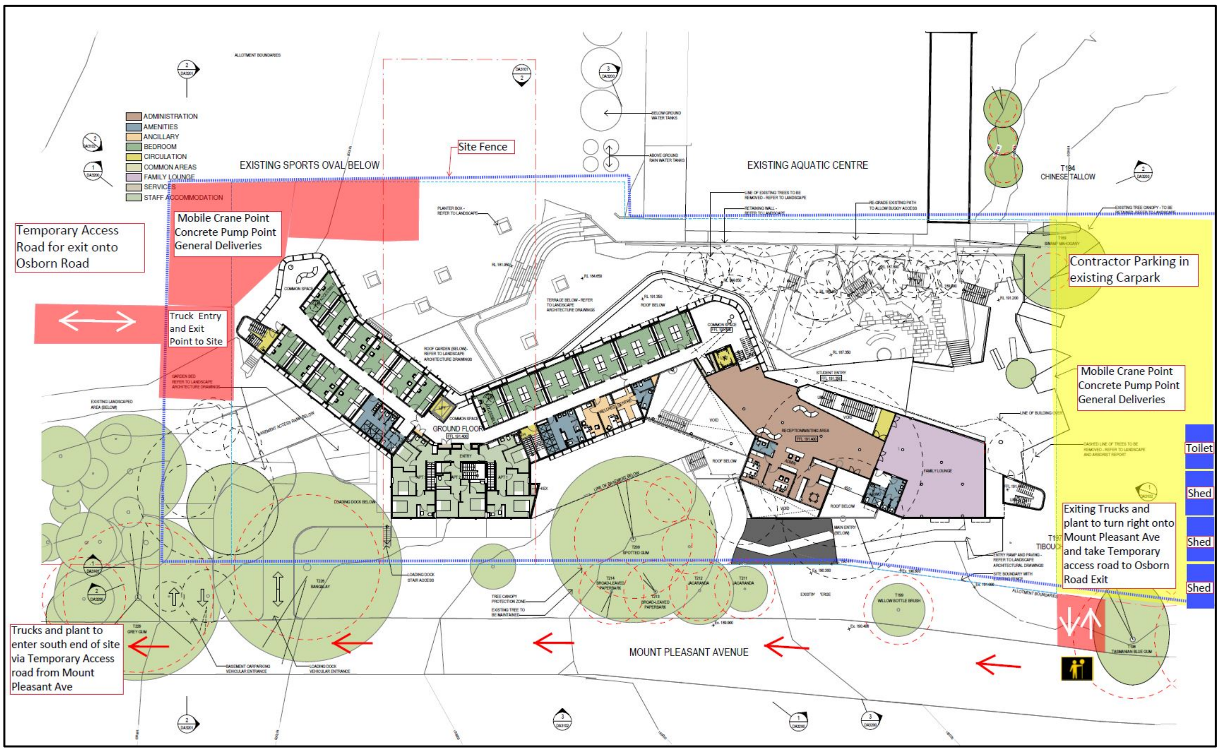


Figure 7: General Construction Stage Site Plan

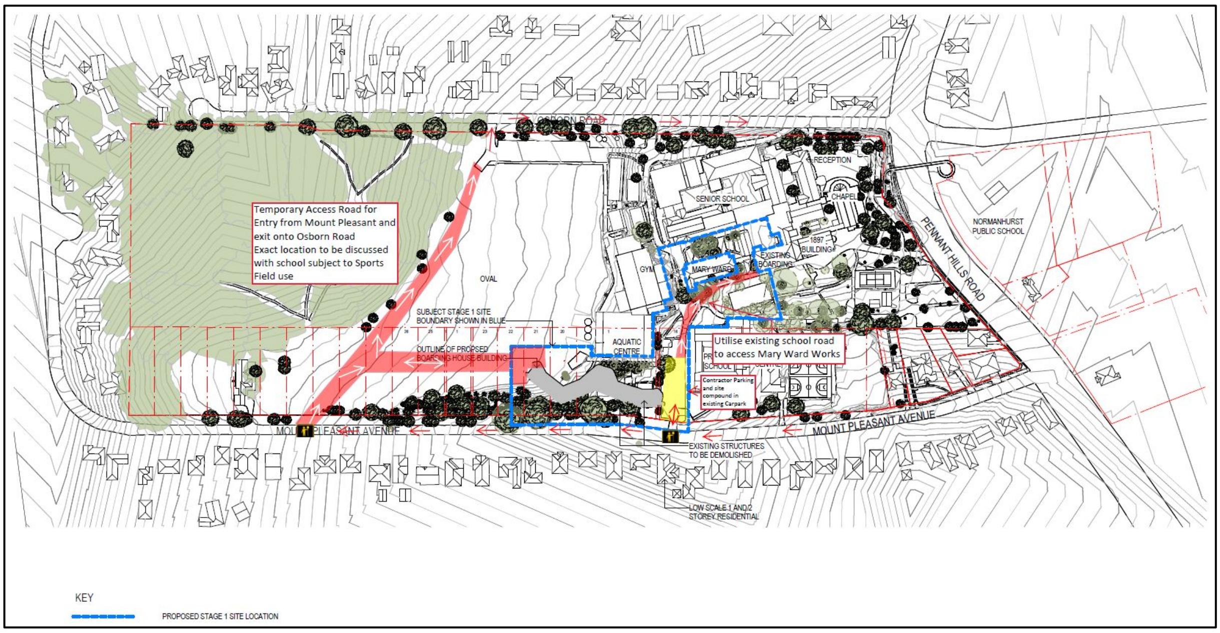


Figure 8: Stage 1 Works Overview Site Plan

2.10 CTMP – Monitoring & Review Process

The CTMP has been based on the existing site conditions and information provided by Loreto Normanhurst. Consultation with Council will continue to be undertaken to ensure that the cumulative traffic impacts of construction within the area does not adversely impact the road network. The CTMP will be reviewed and monitored frequently to confirm that the construction traffic methodologies reflect the current traffic situation in the Site's locality.

2.11 Loreto Normanhurst School Management

Loreto Normanhurst will liaise with the chosen builder, Gledhill Constructions, to inform them of the proposed construction and to comment on any potential construction impacts that could affect the school's operations. Further meetings and discussions will be undertaken in the future to ensure that the pedestrian and cyclist management will minimise construction interactions with school students, staff and parents.

2.12 Bowden Brae Retirement Village Construction Management

The Uniting Church in Australia Property Trust is the developer of the retirement village at 40 – 50 Pennant Hills Road, Normanhurst. This retirement village construction site is within 800m of the Loreto Normanhurst's Stage 1 Works site. It is expected that the development at 40 – 50 Pennant Hills Road will be completed prior to the commencement of the Stage 1 Works. Nevertheless, Loreto Normanhurst will confer with The United Church in Australia Property Trust to mitigate any construction traffic concerns / issues that they may have. However, given the relative distance of the sites, it is unlikely that any of the surrounding local roads will have any significant cumulative traffic impacts from both developments.

2.13 NorthConnex Management

The NorthConnex tunnel is estimated to be delivered in 2020 which will connect the M1 Motorway to the M2 Motorway. The northern NorthConnex construction site at the M1 Motorway Northern Interchange Compound is approximately 1 kilometre from the Loreto Normanhurst Stage 1 Works Site. Although the NorthConnex construction activities do not directly impact movements along Mount Pleasant Avenue and the other surrounding local roads near Loreto Normanhurst, the school and the builder will be in contact with the NorthConnex construction team to coordinate and notify of any major activities along Pennant Hills Road.

2.14 15B Mount Pleasant Avenue Management

A single dwelling place is currently undergoing alteration at 15A Mount Pleasant Avenue which is located approximately 200m north of the Site. This is a very minor construction activity with little impacts along Mount Pleasant Avenue. Furthermore, the alterations would likely be finished before the commencement of the Stage 1 construction.

3 Assessment of Traffic & Transport Impacts

3.1 Construction Vehicle Traffic Generation

3.1.1 Truck Movements

Information provided by Gledhill indicates the following breakdown of truck movements:

Table 2: Truck Movement Overview

Stage	Demolition	Excavation	General Construction	Concrete Pours	External Finishes	Kerb / Footpath Works
Truck Frequency (Movements Per Day)	12	32	16	60	12	TBA
Largest Vehicle Size	Truck & Dog	Truck & Dog	Truck & Dog	HRV	MRV	TBA

It is estimated that there would be a peak of 60 truck movements a day and a peak of 10 truck movements per hour during the peak periods (5 in and 5 out).

It is understood that peak volumes would be associated with concrete pours. During these peak periods, trucks are expected to arrive and depart the Site between the hours of 7:00am – 5:00pm. Gledhill indicates that a peak of 10 truck movements per hour will occur during the concrete pour's activities (5 in & 5 out).

In order to ameliorate any concerns raised by RMS and Council, it is proposed to prioritise truck-heavy activities during off-peak school and traffic hours. Truck movements will be maximised to occur outside of peak-hours and on Saturdays. It should however be noted that that 10 truck movements during the AM and PM peak periods are required (as noted above) for more intense construction activities such as concrete pours.

Furthermore, Loreto Normanhurst has restricted that all trucks will not be allowed to leave the site between 6am and 9am to avoid school peak hours.

3.1.2 Light Vehicle Movements

In relation to light vehicle movements, it is anticipated that a maximum of 60 workers would be on-site at any one time. During the Construction period, sparse parking will be provided within the exisiting Primary School's Carpark and at the south of the Principal's Residence. All staff are encouraged to travel via the readily available public transport services in the area. It is noteworthy that the Normanhurst

Train Station and ancillary bus stops are less than 800m from the Site, therefore construction vehicles workers have several methods to access the site other than driving. No on-street parking will be utilised by construction workers.

Light vehicle traffic generation would be generally associated with staff movements to and from the Site. Staff would be comprised of project managers, various trades and general construction staff. The workforce arrival and departure periods (6.30-7.00AM and 5.00-5.30PM) represent the peak construction traffic generation periods. It is anticipated that the contractor traffic generation would be of a low order due and staff would also be encouraged to car share or use public transport.

3.1.3 Cumulative Traffic Impacts

There are 2 projects within the close proximity to the Site which will most likely coincide with construction works. These projects include

- The NorthConnex Project

The *Traffic Management and Safety Plan Revision 22* prepared by Lendlease and Bouygues for the NorthConnex construction outlines the construction site locations, intersection modifications and traffic impacts as a result of works associated with NorthConnex. The traffic management and safety plan estimates that approximately 104 heavy vehicles in the AM peak and 117 heavy vehicles in the PM peak would traverse Pennant Hills Road during construction. In addition, 117 light vehicles in both the AM and PM peak would use Pennant Hills Road in relation with the NorthConnex construction project. Therefore, there would be a total of 221 vehicles in AM peak and 234 vehicles in the PM peak using Pennant Hills Road.

The nearest intersection modelled with the NorthConnex traffic to the Site has been Pennant Hills Road / Dartford Road intersection and the Pennant Hills Road / M1 Motorway intersection. Both intersections with NorthConnex construction traffic operate at a much worse Level of Service than without the construction traffic generation, operating at an E and F during the PM peaks.

With the introduction of a peak of 10 extra heavy vehicle movements related to the Loreto Normanhurst construction site during the AM and PM peak, this low order of additional traffic (approximately 1 every 6 minutes) would not adversely worsen the surrounding local network. It is expected that the NorthConnex Project would be nearing competition before the start of the Stage 1 construction. With the conclusion of the 40 – 50 Pennant Hills Road development, the resulting net additional construction traffic generation would be greatly reduced, minimising any further added traffic impacts along Pennant Hills Road.

- The Bowden Brae Retirement Village,

Construction for this site at 40 – 50 Pennant Hills Road has been approved since late December 2017. It is expected that this project would reach its conclusion as the construction of the Loreto Normanhurst Stage 1 Works begins. Therefore, the overall net additional construction traffic along Pennant Hills Road would be further reduced, maintaining a similar status quo road conditions along Pennant Hills Road.

3.1.4 Cumulative Traffic and Pedestrian Impacts at Key Intersections

The key intersections for this CTMP are at the Mount Pleasant Avenue / Pennant Hills Road unsignalized intersection and the signalised intersection at Osborn Road / Pennant Hills Road / Normanhurst Road. With a peak of 5 truck arrivals per hour and contractor parking available on-site, these intersections' performances would be negligibly impacted with such a low order of construction traffic volume passing through.

The school is afforded excellent pedestrian connectivity with a pedestrian bridge connecting providing a direct connection to the north. As previously discussed in Section 1.5, Mount Pleasant Avenue and Osborn Road have footpaths on both sides of the road. A sole signalised pedestrian crossing at Osborn Road is provided at the Osborn Road / Pennant Hills Road / Normanhurst Road signalised intersection. Pedestrians in this area will continue to have good pedestrian connectivity during construction as the proposed works noting that the main heavy vehicle access locations will be monitored by Traffic Controller.

3.2 Vehicle Management

3.2.1 Principles

In accordance with Road and Maritime Services (RMS) requirements, all vehicles transporting loose materials would have the entire load covered and/or secured to prevent any large items, excess dust or dirt particles depositing onto the roadway during travel to and from the site. All drivers are to be familiar with the Driver Code of Conduct before attending the Site. A copy of the Code is included in **Appendix A**.

Further to covering/securing the load to prevent deposits onto the roadway, a Shaker Grid is proposed and installed at the point of vehicle egress to minimise the risk of dirt tracking out onto Mount Pleasant Avenue. The responsibility of the driver to ensure that the Shaker Grid is driven over would be included as part of the Driver Code of conduct.

All subcontractors must be inducted by the Contractor to ensure that the procedures are met for all vehicles entering and exiting the construction site. The Head Contractor will monitor the roads leading to and from the site and take all necessary steps to rectify any road deposits caused by site vehicles.

Vehicle movements to, from and within the Site shall do so in a manner, which does not create unreasonable or unnecessary noise or vibration. No tracked vehicles will be permitted or required on any paved roads. Public roads and access points will not be obstructed by any materials, vehicles, refuse skips or the like, under any circumstances.

3.2.2 Queuing

It is expected that a schedule for deliveries of materials and goods will be established prior to that day, with Traffic Controllers maintaining radio contact with construction vehicles at all times. Thus, at no stage shall queueing occur on the public road network. No trucks are to be queued on local roads.

3.3 Contractor Parking

As previously mentioned, there will be parking provided on-site, at the Primary School Carpark and to the south of the Principal's Residence. No on-street parking will be allowed for construction workers.

Contractors would be encouraged to utilise the available public transport services within the area. If Contractors still wish to use private vehicles travelling to and from site, then there are several public car parks which can be utilised within the immediate vicinity of the Site.

3.4 Pedestrian and Cyclist Access

All construction activities would occur off Mount Pleasant Avenue. Although construction activities occur off-road, the pedestrian and cycle connections on Mount Pleasant Avenue would be managed by traffic controllers and boom gates during construction activities. It is proposed that traffic controllers be at each vehicle access to remotely control the pedestrian boom gates at the vehicle accesses to control the pedestrian flow.

Pedestrians and cyclists using the footpath fronting the Site will be halted by an accredited Traffic Controller using a remote-controlled boom gate while construction vehicles are exiting the Site. An expandable barrier (pedestrian boom gate or equivalent) would be installed on both sides of the driveway, to be operated when construction vehicles are on approach / ready to depart from the Site. Once the construction vehicles are clear from the footpath, the Traffic Controller can allow the pedestrians and cyclists to continue along their journey.

The Contractor shall make clear to Traffic Controllers that pedestrians have right of way and, as far as reasonable (mostly associated with exit vehicle movements). An on-Site waiting bay and stopping location is proposed for all Heavy Vehicle exiting movements. This will allow co-ordination and management of pedestrian/cyclist right of Way and interaction with traffic controllers.

In addition, it will provide Traffic Controllers the ability to advise drivers the appropriate time to approach the Site's boundary.

The Traffic Controllers would use these extendable gates to create a physical barrier that would restrict pedestrians walking across the driveway, while maintaining radio communication with the construction vehicle driver at all times.

3.5 Traffic Control

The RMS guide "Traffic Control at Worksites" (TCAW) manual contains standard traffic control plans (TCPs) for a range or work activities. The manual's objective is to maximise safety by ensuring traffic control at worksites complies with best practice. The RMS TCAW outlines the requirements for a Vehicle Movement Plan (VMP).

A VMP is a diagram showing the preferred travel paths for vehicles associated with a work site entering, leaving or crossing the through traffic stream. A VMP should also show travel paths for trucks at key points on routes remote from the work site such as places to turn around, accesses, ramps and side roads.

Regarding construction work on roads with an average daily total (ADT) in excess of 1,500 vehicles, approach speeds of between 60 km/hr and 80 km/hr, with truck movements > 20 veh/shift, and sight distance is less than 2d, (where d equals the posted speed limit and in this instance the sight distance is required to be up to 120 metres), the following is required for the Mount Pleasant Avenue accesses and Osborn Road access road by the RMS TCAW:

- TCP with Traffic controllers/Traffic Signals YES
- VMP YES
- Warning Signs required during shifts YES

It is proposed to implement the TCP's as shown in Appendix B which is a site-specific version of standard TCP 195.

3.6 Authorised Traffic Controller

An authorised Traffic Controller is to be present on-site throughout the construction stage of the project. Responsibilities include:

- Supervision of all construction vehicle movements into and out of site at all times,
- Supervision of all loading and unloading of construction materials during the deliveries in the construction phase of the project, and
- Pedestrian management, to ensure that adverse conflicts between vehicle movements and pedestrians do not occur, while maintaining radio communication with construction vehicles at all times.

4 Monitoring and Communication Strategies

4.1 Development of Monitoring Program

The development of a program to monitor the effectiveness of this CTMP shall be established by the lead contractor. It is not anticipated that the monitoring of the processes will have any material cost implications. We note the following items to consider when developing the processes and tasks involved within monitoring the CTMP.

This CTMP shall be subject to ongoing review and will be updated accordingly. Regular reviews will be undertaken by the on-site coordinator. As a minimum, review of the CTMP shall occur monthly, however a weekly review would be preferred.

All and any reviews undertaken should be documented, however key considerations regarding the review of the CTMP shall be:

- Tracking deliveries against the estimated volumes.
- To identify any shortfalls and develop an updated action plan to address issues that may arise during construction (Parking and access issues)
- To ensure TCP's are updated (if necessary) by "Prepare a Work Zone Traffic Management Plan" card holders to ensure they remain consistent with the set-up on-site.
- Regular checks undertaken to ensure all loads are leaving site covered as outlined within this CTMP.

4.2 Communications Strategy

The communications strategy will outline the most effective communication methods to ensure adequate information within the community and assist the project team to deliver the traffic changes with minimal disruption to the road network.

All surrounding occupants shall be notified of any work that is deemed disruptive to the surrounding network prior to commencement. Ongoing communication is also proposed so that all stakeholders are kept up to date of works and potential impacts.

Nearby property owners that may be affected by the construction works shall be included within the communications strategy.

5 Summary

This preliminary CTMP has been prepared to ensure appropriate pedestrian, cyclist and traffic management is undertaken during construction of the Stage 1 Works at Loreto Normanhurst. This CTMP report has regard for the principles outlined in the RMS Traffic Control at Worksites Manual (2010) and AS1742.3 and is recommended for adoption. Any minor variation to these standards is considered acceptable having regard to the constraints inherent by the Site and proposed development. The following measures should be undertaken to minimise the impacts across each construction phase:

- Traffic control would be required to manage and regulate construction vehicle traffic movements into and out of the site during construction.
- All vehicles transporting loose materials will have the load covered and/or secured to prevent any items depositing onto the roadway during travel to and from the Site.
- All vehicles to enter and exit the site in a forward direction with reverse movements to occur only within the property boundary as necessary, prior approval and subject to supervision.
- Construction and delivery vehicles would be limited to the use of Pennant Hills Road and the necessary local roads.

In summary, the CTMP has provided the following targeted management measures:

- On-Site Contractor Parking.
- Traffic Controllers to Manage Pedestrian / Cyclist traffic along the Site frontage.
- No truck movements at the Site between 6 AM to 9 AM.
- Consideration for truck arrivals prior to 6 AM to commence construction at 7 AM.
- Prioritisation Strategies for truck movements.

In summary, the detailed CTMP report is proposed in accordance with the RMS TCAW. This preliminary CTMP would be further developed at CC stage in consultation with Council but provides a detailed and clear indication of the future construction methodology and principles to be adopted.

Appendix A

Driver Code of Conduct

- Driver Code of Conduct -

Drivers Code of Conduct

Safe Driving Policy for Loreto Normanhurst.

Objectives of the Drivers Code of conduct

- To minimise the impact of earthworks and construction on the local and regional road network;
- Minimise conflict with other road users;
- Minimise road traffic noise; and
- Ensure truck drivers use specified routes

Code of Conduct

All vehicle operators accessing the site must:

- Take reasonable care for his or her own personal health and safety.
- Not adversely, by way of actions or otherwise, impact on the health and safety of other persons.
- Notify their employer if they are not fit for duty prior to commencing their shift.
- Obey all applicable road rules and laws at all times.
- In the event an emergency vehicle behind your vehicle, pull over and allow the emergency vehicle to pass immediately.
- Obey the applicable driving hours in accordance with legislation and take all reasonable steps to manage their fatigue and not drive with high levels of drowsiness.
- Obey all on-site signposted speed limits and comply with directions of traffic control supervisors in relation to movements in and around temporary or fixed work areas.
- Ensure all loads are safely restrained, as necessary.
- Drive over cattle grids – located at the Site's access – to vibrate off any loose material attached to construction vehicles.
- Operate their vehicles in a safe and professional manner, with consideration for all other road users.
- Hold a current Australian State or Territory issued driver's licence.
- Notify their employer or operator immediately should the status or conditions of their driver's license change in any way.

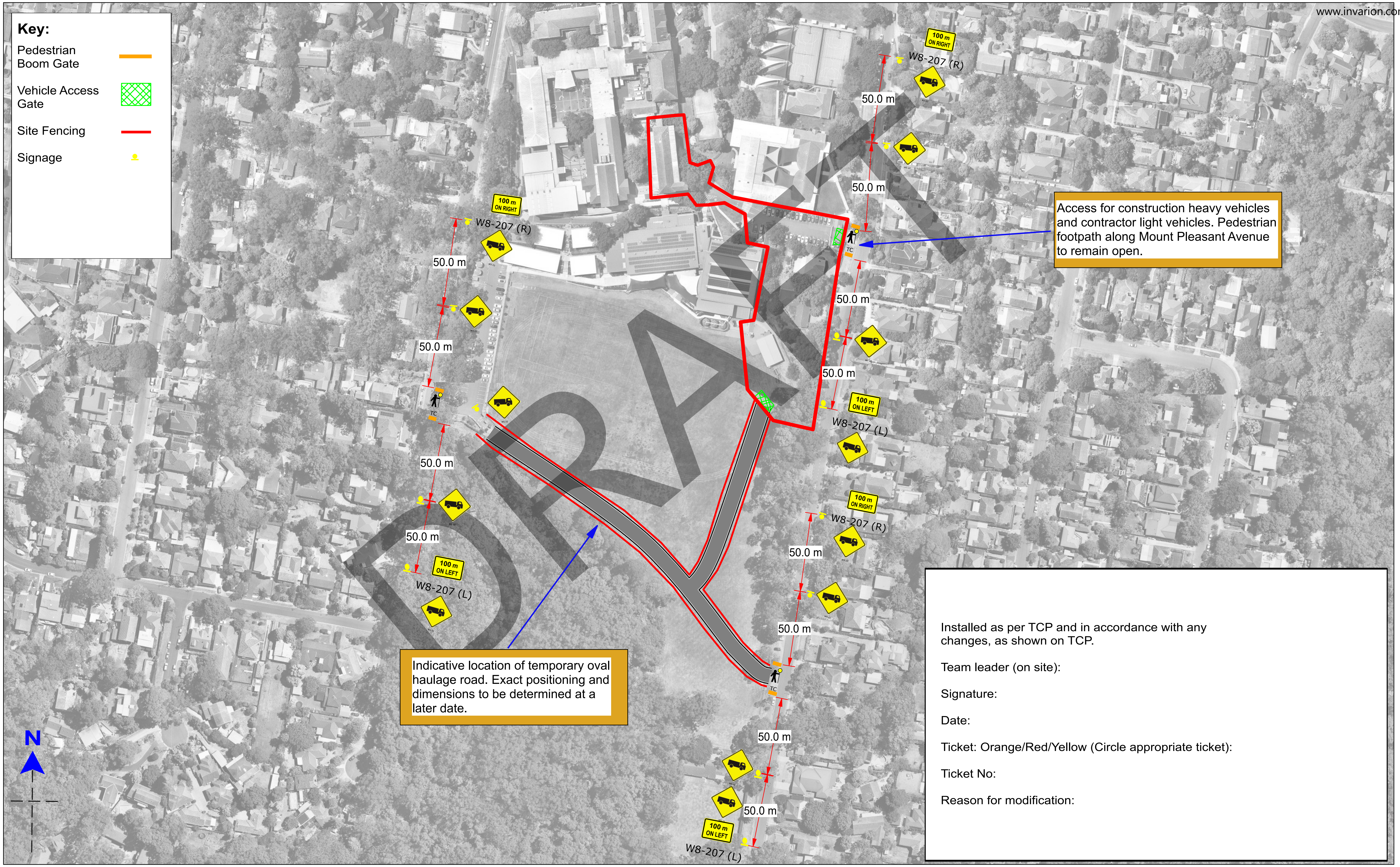
- Comply with other applicable workplace policies, including a zero tolerance of driving while under the influence of alcohol and/or illicit drugs.
- Not use mobile phones when driving a vehicle or operating equipment. If the use of a mobile device is required, the driver shall pull over in a safe and legal location prior to the use of any mobile device.
- Advise management of any situations in which you know, or think may, present a threat to workplace health and safety.
- Drive according to prevailing conditions (such as during inclement weather) and reduce speed, if necessary.
- Have necessary identification documentation at hand and ready to present to security staff on entry and departure from the site, as necessary, to avoid unnecessary delays to other vehicles.

Crash or incident Procedure

- Stop your vehicle as close to it as possible to the scene, making sure you are not hindering traffic. Ensure your own safety first, then help any injured people and seek assistance immediately if required.
- Ensure the following information is noted:
  - Details of the other vehicles and registration numbers
  - Names and addresses of the other vehicle drivers
  - Names and addresses of witnesses
  - Insurers details
- Give the following information to the involved parties:
  - Name, address and company details
- If the damaged vehicle is not occupied, provide a note with your contact details for the owner to contact the company.
- Ensure that the police are contacted should the following circumstances occur:
  - If there is a disagreement over the cause of the crash.
  - If there are injuries.
  - If you damage property other than your own.
- As soon as reasonably practical, report all details gathered to your manager.

Appendix B

Traffic Control Plan(s)

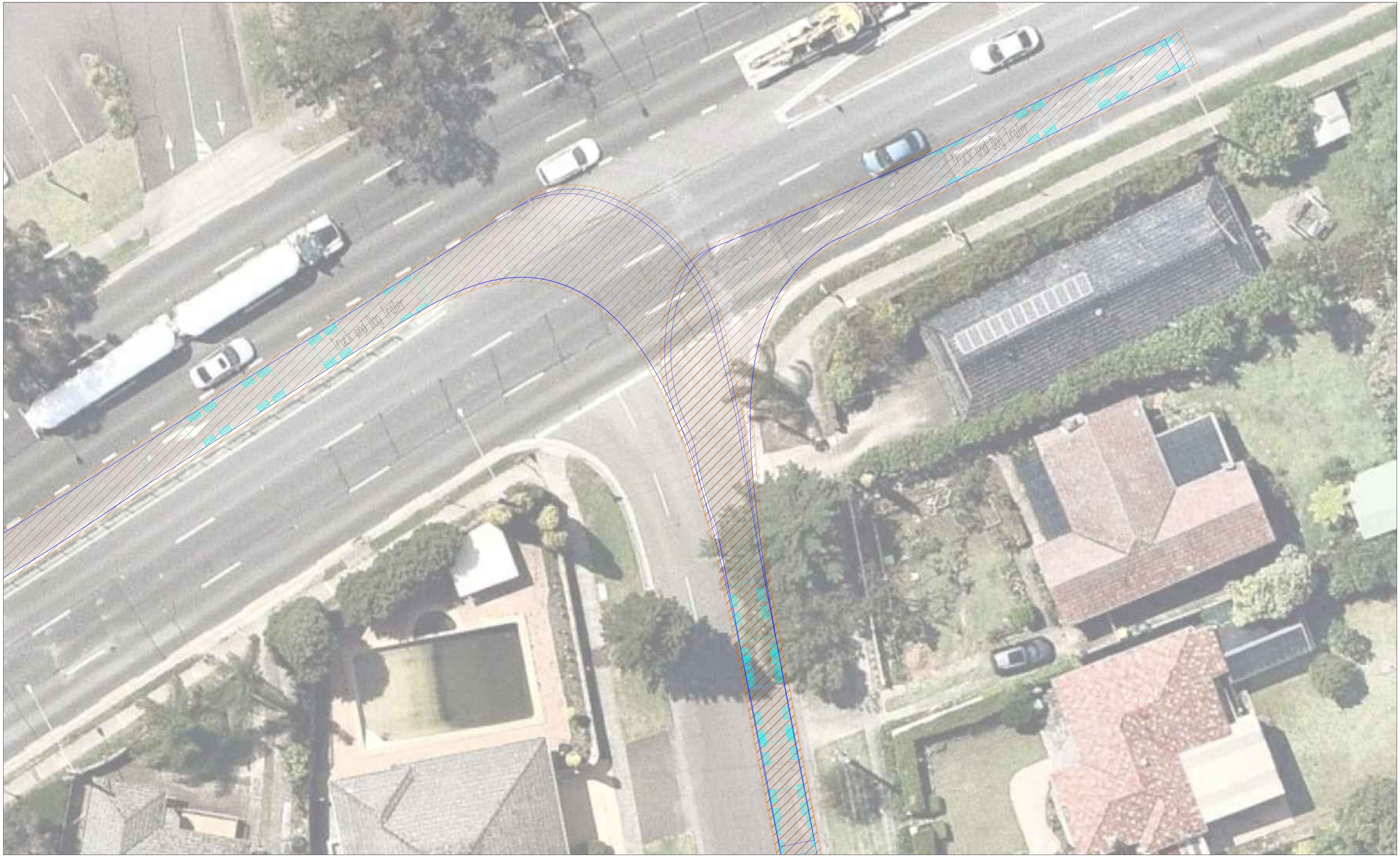


NOTES
- All vehicles to have flashing orange lights
- Ensure signs are visible to vehicles
- Cover vehicle required for hard protection while TC's or workers are exposed to live traffic
- All staff to have reflective safety vests
- All signs to be Class 1 retro-reflective
- Maintain daily logs of ALL activities
- This PVMP is drawn in accordance with AS1742.3, the RTA's TCWS Manual & WHS Manual
- All staff to have reflective safety vests
- All trucks are to have prior notice of UHF channel to radio Foreman on arrival

Closure: TCP195 - Site Access	**Project:** Job No: P0416 Address: Loreto Normanhurst	**Date:** 10/01/19	asongroup
		Scale @ A3: N/A	
Client: Loreto Normanhurst	**Drawing Title:** General Construction TCP	**Drawing Number:** AG.02	**DESIGNER:** JAMES LAIDLER CERT: 0034322012

Appendix C

Swept Path Analysis



Revision notes:		
Rev:	Date:	Notes:

For information purposes only - not for construction

Drawn By: VC

Client: Loreto Normanhurst

Project: P0□1□
91 - 93 Pennant Hills Road, Normanhurst

Drawing Title: Mount Pleasant Avenue □Pennant Hills Road

Date: 08□01□2019

Scale @ A3: 1:250

Drawing Number: 01

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Revision notes:			Drawn By:	Project:	Date:
Rev:	Date:	Notes:	VC	P0□1□ 91 - 93 Pennant Hills Road, Normanhurst	08□01□2019
					Scale @ A3: 1:250
			Client: Loreto Normanhurst	Drawing Title: Osborn Road □Pennant Hills Road	Drawing Number: 02

For information purposes only - not for construction

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Revision notes:

Rev:	Date:	Notes:

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Drawn By:
VC

Client:
Loreto Normanhurst

Project:
P0□1□
91 - 93 Pennant Hills Road, Normanhurst

Drawing Title:
8.8m MRV Site Access
Mount Pleasant Avenue

Date:
08□01□2019

Scale @ A3:
1:350

Drawing Number:
03

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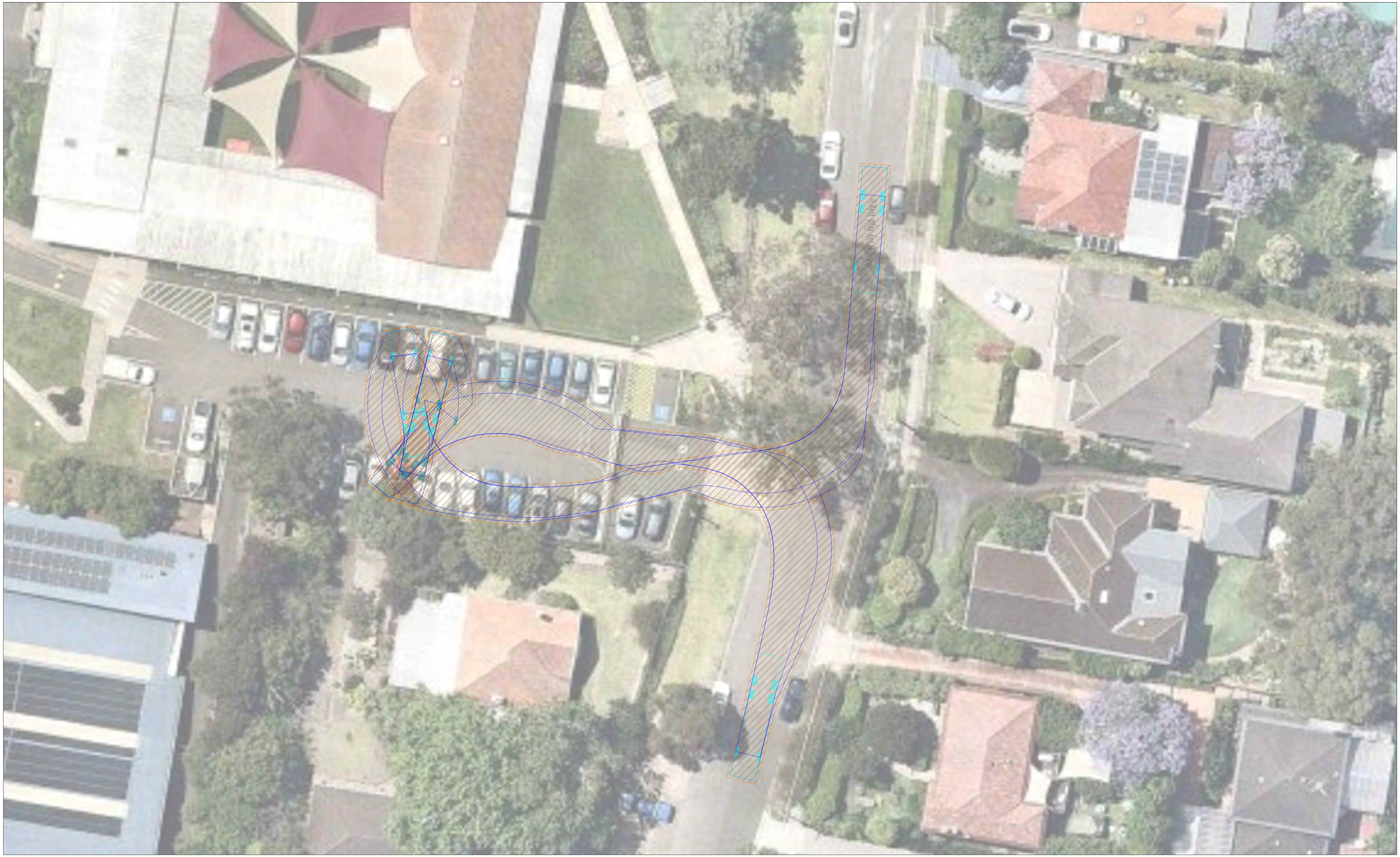

Revision notes:

Rev:	Date:	Notes:

For information purposes only - not for construction

Drawn By: VC

Client: Loreto Normanhurst

Project: P0□1□
91 - 93 Pennant Hills Road, Normanhurst

Drawing Title: 12.5m HRV Site Access
Mount Pleasant Avenue

Date: 08□01□2019

Scale @ A3: 1:350

Drawing Number: 0□

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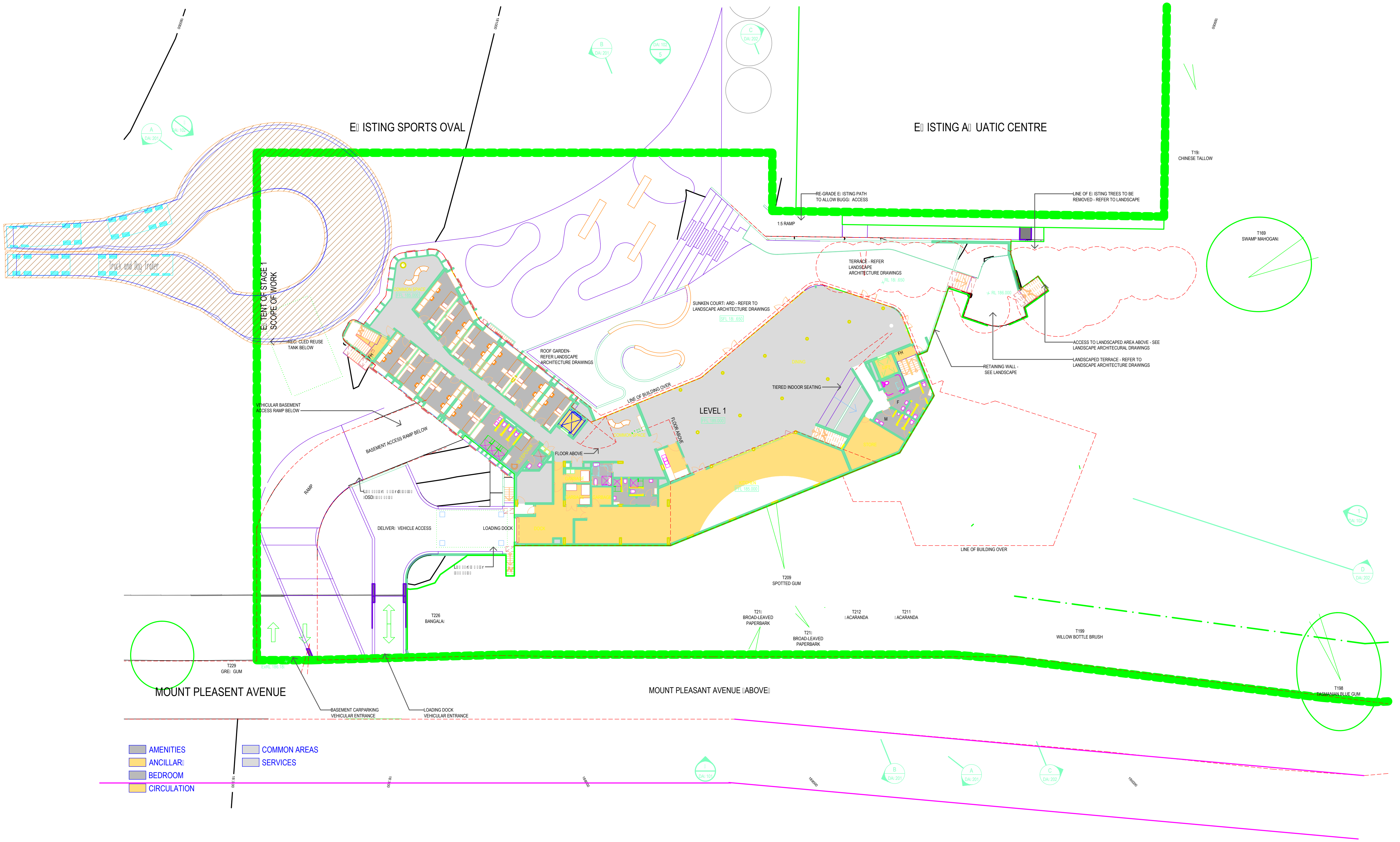

Revision notes:		
Rev:	Date:	Notes:

For information purposes only - not for construction

Drawn By: VC

Client: Loreto Normanhurst

Project: P0□1□
91 - 93 Pennant Hills Road, Normanhurst

Drawing Title: Indicative 19.□m Truck and Dog Turning Area

Date: 08.01.2019

Scale @ A3: 1:350

Drawing Number: 05

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Revision notes: Rev: / Date: / Notes:	**Drawn By:** VC	**Project:** P0□1□ 91 - 93 Pennant Hills Road, Normanhurst	**Date:** 08□01□2019
			Scale @ A3: 1:350
For information purposes only - not for construction	**Client:** Loreto Normanhurst	**Drawing Title:** Indicative 19.□m Truck and Dog Site Access	**Drawing Number:** 0□

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Revision notes:

Rev:	Date:	Notes:

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Drawn By:
VC

Client:
Loreto Normanhurst

Project:
P0□1□
91 - 93 Pennant Hills Road, Normanhurst

Drawing Title:
Indicative 19.□m Truck and Dog Osborn Road E□it

Date:
08□01□2019

Scale @ A3:
1:250

Drawing Number:
0□

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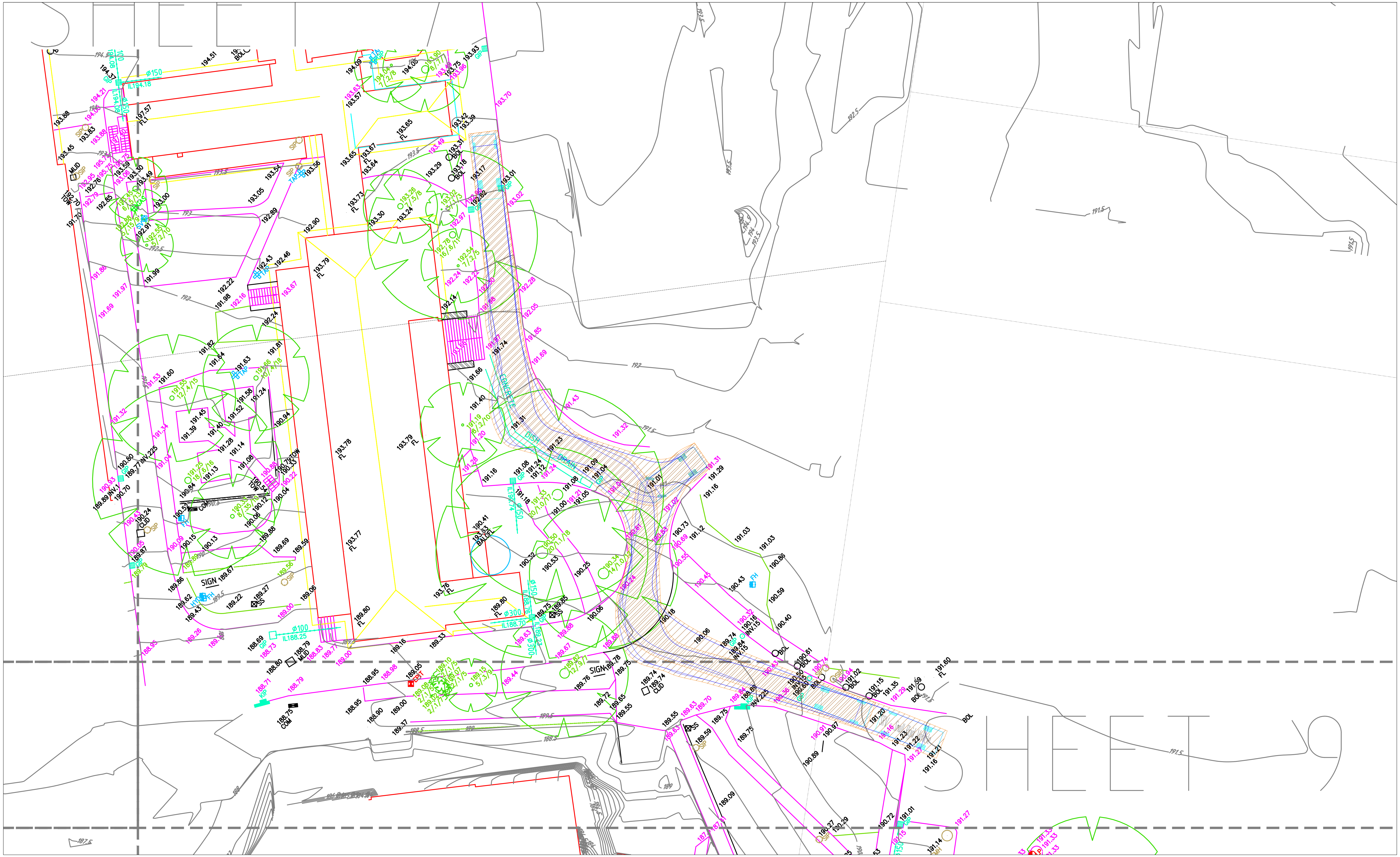

Revision notes:		
Rev:	Date:	Notes:

For information purposes only - not for construction

Drawn By:	VC
Client:	Loreto Normanhurst
Project:	P0□1□ 91 - 93 Pennant Hills Road, Normanhurst
Drawing Title:	Mary Ward Works SRV Access
Date:	08□01□2019
Scale @ A3:	1:350
Drawing Number:	08

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Appendix B

SIDRA Results

MOVEMENT SUMMARY

Site: [Pennant Hills Road / Mount Pleasure Avenue - AM Existing]

Network: [Pennant Hills Road / Mount Pleasure Avenue AM Existing]

Pennant Hills Road / Mount Pleasure Avenue AM Existing
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows Total	Demand Flows HV	Arrival Flows Total	Arrival Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Mount Pleasant Avenue														
1	L2	23	4.3	23	4.3	0.050	14.2	LOS A	0.2	1.3	0.65	0.97	0.65	40.7
2	T1	23	0.0	23	0.0	0.506	132.4	LOS F	1.6	11.1	0.98	1.04	1.16	11.5
Approach		46	2.2	46	2.2	0.506	73.3	LOS F	1.6	11.1	0.82	1.00	0.91	19.8
East: Pennant Hills Road														
4	L2	38	0.0	38	0.0	0.420	6.4	LOS A	0.0	0.0	0.00	0.03	0.00	65.7
5	T1	2240	12.7	2240	12.7	0.420	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	69.6
Approach		2278	12.5	2278	12.5	0.420	0.2	NA	0.0	0.0	0.00	0.01	0.00	69.5
West: Pennant Hills Road														
12	R2	55	0.0	55	0.0	0.478	46.0	LOS D	1.3	9.2	0.96	1.02	1.16	27.6
Approach		55	0.0	55	0.0	0.478	46.0	NA	1.3	9.2	0.96	1.02	1.16	27.6
All Vehicles		2379	12.0	2379	12.0	0.506	2.6	NA	1.6	11.1	0.04	0.05	0.04	63.8

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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Pennant Hills Road / Mount Pleasure Avenue - PM Existing]

Network: [Pennant Hills Road / Mount Pleasure Avenue - PM Existing]

Pennant Hills Road / Mount Pleasure Avenue PM Existing
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Mount Pleasant Avenue														
1	L2	63	0.0	63	0.0	0.123	13.5	LOS A	0.5	3.3	0.64	1.00	0.64	41.4
2	T1	24	0.0	24	0.0	0.424	99.4	LOS F	1.4	9.5	0.98	1.03	1.13	14.5
Approach		87	0.0	87	0.0	0.424	37.2	LOS C	1.4	9.5	0.73	1.01	0.78	29.6
East: Pennant Hills Road														
4	L2	27	3.7	27	3.7	0.397	6.5	LOS A	0.0	0.0	0.00	0.02	0.00	65.6
5	T1	2074	16.8	2074	16.8	0.397	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	69.6
Approach		2101	16.7	2101	16.7	0.397	0.1	NA	0.0	0.0	0.00	0.01	0.00	69.6
West: Pennant Hills Road														
12	R2	18	0.0	18	0.0	0.137	32.3	LOS C	0.3	2.4	0.92	0.97	0.92	32.3
Approach		18	0.0	18	0.0	0.137	32.3	NA	0.3	2.4	0.92	0.97	0.92	32.3
All Vehicles		2206	15.9	2206	15.9	0.424	1.9	NA	1.4	9.5	0.04	0.06	0.04	65.1

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1274 [Pennant Hills Rd / Osborn Rd / Normanhurst Rd AM Base 7:30-8:30]

Pennant Hills Road / Osborn Road / Normanhurst Road AM Existing
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Osborn Road												
1	L2	74	11.4	0.113	33.4	LOS C	3.1	24.2	0.67	0.71	0.67	37.0
2	T1	52	2.0	0.715	64.7	LOS E	10.5	75.1	1.00	0.87	1.08	24.1
3	R2	102	2.1	0.715	69.3	LOS E	10.5	75.1	1.00	0.87	1.08	22.0
Approach		227	5.1	0.715	56.6	LOS E	10.5	75.1	0.89	0.82	0.95	26.7
East: Pennant Hills Road												
4	L2	74	2.9	0.737	34.0	LOS C	35.7	281.2	0.84	0.80	0.84	33.3
5	T1	1922	16.0	0.737	28.4	LOS B	35.7	281.2	0.83	0.79	0.83	37.0
6	R2	63	1.7	0.699	83.2	LOS F	4.6	32.7	1.00	0.81	1.15	17.1
Approach		2059	15.1	0.737	30.3	LOS C	35.7	283.4	0.84	0.79	0.84	35.9
North: Normanhurst Road												
7	L2	94	2.2	0.583	52.6	LOS D	10.0	70.7	0.89	0.76	0.89	22.7
8	T1	80	0.0	0.583	48.1	LOS D	10.0	70.7	0.89	0.76	0.89	27.7
9	R2	120	3.5	0.566	57.5	LOS E	7.2	52.0	0.92	0.78	0.92	28.1
Approach		294	2.2	0.583	53.4	LOS D	10.0	70.7	0.90	0.77	0.90	26.5
West: Pennant Hills Road												
10	L2	34	0.0	0.671	26.2	LOS B	30.9	245.8	0.73	0.67	0.73	42.9
11	T1	1947	16.7	0.671	19.4	LOS B	30.9	245.8	0.71	0.65	0.71	45.8
12	R2	93	6.8	0.642	47.5	LOS D	4.5	33.4	1.00	0.79	1.06	33.0
Approach		2074	16.0	0.671	20.8	LOS B	30.9	246.7	0.72	0.66	0.73	44.6
All Vehicles		4654	14.2	0.737	28.8	LOS C	35.7	283.4	0.79	0.73	0.80	37.5

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	22	19.0	LOS B	0.0	0.0	0.52	0.52
P3	North Full Crossing	1	15.6	LOS B	0.0	0.0	0.47	0.47
All Pedestrians		23	18.9	LOS B			0.52	0.52

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1274 [Pennant Hills Rd / Osborn Rd / Normanhurst Rd PM BASE 3:00-4:00]

Pennant Hills Road / Osborn Road / Normanhurst Road PM Existing
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Osborn Road												
1	L2	65	9.7	0.139	45.2	LOS D	3.3	25.2	0.79	0.73	0.79	33.0
2	T1	29	0.0	0.463	60.0	LOS E	6.6	47.4	0.96	0.78	0.96	24.9
3	R2	74	4.3	0.463	64.6	LOS E	6.6	47.4	0.96	0.78	0.96	22.8
Approach		168	5.6	0.463	56.3	LOS D	6.6	47.4	0.89	0.76	0.89	27.0
East: Pennant Hills Road												
4	L2	60	1.8	0.691	23.9	LOS B	33.8	268.3	0.71	0.67	0.71	39.1
5	T1	2206	16.9	0.691	17.2	LOS B	33.8	268.3	0.69	0.64	0.69	47.6
6	R2	69	4.5	0.687	81.9	LOS F	5.0	36.5	1.00	0.81	1.13	17.3
Approach		2336	16.2	0.691	19.3	LOS B	33.8	269.8	0.70	0.65	0.71	45.4
North: Normanhurst Road												
7	L2	72	7.4	0.338	52.4	LOS D	5.7	42.3	0.86	0.74	0.86	22.4
8	T1	31	3.4	0.338	47.9	LOS D	5.7	42.3	0.86	0.74	0.86	27.5
9	R2	112	5.7	0.722	69.5	LOS E	7.6	55.8	0.98	0.87	1.11	25.3
Approach		214	5.9	0.722	60.7	LOS E	7.6	55.8	0.93	0.81	0.99	24.9
West: Pennant Hills Road												
10	L2	32	3.3	0.734	25.9	LOS B	37.4	286.6	0.76	0.71	0.76	43.1
11	T1	2331	11.4	0.734	19.2	LOS B	37.4	287.3	0.75	0.69	0.75	45.9
12	R2	46	6.8	0.642	84.1	LOS F	3.4	25.2	1.00	0.78	1.12	24.8
Approach		2408	11.2	0.734	20.6	LOS B	37.4	287.3	0.75	0.69	0.75	44.8
All Vehicles		5126	13.1	0.734	22.8	LOS B	37.4	287.3	0.74	0.68	0.75	42.5

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	22	11.6	LOS B	0.0	0.0	0.41	0.41
P3	North Full Crossing	1	14.2	LOS B	0.0	0.0	0.45	0.45
All Pedestrians		23	11.7	LOS B			0.41	0.41

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1274 [Pennant Hills Rd / Osborn Rd / Normanhurst Rd AM BASE 2026 7:30-8:30]

Pennant Hills Road / Osborn Road / Normanhurst Road AM 2026 Base
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Osborn Road												
1	L2	74	11.4	0.107	31.3	LOS C	3.0	23.3	0.64	0.70	0.64	37.7
2	T1	52	2.0	0.495	52.1	LOS D	9.3	66.4	0.92	0.79	0.92	26.6
3	R2	102	2.1	0.495	56.6	LOS E	9.3	66.4	0.92	0.79	0.92	24.6
Approach		227	5.1	0.495	47.4	LOS D	9.3	66.4	0.83	0.76	0.83	29.0
East: Pennant Hills Road												
4	L2	74	2.9	0.646	33.8	LOS C	28.6	224.5	0.80	0.77	0.80	33.4
5	T1	1598	16.0	0.646	28.2	LOS B	28.6	224.5	0.79	0.75	0.79	37.1
6	R2	63	1.7	0.408	74.3	LOS F	4.2	30.1	0.99	0.76	0.99	18.5
Approach		1735	14.9	0.646	30.1	LOS C	28.6	226.5	0.79	0.75	0.79	35.9
North: Normanhurst Road												
7	L2	94	2.2	0.468	44.5	LOS D	9.1	64.2	0.82	0.73	0.82	25.0
8	T1	80	0.0	0.468	39.9	LOS C	9.1	64.2	0.82	0.73	0.82	29.8
9	R2	120	3.5	0.631	59.0	LOS E	7.4	53.4	0.93	0.80	0.95	27.7
Approach		294	2.2	0.631	49.2	LOS D	9.1	64.2	0.86	0.76	0.87	27.6
West: Pennant Hills Road												
10	L2	34	0.0	0.643	33.8	LOS C	27.3	216.6	0.80	0.73	0.80	38.8
11	T1	1537	16.7	0.643	26.9	LOS B	27.3	216.6	0.78	0.70	0.78	40.4
12	R2	93	6.8	0.642	76.8	LOS F	6.5	47.8	1.00	0.80	1.06	26.1
Approach		1663	15.8	0.643	29.8	LOS C	27.3	217.6	0.79	0.71	0.80	38.7
All Vehicles		3919	13.8	0.646	32.4	LOS C	28.6	226.5	0.80	0.74	0.80	35.6

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	22	20.6	LOS C	0.0	0.0	0.54	0.54
P3	North Full Crossing	1	22.9	LOS C	0.0	0.0	0.57	0.57
All Pedestrians		23	20.7	LOS C			0.54	0.54

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Organisation: ASON GROUP PTY LTD | Processed: Thursday, 13 December 2018 2:25:45 PM
Project: C:\Users\Rebecca BMadden\Ason Group\Ason Group Team Site - 0416\Projects\Modelling\0416m02 Osborn_PHR.sip8

MOVEMENT SUMMARY

Site: 1274 [Pennant Hills Rd / Osborn Rd / Normanhurst Rd PM BASE 2026 3:00-4:00]

Pennant Hills Road / Osborn Road / Normanhurst Road PM 2026 Base
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Osborn Road												
1	L2	65	9.7	0.116	38.9	LOS C	3.0	23.0	0.73	0.72	0.73	35.0
2	T1	29	0.0	0.388	54.8	LOS D	6.3	45.2	0.92	0.77	0.92	26.0
3	R2	74	4.3	0.388	59.4	LOS E	6.3	45.2	0.92	0.77	0.92	23.9
Approach		168	5.6	0.388	50.6	LOS D	6.3	45.2	0.85	0.75	0.85	28.4
East: Pennant Hills Road												
4	L2	60	1.8	0.596	26.5	LOS B	26.5	208.4	0.70	0.65	0.70	37.5
5	T1	1720	16.0	0.596	19.8	LOS B	26.5	208.4	0.69	0.63	0.69	45.4
6	R2	69	4.5	0.549	77.6	LOS F	4.8	35.0	1.00	0.77	1.00	18.0
Approach		1849	15.1	0.596	22.2	LOS B	26.5	209.8	0.70	0.63	0.70	43.1
North: Normanhurst Road												
7	L2	72	7.4	0.288	48.7	LOS D	5.5	40.6	0.83	0.73	0.83	23.4
8	T1	31	3.4	0.288	44.2	LOS D	5.5	40.6	0.83	0.73	0.83	28.5
9	R2	112	5.7	0.574	61.2	LOS E	7.0	51.3	0.94	0.79	0.94	27.1
Approach		214	5.9	0.574	54.6	LOS D	7.0	51.3	0.89	0.76	0.89	26.3
West: Pennant Hills Road												
10	L2	32	3.3	0.512	25.0	LOS B	20.3	161.4	0.65	0.60	0.65	43.5
11	T1	1443	16.7	0.512	18.5	LOS B	20.3	161.4	0.64	0.58	0.64	46.5
12	R2	46	6.8	0.385	76.5	LOS F	3.2	23.5	0.99	0.75	0.99	26.2
Approach		1521	16.1	0.512	20.4	LOS B	20.3	162.1	0.65	0.58	0.65	44.9
All Vehicles		3753	14.6	0.596	24.6	LOS B	26.5	209.8	0.70	0.63	0.70	41.1

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	22	15.1	LOS B	0.0	0.0	0.46	0.46
P3	North Full Crossing	1	17.0	LOS B	0.0	0.0	0.49	0.49
All Pedestrians		23	15.2	LOS B			0.47	0.47

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1274 [Pennant Hills Rd / Osborn Rd / Normanhurst Rd AM BASE + Dev 2026 7:30-8:30]

Pennant Hills Road / Osborn Road / Normanhurst Road AM 2026 plus Dev
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total	Demand Flows HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	95% Back of Queue Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	%	v/c	sec		veh	m				km/h
South: Osborn Road												
1	L2	137	6.2	0.188	31.6	LOS C	5.8	42.6	0.67	0.73	0.67	37.6
2	T1	59	1.8	0.442	47.1	LOS D	10.2	72.3	0.89	0.78	0.89	27.8
3	R2	118	1.8	0.442	51.7	LOS D	10.2	72.3	0.89	0.78	0.89	25.9
Approach		314	3.7	0.442	42.1	LOS C	10.2	72.3	0.79	0.76	0.79	31.2
East: Pennant Hills Road												
4	L2	107	2.0	0.668	34.9	LOS C	29.9	233.1	0.82	0.79	0.82	32.8
5	T1	1598	16.0	0.668	29.3	LOS C	29.9	233.1	0.81	0.77	0.81	36.5
6	R2	63	1.7	0.408	44.1	LOS D	2.8	19.6	0.99	0.75	0.99	25.5
Approach		1768	14.6	0.668	30.1	LOS C	29.9	236.2	0.81	0.77	0.81	35.8
North: Normanhurst Road												
7	L2	94	2.2	0.630	48.2	LOS D	11.7	82.3	0.86	0.75	0.86	24.1
8	T1	117	0.0	0.630	43.6	LOS D	11.7	82.3	0.86	0.75	0.86	29.0
9	R2	120	3.5	0.659	58.4	LOS E	7.4	53.6	0.92	0.82	0.97	27.8
Approach		331	1.9	0.659	50.3	LOS D	11.7	82.3	0.88	0.78	0.90	27.4
West: Pennant Hills Road												
10	L2	34	0.0	0.673	35.6	LOS C	28.8	228.6	0.82	0.75	0.82	38.0
11	T1	1537	16.7	0.673	28.5	LOS C	28.8	228.6	0.80	0.72	0.80	39.4
12	R2	133	4.8	0.640	71.7	LOS F	8.9	65.1	1.00	0.81	1.02	27.1
Approach		1703	15.5	0.673	32.0	LOS C	28.8	229.6	0.82	0.73	0.82	37.5
All Vehicles		4116	13.1	0.673	33.4	LOS C	29.9	236.2	0.82	0.75	0.82	35.1

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Average Back of Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		
P1	South Full Crossing	22	21.2	LOS C	0.0	0.0	0.55	0.55
P3	North Full Crossing	1	24.0	LOS C	0.0	0.0	0.59	0.59
All Pedestrians		23	21.3	LOS C			0.55	0.55

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1274 [Pennant Hills Rd / Osborn Rd / Normanhurst Rd PM BASE + Dev 2026 3:00-4:00]

Pennant Hills Road / Osborn Road / Normanhurst Road PM 2026 plus Drev
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Osborn Road												
1	L2	98	6.5	0.170	39.5	LOS C	4.7	34.4	0.74	0.73	0.74	34.8
2	T1	45	0.0	0.474	52.4	LOS D	9.5	67.9	0.92	0.79	0.92	26.5
3	R2	113	2.8	0.474	57.0	LOS E	9.5	67.9	0.92	0.79	0.92	24.5
Approach		256	3.7	0.474	49.5	LOS D	9.5	67.9	0.85	0.77	0.85	28.7
East: Pennant Hills Road												
4	L2	104	1.0	0.610	26.7	LOS B	27.5	214.7	0.70	0.67	0.70	37.1
5	T1	1720	16.0	0.610	20.0	LOS B	27.5	214.7	0.69	0.64	0.69	45.1
6	R2	69	4.5	0.323	42.5	LOS C	3.1	22.6	0.95	0.75	0.95	26.0
Approach		1894	14.7	0.610	21.2	LOS B	27.5	217.3	0.70	0.65	0.70	43.6
North: Normanhurst Road												
7	L2	72	7.4	0.392	49.3	LOS D	6.8	49.6	0.85	0.73	0.85	23.4
8	T1	53	2.0	0.392	44.8	LOS D	6.8	49.6	0.85	0.73	0.85	28.5
9	R2	112	5.7	0.612	61.7	LOS E	7.0	51.7	0.95	0.80	0.96	27.0
Approach		236	5.4	0.612	54.2	LOS D	7.0	51.7	0.89	0.76	0.90	26.4
West: Pennant Hills Road												
10	L2	32	3.3	0.610	33.7	LOS C	25.1	199.3	0.78	0.71	0.78	38.8
11	T1	1443	16.7	0.610	26.9	LOS B	25.1	199.3	0.77	0.69	0.77	40.4
12	R2	79	4.0	0.586	76.9	LOS F	5.5	39.6	1.00	0.78	1.02	26.1
Approach		1554	15.8	0.610	29.6	LOS C	25.1	200.2	0.78	0.70	0.78	38.8
All Vehicles		3939	13.9	0.612	28.3	LOS B	27.5	217.3	0.76	0.68	0.76	38.6

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	22	15.1	LOS B	0.0	0.0	0.46	0.46
P3	North Full Crossing	1	23.4	LOS C	0.0	0.0	0.58	0.58
All Pedestrians		23	15.5	LOS B			0.47	0.47

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1274 [Pennant Hills Rd / Osborn Rd / Normanhurst Rd AM BASE + Dev Sensitivity 2026 7:30-8:30]

Pennant Hills Road / Osborn Road / Normanhurst Road AM 2026 plus Dev Sensitivity
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Osborn Road												
1	L2	137	6.2	0.210	23.4	LOS B	4.5	33.5	0.71	0.72	0.71	41.1
2	T1	59	1.8	0.510	52.0	LOS D	10.7	76.2	0.93	0.80	0.93	26.6
3	R2	118	1.8	0.510	56.6	LOS E	10.7	76.2	0.93	0.80	0.93	24.7
Approach		314	3.7	0.510	41.2	LOS C	10.7	76.2	0.83	0.77	0.83	31.4
East: Pennant Hills Road												
4	L2	107	2.0	0.724	26.5	LOS B	23.1	180.1	0.88	0.81	0.88	36.7
5	T1	1598	16.0	0.724	21.1	LOS B	23.1	180.1	0.87	0.80	0.87	41.3
6	R2	63	1.7	0.222	37.4	LOS C	2.4	17.4	0.91	0.75	0.91	27.7
Approach		1768	14.6	0.724	22.0	LOS B	23.1	182.5	0.87	0.80	0.87	40.4
North: Normanhurst Road												
7	L2	94	2.2	0.725	55.0	LOS D	12.7	89.6	0.91	0.82	0.97	22.3
8	T1	117	0.0	0.725	50.4	LOS D	12.7	89.6	0.91	0.82	0.97	27.2
9	R2	120	3.5	0.706	61.9	LOS E	7.7	55.6	0.93	0.85	1.04	27.0
Approach		331	1.9	0.725	55.9	LOS D	12.7	89.6	0.92	0.83	0.99	26.0
West: Pennant Hills Road												
10	L2	34	0.0	0.726	39.9	LOS C	30.8	244.5	0.88	0.80	0.88	36.1
11	T1	1537	16.7	0.726	32.7	LOS C	30.8	244.5	0.86	0.77	0.86	37.0
12	R2	133	4.8	0.680	42.1	LOS C	5.1	37.3	1.00	0.81	1.06	34.7
Approach		1703	15.5	0.726	33.6	LOS C	30.8	245.6	0.87	0.78	0.88	36.7
All Vehicles		4116	13.1	0.726	31.0	LOS C	30.8	245.6	0.87	0.79	0.88	36.3

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	22	16.1	LOS B	0.0	0.0	0.64	0.64
P3	North Full Crossing	1	27.0	LOS C	0.0	0.0	0.62	0.62
All Pedestrians		23	16.6	LOS B			0.64	0.64

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1274 [Pennant Hills Rd / Osborn Rd / Normanhurst Rd AM BASE 2036 7:30-8:30]

Pennant Hills Road / Osborn Road / Normanhurst Road AM Existing
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Osborn Road												
1	L2	74	11.4	0.109	32.0	LOS C	3.1	23.6	0.65	0.70	0.65	37.5
2	T1	52	2.0	0.512	53.1	LOS D	9.4	67.1	0.93	0.80	0.93	26.4
3	R2	102	2.1	0.512	57.7	LOS E	9.4	67.1	0.93	0.80	0.93	24.4
Approach		227	5.1	0.512	48.3	LOS D	9.4	67.1	0.84	0.77	0.84	28.8
East: Pennant Hills Road												
4	L2	74	2.9	0.667	33.7	LOS C	30.2	237.1	0.80	0.77	0.80	33.5
5	T1	1679	16.0	0.667	28.0	LOS B	30.2	237.1	0.79	0.76	0.79	37.2
6	R2	63	1.7	0.408	74.3	LOS F	4.2	30.1	0.99	0.76	0.99	18.5
Approach		1816	15.0	0.667	29.9	LOS C	30.2	239.2	0.80	0.76	0.80	36.0
North: Normanhurst Road												
7	L2	94	2.2	0.481	45.3	LOS D	9.2	64.9	0.82	0.73	0.82	24.7
8	T1	80	0.0	0.481	40.8	LOS C	9.2	64.9	0.82	0.73	0.82	29.6
9	R2	120	3.5	0.657	60.6	LOS E	7.5	54.4	0.93	0.82	0.99	27.3
Approach		294	2.2	0.657	50.3	LOS D	9.2	64.9	0.87	0.77	0.89	27.3
West: Pennant Hills Road												
10	L2	34	0.0	0.650	33.3	LOS C	27.9	221.3	0.79	0.72	0.79	39.1
11	T1	1577	16.7	0.650	26.4	LOS B	27.9	221.3	0.78	0.70	0.78	40.7
12	R2	93	6.8	0.642	76.8	LOS F	6.5	47.8	1.00	0.80	1.06	26.1
Approach		1703	15.8	0.650	29.3	LOS C	27.9	222.3	0.79	0.71	0.79	39.0
All Vehicles		4040	13.8	0.667	32.2	LOS C	30.2	239.2	0.80	0.74	0.81	35.7

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	22	20.1	LOS C	0.0	0.0	0.54	0.54
P3	North Full Crossing	1	22.3	LOS C	0.0	0.0	0.56	0.56
All Pedestrians		23	20.2	LOS C			0.54	0.54

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1274 [Pennant Hills Rd / Osborn Rd / Normanhurst Rd PM BASE 2036 3:00-4:00]

Pennant Hills Road / Osborn Road / Normanhurst Road PM Existing
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Osborn Road												
1	L2	65	9.7	0.121	40.4	LOS C	3.1	23.6	0.74	0.72	0.74	34.5
2	T1	29	0.0	0.403	55.9	LOS D	6.4	45.7	0.93	0.77	0.93	25.8
3	R2	74	4.3	0.403	60.5	LOS E	6.4	45.7	0.93	0.77	0.93	23.7
Approach		168	5.6	0.403	51.9	LOS D	6.4	45.7	0.86	0.75	0.86	28.1
East: Pennant Hills Road												
4	L2	60	1.8	0.608	25.6	LOS B	27.3	215.5	0.69	0.65	0.69	38.0
5	T1	1802	16.0	0.608	18.9	LOS B	27.3	215.5	0.68	0.62	0.68	46.1
6	R2	69	4.5	0.610	79.6	LOS F	4.9	35.7	1.00	0.78	1.05	17.7
Approach		1932	15.1	0.610	21.3	LOS B	27.3	217.0	0.69	0.63	0.69	43.8
North: Normanhurst Road												
7	L2	72	7.4	0.300	49.6	LOS D	5.6	41.0	0.84	0.73	0.84	23.1
8	T1	31	3.4	0.300	45.1	LOS D	5.6	41.0	0.84	0.73	0.84	28.2
9	R2	112	5.7	0.599	62.4	LOS E	7.1	51.9	0.95	0.79	0.95	26.9
Approach		214	5.9	0.599	55.6	LOS D	7.1	51.9	0.90	0.76	0.90	26.0
West: Pennant Hills Road												
10	L2	32	3.3	0.527	24.2	LOS B	21.1	168.1	0.64	0.59	0.64	44.1
11	T1	1524	16.7	0.527	17.6	LOS B	21.1	168.1	0.63	0.57	0.63	47.2
12	R2	46	6.8	0.428	78.0	LOS F	3.2	23.8	1.00	0.75	1.00	25.9
Approach		1602	16.2	0.527	19.5	LOS B	21.1	168.8	0.64	0.58	0.64	45.6
All Vehicles		3916	14.7	0.610	23.7	LOS B	27.3	217.0	0.69	0.62	0.69	41.6

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	22	14.2	LOS B	0.0	0.0	0.45	0.45
P3	North Full Crossing	1	16.0	LOS B	0.0	0.0	0.48	0.48
All Pedestrians		23	14.3	LOS B			0.45	0.45

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1274 [Pennant Hills Rd / Osborn Rd / Normanhurst Rd AM BASE + Dev 2036 7:30-8:30]

Pennant Hills Road / Osborn Road / Normanhurst Road AM 2036 plus Dev
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Osborn Road												
1	L2	191	4.4	0.243	29.8	LOS C	7.9	57.4	0.66	0.74	0.66	38.4
2	T1	66	1.6	0.469	46.0	LOS D	11.3	80.4	0.89	0.78	0.89	28.1
3	R2	132	1.6	0.469	50.6	LOS D	11.3	80.4	0.89	0.78	0.89	26.2
Approach		388	3.0	0.469	39.6	LOS C	11.3	80.4	0.77	0.76	0.77	32.3
East: Pennant Hills Road												
4	L2	137	1.5	0.753	39.2	LOS C	34.7	269.5	0.89	0.84	0.89	31.0
5	T1	1679	16.0	0.753	33.5	LOS C	34.7	269.5	0.88	0.82	0.88	34.4
6	R2	63	1.7	0.376	42.6	LOS D	2.6	18.7	0.98	0.75	0.98	25.9
Approach		1879	14.5	0.753	34.3	LOS C	34.7	273.8	0.88	0.82	0.88	33.8
North: Normanhurst Road												
7	L2	94	2.2	0.698	48.1	LOS D	13.7	96.7	0.87	0.77	0.88	24.2
8	T1	151	0.0	0.698	43.5	LOS D	13.7	96.7	0.87	0.77	0.88	29.1
9	R2	120	3.5	0.751	63.6	LOS E	7.9	56.9	0.93	0.88	1.10	26.6
Approach		364	1.7	0.751	51.3	LOS D	13.7	96.7	0.89	0.81	0.96	27.1
West: Pennant Hills Road												
10	L2	34	0.0	0.731	38.7	LOS C	31.7	252.1	0.88	0.80	0.88	36.6
11	T1	1577	16.7	0.731	31.4	LOS C	31.7	252.1	0.85	0.77	0.85	37.7
12	R2	168	3.8	0.722	72.1	LOS F	11.6	83.5	1.00	0.85	1.08	27.1
Approach		1779	15.1	0.731	35.4	LOS C	31.7	253.2	0.86	0.77	0.87	35.8
All Vehicles		4411	12.7	0.753	36.6	LOS C	34.7	273.8	0.87	0.79	0.87	33.7

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	22	23.5	LOS C	0.1	0.1	0.58	0.58
P3	North Full Crossing	1	25.8	LOS C	0.0	0.0	0.61	0.61
All Pedestrians		23	23.6	LOS C			0.58	0.58

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1274 [Pennant Hills Rd / Osborn Rd / Normanhurst Rd PM BASE + Dev 2036 3:00-4:00]

Pennant Hills Road / Osborn Road / Normanhurst Road PM 2036 plus Dev
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Osborn Road												
1	L2	125	5.0	0.202	37.8	LOS C	5.9	42.7	0.73	0.74	0.73	35.4
2	T1	60	0.0	0.603	53.2	LOS D	12.7	90.3	0.95	0.82	0.95	26.3
3	R2	145	2.2	0.603	57.8	LOS E	12.7	90.3	0.95	0.82	0.95	24.3
Approach		331	2.9	0.603	49.4	LOS D	12.7	90.3	0.87	0.79	0.87	28.7
East: Pennant Hills Road												
4	L2	145	0.7	0.674	29.6	LOS C	32.0	248.3	0.77	0.73	0.77	35.5
5	T1	1802	16.0	0.674	22.9	LOS B	32.0	248.3	0.76	0.70	0.76	42.8
6	R2	69	4.5	0.458	46.0	LOS D	3.3	23.7	0.99	0.76	0.99	24.9
Approach		2017	14.5	0.674	24.2	LOS B	32.0	252.3	0.76	0.70	0.76	41.4
North: Normanhurst Road												
7	L2	72	7.4	0.481	49.3	LOS D	8.0	58.2	0.85	0.74	0.85	23.5
8	T1	74	1.4	0.481	44.8	LOS D	8.0	58.2	0.85	0.74	0.85	28.6
9	R2	112	5.7	0.668	63.3	LOS E	7.2	53.0	0.95	0.83	1.02	26.6
Approach		257	4.9	0.668	54.1	LOS D	8.0	58.2	0.90	0.78	0.93	26.5
West: Pennant Hills Road												
10	L2	32	3.3	0.616	31.4	LOS C	26.0	206.7	0.76	0.70	0.76	40.0
11	T1	1524	16.7	0.616	24.5	LOS B	26.0	206.7	0.74	0.67	0.74	41.9
12	R2	109	2.9	0.682	76.4	LOS F	7.6	54.8	1.00	0.82	1.08	26.2
Approach		1665	15.5	0.682	28.1	LOS B	26.0	207.6	0.76	0.68	0.77	39.7
All Vehicles		4269	13.4	0.682	29.4	LOS C	32.0	252.3	0.78	0.71	0.78	37.9

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	22	16.5	LOS B	0.0	0.0	0.49	0.49
P3	North Full Crossing	1	21.2	LOS C	0.0	0.0	0.55	0.55
All Pedestrians		23	16.7	LOS B			0.49	0.49

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1274 [Pennant Hills Rd / Osborn Rd / Normanhurst Rd AM BASE + Dev Sensitivity 2036 7:30-8:30]

Pennant Hills Road / Osborn Road / Normanhurst Road AM 2036 plus Dev Sensitivity
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Osborn Road												
1	L2	191	4.4	0.273	22.9	LOS B	6.4	46.7	0.71	0.73	0.71	41.4
2	T1	66	1.6	0.537	50.8	LOS D	11.9	84.7	0.93	0.80	0.93	26.9
3	R2	132	1.6	0.537	55.4	LOS D	11.9	84.7	0.93	0.80	0.93	24.9
Approach		388	3.0	0.537	38.7	LOS C	11.9	84.7	0.82	0.77	0.82	32.6
East: Pennant Hills Road												
4	L2	137	1.5	0.808	31.2	LOS C	28.3	220.2	0.94	0.87	0.96	34.3
5	T1	1679	16.0	0.808	25.9	LOS B	28.3	220.2	0.93	0.86	0.95	38.3
6	R2	63	1.7	0.222	37.0	LOS C	2.4	17.0	0.91	0.75	0.91	27.9
Approach		1879	14.5	0.808	26.7	LOS B	28.3	224.1	0.93	0.85	0.95	37.6
North: Normanhurst Road												
7	L2	94	2.2	0.798	58.1	LOS E	15.5	109.4	0.91	0.88	1.04	21.6
8	T1	151	0.0	0.798	53.6	LOS D	15.5	109.4	0.91	0.88	1.04	26.6
9	R2	120	3.5	0.743	63.1	LOS E	7.8	56.6	0.93	0.88	1.09	26.7
Approach		364	1.7	0.798	57.9	LOS E	15.5	109.4	0.92	0.88	1.06	25.5
West: Pennant Hills Road												
10	L2	34	0.0	0.778	42.3	LOS C	33.4	265.4	0.92	0.83	0.92	35.1
11	T1	1577	16.7	0.778	35.4	LOS C	33.4	265.4	0.89	0.81	0.90	35.6
12	R2	168	3.8	0.807	45.8	LOS D	7.0	50.7	1.00	0.87	1.19	33.6
Approach		1779	15.1	0.807	36.5	LOS C	33.4	266.6	0.90	0.82	0.93	35.3
All Vehicles		4411	12.7	0.808	34.3	LOS C	33.4	266.6	0.91	0.83	0.94	34.7

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	22	18.0	LOS B	0.0	0.0	0.66	0.66
P3	North Full Crossing	1	28.3	LOS C	0.0	0.0	0.64	0.64
All Pedestrians		23	18.5	LOS B			0.66	0.66

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.