TRAFFIX
TRAFFIC AND TRANSPORT PLANNERS

TRAFFIC IMPACT ASSESSMENT (TIA)

Proposed Restaurant Development
40 Myoora Road, Terrey Hills

Reference: 24.014r01v02
Date: September 2024

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DOCUMENT VERIFICATION

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TRAFFIX

CONTENTS

1. INTRODUCTION

TRAFFIX has been commissioned by Isaac Property Terry Hills P/L to undertake a traffic impact assessment (TIA) in support of a development application (DA) relating to a proposed restaurant located at 40 Myoora Road, Terrey Hills. The development is located within the Northern Beaches Local Government Area (LGA) and has been assessed under that Council's controls.

This report documents the findings of our investigations and should be read in the context of the Statement of Environmental Effects (SEE) prepared separately. The proposed development contains more than 200 parking spaces and is therefore required to be referred to TfNSW under the provisions of SEPP (Transport and Infrastructure) 2021.

The report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Documents existing traffic conditions
- Section 4: Describes the proposed development
- Section 5: Assesses the parking requirements
- Section 6: Assesses traffic impacts
- Section 7: Discusses access and internal design aspects
- Section 8: Presents the overall study conclusions

2. LOCATION AND SITE

The subject site is known as 40 Myoora Road, Terrey Hills (Lot 180 of DP752017) is located on the eastern side of Myoora Road and fronts Mona Vale Road to the east. The site is located approximately 28 kilometres north of the Sydney CBD.

The site has a total site area of approximately 15,957m^2 and contains one dwelling house and two metal sheds. The site has an eastern frontage of 60 metres to Mona Vale Road and a western frontage of 60 metres to Myoora Road. It is bounded to the north and south by commercial / light industrial developments.

Vehicular access to the dual frontage site is currently provided via two access driveways from Mona Vale Road frontage and from an access driveway from Myoora Road.

A Location Plan is presented in **Figure 1**, with a Site Plan presented in **Figure 2**. Reference should be made to the photographic record presented in **Appendix A** which provides an appreciation of the existing surrounding road network within the vicinity of the subject site.

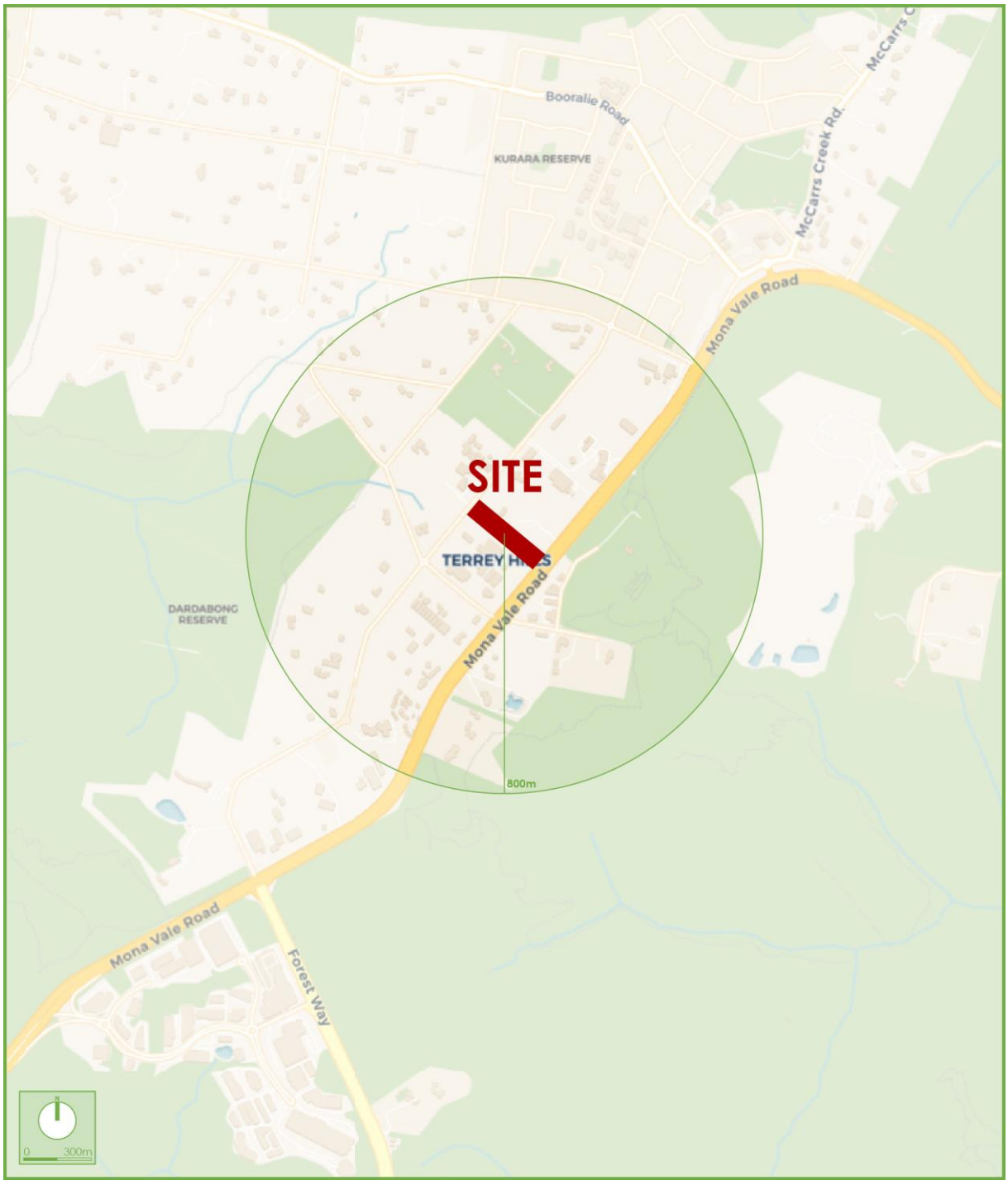


Figure 1: Location Plan

Figure 2: Site Plan

3. EXISTING TRAFFIC CONDITIONS

3.1 Road Network

The road hierarchy in the vicinity of the site is shown in **Figure 3** with the following roads of particular interest:

- Mona Vale Road: a TfNSW Main Road (MR 162) that traverses north-east-south-west between Mona Vale in the east and Pymble in the west. In the vicinity of the site, Mona Vale Road carries about 42,100 vpd (2022 AADT) and is subject to an 80km/h speed zoning local to the site. It generally consists of two traffic lanes in either direction separated by a median.
- Myoora Road: a local road that traverses north-south between Booralie Road in the north and Mona Vale Road in the south-east. It is subject to 50km/h speed zoning. Myoora Road carries a single lane of traffic in each direction and generally permits on-street parking along both sides.
- Aumuna Road a local road that generally traverses east-west between Coolowie Road in the north-west and Mona Vale Road in the south-east. It is subject to a 50km/h speed zoning, carries a single lane of traffic in each direction and generally permits unrestricted kerbside parallel parking along both sides.
- Kamber Road a local road that generally traverses east-west between Mona Vale Road in the east and Kamber Road Trail the east. It is subject to 50km/h speed zoning, carries a single lane of traffic in each direction and generally permits unrestricted kerbside parallel parking along the southern side.

It can be seen from the road hierarchy presented in **Figure 3** below that access to the wider regional road network is provided via Mona Vale Road using Myoora Road and Aumuna Road.

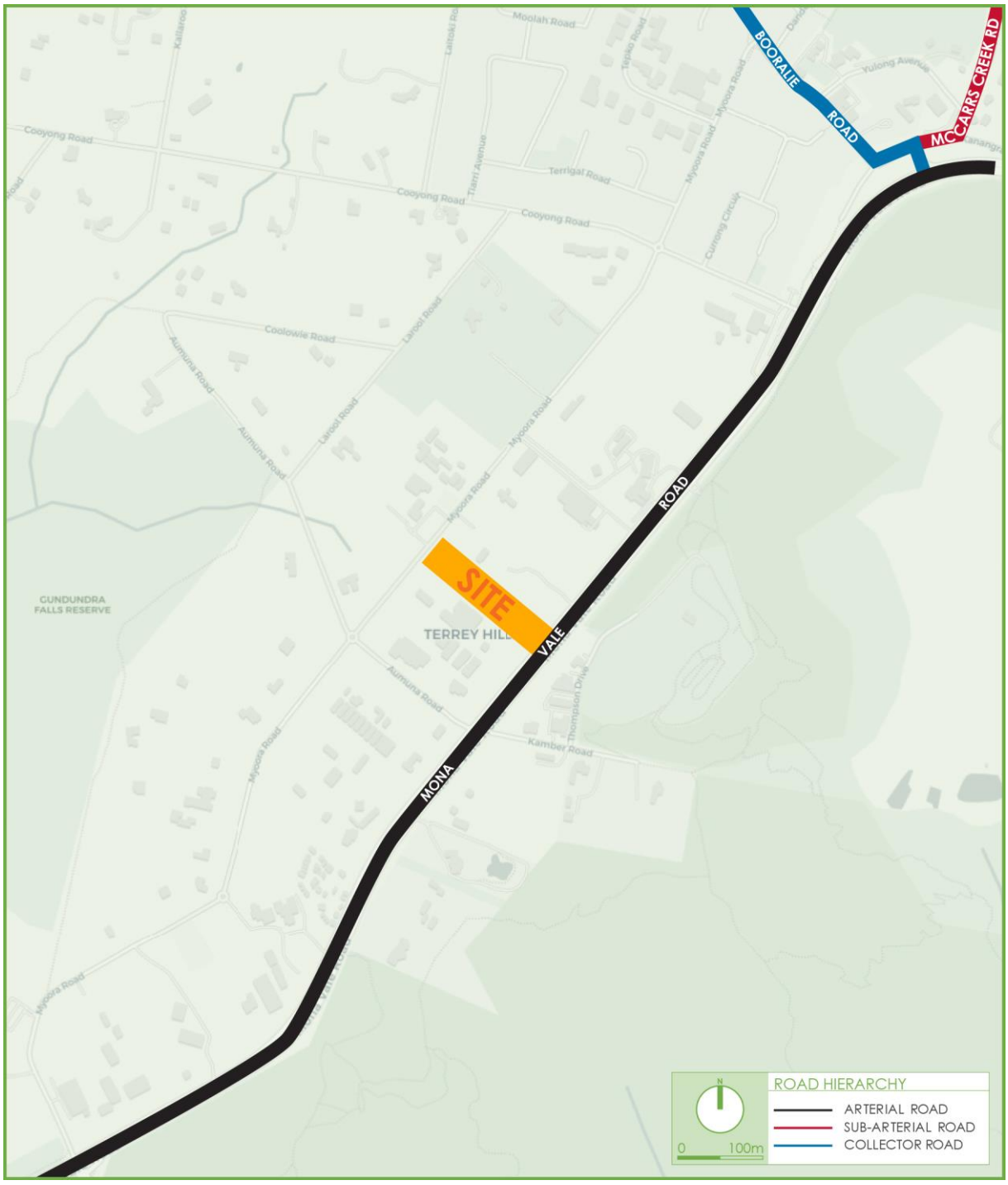


Figure 3: Road Hierarchy

3.2 Key Intersections

The key intersections in the vicinity of the site are shown below and provide an understanding of the existing road geometry and alignment.

3.2.1 Intersection of Mona Vale Road / Aumuna Road / Kamber Road

Figure 4: Intersection of Mona Vale Road / Aumuna Road / Kamber Road

It can be seen from **Figure 4** that the intersection of Mona Vale Road / Aumuna Road / Kamber Road is a four-legged cross intersection. The main attributes of each approach outlined as follows:

- Mona Vale Road (north and south leg)
  - The northern approach provides four lanes from which all movements are permitted.
  - The southern approach provides four lanes from which all movements are permitted.
- Aumuna Road (east leg)
  - The eastern approach provides a single lane from which all movements are permitted.
- Kamber Road (west leg)
  - The eastern approach provides a single lane from which all movements are permitted.

3.2.2 Intersection of Aumuna Road and Myoora Road

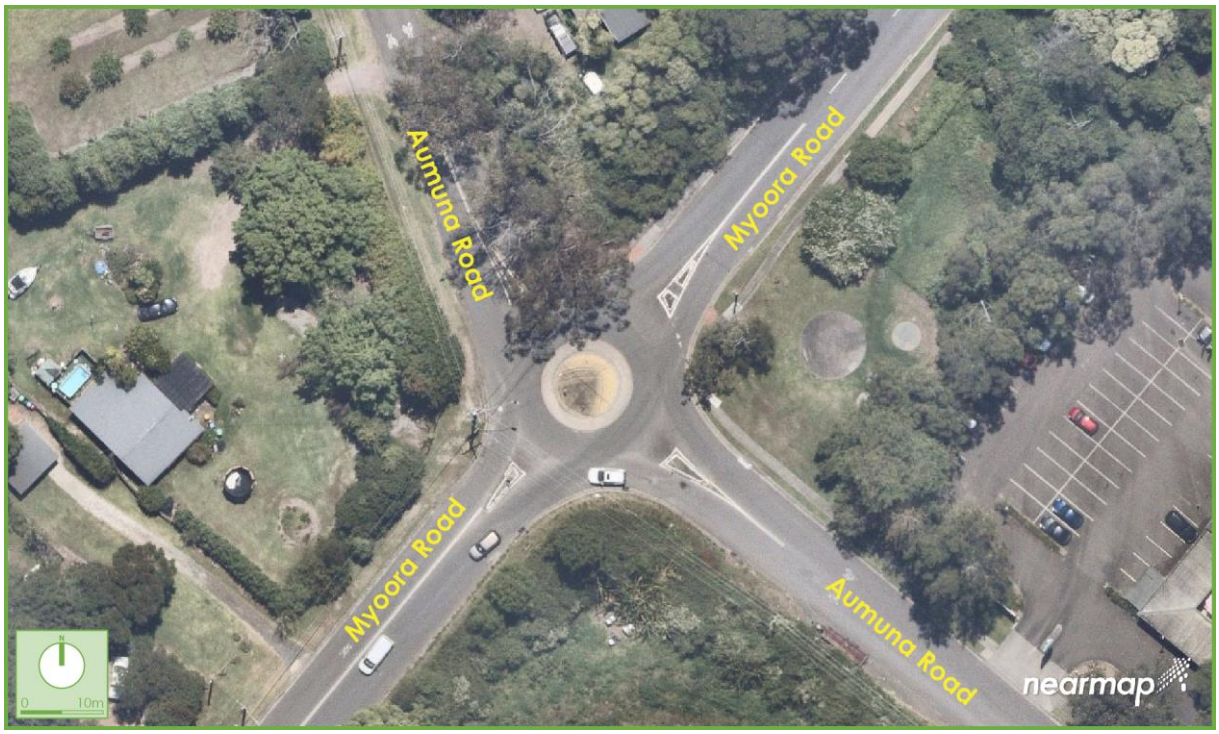


Figure 5: Intersection of Aumuna Road and Myoora Road

It can be seen from **Figure 5** that the intersection of Aumuna Road and Myoora Road is a four-legged roundabout intersection. The main attributes of each approach outlined as follows:

- Myoora Road (north and south leg)
  - The northern approach provides a single lane from which all movements are permitted.
  - The southern approach provides a single lane from which all movements are permitted.
- Aumuna Road (east and west leg)
  - The eastern approach provides a single lane from which all movements are permitted.
  - The western approach provides a single lane from which all movements are permitted.

3.3 Public Transport

The existing bus services that operate in the locality are shown in **Figure 6.** The subject site is within optimal walking distance (200 metres) of existing bus services operating in the locality. These bus services and their frequencies are detailed in **Table 1** below:

Table 1: Bus Information

Bus No.	Route	Frequency		
		Weekday	Saturday	Sunday & Public Holidays
196	Gordon to Mona Vale	Every 20-30 minutes in AM and PM peaks only	Every 1 hour	Every 1 hour
197	Macquarie University to Mona Vale	Every 20-30 minutes	Every 1 hour	Every 1 hour
260	Terrey Hills to North Sydney	Every 20-30 minutes in AM and PM peaks only	No service	No service
270	Terry Hills to City QVB	Every 10-20 mins in AM and PM peaks. 30 mins outside of peak	Every 1 hour	Every 1 hour
271	Belrose to City QVB	Every 15-30 mins	Every 30 mins	Every 30 mins
284	Duffys Forest to Terrey Hills and Chatswood	Limited to 9 services	Limited to 7 services	Limited to 7 services

It is evident that the development benefits from good bus services with bus stops in either direction being situated within 200 metres of the site along Myoora Road. These services provide connections to such centres as Mona Vale, Gordon, Macquarie Park, Macquarie University, Sydney CBD, North Sydney and Chatswood. These bus routes provide frequent services during the weekday peak hour periods.

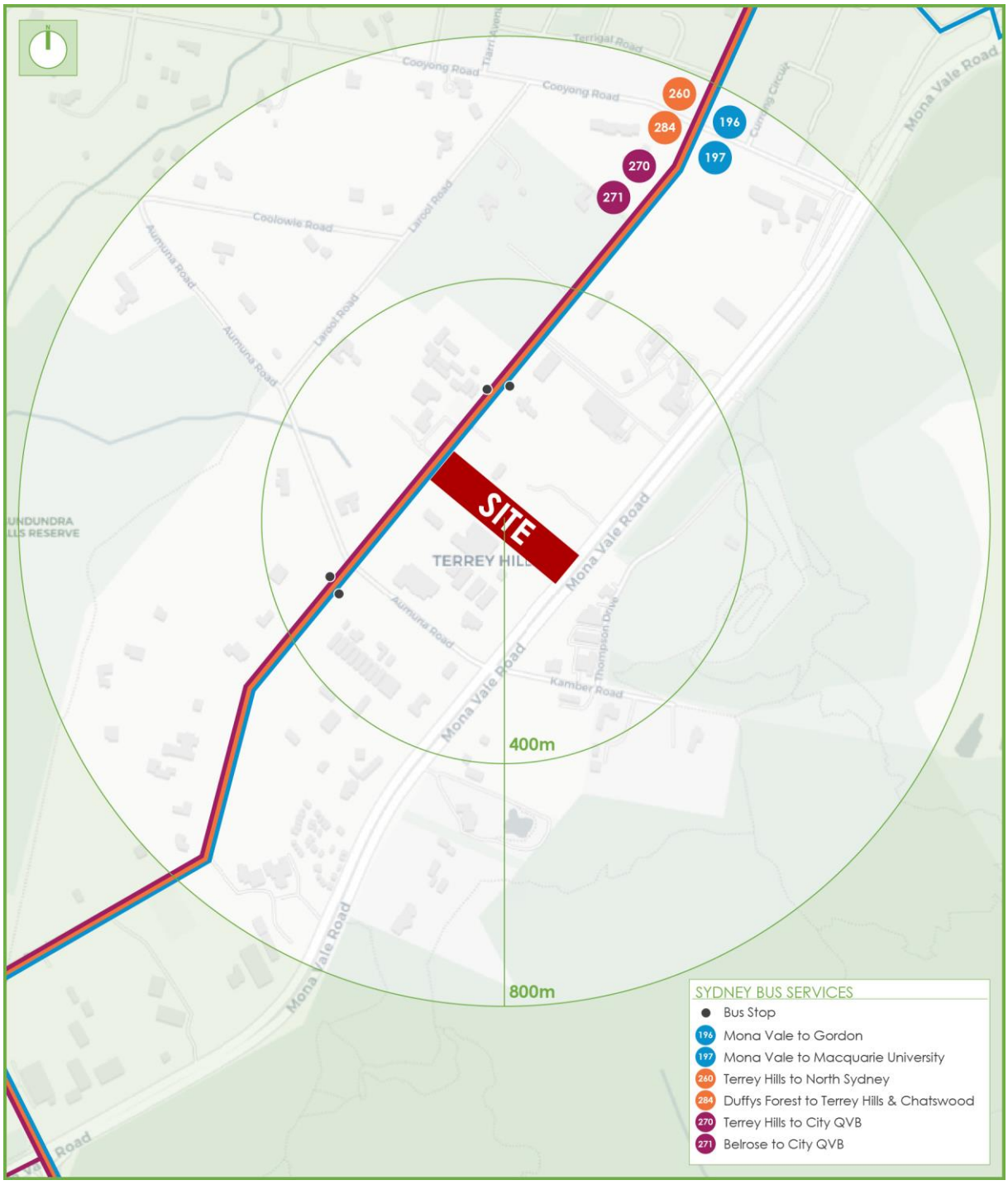


Figure 6: Public Transport

4. DESCRIPTION OF PROPOSED DEVELOPMENT

A detailed description of the proposed development is provided in the Statement of Environmental Effects prepared separately. In summary, the development for which approval is for restaurant comprising the following:

- Restaurant and associated all-day dining (internal), terrace dining and beer garden(external) with ancillary bistro kitchen, amenities and back of house.
- 2,698m^2 Gross Floor Area (GFA).
- 297 car parking spaces comprising:
  - 223 standard car parking spaces.
  - 74 overflow parking spaces
- 1 x loading bay
- 1 x mini bus pick up / drop off bay
- Proposed maximum patron capacity of 794 patrons onsite at any one time.
- Proposed operating hours are from 10:00am to 12:00am Monday to Sunday

The parking and traffic impacts arising from the development are discussed in **Section 5** and **Section 6**. Reference should be made to the plans submitted separately to Council which are presented at reduced scale in **Appendix B**.

5. PARKING REQUIREMENTS

5.1 Car Parking

5.1.1 Council Controls

The Warringah Council Development Control Plan (DCP) 2011, Part H Appendix 1 - requires parking for developments to be provided in accordance with **Table 2** below:

Table 2: Council Parking Rates and Provision

Type	Area / Units	Seats	Minimum Parking Rate	Minimum Spaces Required	Spaces Provided
Restaurant	2,698m²	794	15 spaces per 100m² GFA **Or** 1 space per 3 seats (whichever is greater)	388	297
Totals				**388**	**297**

It can be seen in **Table 2** the proposed development requires a minimum of 388 spaces in strict accordance with Council's DCP. In response, the proposed development provides a total of 297 spaces including 74 overflow parking spaces, a nominal shortfall of 91 car parking spaces in strict accordance with Council's DCP. However, the parking assessment has also been conducted having regard for Transport for New South Wales (TfNSW) (former RMS) Guidelines and publicly available surveys of another comparable nearby developments as discussed in more detail below.

5.1.2 RMS Parking Rates

The *Transport for New South Wales (former RMS) Guide to Traffic Generating Developments (2002)* (The Guide) provides an alternative method for assessing restaurant parking demands by drawing comparisons with similar restaurants and applying the following model:

Peak Parking Demand = No. of Seats x Design Occupancy x Modal Split for cars.

A publicly available Parking and Patronage Impact Statement was prepared by McLaren Traffic Engineering (McLaren document reference: 17344.03DB, dated 10th January 2018) for

the nearby Terrey Hills Tavern (similar restaurant located approximately 150m south of the subject site) which included parking and travel mode survey data for Terry Hills Tavern. These parking and questionnaire surveys were undertaken on two Fridays between 4:00pm and 9:00 pm and two Sundays between 10:00 am and 4:00pm in August of 2017.

The surveys undertaken by McLaren demonstrate that an average of 44.3% of patrons arrived by private vehicle and parked across the four days surveyed. This results in a peak parking demand for the subject development summarised as follows:

- Parking demand = 794 seats x (0.85 design occupancy) x 0.44 (modal split) = 297 spaces.

Therefore, there is a requirement to provide at least 297 spaces for 794 patrons when applying TfNSW's alternative parking assessment criteria having regard for the parking surveys undertaken in 2017 by McLaren Engineering in accordance with TfNSW's suggested methodology. A copy of the parking surveys undertaken by McLaren is provided in **Appendix C** for reference.

It is noteworthy that additional measures as outlined in sections 5.1.3 and 5.1.4 below can be adopted to further reduce demand for parking and encourage travel to and from the subject site using more sustainable modes of travel.

5.1.3 Courtesy Bus

It is emphasised the operator proposes to operate a courtesy bus service with pick-up and drop-off services during peak operating times servicing the local area. This would significantly reduce parking demands and could form part of an Operational Management Plan / Green Travel Plan as discussed in more detail in Section 5.1.5 below.

5.1.4 Green Travel Plan

It is envisaged that a Green Travel / Operational Management Plan could be prepared in response to a suitable DA Condition of Consent which would include travel modal targets in conjunction with proposed courtesy bus drop off/pick up arrangements with the intention of minimising private vehicle arrivals and providing more sustainable transport options for patrons in line with state government sustainable transport targets and initiatives.

5.1.5 Overflow Parking

74 overflow parking spaces are proposed at the eastern end of the subject site. Access to these parking spaces will be provided in accordance with the Overflow Car Park Operational Traffic Management Plan (OTMP) provided separately by TRAFFIX (document reference number: 24.014r02v02 dated 11th September 2024). In summary, the duty manager or designated personnel is responsible for monitoring parking occupancy over the extent of a typical trading day and activating use of the overflow carpark when the carpark is at approximately 85% capacity (when 190 spaces are occupied). The overflow carpark will be operated and managed in accordance with the procedures and signage and line marking plan outlined in the Overflow Carpark OTMP.

5.1.6 Parking Summary

In summary, it is evident there is a requirement to provide between 297 spaces (based on TfNSW Guidelines) and 388 spaces (based on Council's DCP) with a seating capacity of 794 patrons. In response, 297 parking spaces are provided including 74 overflow spaces. This provision is considered appropriate in the circumstances in accordance with the survey-based assessment as is permitted under The Guide, especially accounting for the proposed courtesy bus service, green travel plan and overflow carpark measures as discussed. In particular, the courtesy shittle bus and green travel plan will further reduce reliance on parking associated with private vehicle trips and encourage travel to and from the proposed development via more sustainable modes of transport.

5.2 Accessible Parking

The development is required to provide accessible parking spaces in accordance with the requirements of the Building Code of Australia. The restaurant will require a minimum of one (1) space per 50 spaces or part thereof thereby requiring at least five (5) accessible parking spaces based on the standard parking provision of 223 spaces. In response, five (5) accessible parking spaces are provided in compliance with the requirements of the Building Code of Australia and Councils DCP and is considered acceptable.

5.3 Bicycle Parking

Council's DCP does not specify any bicycle parking requirements for restaurant developments and none are provided in response. Section C3A of Council's DCP, bicycle parking and end

of trip facilities are to be provided with justification for the nominated rate made by reference to the rates specified in the *NSW Planning Guidelines for Walking and Cycling or Austroads Guide to Traffic Engineering Part 14 – Bicycles.*

Austroads Guide to Traffic Engineering Part 14 – Bicycles is superseded by *Cycling Aspects of Austroads Guides (2017) edition*. Appendix I, Table L1 provides the following bicycle parking rates applicable to restaurants:

- Employees: 1 space per 100m^2 of public area, and
- Visitors: 2 spaces

Application of the above rates to the proposed 2,698m^2 GFA (public area) would result in a requirement for 29 bicycle parking spaces in total comprising 27 staff spaces and 2 visitor spaces. However, Appendix I of by *Cycling Aspects of Austroads Guides (2017) edition* also states the following in reference to the above rates:

> *"Table I 1 gives an indication of the levels of bicycle parking needed to be provided for various land uses. These bicycle parking provision rates may be used to provide guidance if local standards or data are not available. It should be noted that the application of these types of provision rates needs to be undertaken with caution as local circumstances may often render them inappropriate."*

It is emphasised the subject development is located within an outer Sydney suburb (Terrey Hills) with no formal cycle lanes or cycle paths connecting the subject site with the surrounding road network. In addition, the traffic surveys undertaken of the Terrey Hills Hotel provided by McLaren Engineering and included in **Appendix C** for reference, demonstrated that no patrons arrived by bicycle. Given the above, it is evident that demand for bicycle parking is minimal. Notwithstanding, 10 bicycle parking spaces in form of bicycle racks are provided on the ground floor, adjacent to the kids play area thereby accommodating any unforeseen bicycle parking demands. End of Trip facilities are not provided given that patrons/staff arriving by bicycle are not likely to travel long distances given that Mona Vale Road (a TfNSW Main Road) does not provide formal cycle lanes or cycle paths and all bicycle arrivals (if any) would likely originate in Terrey Hills given that Terrey Hills can only be accessed by Mona Vale Road.

The proposed bicycle parking arrangements are therefore considered appropriate in the circumstances and will accommodate all bicycle parking demands for the reasons discussed.

5.4 Motorcycle Parking

Council's DCP does not specify any motorcycle parking requirements for restaurants. Notwithstanding, five (5) motorcycle parking spaces are proposed onsite thereby ensuring that all future motorcycle spaces are accommodated onsite without having to rely on standard parking spaces.

5.5 Refuse Collection and Servicing

A loading dock has been provided on the site on the ground floor with access provided via Myoora Road and can accommodate vehicles up to an including 8.8m Medium Rigid Vehicles (MRV's). All waste collection and servicing requirements are proposed to be undertaken via this dedicated loading bay.

6. TRAFFIC AND TRANSPORT IMPACTS

6.1 Existing Site Generation

The subject site currently accommodates one residential dwelling. The TfNSW Technical Direction (TDT 2013/04a) provides traffic generation rates for single-occupancy dwellings. The Technical Direction recommends the following peak hour trip generation rates:

- 0.95 vehicle trips per dwelling during the AM peak periods; and
- 0.99 vehicle trips per dwelling during the PM peak periods.

Adoption of this rate to the single dwelling results in the following trip generation,

- 1 vehicle trips per hour during the AM peak; and
- 1 vehicle trips per hour during the PM peak.

6.2 Development Trip Generation

The traffic impacts of the proposed development (restaurant) to the external surrounding road network have been assessed having regard for the requirements of the TfNSW (former RMS) Guideline to Traffic Generating Developments (2002) applicable to restaurants.

In accordance with The Guide, restaurants attract a vehicle trip rate of 5 vehicle trips/100m^2 GFA during the weekday afternoon peak. The weekday afternoon peak between 4:00pm-6:00pm and the Saturday lunchtime peak between 10:00am-2:00pm was assessed in order to capture peak weekday and Saturday lunchtime trading periods.

Application of the TfNSW vehicle trip rate applied to restaurants (5 vehicle trips per 100m^2 GFA) to the proposed 2,584m^2 of restaurant GFA and assuming a 50/50 split results in the following vehicle trips:

- 135 veh/hr (68 in, 67 out) during the weekday evening peak.
- 135 veh/hr (68 in, 67 out) during the Saturday lunchtime peak.

6.3 Net Impacts

The proposed development has been assessed as a net increase of +135 vehicles per hour above existing conditions in order to undertake a conservative assessment.

6.4 Intersection Performance

6.4.1 Traffic Surveys

For the purposes of assessing the traffic impacts of this development, traffic surveys were obtained at the critical intersections within proximity of the site.

These surveys were conducted on Friday 5 April 2024 and Saturday 6 April 2024 during the critical evening network peak between 4:00pm-6:00pm and between 10:00am- 2:00pm on Saturday at the below following key intersections.

- The intersection of Mona Vale Road / Aumuna Road / Kamber Road; and
- The intersection of Aumuna Road / Myoora Road.

6.4.2 Trip Distribution

The adopted trip distribution is summarised in the vehicle trip distribution diagram presented in **Figure 7** below whereby it was assumed that traffic will be split evenly across the surrounding road network which is generally consistent with surveys undertaken of the key intersections of interest.

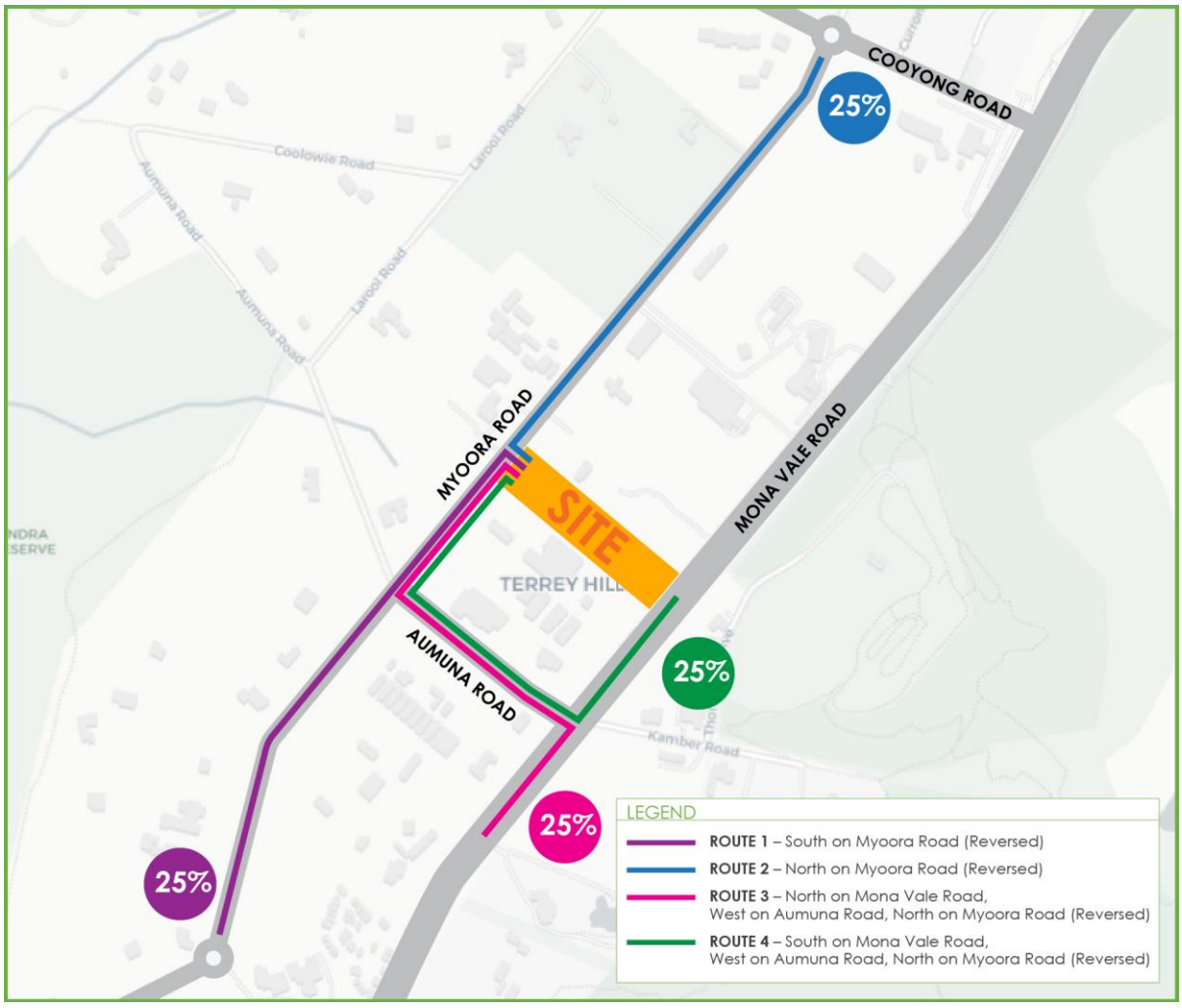


Figure 7: Vehicle Trip Distributions

6.4.3 Scenarios

To assess the potential traffic impacts of a proposed development, the following scenarios were identified:

- Existing Scenario; and
- Existing + Development Scenario.

6.4.4 SIDRA Intersection Analysis

The surveys were analysed using the SIDRA Intersection 9 computer program to determine their performance characteristics under existing traffic conditions. The SIDRA model produces a range of outputs, the most useful of which are the Degree of Saturation (DoS) and Average

Vehicle Delay per vehicle (AVD). The AVD is in turn related to a level of service (LoS) criteria. These performance measures can be interpreted using the following explanations:

DoS the DoS is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DoS approaches 1, it is usual to attempt to keep DoS to less than 0.9. When DoS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at 1.1 can be assumed. For intersections controlled by roundabout or give way / stop control, satisfactory intersection operation is generally indicated by a DoS of 0.8 or less.

AVD the AVD for individual intersections provides a measure of the operational performance of an intersection. In general, levels of acceptability of AVD for individual intersections depend on the time of day (motorists generally accept higher delays during peak commuter periods) and the road system being modelled (motorists are more likely to accept longer delays on side streets than on the main road system).

LoS this is a comparative measure which provides an indication of the operating performance of an intersection as shown in **Table 3**.

Table 3: Intersection Performance Indicators (TfNSW)

Level of Service (LoS)	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

A summary of the modelled results is provided in **Table 3**, reference should also be made to the SIDRA outputs provided in **Appendix D** which provide detailed results for each movement.

Table 3: Intersection Performance for Existing and Development

Intersection	Control Type	Scenario	Period	Degree of Saturation (DoS)	Average Delay	Level of Service
Mona Vale Road and Aumuna Road (south approach)	Give way	Existing	PM	0.625	46.6	D
			SAT	0.870	163.3	F
		Existing + Development	PM	0.625	48	D
			SAT	1.076	233.3	F
Mona Vale Road and Kamber Road (north approach)	Give way	Existing	PM	0.525	31.9	C
			SAT	0.613	77.9	F
		Existing + Development	PM	0.525	32.9	C
			SAT	0.613	78.7	F
Aumuna Road and Myoora Road	Roundabout	Existing	PM	0.103	8.8	A
			SAT	0.224	8.7	A
		Existing + Development	PM	0.120	8.8	A
			SAT	0.248	8.7	A

6.5 Traffic Impacts

It can be seen from **Table 3** above that the intersection of Mona Vale Road and Aumuna Road (south approach) operates at a level of service D during the weekday PM peak in the existing and development scenarios with a minor increase in average delay from 46.6 seconds (existing) to 48 seconds (existing plus development), an increase of 1.4 seconds.

The intersection of Mona Vale Road and Aumuna Road (south approach) operates at a level of service F during the Saturday peak in the existing and development scenarios with an increase in average delay from 163.3 seconds (existing) to 233.3 seconds (existing plus development), an increase of 70 seconds.

The intersection of Mona Vale Road and Kamber Road (north approach) operates at a level of service C during the weekday PM in the existing and development scenarios with a minor increase in average delay from 31.9 seconds (existing) to 32.9 seconds (existing plus development), an increase of 1 second.

The intersection of Mona Vale Road and Aumuna Road (north approach) operates at a level of service F during the Saturday peak in the existing and development scenarios with a minor

increase in average delay from 77.9 seconds (existing) to 78.7 seconds (existing plus development), an increase of less than 1 second.

The intersection of Aumuna Road and Myoora Road operates at a level of service A during the weekday PM in the existing and development scenarios with no increase in average delay (8.8 seconds).

The intersection of Aumuna Road and Myoora Road operates at a level of service A during the Saturday peak in the existing and development scenarios with no increase in average delay (8.7 seconds).

It is emphasised that whilst the intersection of Monavale Road/Aumuna Road/Kamber Road operates at a Level of Service 'F' during the Saturday peak in both the existing and development scenarios this is caused by vehicles waiting to turn right from Aumuna Road, eastbound onto Mona Vale Road, southbound and vehicles waiting to turn right from Kamber Road, westbound onto Mona Vale Road, northbound. This is in conjunction with existing high traffic volumes in both directions along Mona Vale Road resulting in delays of more than one (1) minute in many instances for vehicles waiting to turn right onto Mona Vale Road.

A review of survey video footage undertaken at this intersection during the Saturday lunchtime peak between 12:00pm-1:00pm generally shows that no more than one (1) vehicle at any one time arrived on Aumuna Road, eastbound and turned right onto Mona Vale Road, southbound. This is supported by the SIDRA modelling results presented in **Appendix C** which shows an average back of queue length of no more than one (1) vehicle under the existing scenario and no more than three (3) vehicles under the proposed development scenario. This demonstrates there are inherent delays associated with vehicles waiting to turn right onto Mona Vale Road in both directions under the existing arrangement causing the intersection to fail which is unrelated to any future vehicle trips associated with the proposed development.

It is important to note the proposed development scenario does not take into account diversionary effects where traffic generated by the subject development is likely to take advantage of alternative more convenient vehicle routes using nearby signalised intersections to turn right onto Mona Vale Road, southbound such as the intersection of Myoora Road and Forest Way located approximately 1.1km to the south of the subject site.

Having regard for the above, it is evident there is no change to the level of service of any of the key intersections assessed as a result of the proposed development. Impacts to the average vehicle delay of Mona Vale Road/Aumuna Road / Kamber Road during the Saturday

peak are considered acceptable for the reasons discussed and are likely to be considerably less once diversionary effects are accounted for. Therefore, the impacts to traffic on the existing external road network and surrounding intersections are considered acceptable and consistent with existing intersection performance parameters.

7. ACCESS AND INTERNAL DESIGN ASPECTS

7.1 Site Vehicular Access

7.1.1 Access

The subject development proposes a total of 297 parking spaces with access via Myoora Road, a local access road. It will therefore require a Category 2 driveway under AS2890.1 (2004), being a combined entry/exit width of 6.0 metres. In response, a combined 6.0 metre wide access driveway is provided sufficient to accommodate all vehicle movements to and from the subject site, including the largest service vehicle required to access the subject site being an 8.8m MRV. Reference should be made to the swept path analysis provided in **Appendix D** showing the satisfactory operation of the access driveway.

7.2 Internal Design

The internal car park complies with the requirements of AS 2890.1 (2004), AS 2890.2(2018) and AS 2890.6 (2022), and the following characteristics are noteworthy:

7.2.1 Parking Modules

- All standard car parking spaces have been designed in accordance with User Class 2 being for medium-term parking. These spaces are provided with a minimum space length of 5.4m, a minimum width of 2.5m and a minimum aisle width of 5.8m.
- A parallel bus bay for drop off and pick up of passengers is provided within the at-grade carpark adjacent to the subject developments' pedestrian entry with a minimum space length and minimum width to accommodate a Toyota Coaster minimum or similar and a minimum aisle width of 6.3m to adjacent car parking spaces. Reference should be made to the swept path analysis provide in **Appendix E** showing the satisfactory operation of the bus bay.
- All spaces located adjacent to obstructions of greater than 150mm in height are provided with an additional width of 300mm.
- Dead-end aisles are provided with the required 1.0m aisle extension in accordance with Figure 2.3 of AS2890.1 (2004).

- All accessible parking spaces have been designed in accordance with AS 2890.6 (2022), being 2.4m wide, 5.4m long and situated immediately adjacent to a dedicated shared area or the circulating aisle.

7.2.2 Clear Head Heights

- A minimum clear head height of 2.2m is provided for all areas within the undercover car park as required by AS 2890.1 (2004).
- A minimum clear head height of 4.5m is provided for all areas accessed by the service vehicle as required by AS 2890.2 (2018).
- A minimum clear head height of 2.5m is to be provided above all disabled spaces in accordance with AS 2890.6 (2022).

7.2.3 Loading

- A minimum bay width of 3.5m and length of 8.8m is provided for the largest service vehicle required to access the subject development being an 8.8m MRV as required under AS 2890.2 (2018).

7.2.4 Other Considerations

- All columns are located outside of the parking space design envelope shown in Figure 5.2 of AS 2890.1 (2004).
- Visual splay has been provided at the access driveway in accordance with Figure 3.3 of AS 2890.1 (2004).
- All vehicle (service vehicles and light vehicles) can enter and exit the subject site in a forward direction. Reference should be made to the swept path analysis provided in **Appendix E.**

7.3 Summary

In summary, the internal configuration of the car park has been designed in accordance with AS 2890.1 (2004), AS 2890.2 (2018) and AS 2890.6 (2022).

8. CONCLUSIONS

In summary:

- The proposal seeks approval for a restaurant located at 40 Myoora Road, Terrey Hills comprising an at-grade and undercover car.
- The subject site is well connected to the public transport network with reliable access to regular bus services as discussed in Section 3.3.
- 223 standard onsite parking spaces and 74 additional overflow spaces are provided which is sufficient to accommodate all parking demands onsite in accordance with the TfNSW Guide to Traffic Generating Developments (2002) and based on the traffic and parking survey assessment undertaken of Terrey Hills Tavern, as is permitted under the Guide.
- The proposed mini-bus service in conjunction with a future Green Travel Plan will provide crucial roles in driving travel behaviour towards more sustainable modes of transport and minimising demand for onsite parking.
- The traffic generation arising from the development has been assessed as a net change over existing conditions and equates to an additional 135 vehicle trips per hour during the weekday afternoon and Saturday peaks. Traffic impacts have been assessed using SIDRA Intersection and there are no changes in the Level of Service of each of the key intersection surveys surveyed in relation to the existing and proposed developments and traffic impacts are considered acceptable in this regard for the reasons discussed in Section 6.5.
- The at-grade and undercover car park has been assessed to comply with the requirements of AS 2890.1 (2004), AS 2890.2 (2018) and AS 2890.6 (2022).
- The overflow carpark has been designed in accordance with AS2890.1 (2004) and will operate in accordance with the Overflow Carpark OTMP provided separately.
- Waste collection and servicing is to be undertaken onsite via the loading dock which is can accommodate vehicles up to and including an 8.8m MRV.

This traffic impact assessment therefore demonstrates that the subject application is supportable on traffic engineering and transport planning grounds.

APPENDIX A

Photographic Record

View looking east across Myoora Road towards the subject site

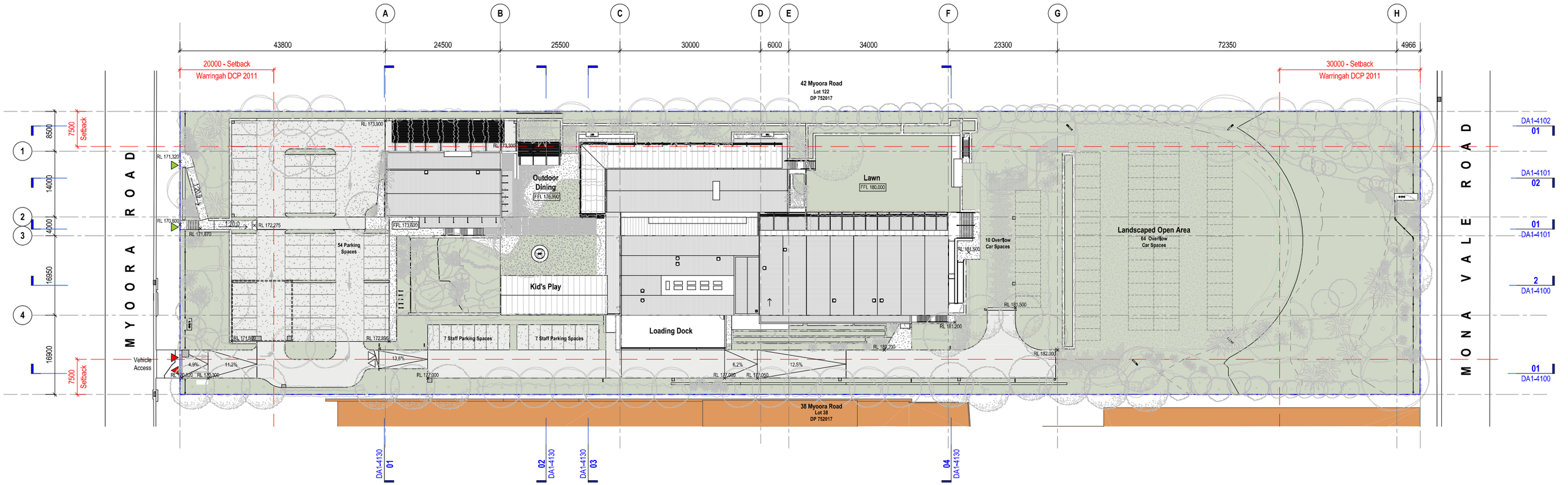
View looking south along Myoora Road towards its intersection with Amuna Road

View looking east along Amuna Road towards its intersection with Mona Vale Road

View looking south along Mona Vale Road towards its intersection with Amuna Road and Kamber Road

APPENDIX B

Reduced Plans



DA Legend

UNO the general extent and location of alterations or additions, including demolition is indicated accordingly:

- Proposed new building fabric
- Area of proposed demolition
- Neighbouring Light Industrial Buildings
- Neighbouring Residential Buildings
- Subject to final layout this area is to comply with Australian Standard 4674-2004; Design, construction and fit out of food premises. Refer to DA1-1200.

For Development Approval

General Notes

Rev	Date	Amendments
01	28.09.23	Preliminary Issue for Information
02	16.10.23	Issue for Information
03	27.10.23	Issue for Information
04	31.10.23	Issue for Information
05	19.03.24	Consultant Issue
06	02.04.24	Issue for Information: Pre-DA Meeting
07	03.05.24	Issued for Landscape Coordination
08	21.05.24	Issue for Information: Design and Sustainability Advisory Panel

Rev	Date	Amendments
09	26.07.24	Issue for Information
10	14.08.24	Issue for Information
11	03.09.24	For Development Approval

H&E ARCHITECTS
Suite 4.02, 80 Cooper Street
Surry Hills NSW 2010 Australia
+612 9357 2288
hello@h-e.com.au
www.h-e.com.au
PO Box 490 Darlinghurst NSW 1300
Humphrey & Edwards Pty Ltd | ABN 89056638227
Nominated Architect: Glenn Cunnington #6415

Project
40 Myoora Road

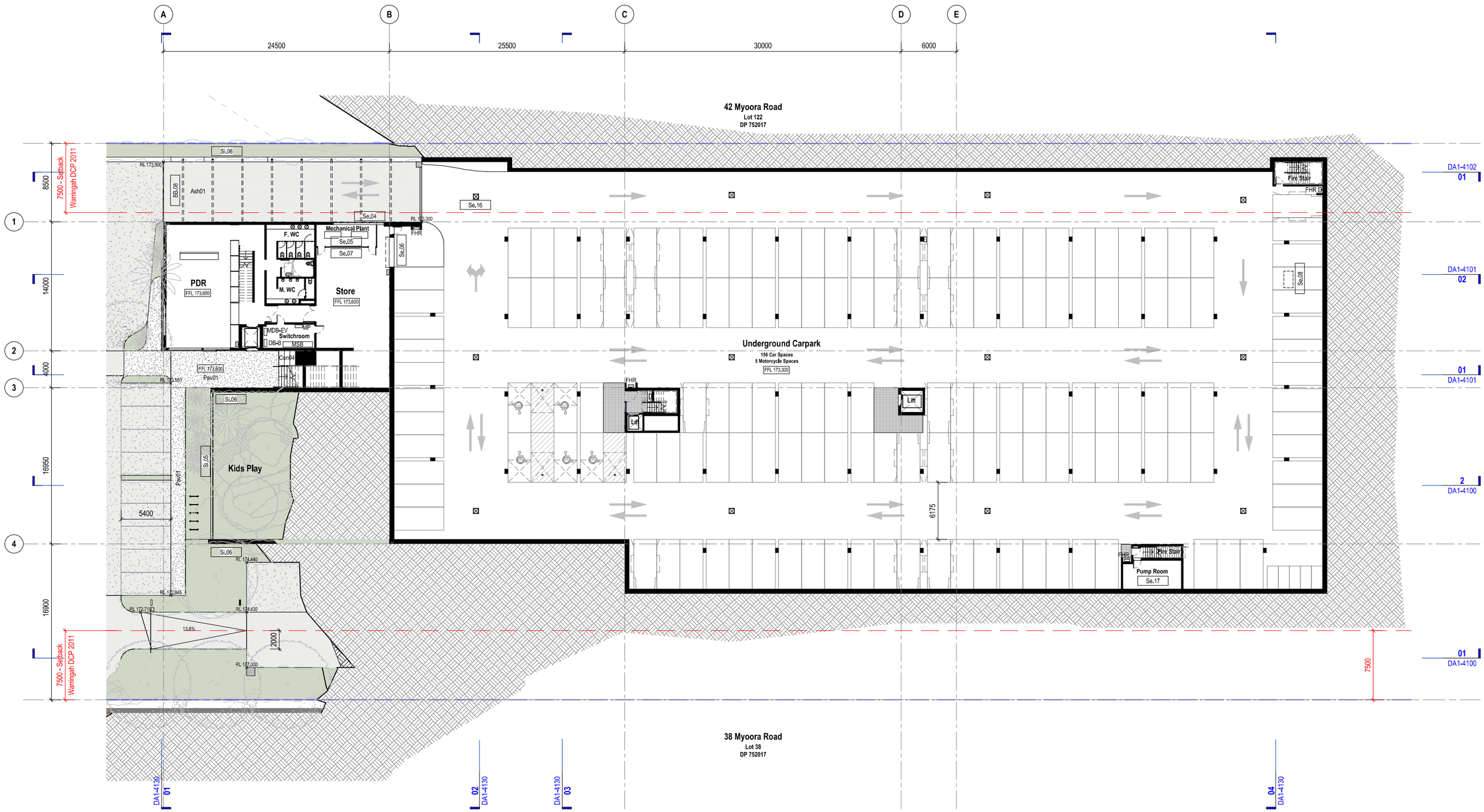
Client
Gardoxi P/L (Norwest)

Location
40 Myoora Road, Terrey Hills NSW 2084

Drawing
Site Plan - Proposed

Scale @ A1	1:400	Drawn by	Checked by
Scale @ A3	1:800		
Project Start Date	Issue Date	Sheet Issue Date	03/09/24
Project #	2725		
Drawing #	DA1-0500	Rev	11

4/09/2024 9:32:09 AM



DA Legend

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- Subject to final layout this area is to comply with Australian Standard 4674-2004; Design, construction and fit out of food premises. Refer to DA1-1200.

For Development Approval

General Notes

Rev	Date	Amendments
01	28.09.23	Preliminary Issue for Information
02	10.10.23	Issue for Information
03	16.10.23	Issue for Information
04	27.10.23	Issue for Information
05	31.10.23	Issue for Information
06	19.03.24	Consultant Issue
07	02.04.24	Issue for Information: Pre-DA Meeting
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PO Box 490 Darlinghurst NSW 1300
Humphrey & Edwards Pty Ltd | ABN 89056638227
Nominated Architect: Glenn Cunnington #6415

Project
40 Myoora Road

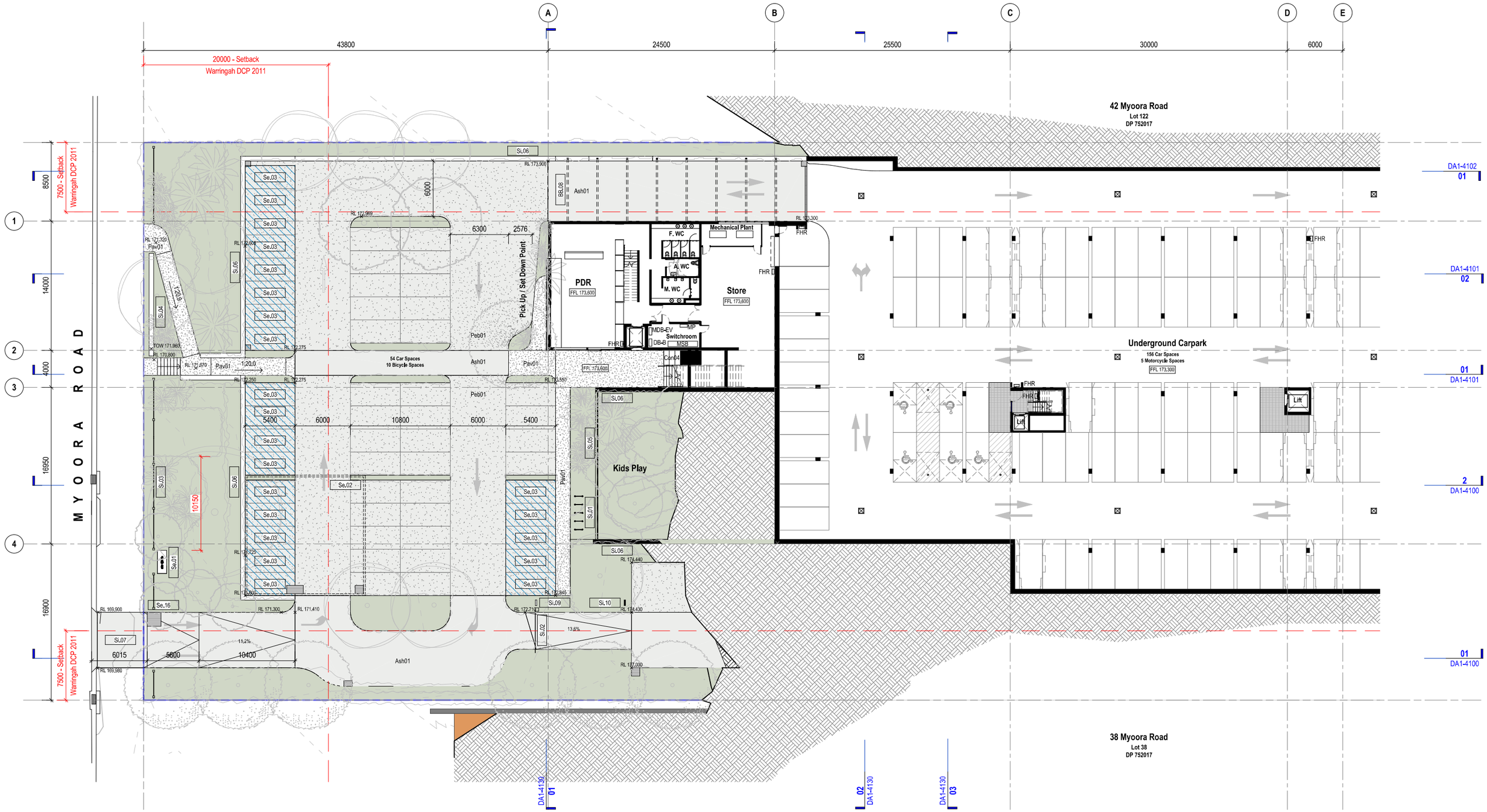
Client
Gardoxi P/L (Norwest)

Location
40 Myoora Road, Terrey Hills NSW 2084

Drawing
General Arrangement Plan - Basement & Restaurant 01

Scale @ A1	1:200	Drawn by	Checked by
Scale @ A3	1:400		
Project Start Date	Issue Date	Sheet Issue Date	03/09/24
Project #	2725		
Drawing #	DA1-1011	Rev	12

4/09/2024 9:32:31 AM



DA Legend

UNO the general extent and location of alterations or additions, including demolition is indicated accordingly:

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- Neighbouring Light Industrial Buildings
- Neighbouring Residential Buildings
- Subject to final layout this area is to comply with Australian Standard 4674-2004; Design, construction and fit out of food premises. Refer to DA1-1200.

For Development Approval

General Notes

Rev	Date	Amendments
01	28.09.23	Preliminary Issue for Information
02	10.10.23	Issue for Information
03	16.10.23	Issue for Information
04	27.10.23	Issue for Information
05	31.10.23	Issue for Information
06	19.03.24	Consultant Issue
07	02.04.24	Issue for Information: Pre-DA Meeting
08	03.05.24	Issued for Landscape Coordination

Rev	Date	Amendments
09	21.05.24	Issue for Information: Design and Sustainability Advisory Panel
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PO Box 490 Darlinghurst NSW 1300
Humphrey & Edwards Pty Ltd | ABN 89056638227
Nominated Architect: Glenn Cunnington #6415

Project
40 Myoora Road

Client
Gardoxi P/L (Norwest)

Location
40 Myoora Road, Terrey Hills NSW 2084

Drawing
General Arrangement Plan - Myoora Road Venue Entry & Carparking

Scale @ A1	1:200	Drawn by	Checked by
Scale @ A3	1:400		
Project Start Date	Issue Date	Sheet Issue Date	03/09/24
Project #	2725		
Drawing #	DA1-1010	Rev	12

4/09/2024 9:32:21 AM

APPENDIX C

Terrey Hills Tavern Parking Survey Results

M^CLAREN TRAFFIC ENGINEERING

Address: Shop 7, 720 Old Princes Highway Sutherland NSW 2232
Postal: P.O Box 66 Sutherland NSW 1499

Telephone: +61 2 8355 2440
Fax: +61 2 9521 7199
Web: www.mclarentraffic.com.au
Email: admin@mclarentraffic.com.au

Division of RAMTRANS Australia ABN: 45067491678

Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

10 January 2018 Reference: 17344.03DB

JDK Legal
Level 5
1 Castlereagh Street
SYDNEY NSW 2000
Attention: Tim Calvert

PARKING & PATRONAGE IMPACT ADVICE OF PROPOSED INCREASE TO PATRONAGE OF APPROVED HOTEL AT 2 AUMUNA ROAD, TERREY HILLS

Dear Tim,

Reference is made to your request to provide a supplementary parking advice with regards to the Development Application for the hotel at 2 Aumuna Road, Terrey Hills (Terrey Hills Tavern). This letter should be read in conjunction with and provides a number of clarifications and corrections to the Traffic and Parking Impact Assessment by *M^CLaren Traffic Engineering* dated 14 November 2017 (hereinafter referred to as the M^CLaren Report).

This letter has been prepared in retrospect of the S34 Conciliation Hearing held on Monday 27 November 2017 and the undersigned has read and agrees to be bound by the Expert Witness Code of Conduct in Schedule 7 of the Uniform Civil Procedure Rules 2005.

1 Basis of Approved Patron Limit

Awaiting input from planners & lawyers

2 Clarifications/Corrections to Traffic and Parking Impact Assessment

Minor corrections or clarifications to the Traffic and Parking Impact Assessment by *M^CLaren Traffic Engineering* dated 14 November 2017 are provided in the following sub-sections.

2.1 1.2 Site Description

The existing number of car parking spaces was not stated, there are 181 car parking spaces in the existing car park including 158 spaces in the Tavern car park and 23 spaces in the Bottle Shop car park. It has been identified that 8 spaces can be added within the existing car park with minor adjustments to pavement marking, adjustment of bollards and pavement repairs, such that 189 car spaces would be available prior to the adjustments suggested in the M^CLaren Report.

It should also have been noted that whist the Bottle Shop drive-through physically exists and permits vehicles to drive around the building, the bottle shop does not provide a service to customers from the drive-through lane and only via the southern side of the building fronting Aumuna Road.

2.2 3.2 Parking and Patron Surveys

Table 1 and **Table 2** of the M^CLaren Report have been revised to more clearly reflect the patron and car parking characteristics observed during the surveys and are depicted below. Additionally, the percentages included in **Table 4** of the M^CLaren Report were incorrect and have been revised.

TABLE 1: FRIDAY PATRON AND CAR PARKING ACCUMULATION

Time	18/08/2017						25/08/2017					
	Adults	Children	Total Patrons	Cars Parked On-Site	Cars Parked On-Street	Total Cars Parked	Adults	Children	Total Patrons	Cars Parked On-Site	Cars Parked On-Street	Total Cars Parked
16:00	37	2	39	34	14	48	62	0	62	57	13	70
16:30	57	2	59	57	8	65	53	0	53	62	11	73
17:00	85	5	90	66	8	74	61	5	66	66	13	79
17:30	103	20	123	92	6	98	72	10	82	78	10	88
18:00	117	39	156	134	5	139	96	31	127	87	7	94
18:30	136	36	172	169	9	178	139	34	173	125	12	137
19:00	140	37	177	166	8	174	167	51	218	134	21	155
19:30	154	37	191	147	7	154	183	44	227	145	24	169
20:00	138	23	161	133	7	140	141	27	168	124	26	150
20:30	134	14	148	104	9	113	123	26	149	104	18	122
21:00	99	11	110	86	8	94	108	23	131	85	18	103

TABLE 2: SUNDAY PATRON AND CAR PARKING ACCUMULATION

Time	20/08/2017						27/08/2017					
	Adults	Children	Total Patrons	Cars Parked On-Site	Cars Parked On-Street	Total Cars Parked	Adults	Children	Total Patrons	Cars Parked On-Site	Cars Parked On-Street	Total Cars Parked
10:00	0	0	0	10	9	19	3	0	3	17	8	25
10:30	2	0	2	13	8	21	8	2	10	27	7	34
11:00	4	0	4	17	7	24	27	2	29	31	7	38
11:30	4	2	6	25	7	32	46	9	55	49	10	59
12:00	33	26	59	46	7	53	102	18	120	73	14	87
12:30	86	62	148	97	6	103	160	35	195	109	14	123
13:00	139	72	211	133	12	145	224	60	284	143	49	192
13:30	143	60	203	140	22	162	260	57	317	155	93	248
14:00	168	52	220	141	24	165	276	41	317	155	111	266
14:30	176	28	204	127	22	149	197	36	233	151	115	266
15:00	146	25	171	115	22	137	165	31	196	145	110	255
15:30	111	15	126	78	22	100	110	16	126	68	44	112
16:00	98	19	117	59	20	79	94	11	105	57	32	89

TABLE 4: PATRONAGE MODE OF TRANSPORT

Date	18/08/2017	20/08/2017	25/08/2017	27/08/2017
Driver	73 (50.3%)	77 (36.8%)	72 (45.3%)	91 (44.6%)
Passenger	66 (45.5%)	125 (59.8%)	75 (47.2%)	107 (52.5%)
Public Transport	0 (0%)	0 (0%)	1 (0.6%)	0 (0%)
Uber	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Walking	2 (1.4%)	2 (1%)	3 (1.9%)	2 (1%)
Taxi	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Drop Off	4 (2.8%)	2 (1%)	6 (3.8%)	0 (0%)
Shuttle	0 (0%)	0 (0%)	2 (1.3%)	0 (0%)
Chartered Bus	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Other	0 (0%)	3 (1.4%)	0 (0%)	4 (2%)
Average Car Occupancy(1)	1.90	2.62	2.04	2.18
Average Patrons Per Private Vehicle(2)	1.99	2.71	2.21	2.24

Notes:

(1) The "average car occupancy" measure relates only to patrons that arrived via private vehicle.

(2) The "average patrons per private vehicle" measure is the average number of patrons (irrespective of travel mode) per private vehicle.

It should also be noted that a proportion of the on-street car parking observed on Sunday 27 August 2017 was not associated with the Tavern. The graph provided in **Figure 1** demonstrates that the on-street car parking continued to increase after the number of patrons in the Tavern peaked.

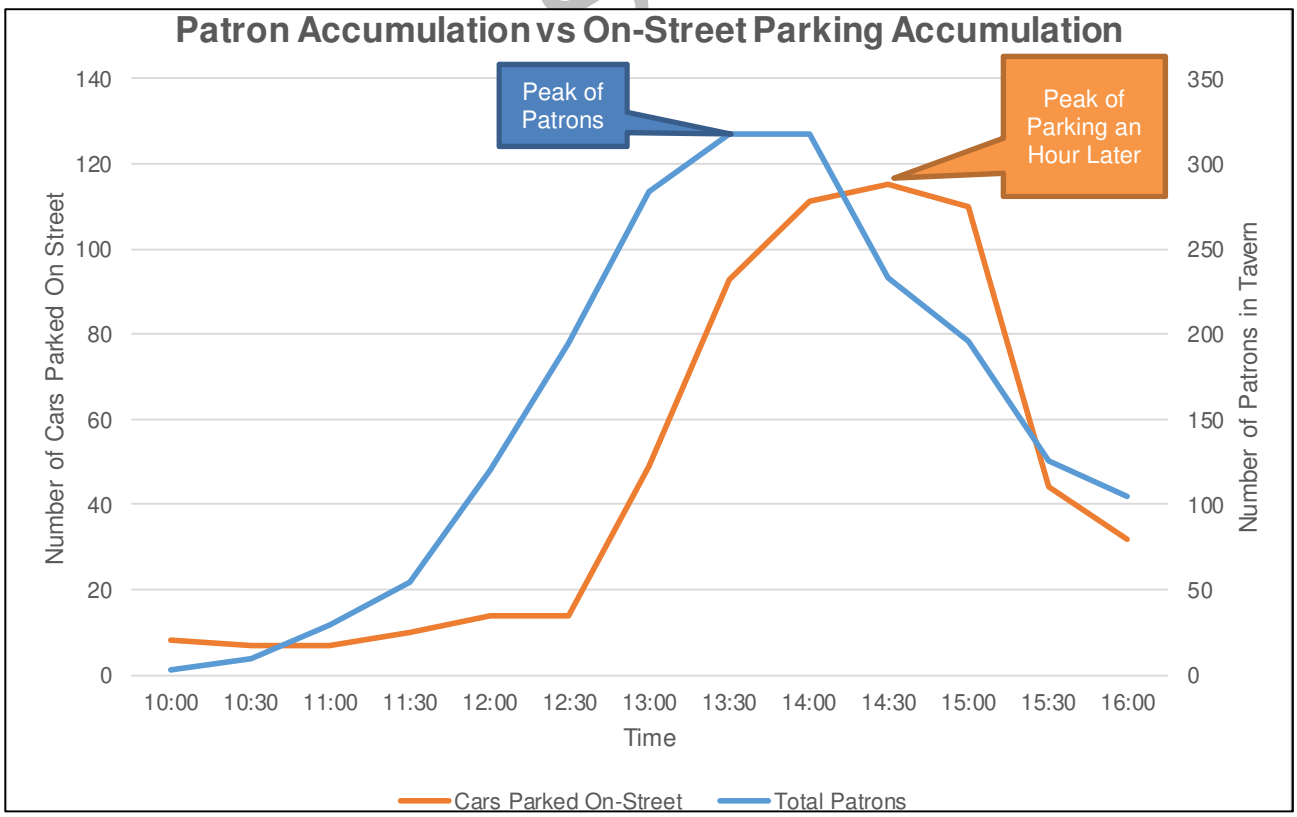


FIGURE 1: SEPARATION OF PATRON AND PARKING ACCUMULATION

3 Parking Analysis

The parking requirement calculated and presented in the M^CLaren Report was based upon the correlation found between the patrons observed within the Tavern and the number of cars parked both off-street and on-street. A key assumption was made that all car parking on the street was associated with the Tavern as part of this analysis which acted to produce a conservative result.

As an alternative, the parking requirement of the development can be calculated using the results of the travel-mode interview survey results.

As illustrated in **Table 4** above, the average number of patrons per private car trip was found to range between 1.99 and 2.71 based on the interview survey results. This results in an average of 2.29 patrons per private car across the 4 surveyed days. The number of patrons able to be catered for by the parking on and surrounding the site, based on these rates, is provided in **Table 3**.

TABLE 3: CAR PARKING SUMMARY – INTERVIEW SURVEY RESULTS

Parking Area(1)	Spaces in Area	Cumulative Parking Spaces	Staff Parking Requirement	Resulting Number of Patrons
01 - Tavern Car Park	166	166	28 Spaces	315
02 - Bottle Shop Parking	23	189		368
03 - Car Park Modifications	11	200		393
04 - Overflow Parking	58	258		526
05 - Aumuna Road Parking	70	328		686
06 - Myoora Road Parking	68	396		841

Note: (1) Refer to **Annexure A** for parking area location plans.

As shown, based on the results of the interview surveys, the total quantum of parking available both on and off-street would be sufficient for some 841 patrons. Alternatively, a patronage limit can be determined commensurate with specified parking areas for use by the Tavern. One example that excludes the overflow car parking area fronting Mona Vale Road (58 spaces) and Myoora Road (68 spaces) equates to a reduced car parking supply of 270 (i.e. 396 less 126) spaces that translates to a patronage limit of 554 persons (excluding 28 staff all assumed to drive individually).

Please contact the undersigned should you require further information or assistance.

Yours faithfully
M^CLaren Traffic Engineering

Craig M^CLaren
Director
BE Civil. Graduate Diploma (Transport Eng) MAITPM MITE [1985]
RMS Accredited Level 3 Road Safety Auditor
RMS Accredited Traffic Control Planner, Auditor & Certifier (Orange Card)

APPENDIX D

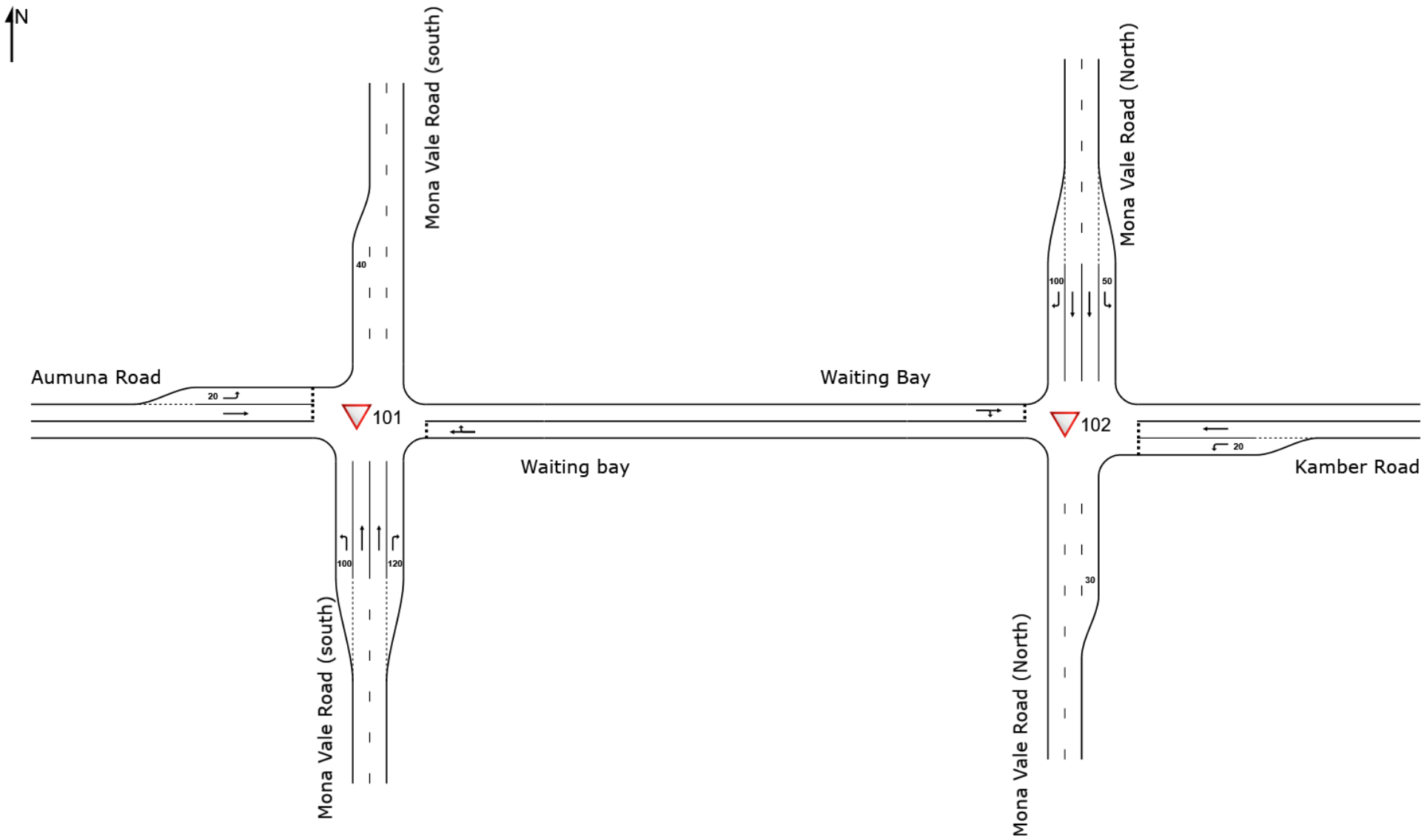
SIDRA Modelling Results

NETWORK LAYOUT

Network: N103 [Mona Vale Road PM (Network Folder: Existing)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽101	NA	Mona Vale / Aumuna South Approach PM Peak - Existing
▽102	NA	Mona Vale / Kamber North Approach PM Peak - Existing

Organisation: TRAFFIX PTY LTD | Licence: NETWORK / 1PC | Created: Wednesday, 31 July 2024 10:50:28 AM
Project: T:\Synergy\Projects\24\24.014\Modelling\24.014v01r01.sip9

MOVEMENT SUMMARY

Site: 101 [Mona Vale / Aumuna South Approach PM Peak - Existing (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N103 [Mona Vale Road PM (Network Folder: Existing)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Mona Vale Road (south)															
1	L2	All MCs	82	6.4	82	6.4	0.046	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	67.3
2	T1	All MCs	1531	2.1	1531	2.1	0.625	1.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.3
3	R2	All MCs	7	0.0	7	0.0	0.004	6.8	LOS A	0.0	0.0	0.00	0.67	0.00	69.6
Approach			1620	2.3	1620	2.3	0.625	1.4	NA	0.0	0.0	0.00	0.03	0.00	78.8
East: Waiting bay															
5	T1	All MCs	6	0.0	6	0.0	0.100	29.8	LOS C	0.1	0.8	0.93	0.96	0.93	25.3
6	R2	All MCs	4	0.0	4	0.0	0.100	43.8	LOS D	0.1	0.8	0.93	0.96	0.93	33.1
Approach			11	0.0	11	0.0	0.100	35.4	LOS C	0.1	0.8	0.93	0.96	0.93	29.2
West: Aumuna Road															
10	L2	All MCs	49	2.1	49	2.1	0.050	8.1	LOS A	0.1	0.5	0.38	0.59	0.38	46.6
11	T1	All MCs	40	5.3	40	5.3	0.380	46.6	LOS D	0.4	3.3	0.95	1.02	1.12	22.2
Approach			89	3.5	89	3.5	0.380	25.3	LOS B	0.4	3.3	0.63	0.78	0.71	37.7
All Vehicles			1720	2.3	1720	2.3	0.625	2.8	NA	0.4	3.3	0.04	0.08	0.04	76.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: TRAFFIX PTY LTD | Licence: NETWORK / 1PC | Processed: Wednesday, 31 July 2024 10:43:33 AM
Project: T:\Synergy\Projects\24\24.014\Modelling\24.014v01r01.sip9

MOVEMENT SUMMARY

Site: 102 [Mona Vale / Kamber North Approach PM Peak - Existing (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N103 [Mona Vale Road PM (Network Folder: Existing)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Kamber Road															
4	L2	All MCs	6	0.0	6	0.0	0.006	6.6	LOS A	0.0	0.1	0.30	0.52	0.30	46.7
5	T1	All MCs	4	0.0	4	0.0	0.019	18.9	LOS B	0.0	0.2	0.85	0.92	0.85	33.2
Approach			11	0.0	11	0.0	0.019	11.5	LOS A	0.0	0.2	0.52	0.68	0.52	43.4
North: Mona Vale Road (North)															
7	L2	All MCs	7	0.0	7	0.0	0.004	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	69.0
8	T1	All MCs	1236	3.7	1236	3.7	0.525	0.6	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
9	R2	All MCs	24	17.4	24	17.4	0.015	7.2	LOS A	0.0	0.0	0.00	0.67	0.00	69.6
Approach			1267	4.0	1267	4.0	0.525	0.7	NA	0.0	0.0	0.00	0.02	0.00	79.4
West: Waiting Bay															
11	T1	All MCs	1	0.0	1	0.0	0.295	21.4	LOS B	0.4	2.6	0.91	0.99	1.04	26.6
12	R2	All MCs	40	5.3	40	5.3	0.295	31.9	LOS C	0.4	2.6	0.91	0.99	1.04	34.1
Approach			41	5.1	41	5.1	0.295	31.6	LOS C	0.4	2.6	0.91	0.99	1.04	34.0
All Vehicles			1319	4.0	1319	4.0	0.525	1.8	NA	0.4	2.6	0.03	0.05	0.04	77.4

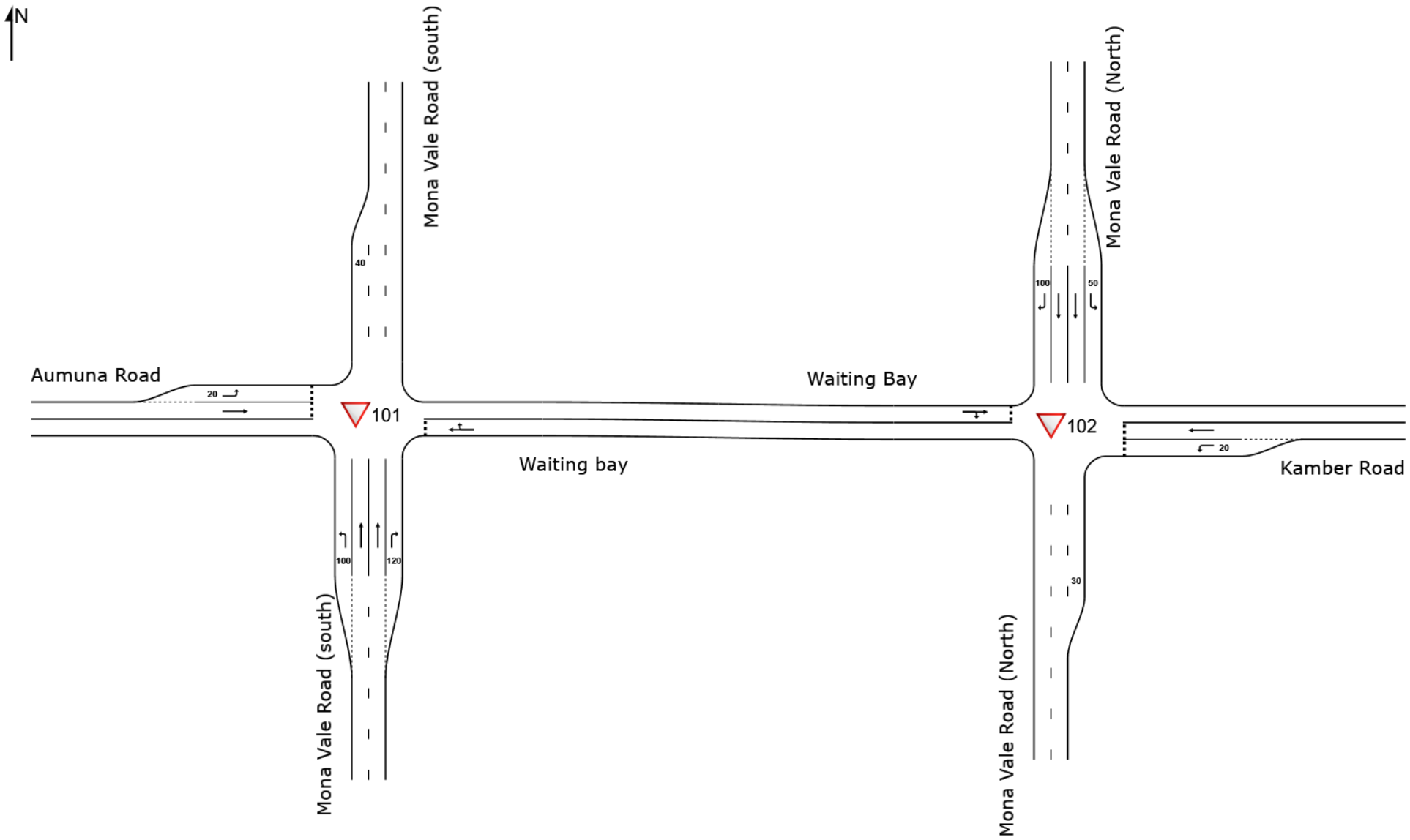
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

NETWORK LAYOUT

Network: N101 [Mona Vale Road SAT (Network Folder: Existing)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽101	NA	Mona Vale / Aumuna South Approach SAT Peak - Existing
▽102	NA	Mona Vale / Kamber North Approach SAT Peak - Existing

Organisation: TRAFFIX PTY LTD | Licence: NETWORK / 1PC | Created: Wednesday, 31 July 2024 10:50:28 AM
Project: T:\Synergy\Projects\24\24.014\Modelling\24.014v01r01.sip9

MOVEMENT SUMMARY

Site: 101 [Mona Vale / Aumuna South Approach SAT Peak - Existing (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Mona Vale Road SAT (Network Folder: Existing)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Mona Vale Road (south)															
1	L2	All MCs	54	2.0	54	2.0	0.029	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	68.5
2	T1	All MCs	1876	1.5	1876	1.5	0.763	2.3	LOS A	0.0	0.0	0.00	0.00	0.00	78.8
3	R2	All MCs	5	0.0	5	0.0	0.003	6.8	LOS A	0.0	0.0	0.00	0.67	0.00	69.6
Approach			1935	1.5	1935	1.5	0.763	2.5	NA	0.0	0.0	0.00	0.02	0.00	78.5
East: Waiting bay															
5	T1	All MCs	1	0.0	1	0.0	0.429	83.3	LOS F	0.2	2.1	0.99	1.00	1.01	10.7
6	R2	All MCs	2	50.0	2	50.0	0.429	163.3	LOS F	0.2	2.1	0.99	1.00	1.01	17.2
Approach			3	33.3	3	33.3	0.429	136.6	LOS F	0.2	2.1	0.99	1.00	1.01	15.3
West: Aumuna Road															
10	L2	All MCs	40	7.9	40	7.9	0.045	11.9	LOS A	0.1	0.5	0.42	0.62	0.42	46.4
11	T1	All MCs	48	0.0	48	0.0	0.870	147.6	LOS F	1.2	8.7	0.99	1.19	1.73	10.1
Approach			88	3.6	88	3.6	0.870	86.2	LOS F	1.2	8.7	0.74	0.93	1.14	22.6
All Vehicles			2026	1.7	2026	1.7	0.870	6.3	NA	1.2	8.7	0.03	0.06	0.05	74.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: TRAFFIX PTY LTD | Licence: NETWORK / 1PC | Processed: Wednesday, 31 July 2024 10:43:36 AM
Project: T:\Synergy\Projects\24\24.014\Modelling\24.014v01r01.sip9

MOVEMENT SUMMARY

Site: 102 [Mona Vale / Kamber North Approach SAT Peak - Existing (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Mona Vale Road SAT (Network Folder: Existing)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Kamber Road															
4	L2	All MCs	7	0.0	7	0.0	0.007	7.4	LOS A	0.0	0.1	0.33	0.53	0.33	46.7
5	T1	All MCs	2	50.0	2	50.0	0.046	77.9	LOS F	0.0	0.4	0.95	0.97	0.95	16.2
Approach			9	11.1	9	11.1	0.046	23.0	LOS B	0.0	0.4	0.47	0.63	0.47	40.0
North: Mona Vale Road (North)															
7	L2	All MCs	5	20.0	5	20.0	0.003	7.3	LOS A	0.0	0.0	0.00	0.63	0.00	64.2
8	T1	All MCs	1464	1.7	1464	1.7	0.613	0.9	LOS A	0.0	0.0	0.00	0.00	0.00	79.4
9	R2	All MCs	44	14.3	44	14.3	0.026	7.1	LOS A	0.0	0.0	0.00	0.67	0.00	69.6
Approach			1514	2.1	1514	2.1	0.613	1.1	NA	0.0	0.0	0.00	0.02	0.00	79.1
West: Waiting Bay															
11	T1	All MCs	1	0.0	1	0.0	0.480	39.7	LOS C	0.6	4.5	0.96	1.04	1.20	21.0
12	R2	All MCs	48	0.0	48	0.0	0.480	50.4	LOS D	0.6	4.5	0.96	1.04	1.20	29.1
Approach			49	0.0	49	0.0	0.480	50.2	LOS D	0.6	4.5	0.96	1.04	1.20	29.0
All Vehicles			1573	2.1	1573	2.1	0.613	2.7	NA	0.6	4.5	0.03	0.06	0.04	76.7

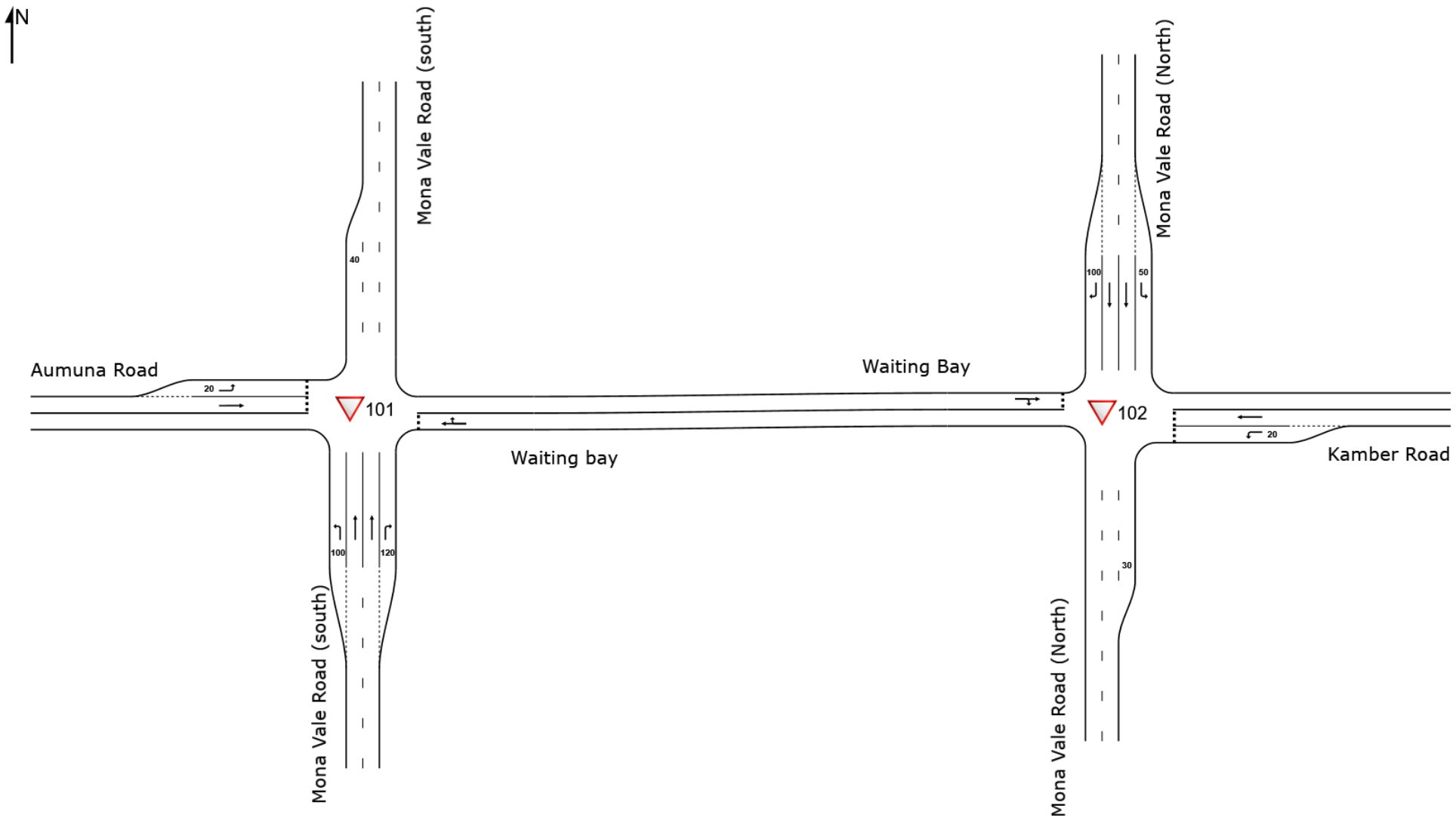
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

NETWORK LAYOUT

Network: N101 [Mona Vale Rd PM (Network Folder: Post development)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽101	NA	Mona Vale / Aumuna South Approach PM Peak
▽102	NA	Mona Vale / Kamber North Approach PM Peak

MOVEMENT SUMMARY

Site: 102 [Mona Vale / Kamber North Approach PM Peak (Site Folder: Post development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Mona Vale Rd PM (Network Folder: Post development)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Kamber Road															
4	L2	All MCs	6	0.0	6	0.0	0.006	6.6	LOS A	0.0	0.1	0.30	0.52	0.30	46.7
5	T1	All MCs	4	0.0	4	0.0	0.019	19.0	LOS B	0.0	0.2	0.85	0.92	0.85	33.1
Approach			11	0.0	11	0.0	0.019	11.5	LOS A	0.0	0.2	0.52	0.68	0.52	43.4
North: Mona Vale Road (North)															
7	L2	All MCs	7	0.0	7	0.0	0.004	6.9	LOS A	0.0	0.0	0.00	0.63	0.00	69.0
8	T1	All MCs	1236	3.7	1236	3.7	0.525	0.6	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
9	R2	All MCs	33	12.9	33	12.9	0.019	7.1	LOS A	0.0	0.0	0.00	0.67	0.00	69.6
Approach			1276	4.0	1276	4.0	0.525	0.8	NA	0.0	0.0	0.00	0.02	0.00	79.3
West: Waiting Bay															
11	T1	All MCs	1	0.0	1	0.0	0.350	22.9	LOS B	0.4	3.2	0.92	1.01	1.09	26.2
12	R2	All MCs	48	4.3	48	4.3	0.350	32.9	LOS C	0.4	3.2	0.92	1.01	1.09	33.8
Approach			49	4.3	49	4.3	0.350	32.7	LOS C	0.4	3.2	0.92	1.01	1.09	33.7
All Vehicles			1336	3.9	1336	3.9	0.525	2.0	NA	0.4	3.2	0.04	0.06	0.04	77.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Mona Vale / Aumuna South Approach PM Peak (Site Folder: Post development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Mona Vale Rd PM (Network Folder: Post development)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Mona Vale Road (south)															
1	L2	All MCs	91	5.8	91	5.8	0.051	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	67.5
2	T1	All MCs	1531	2.1	1531	2.1	0.625	1.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.3
3	R2	All MCs	7	0.0	7	0.0	0.004	6.8	LOS A	0.0	0.0	0.00	0.67	0.00	69.6
Approach			1628	2.3	1628	2.3	0.625	1.4	NA	0.0	0.0	0.00	0.04	0.00	78.7
East: Waiting bay															
5	T1	All MCs	6	0.0	6	0.0	0.102	30.0	LOS C	0.1	0.8	0.94	0.96	0.94	25.1
6	R2	All MCs	4	0.0	4	0.0	0.102	44.8	LOS D	0.1	0.8	0.94	0.96	0.94	32.9
Approach			11	0.0	11	0.0	0.102	35.9	LOS C	0.1	0.8	0.94	0.96	0.94	29.0
West: Aumuna Road															
10	L2	All MCs	58	1.8	58	1.8	0.058	8.1	LOS A	0.1	0.6	0.38	0.59	0.38	46.6
11	T1	All MCs	48	4.3	48	4.3	0.445	48.0	LOS D	0.5	4.0	0.95	1.04	1.18	21.8
Approach			106	3.0	106	3.0	0.445	26.3	LOS B	0.5	4.0	0.64	0.79	0.74	37.2
All Vehicles			1745	2.3	1745	2.3	0.625	3.1	NA	0.5	4.0	0.04	0.09	0.05	75.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

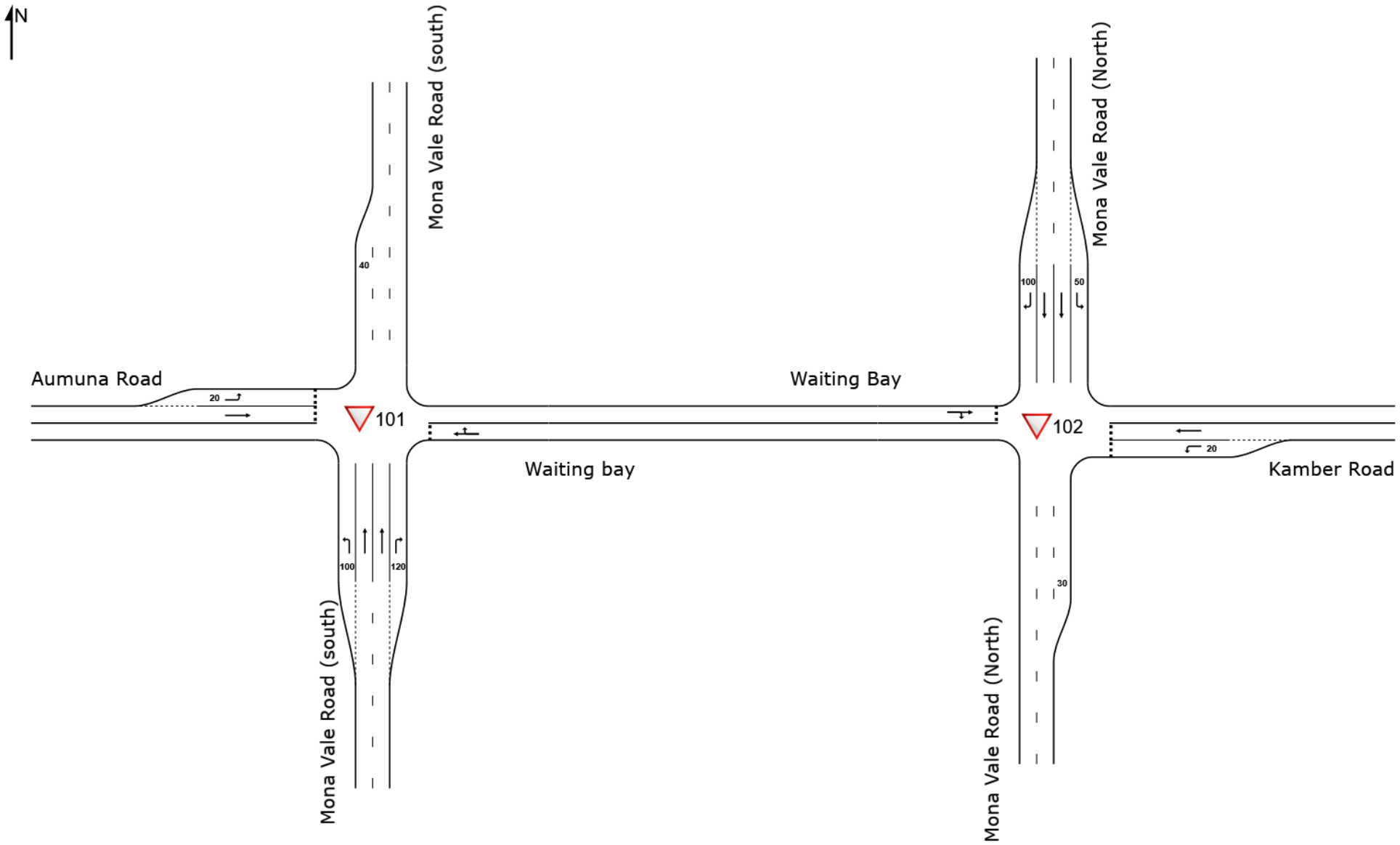
Organisation: TRAFFIX PTY LTD | Licence: NETWORK / 1PC | Processed: Wednesday, 31 July 2024 10:43:38 AM
Project: T:\Synergy\Projects\24\24.014\Modelling\24.014v01r01.sip9

NETWORK LAYOUT

Network: N101 [Mona Vale Rd SAT (Network Folder: Post development)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽101	NA	Mona Vale / Aumuna South Approach SAT Peak
▽102	NA	Mona Vale / Kamber North Approach SAT Peak

MOVEMENT SUMMARY

Site: 102 [Mona Vale / Kamber North Approach SAT Peak (Site Folder: Post development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Mona Vale Rd SAT (Network Folder: Post development)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Kamber Road															
4	L2	All MCs	7	0.0	7	0.0	0.007	7.4	LOS A	0.0	0.1	0.33	0.53	0.33	46.7
5	T1	All MCs	2	50.0	2	50.0	0.046	78.7	LOS F	0.0	0.4	0.95	0.97	0.95	16.1
Approach			9	11.1	9	11.1	0.046	23.2	LOS B	0.0	0.4	0.47	0.63	0.47	39.9
North: Mona Vale Road (North)															
7	L2	All MCs	5	20.0	5	20.0	0.003	7.3	LOS A	0.0	0.0	0.00	0.63	0.00	64.2
8	T1	All MCs	1464	1.7	1464	1.7	0.613	0.9	LOS A	0.0	0.0	0.00	0.00	0.00	79.4
9	R2	All MCs	53	12.0	53	12.0	0.031	7.1	LOS A	0.0	0.0	0.00	0.67	0.00	69.6
Approach			1522	2.1	1522	2.1	0.613	1.1	NA	0.0	0.0	0.00	0.03	0.00	79.1
West: Waiting Bay															
11	T1	All MCs	1	0.0	1	0.0	0.530	42.7	LOS D	0.7	5.1	0.96	1.06	1.25	20.3
12	R2	All MCs	57	0.0	53	0.0	0.530	53.6	LOS D	0.7	5.1	0.96	1.06	1.25	28.4
Approach			58	0.0	54	0.0	0.530	53.4	LOS D	0.7	5.1	0.96	1.06	1.25	28.3
All Vehicles			1589	2.1	1586	2.1	0.613	3.0	NA	0.7	5.1	0.04	0.06	0.05	76.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Mona Vale / Aumuna South Approach SAT Peak (Site Folder: Post development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Mona Vale Rd SAT (Network Folder: Post development)]

New Site
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Mona Vale Road (south)															
1	L2	All MCs	62	1.7	62	1.7	0.034	7.0	LOS A	0.0	0.0	0.00	0.63	0.00	68.5
2	T1	All MCs	1876	1.5	1876	1.5	0.763	2.4	LOS A	0.0	0.0	0.00	0.00	0.00	78.8
3	R2	All MCs	5	0.0	5	0.0	0.003	6.8	LOS A	0.0	0.0	0.00	0.67	0.00	69.6
Approach			1943	1.5	1943	1.5	0.763	2.6	NA	0.0	0.0	0.00	0.02	0.00	78.5
East: Waiting bay															
5	T1	All MCs	1	0.0	1	0.0	0.463	89.8	LOS F	0.2	2.2	0.99	1.00	1.01	10.3
6	R2	All MCs	2	50.0	2	50.0	0.463	169.8	LOS F	0.2	2.2	0.99	1.00	1.01	16.7
Approach			3	33.3	3	33.3	0.463	143.1	LOS F	0.2	2.2	0.99	1.00	1.01	14.8
West: Aumuna Road															
10	L2	All MCs	57	5.6	57	5.6	0.063	12.1	LOS A	0.1	0.7	0.42	0.63	0.42	46.4
11	T1	All MCs	57	0.0	57	0.0	1.076	233.3	LOS F	2.5	17.5	1.00	1.52	3.02	6.9
Approach			114	2.8	114	2.8	1.076	122.7	LOS F	2.5	17.5	0.71	1.08	1.72	18.9
All Vehicles			2060	1.6	2060	1.6	1.076	9.4	NA	2.5	17.5	0.04	0.08	0.10	71.7

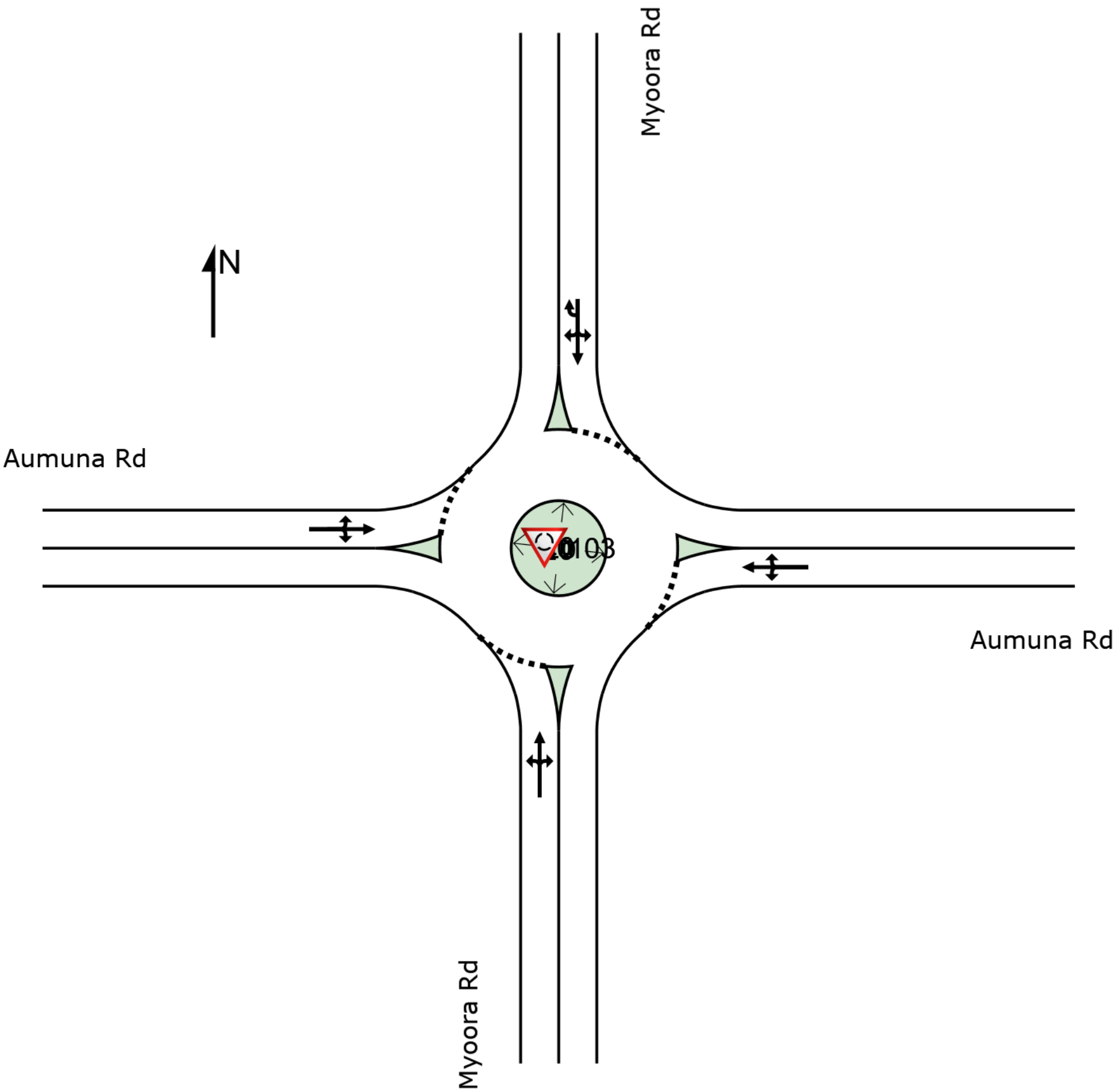
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 103 [Aumuna / Myoora PM Peak - Existing (Site Folder: Existing)]

New Site
Site Category: Existing Design
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Aumuna / Myoora PM Peak - Existing (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Myoora Rd															
1	L2	All MCs	25	0.0	25	0.0	0.103	3.9	LOS A	0.5	4.0	0.20	0.48	0.20	45.7
2	T1	All MCs	67	18.8	67	18.8	0.103	4.1	LOS A	0.5	4.0	0.20	0.48	0.20	45.8
3	R2	All MCs	32	3.3	32	3.3	0.103	7.2	LOS A	0.5	4.0	0.20	0.48	0.20	45.4
Approach			124	11.0	124	11.0	0.103	4.8	LOS A	0.5	4.0	0.20	0.48	0.20	45.7
East: Aumuna Rd															
4	L2	All MCs	32	13.3	32	13.3	0.074	4.2	LOS A	0.4	2.7	0.22	0.53	0.22	45.2
5	T1	All MCs	15	0.0	15	0.0	0.074	4.0	LOS A	0.4	2.7	0.22	0.53	0.22	45.6
6	R2	All MCs	40	7.9	40	7.9	0.074	7.3	LOS A	0.4	2.7	0.22	0.53	0.22	45.0
Approach			86	8.5	86	8.5	0.074	5.6	LOS A	0.4	2.7	0.22	0.53	0.22	45.1
North: Myoora Rd															
7	L2	All MCs	36	2.9	36	2.9	0.066	4.0	LOS A	0.3	2.5	0.23	0.46	0.23	45.9
8	T1	All MCs	32	36.7	32	36.7	0.066	4.4	LOS A	0.3	2.5	0.23	0.46	0.23	45.9
9	R2	All MCs	4	0.0	4	0.0	0.066	7.2	LOS A	0.3	2.5	0.23	0.46	0.23	45.7
9u	U	All MCs	1	0.0	1	0.0	0.066	8.8	LOS A	0.3	2.5	0.23	0.46	0.23	45.7
Approach			73	17.4	73	17.4	0.066	4.5	LOS A	0.3	2.5	0.23	0.46	0.23	45.9
West: Aumuna Rd															
10	L2	All MCs	3	0.0	3	0.0	0.042	4.3	LOS A	0.2	1.4	0.30	0.57	0.30	44.8
11	T1	All MCs	12	0.0	12	0.0	0.042	4.3	LOS A	0.2	1.4	0.30	0.57	0.30	45.0
12	R2	All MCs	34	0.0	34	0.0	0.042	7.6	LOS A	0.2	1.4	0.30	0.57	0.30	44.5
Approach			48	0.0	48	0.0	0.042	6.6	LOS A	0.2	1.4	0.30	0.57	0.30	44.7
All Vehicles			332	10.2	332	10.2	0.103	5.2	LOS A	0.5	4.0	0.23	0.50	0.23	45.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [Aumuna / Myoora SAT Peak - Existing (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Myoora Rd															
1	L2	All MCs	19	5.6	19	5.6	0.078	3.9	LOS A	0.4	3.0	0.18	0.45	0.18	45.9
2	T1	All MCs	64	4.9	64	4.9	0.078	3.9	LOS A	0.4	3.0	0.18	0.45	0.18	46.2
3	R2	All MCs	15	7.1	15	7.1	0.078	7.2	LOS A	0.4	3.0	0.18	0.45	0.18	45.6
Approach			98	5.4	98	5.4	0.078	4.4	LOS A	0.4	3.0	0.18	0.45	0.18	46.0
East: Aumuna Rd															
4	L2	All MCs	42	15.0	42	15.0	0.088	5.5	LOS A	0.4	3.3	0.45	0.59	0.45	44.7
5	T1	All MCs	8	0.0	8	0.0	0.088	5.1	LOS A	0.4	3.3	0.45	0.59	0.45	45.1
6	R2	All MCs	35	0.0	35	0.0	0.088	8.4	LOS A	0.4	3.3	0.45	0.59	0.45	44.6
Approach			85	7.4	85	7.4	0.088	6.6	LOS A	0.4	3.3	0.45	0.59	0.45	44.7
North: Myoora Rd															
7	L2	All MCs	48	0.0	48	0.0	0.224	4.0	LOS A	1.3	9.2	0.23	0.42	0.23	46.0
8	T1	All MCs	242	2.6	242	2.6	0.224	4.0	LOS A	1.3	9.2	0.23	0.42	0.23	46.3
9	R2	All MCs	3	0.0	3	0.0	0.224	7.2	LOS A	1.3	9.2	0.23	0.42	0.23	45.7
9u	U	All MCs	3	0.0	3	0.0	0.224	8.7	LOS A	1.3	9.2	0.23	0.42	0.23	45.7
Approach			297	2.1	297	2.1	0.224	4.0	LOS A	1.3	9.2	0.23	0.42	0.23	46.2
West: Aumuna Rd															
10	L2	All MCs	1	0.0	1	0.0	0.043	4.2	LOS A	0.2	1.5	0.28	0.57	0.28	44.7
11	T1	All MCs	12	27.3	12	27.3	0.043	4.6	LOS A	0.2	1.5	0.28	0.57	0.28	44.7
12	R2	All MCs	36	2.9	36	2.9	0.043	7.5	LOS A	0.2	1.5	0.28	0.57	0.28	44.4
Approach			48	8.7	48	8.7	0.043	6.7	LOS A	0.2	1.5	0.28	0.57	0.28	44.5
All Vehicles			528	4.2	528	4.2	0.224	4.8	LOS A	1.3	9.2	0.26	0.47	0.26	45.8

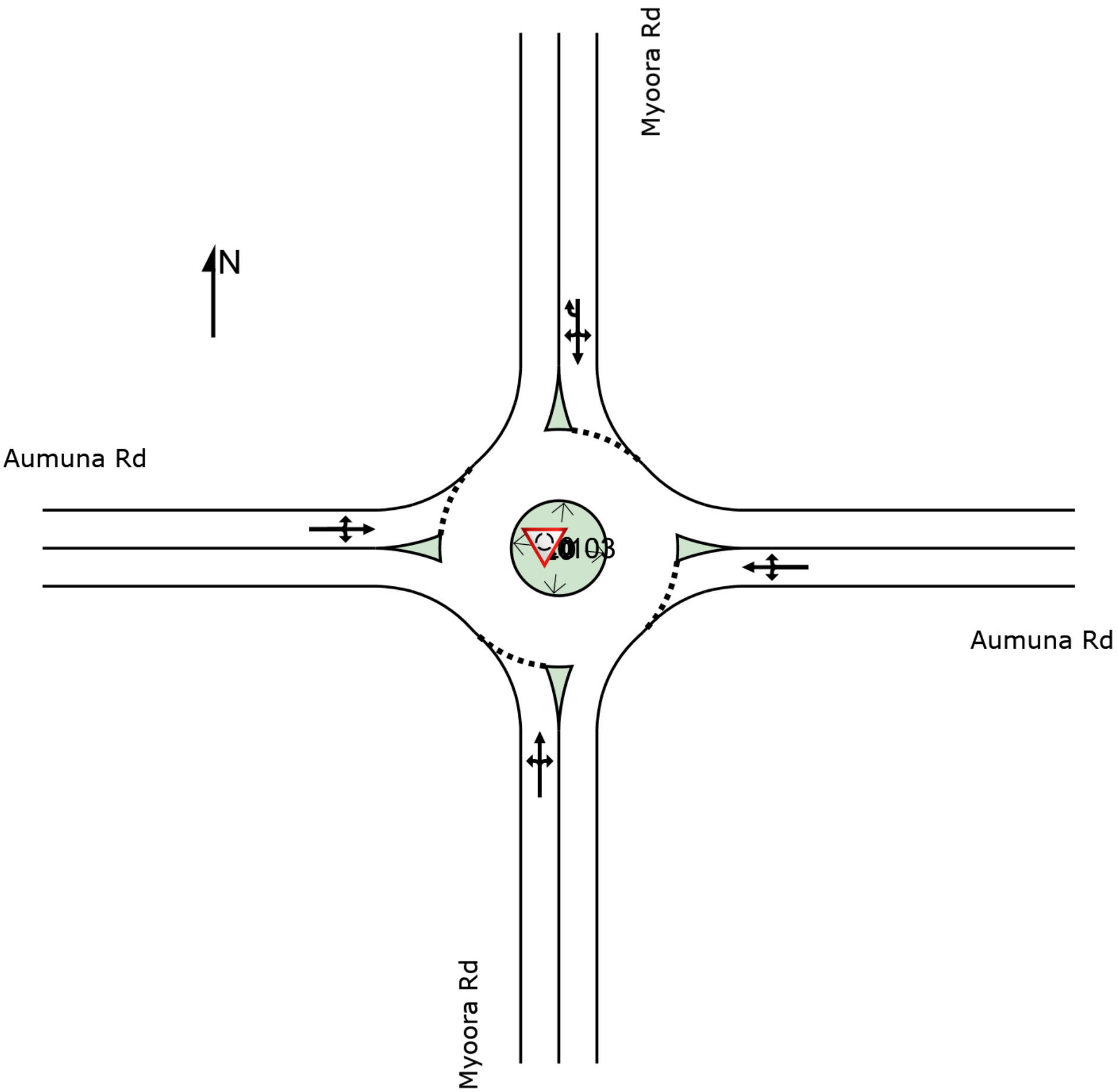
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 103 [Aumuna / Myoora PM Peak (Site Folder: Post development)]

New Site
Site Category: Existing Design
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 103 [Aumuna / Myoora PM Peak (Site Folder: Post development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Myoora Rd															
1	L2	All MCs	25	0.0	25	0.0	0.120	4.0	LOS A	0.6	4.7	0.24	0.47	0.24	45.6
2	T1	All MCs	85	14.8	85	14.8	0.120	4.2	LOS A	0.6	4.7	0.24	0.47	0.24	45.8
3	R2	All MCs	32	3.3	32	3.3	0.120	7.3	LOS A	0.6	4.7	0.24	0.47	0.24	45.4
Approach			142	9.6	142	9.6	0.120	4.8	LOS A	0.6	4.7	0.24	0.47	0.24	45.7
East: Aumuna Rd															
4	L2	All MCs	32	13.3	32	13.3	0.089	4.3	LOS A	0.4	3.3	0.25	0.54	0.25	45.0
5	T1	All MCs	15	0.0	15	0.0	0.089	4.1	LOS A	0.4	3.3	0.25	0.54	0.25	45.4
6	R2	All MCs	57	5.6	57	5.6	0.089	7.4	LOS A	0.4	3.3	0.25	0.54	0.25	44.8
Approach			103	7.1	103	7.1	0.089	6.0	LOS A	0.4	3.3	0.25	0.54	0.25	44.9
North: Myoora Rd															
7	L2	All MCs	53	2.0	53	2.0	0.092	4.0	LOS A	0.5	3.5	0.23	0.46	0.23	45.9
8	T1	All MCs	48	23.9	48	23.9	0.092	4.3	LOS A	0.5	3.5	0.23	0.46	0.23	46.0
9	R2	All MCs	4	0.0	4	0.0	0.092	7.2	LOS A	0.5	3.5	0.23	0.46	0.23	45.7
9u	U	All MCs	1	0.0	1	0.0	0.092	8.8	LOS A	0.5	3.5	0.23	0.46	0.23	45.7
Approach			106	11.9	106	11.9	0.092	4.3	LOS A	0.5	3.5	0.23	0.46	0.23	46.0
West: Aumuna Rd															
10	L2	All MCs	3	0.0	3	0.0	0.044	4.5	LOS A	0.2	1.5	0.34	0.58	0.34	44.7
11	T1	All MCs	12	0.0	12	0.0	0.044	4.5	LOS A	0.2	1.5	0.34	0.58	0.34	45.0
12	R2	All MCs	34	0.0	34	0.0	0.044	7.7	LOS A	0.2	1.5	0.34	0.58	0.34	44.5
Approach			48	0.0	48	0.0	0.044	6.8	LOS A	0.2	1.5	0.34	0.58	0.34	44.6
All Vehicles			400	8.4	400	8.4	0.120	5.2	LOS A	0.6	4.7	0.25	0.50	0.25	45.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [Aumuna / Myoora SAT Peak (Site Folder: Post development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: Existing Design
Roundabout

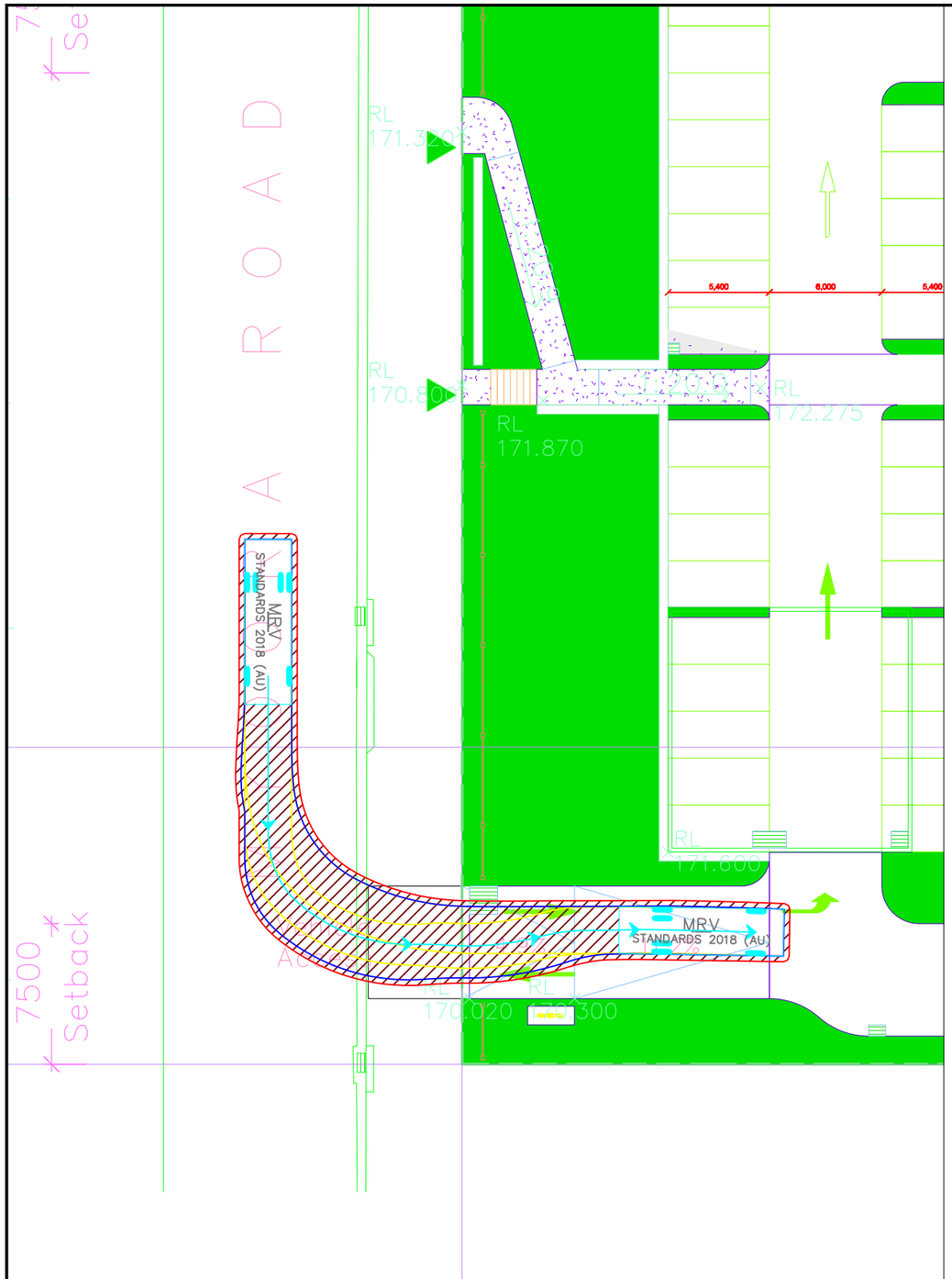
Vehicle Movement Performance

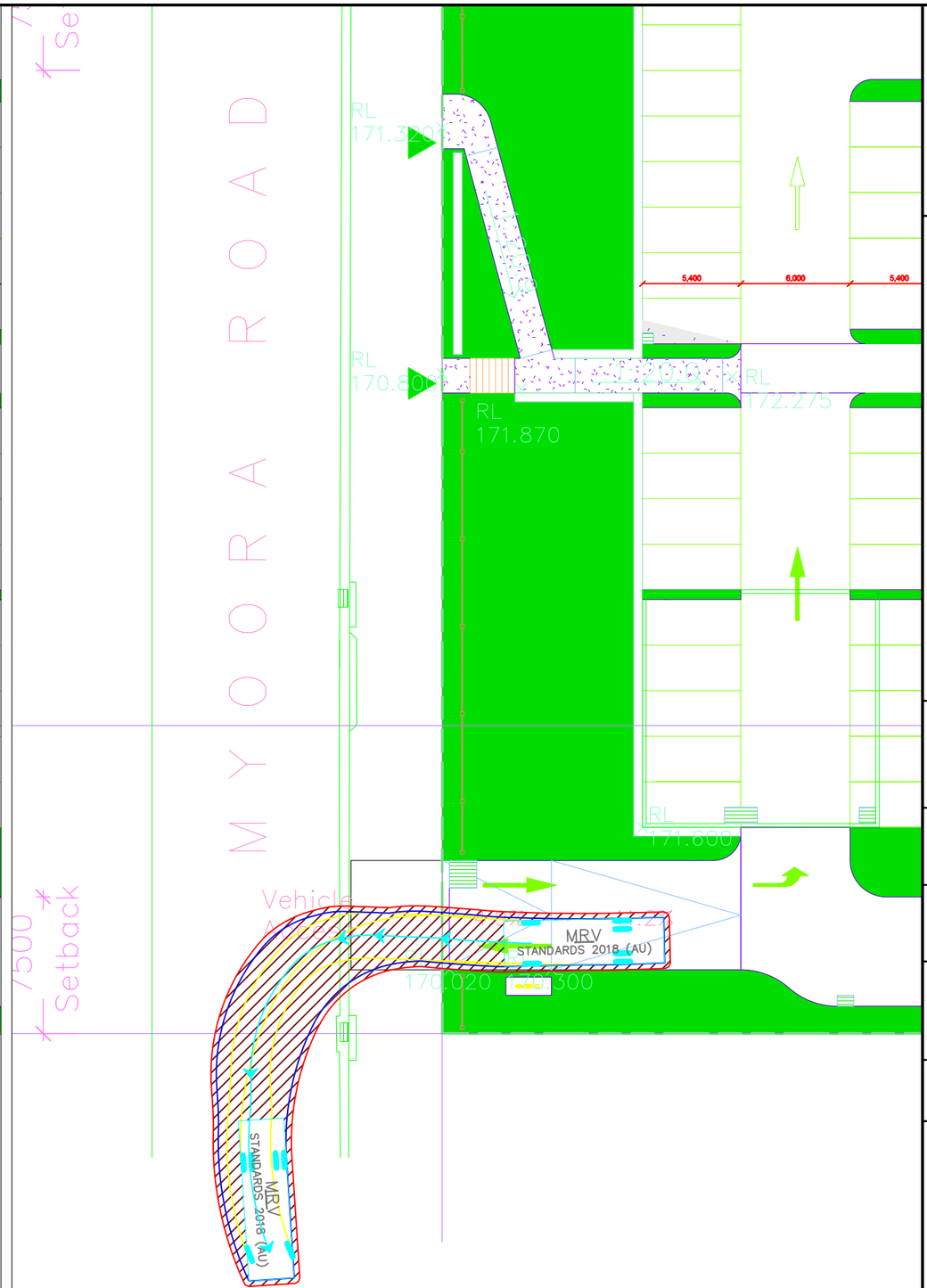
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Myoora Rd															
1	L2	All MCs	19	5.6	19	5.6	0.094	4.0	LOS A	0.5	3.6	0.22	0.45	0.22	45.8
2	T1	All MCs	81	3.9	81	3.9	0.094	4.0	LOS A	0.5	3.6	0.22	0.45	0.22	46.1
3	R2	All MCs	15	7.1	15	7.1	0.094	7.3	LOS A	0.5	3.6	0.22	0.45	0.22	45.5
Approach			115	4.6	115	4.6	0.094	4.4	LOS A	0.5	3.6	0.22	0.45	0.22	46.0
East: Aumuna Rd															
4	L2	All MCs	42	15.0	42	15.0	0.106	5.7	LOS A	0.5	4.0	0.46	0.61	0.46	44.5
5	T1	All MCs	8	0.0	8	0.0	0.106	5.2	LOS A	0.5	4.0	0.46	0.61	0.46	44.9
6	R2	All MCs	52	0.0	52	0.0	0.106	8.5	LOS A	0.5	4.0	0.46	0.61	0.46	44.4
Approach			102	6.2	102	6.2	0.106	7.1	LOS A	0.5	4.0	0.46	0.61	0.46	44.5
North: Myoora Rd															
7	L2	All MCs	65	0.0	65	0.0	0.248	4.0	LOS A	1.5	10.5	0.23	0.42	0.23	46.0
8	T1	All MCs	259	2.4	259	2.4	0.248	4.0	LOS A	1.5	10.5	0.23	0.42	0.23	46.2
9	R2	All MCs	3	0.0	3	0.0	0.248	7.2	LOS A	1.5	10.5	0.23	0.42	0.23	45.7
9u	U	All MCs	3	0.0	3	0.0	0.248	8.7	LOS A	1.5	10.5	0.23	0.42	0.23	45.7
Approach			331	1.9	331	1.9	0.248	4.0	LOS A	1.5	10.5	0.23	0.42	0.23	46.2
West: Aumuna Rd															
10	L2	All MCs	1	0.0	1	0.0	0.045	4.4	LOS A	0.2	1.6	0.32	0.57	0.32	44.6
11	T1	All MCs	12	27.3	12	27.3	0.045	4.8	LOS A	0.2	1.6	0.32	0.57	0.32	44.6
12	R2	All MCs	36	2.9	36	2.9	0.045	7.7	LOS A	0.2	1.6	0.32	0.57	0.32	44.3
Approach			48	8.7	48	8.7	0.045	6.9	LOS A	0.2	1.6	0.32	0.57	0.32	44.4
All Vehicles			596	3.7	596	3.7	0.248	4.9	LOS A	1.5	10.5	0.28	0.47	0.28	45.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

APPENDIX E

Swept Path Analysis





Notes:

This drawing is prepared for information purposes only. It is not to be used for construction.

TRAFFIX is responsible for vehicle swept path diagrams and/or drawing mark-ups only. Base drawing prepared by others.

Vehicle swept path diagrams prepared using computer generated turning path software and associated CAD drawing platforms. Vehicle data based upon relevant Australian Standards *(AS/NZS 2890.1:2004 Parking facilities - Off-street car parking,* and/or *AS2890.2:2002 Parking facilities - Off-street commercial vehicle facilities*). These standards embody a degree of tolerance, however the vehicle characteristics in these standards represent a suitable design vehicle and do not account for all variations in vehicle dimensions / specifications and/or driver ability or behaviour.

Rev.	Revision Note	By.	Date

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect

H&E Architects

Client

Scale / Plan Orientation

0 3 6 9 12m

1:300 @ A3

Project Description

40 Myoora Road, Terry Hills

Drawing Prepared By

TRAFFIX
TRAFFIC AND TRANSPORT PLANNERS

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Surry Hills, NSW 2010
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Strawberry Hills, NSW 2012

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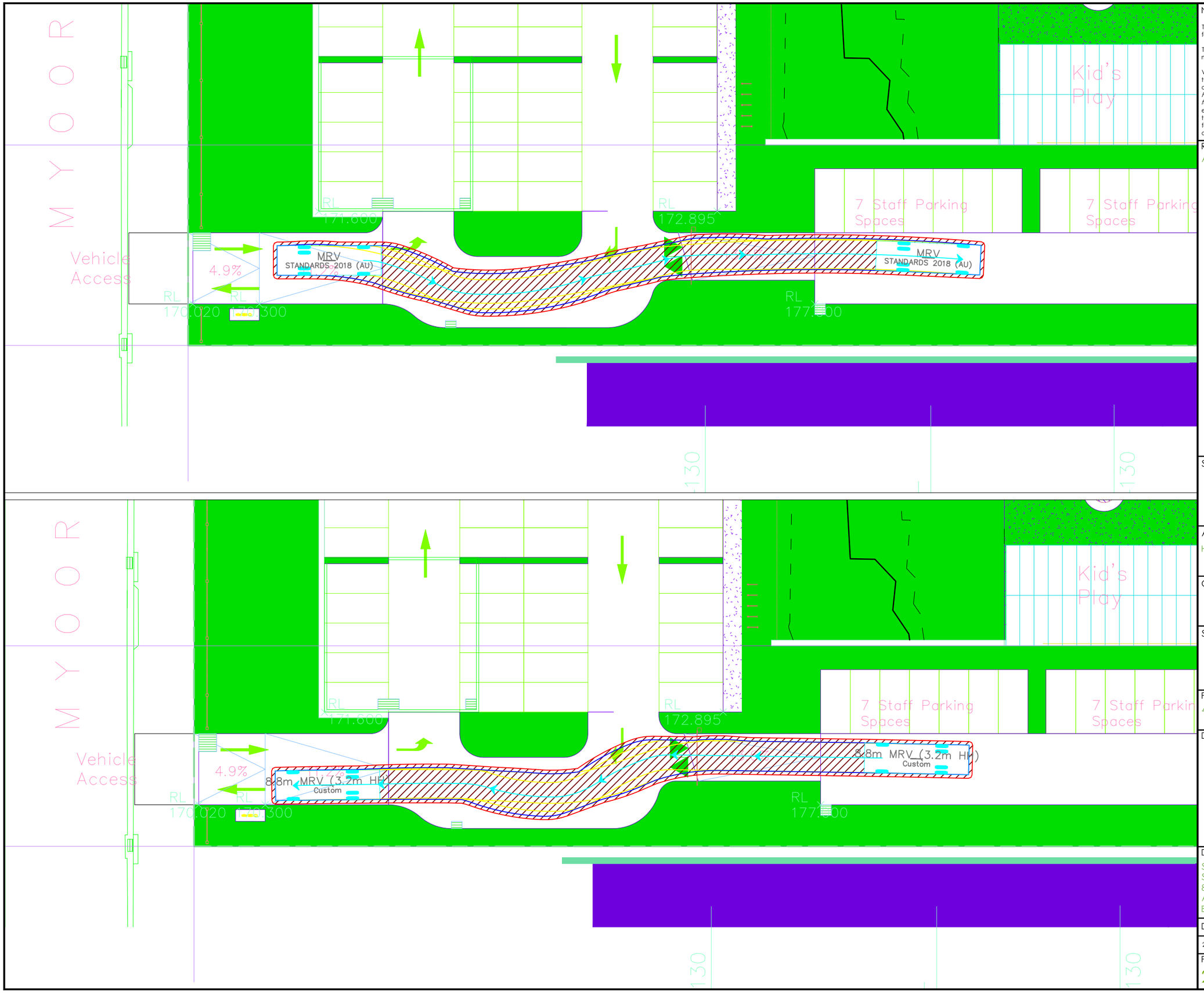
Drawing Title

Site Plan
Swept Path Analysis
8.8m MRV
Left: Site Entry Manoeuvre
Right: Site Egress Manoeuvre

Drawn:	Checked:	Date:
JP	JP	08-08-24

24.014d04v01 TRAFFIX [24-08-06 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
23.008	DA	TX.01	A



Notes:

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Rev.	Revision Note	By.	Date
A	Initial Design Review	HD	08-04-22

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect

H&E Architects

Client

Scale / Plan Orientation

0 3 6 9 12m

1:300 @ A3

Project Description

40 Myoora Road, Terry Hills

Drawing Prepared By

TRAFFIX
TRAFFIC AND TRANSPORT PLANNERS

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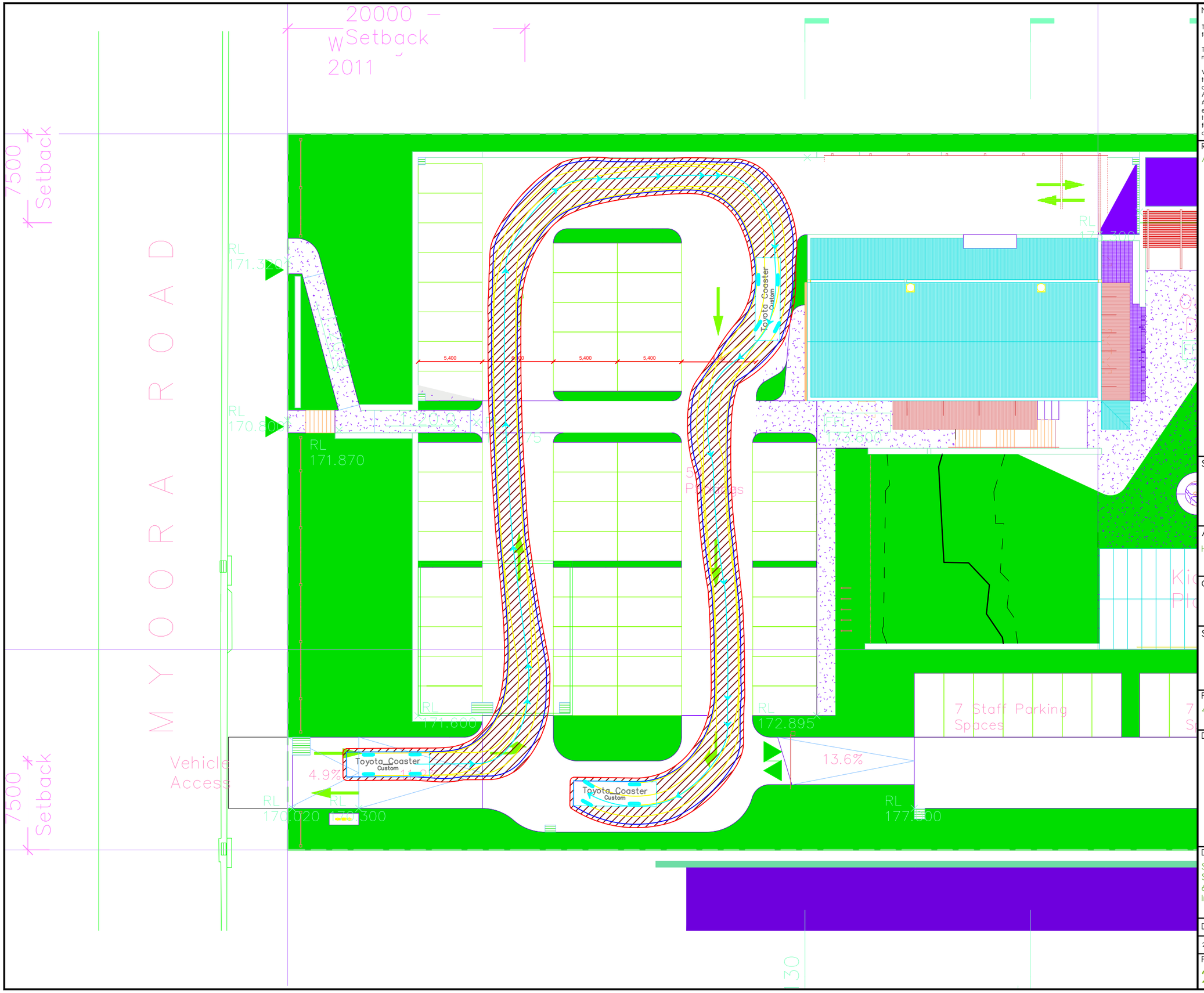
Drawing Title

Site Plan
Swept Path Analysis
8.8m MRV- Internal Circulation Arrangements
Above: Entry Manoeuvre
Below: Egress Manoeuvre

Drawn:	Checked:	Date:
JP	JP	08-08-24

24.014d04v01 TRAFFIX [24-08-06 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
23.008	DA	TX.02	A



Notes:

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TRAFFIX is responsible for vehicle swept path diagrams and/or drawing mark-ups only. Base drawing prepared by others.

Vehicle swept path diagrams prepared using computer generated turning path software and associated CAD drawing platforms. Vehicle data based upon relevant Australian Standards *(AS/NZS 2890.1:2004 Parking facilities - Off-street car parking,* and/or *AS2890.2:2002 Parking facilities - Off-street commercial vehicle facilities*). These standards embody a degree of tolerance, however the vehicle characteristics in these standards represent a suitable design vehicle and do not account for all variations in vehicle dimensions / specifications and/or driver ability or behaviour.

Rev.	Revision Note	By.	Date
A	Initial Design Review	HD	08-04-22

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect

H&E Architects

Client

Scale / Plan Orientation

0 3 6 9 12m

1:300 @ A3

Project Description

40 Myoora Road, Terry Hills

Drawing Prepared By

TRAFFIX
TRAFFIC AND TRANSPORT PLANNERS

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Drawing Title

Site Plan
Swept Path Analysis
6.99m Toyota Coaster
Internal Circulation and Pick Up / Drop Off

Drawn:	Checked:	Date:
JP	JP	08-08-24

24.014d04v01 TRAFFIX [24-08-06 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
23.008	DA	TX.03	A

Lawn
FFL
180.000
RL
181.200
RL
180.200
RL
182.000
RL
177.050
12.5%
MRV
STANDARDS 2018 (AU)
38 Myoora Road
Lot
D38
752017
04
DA1-4130

Notes:

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TRAFFIX is responsible for vehicle swept path diagrams and/or drawing mark-ups only. Base drawing prepared by others.

Vehicle swept path diagrams prepared using computer generated turning path software and associated CAD drawing platforms. Vehicle data based upon relevant Australian Standards *(AS/NZS 2890.1:2004 Parking facilities - Off-street car parking,* and/or *AS2890.2:2002 Parking facilities - Off-street commercial vehicle facilities*). These standards embody a degree of tolerance, however the vehicle characteristics in these standards represent a suitable design vehicle and do not account for all variations in vehicle dimensions / specifications and/or driver ability or behaviour.

Rev.	Revision Note	By.	Date
A	Initial Design Review	HD	08-04-22

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
H&E Architects

Client

Scale / Plan Orientation
0 3 6 9 12m
1:300 @ A3

Project Description
40 Myoora Road, Terry Hills

Drawing Prepared By

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Drawing Title
Site Plan
Swept Path Analysis
8.8m MRV
3- Point Turn

Drawn:	Checked:	Date:
JP	JP	08-08-24

24.014d04v01 TRAFFIX [24-08-06 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
23.008	DA	TX.04	A