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Traffic Impact Assessment Report

Jerrabomberra Vikings

Proposed Licensed Club

28/01/2025

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Executive Summary

Quantum Traffic have been engaged by Tuggeranong Valley Rugby Union & Sports Club Limited (Vikings Group) to undertake a Traffic Impact Assessment for the proposed licensed club development (Jerrabomberra Vikings) in Jerrabomberra, NSW. This report summarises the various transport planning assessments undertaken in relation to the proposed development.

Existing Conditions

Subject Site

The subject site is located on the northeast part of Lot 6 DP1246134 in Jerrabomberra, approximately 4.74km southwest of Queanbeyan Railway Station and 400m northwest of Jerrabomberra Village shopping centre. The site is subject to the South Jerrabomberra Regional Jobs Precinct Process and is zoned as B1: Neighbourhood Centre under the *Queanbeyan Palerang Regional Local Environmental Plan 2022* (*LEP*).

The subject site is currently vacant, with no formal vehicle access.

It is noted that the land which accommodates the subject site is, at the time of writing, subject to a separate development application (DA.2023.0348) which seeks to subdivide both lot 6 DP1246134 and the adjoining lot 1 DP1243031 into 10 new lots, along with the construction of new roads and associated infrastructure. As such, Henry Place is proposed to be extended to the north to intersect with a new road (Gwendoline Place) which is proposed to extend northeast to terminate in a cul-de-sac located immediately southwest of the subject site. This analysis assumes that DA.2023.0348 is approved without significant changes.

Active Travel and Public Transport Networks

There is limited active travel infrastructure in the vicinity of the subject site. That which does exist accommodates walking and cycling trips along Tompsitt Drive between Henry Place and Jerrabomberra Village shopping centre.

There are three (3) public transport services which serve the Jerrabomberra Village Shop bus stop, the only public transport stop located within close walking distance (approximately 400m) of the subject site.

Intersection Performance

Noting the inherent bias of considering intersection performance only in terms of the movement of motor vehicles, the Environa Drive / Henry Place / Tompsitt Drive intersection was found to have sufficient practical capacity to accommodate the existing conditions traffic demands.

Base Conditions

A base scenario has been considered which reflects the development of Poplars North. This includes:

- A 60-place childcare centre,
- An 850m^2 GFA gym, and

- 23,113m^2 GFA of shops (including 2,300m^2 GFA of shop on the subject site).

Intersection Performance

The (inherently biased) intersection analysis indicated that the anticipated base scenario traffic demands would exceed the practical capacity of the Environa Drive / Henry Place / Tompsitt Drive intersection during both the weekday evening and Saturday peak hours (DOS 0.96 and DOS 0.92, respectively). The intersection analysis also indicated that one (1) vehicle movement (on the east approach) would operate at LOS F during the weekday PM peak hour, with up to 79s average delay. Additionally, the analysis indicated that vehicle queues on the east, north and west approaches would exceed their available storage during both the weekday PM and Saturday peak hours.

Proposed Development

The proposal is to develop the site, over two (2) stages, to accommodate a licensed club as follows:

- Stage 1 only – 2,296m^2 GFA, comprising:
  - 1,202m^2 licensed GFA,
  - 112m^2 office GFA, and
  - 153 car parking spaces.
- Stages 1 & 2 – 3,562m^2 GFA, comprising:
  - 1,832m^2 licensed GFA,
  - 112m^2 office GFA, and
  - 272 car parking spaces.

Vehicle access and egress is proposed in two (2) locations as follows:

- Light vehicle and heavy vehicle access, across the southwest boundary of the site, via the cul-de-sac of Gwendoline Place, and
- Emergency access only, across the east boundary of the site, via Esmond Avenue / O'Sullivan Road.

Anticipated Traffic and Parking Demands

Observations at seven (7) sites with similar land uses have been considered in this analysis.

Observations at the three (3) most similar sites (Chisholm Vikings, Lanyon Vikings and Plumpton Hotel) indicate that the proposed stage 1 development may generate demands for up to 94 car parking spaces, while the proposed stages 1 & 2 development may generate demands for up to 143 car parking spaces.

Similarly, observations made at the most similar site (Lanyon Vikings) indicate that the proposed development is expected to generate typical traffic demands of up to 48 vehicle trips per hour under stage 1 only and up to 73 vehicle trips per hour under stages 1 & 2, during the road network peak hours.

Parking and Vehicular Access Design Review

A design review has been undertaken to assess the design of the proposed on-site parking and vehicle access arrangements against the relevant requirements. This design review found

that the proposed parking and vehicle access arrangements generally accord with the relevant requirements, including:

- Design of car parking modules,
- Design of circulation roadways and ramps,
- Access facilities, and
- Additional considerations for car parking structures.

It is recommended that the ramps in the western carpark be widened to accommodate simultaneous two-way traffic flow, as requested by Queanbeyan-Palerang Regional Council.

Statutory Parking Assessments

Parking assessments have been undertaken in accordance with the *Queanbeyan Development Control Plan 2012*.

Overall Car Parking

Noting the critical limitations of the quantified requirement (for one (1) car parking space per 3.5m^2 licensed GFA), this assessment is based on a car parking requirement calculated based on the maximum rate observed at three (3) most similar sites from the case study data. As such, the proposed development requires a minimum of 94 car parking spaces under the stage 1 only development and a minimum of 143 car parking spaces under the stages 1 & 2 development.

The provision of 153 on-site car parking spaces as part of the stage 1 only development and 272 on-site car parking spaces as part of the stages 1 & 2 development comfortably satisfy the relevant requirements of on-site car parking.

Accessible Car Parking

The proposed development has a statutory requirement for a minimum of between five (5) and seven (7) accessible car parking spaces associated with the stages 1 only development and for a minimum of between nine (9) and 11 accessible car parking spaces associated with the stages 1 & 2 development.

The provision of 16 accessible car parking spaces as part of the stage 1 only development, satisfies the relevant requirements for accessible car parking.

Service Vehicle Parking

The proposed development has a statutory requirement for a minimum of two (2) service vehicle parking spaces, including one (1) which is suitable for a truck, under both the stage 1 only and the stages 1 & 2 development.

The provision of one (1) loading dock, suitable for use by trucks up to 12.5m in length, and the provision of additional on-site car parking beyond the anticipated typical demands, satisfies the relevant requirements for service vehicle parking.

Post-Development Conditions

Intersection Performance

The (inherently biased) intersection analysis indicated that while the anticipated post-development traffic demands would exceed the practical capacity of the Environa Drive / Henry Place / Tompsitt Drive intersection during both the weekday evening and Saturday peak hours (DOS 0.94 and DOS 0.90, respectively), they would do so by less than under the base scenario. The intersection analysis also indicated that, during the weekday evening peak hour, two (2) vehicle movements (on the east and north approaches) would operate at LOS F, with up to 73s average delays. Additionally, the analysis indicated that vehicle queues on the east, north and west approaches would exceed their available storage, during both the weekday PM and Saturday peak hours. As such, the intersection performance analysis demonstrates that the proposed licensed club would result in lesser traffic impacts, than even a conservatively small shop, which would otherwise likely be developed on the subject site.

Conclusion

On this basis, there are no traffic engineering reasons why the proposed development should not be approved, subject to appropriate conditions.

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Appendices

Figures

Tables

1 Introduction

Quantum Traffic have been engaged by Tuggeranong Valley Rugby Union & Sports Club Limited (Vikings Group) to undertake a Traffic Impact Assessment (TIA) in relation to a proposed licensed club development in Jerrabomberra. This report summarises the various traffic engineering and transport planning assessments undertaken in relation to the proposed development.

1.1 Background

This revision of the report seeks to address a number of comments made by Queanbeyan-Palerang Regional Council (QPRC) in relation to the proposed development. Table 1 below identifies the relevant sections of this document which address each of the provided comments.

Table 1: Comments

Comment	Reference / Response
July 2024	
Queanbeyan Development Control Plan (DCP) 2012, Part 2.2.6 stipulates that registered clubs will need to provide whichever is greater: Comparison with similar clubs, or 1 space per 3.5m2 of licensed gross floor area. This would equate to approximately 523 parking spaces for licensed area and 3 parking spaces for office area. The Traffic Impact Assessment Report prepared by Quantum Traffic has included the data from Lanyon Viking in Conder, ACT and has specified that the parking demands for the proposed development will be approximately 83 car parking spaces. While 272 on-site parking spaces far exceed the estimated 83 required car parking spaces as per the report, we are not convinced with the survey of one similar venue only. Survey data of at least three other similar venues to be provided to make further assessment of the parking requirements. The findings should include proximity to public transport, staff parking arrangements and any other nearby parking spaces that may have an impact on required spaces.	Section 5.1.1 (page 7) acknowledges the car parking requirements as set out in the *Queanbeyan DCP* and identifies significant shortcomings with the quantified rate. Section 4.1 (page 9) presents case study data reflecting typical car parking demand observations made at a total of seven (7) different sites with similar land uses to the proposed development. Of these, the three (3) sites which are most similar to the proposed development have been identified, with the maximum of those rates adopted for the estimation of car parking demands associated with the proposed development. Even under these conditions, the proposed on-site car parking provision would comfortably accommodate the anticipated demands.

Comment	Reference / Response
It is noted some ramps within the carpark are narrower than the width required to accommodate simultaneous two-way traffic. This will need to be widened to accommodate two-way traffic on all ramps. A swept path drawing is to be provided as part of the application to confirm the vehicle's manoeuvrability of B99 and B85 vehicles simultaneously.	The design of the western carpark is to be revised to accommodate simultaneous two-way traffic flow throughout, as set out at section 4.2.2 (page 4).
December 2024	
Development engineering notes that the traffic impact assessment only includes movements under existing conditions plus the traffic demands associated with the proposed development. Several other developments are expected to occur within the Poplars North precinct subdivision, which are not considered on the traffic impact assessment. While the proposed development may not have a significant impact, a cumulative traffic demands of future developments on North Poplars will have significant impacts on intersection performance and queue length issues.	Section 3 (page 13) has been added and section 6 (page 12) updated to reflect the consideration of other indicative developments within Poplars North. The analysis indicates that the traffic demands associated with the Poplars North development are likely to exceed the practical capacity of the Environa Drive / Henry Place / Tompsitt Drive intersection during both the weekday PM and Saturday peak hours. Furthermore, the analysis demonstrates that the proposed licensed club would be expected to result in lesser traffic demands, and hence lesser traffic impacts, compared to even a conservatively small shop, which would otherwise likely be developed on the subject site.

2 Existing Conditions

2.1 Subject Site

The subject site is located on the northeast part of what is currently Lot 6 DP1246134 in Jerrabomberra, approximately 4.74km southwest of Queanbeyan Railway Station and 400m northwest of Jerrabomberra Village shopping centre. The site is subject to the South Jerrabomberra Regional Jobs Precinct Process and is currently zoned as B1: Neighbourhood Centre under the *Queanbeyan Palerang Regional Local Environmental Plan 2022* (*LEP*). Land uses surrounding the site are predominantly residential to the east, environmental land to the northwest, with commercial zoning to the south and southwest. Figure 1 below presents the current land use zoning of the subject site and surrounds.

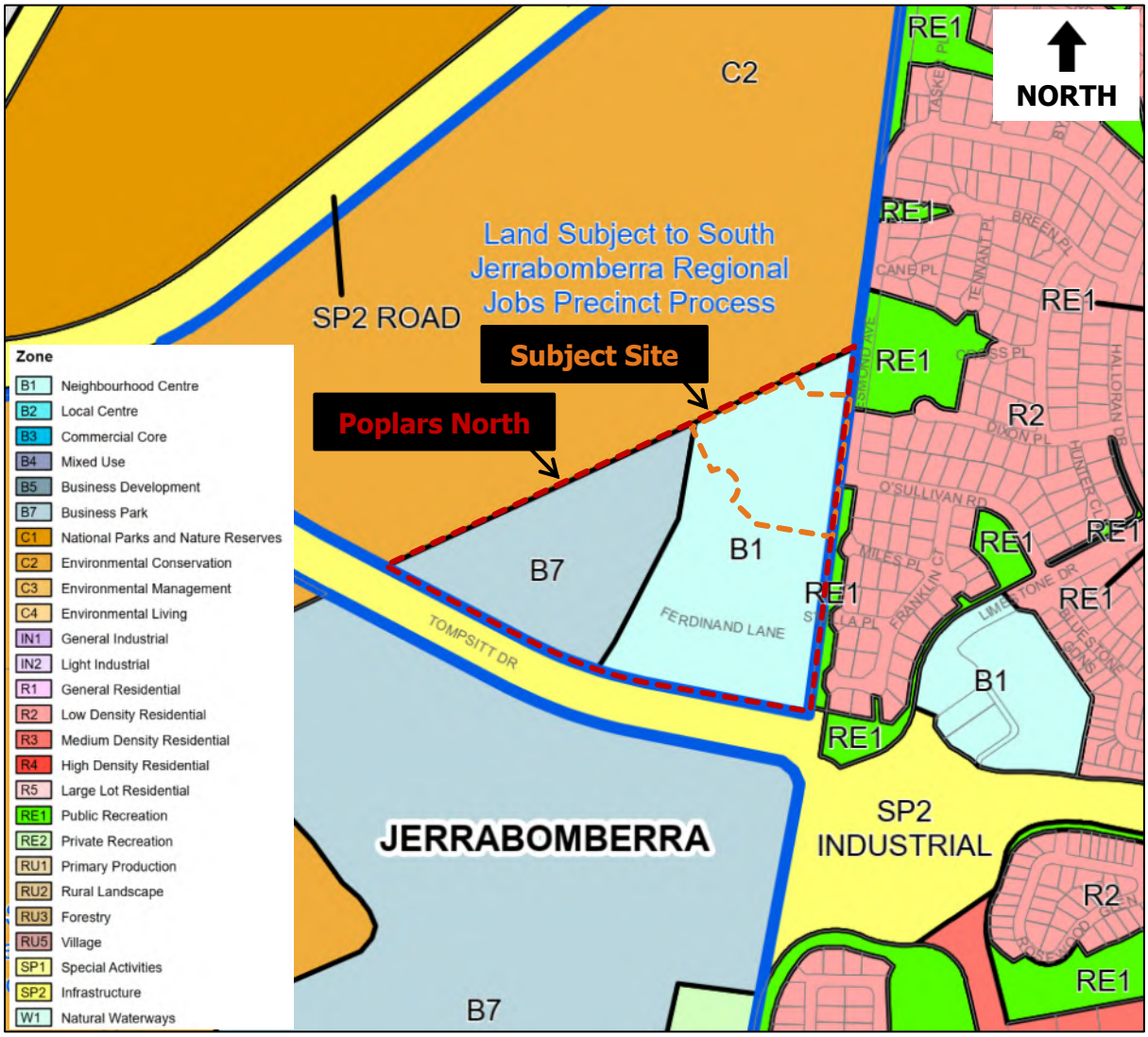


Figure 1: Locality Plan (source: LEP)

The aerial photograph at Figure 2 below, shows that the subject site is currently vacant. Under the existing conditions there is no formal vehicle access to the subject site.

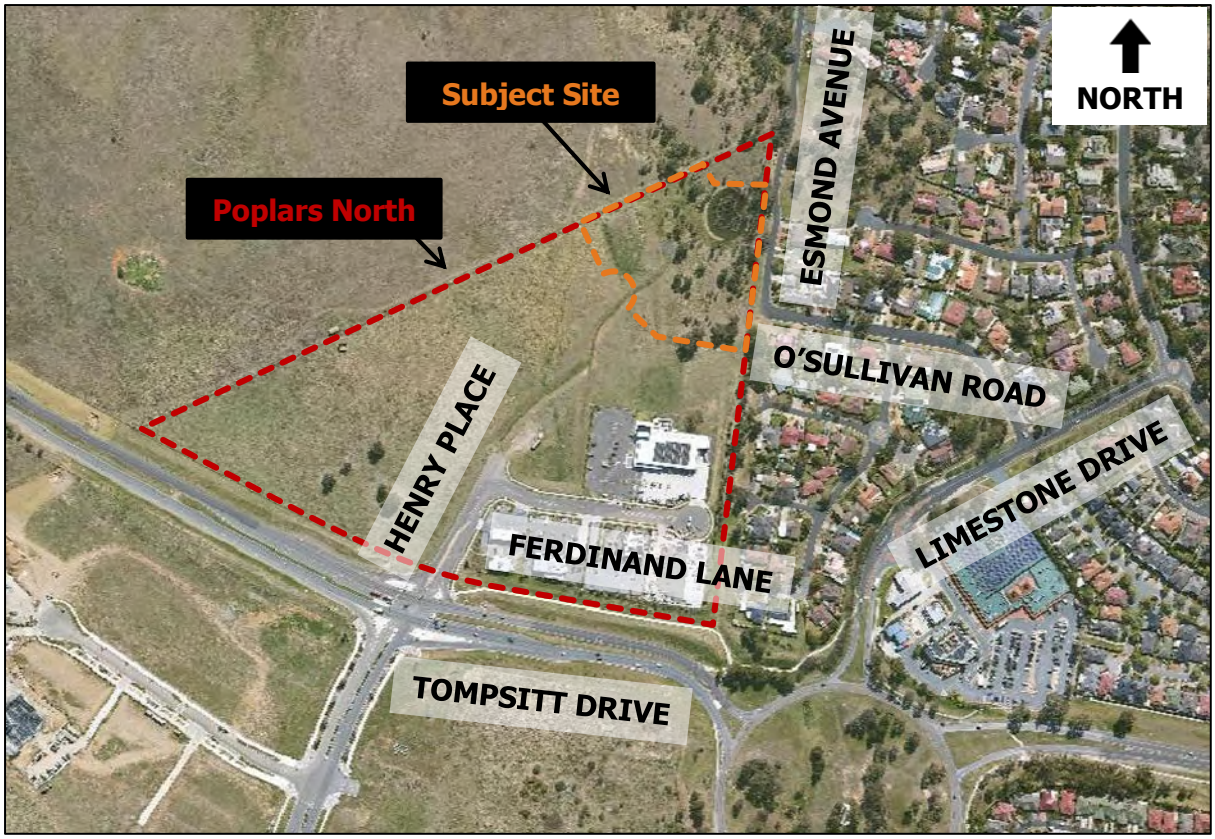


Figure 2: Aerial Image (source: ACTmapi)

It is noted that the land which accommodates the subject site is, at the time of writing, subject to a separate development application (DA.2023.0348) which seeks to subdivide both lot 6 DP1246134 and the adjoining lot 1 DP1243031 into 10 new lots, along with the construction of new roads and associated infrastructure.

Figure 3 below shows the location of the subject site on the proposed lot layout plan from DA.2023.0348.

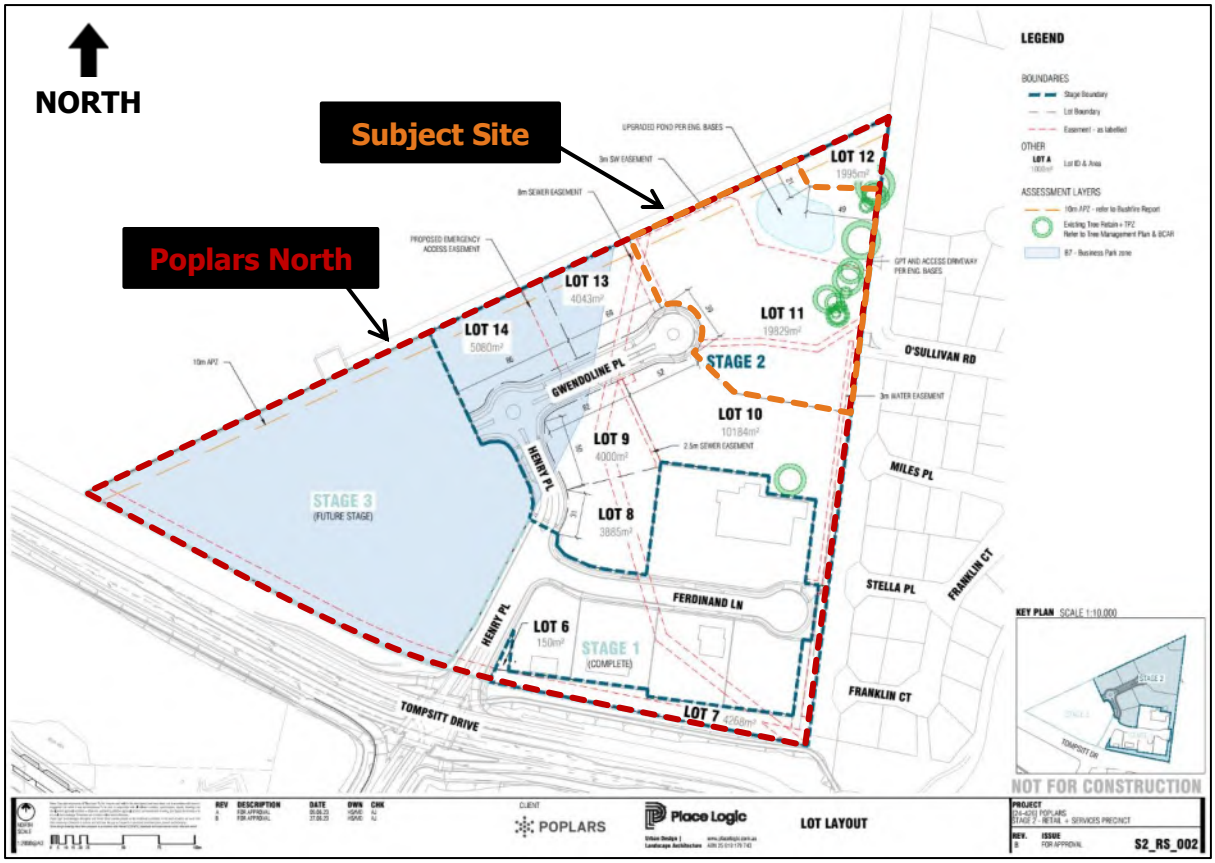


Figure 3: Proposed Lot Layout Plan (source: DA.2023.0348)

It can be seen that Henry Place is proposed to be extended to the north to intersect with a new road (Gwendoline Place) which is proposed to extend northeast to terminate in a cul-de-sac located immediately southwest of the subject site. This analysis assumes that DA.2023.0348 is approved without significant changes.

2.2 Sustainable Transport Networks

Under the existing conditions, there is limited active travel infrastructure in the vicinity of the subject site. That which does exist comprises a 2.5m wide shared path along the north side of Tompsitt Drive, a 1.4m wide pedestrian path along the east side of Henry Place, 1.4m wide pedestrian paths along both sides of Ferdinand Lane and a 1.0m wide pedestrian path along the northwest side of Limestone Drive. There is no active travel infrastructure along Esmond Avenue or O'Sullivan Road.

The Jerrabomberra Village Shops bus stops are the only public transport stops located within close walking distance (approximately 400m) of the subject site. Figure 4 below, shows that these stops are served by three (3) bus routes, including:

- Bus route 835, Tralee to Queanbeyan via Queanbeyan West loop service,
- Bus route 836, Jerrabomberra to Queanbeyan loop service, and
- Bus route 840X, Googong and Jerrabomberra to Canberra CBD via Russell.

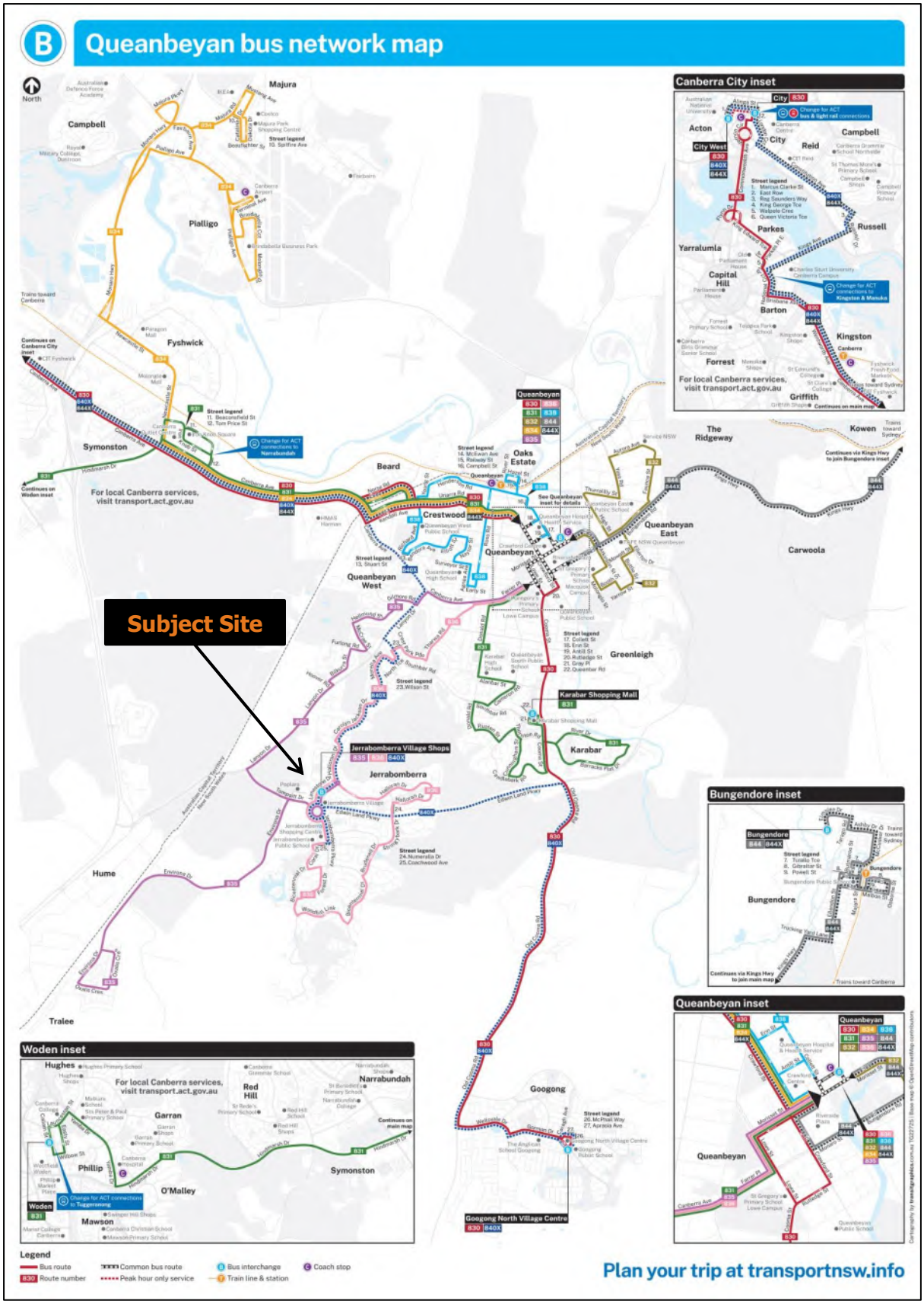


Figure 4: Public Transport Network (source: CDC Canberra)

2.3 Road Network

Tompsitt Drive is a Council major road which extends approximately 1.0km from Lanyon Drive in the west to Jerrabomberra Parkway / Limestone Drive in the east. In the vicinity of the subject site, Tompsitt Drive comprises a pair of 10.0m wide carriageways, separated by a grassed median (of approximately 6.0m width). Each carriageway comprises two (2) through traffic lanes with sealed shoulders on both sides. The shoulders on the left side of the traffic lanes are designated as (unprotected) bicycle lanes in the vicinity of the Environa Drive / Henry Place intersection. On-street parking is not formally prohibited on either side of Tompsitt Drive, except where the shoulders are designated as bicycle lanes. Tompsitt Drive is subject to a posted 80km/h speed limit in the vicinity of the site.

2.3.1 Existing Traffic Conditions

Classified turning movement counts were undertaken at the Environa Drive / Henry Place / Tompsitt Drive intersection (the study area shown at Figure 6 below), between 10am and 10pm on both Thursday, 4 May 2023 and Saturday, 6 May 2023 to quantify the existing traffic volumes in the vicinity of the subject site. Figure 5 below presents the observed traffic volume profile and identifies a weekday evening peak hour beginning at 4:45pm and a Saturday peak hour beginning at 3:30pm.

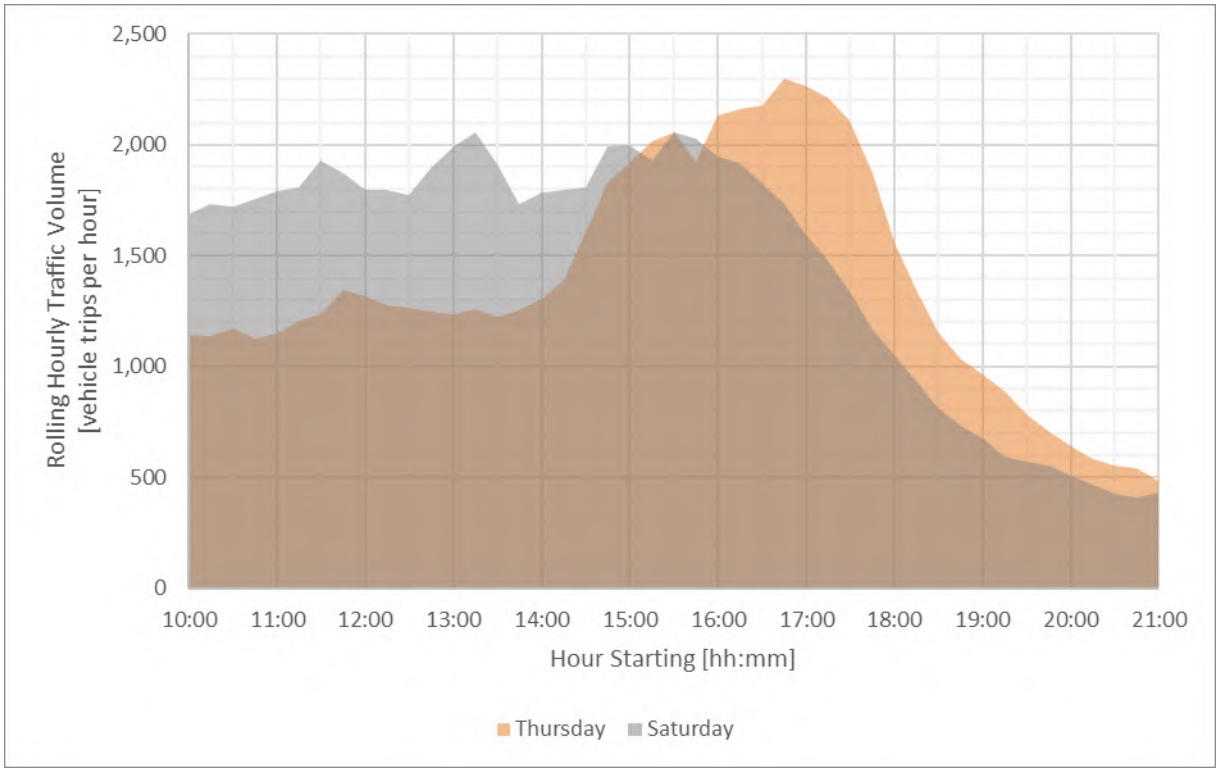


Figure 5: Traffic Volume Profiles – Existing Conditions

Intersection Performance

The performance of the Environa Drive / Henry Place / Tompsitt Drive intersection has been assessed using the SIDRA Intersection 8 software package. The SIDRA software quantifies intersection performance using the following four (4) measures:

- Degree of Saturation (DOS), which represents the ratio of traffic demands to theoretical intersection capacity,

- Average delay, in seconds, experienced by vehicles at the intersection,
- Level of Service (LOS), which converts average delay to a letter grade, and
- 95th percentile queue length, in metres, which reflects the length of queueing that has a 5% chance of being exceeded.

The *RMS Traffic Modelling Guidelines* specify that the maximum practical DOS of signalised intersections is 0.90. Beyond this value, traffic flows can become unstable, with minor flow disruptions likely to cause long delays and queue lengths.

The *RMS Guide to Traffic Generating Developments (2002)* defines the LOS criteria as presented at Table 2 below.

Table 2: LOS Criteria for Intersections

Level of Service	Average Delay
A	≤ 14s
B	15s – 28s
C	29s – 42s
D	43s – 56s
E	57s – 70s
F	> 70s

The 95th percentile queue lengths have been assessed against the available storage length within each respective lane.

When considering this type of traffic analysis, it is important to acknowledge the inherent bias of measuring road network only in terms of vehicle movement (i.e. no consideration for the movement of people, whether inside or outside a vehicle, the movement of goods, or the use of the public realm as a destination rather than a thoroughfare). Furthermore, it is necessary to acknowledge that historically, this type of analysis has been widely utilised to justify infrastructure spending which increases car dependency (with all of the associated adverse environmental, financial and social impacts). On this basis, it is recommended that the results of this analysis be viewed in the context of achieving the strategic vision for the transport network and public realm, rather than simply expanding the road network in an effort to accommodate ever-increasing traffic demand forecasts.

Model Geometry

Figure 6 below presents the study area for the intersection performance analysis. This area comprises the Environa Drive / Henry Place / Tompsitt Drive intersection.

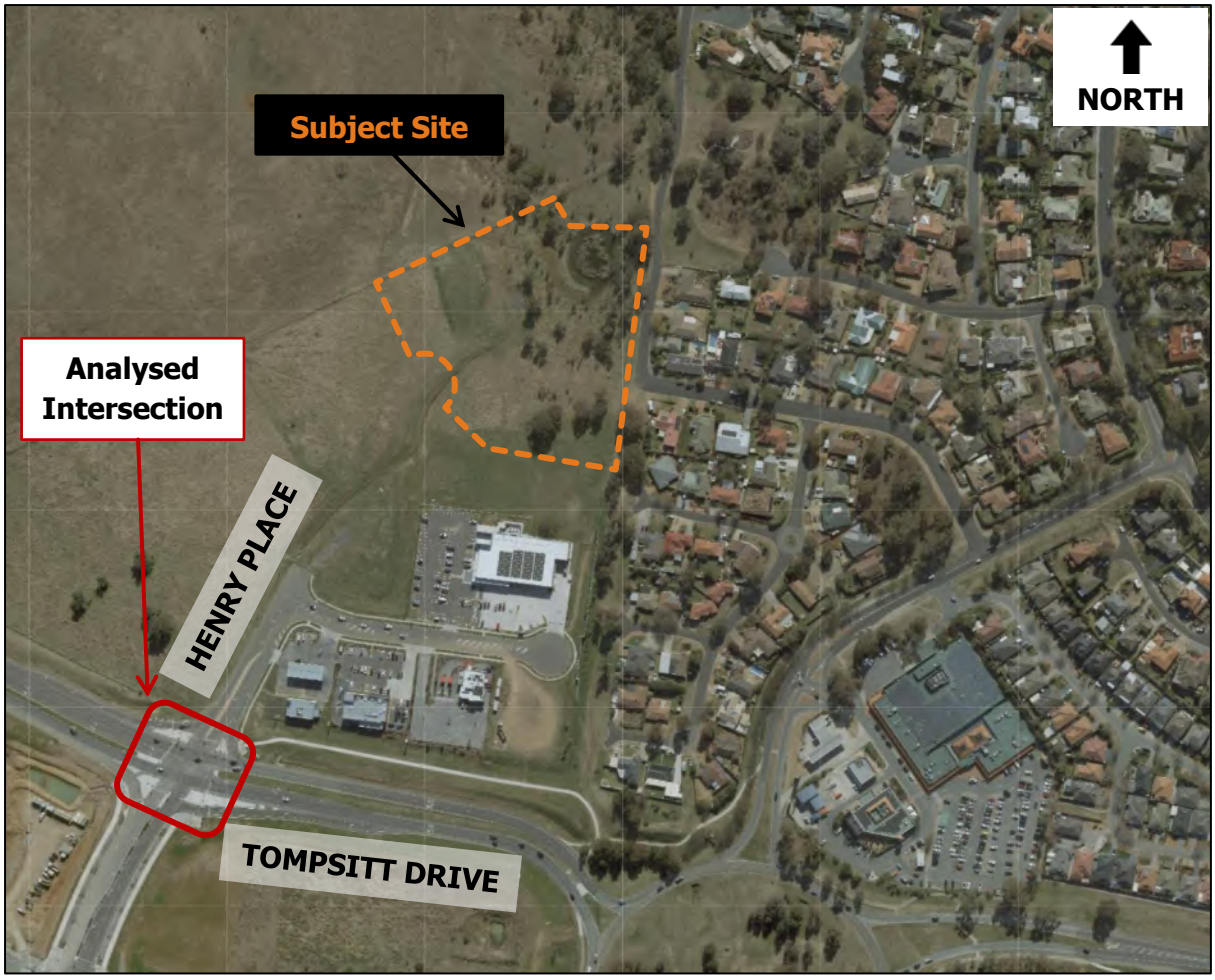


Figure 6: Intersection Performance Analysis Study Area (source: ACTmapi)

Figure 7 below presents the modelled geometry of the Environa Drive / Henry Place / Tompsitt Drive intersection.

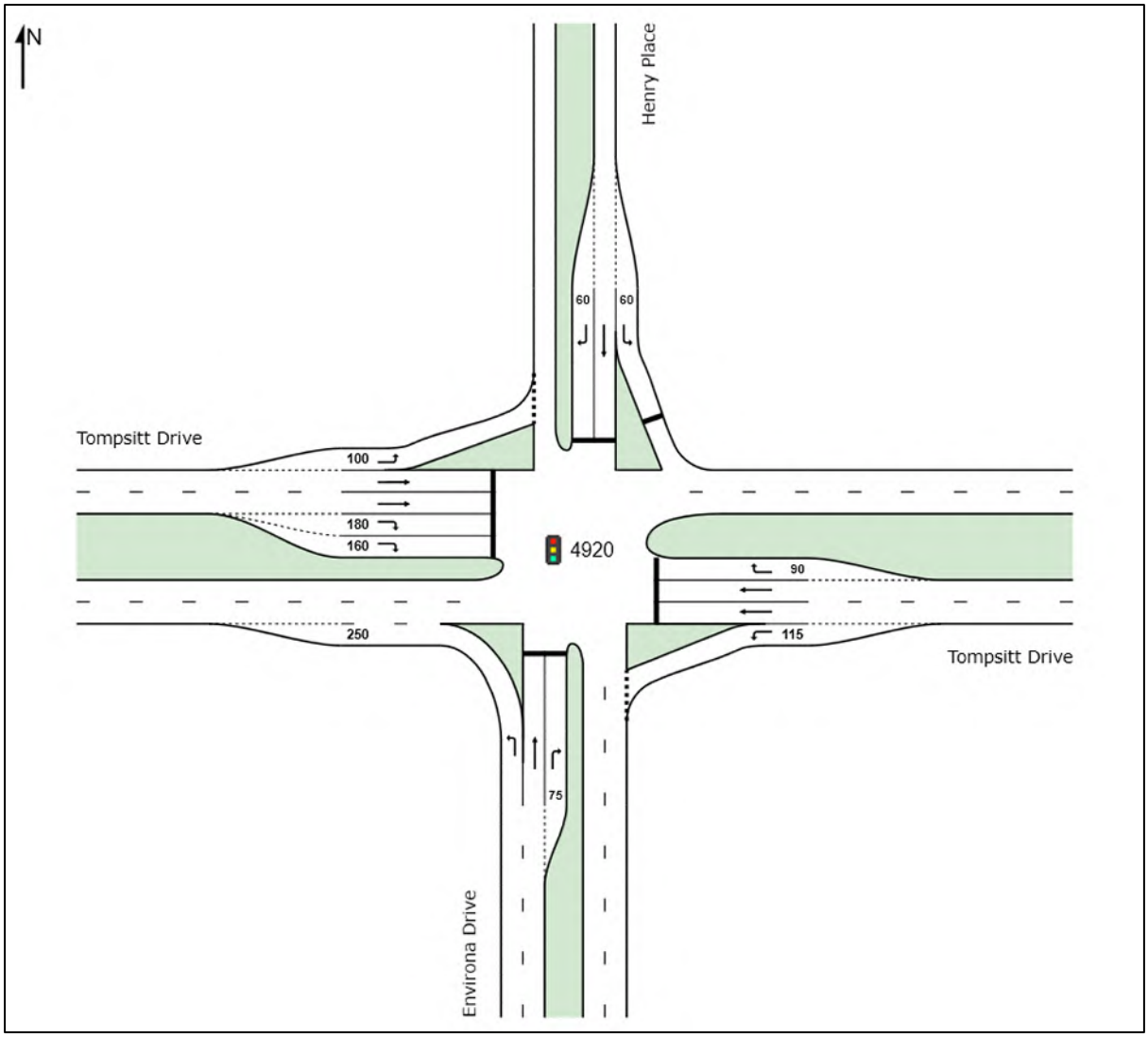
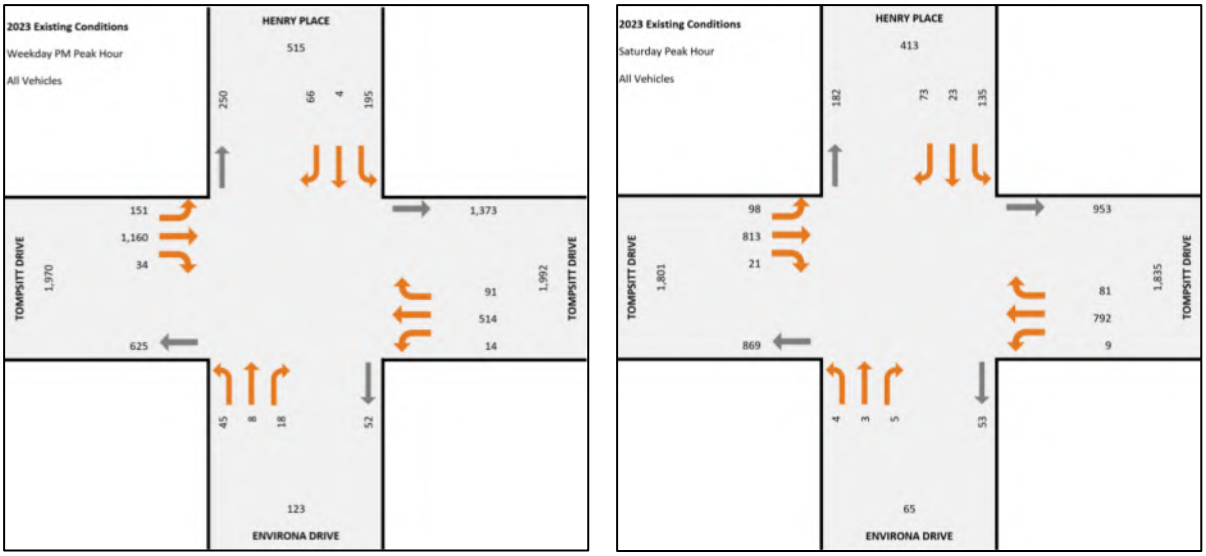


Figure 7: Modelled Intersection Geometry – Existing Conditions

Traffic Volumes

Figure 8 below, presents the observed turning movements at these intersections, during the identified morning and evening peak hours. More detailed breakdowns of the peak hour traffic volumes, under the existing conditions, are provided at Appendix A.



a) Weekday PM Peak Hour *b) Saturday Peak Hour*

Figure 8: Peak Hour Traffic Volumes – Existing Conditions

Traffic Signal Operation

The operation of the traffic signals at the Environa Drive / Henry Place / Tompsitt Drive intersection has been derived from historical SCATS data, which was sourced from TfNSW and coincides with the turning movement counts undertaken for this project.

The traffic signal phasing at these intersections is presented at Figure 9 below, while Table 3 presents the traffic signal timings.

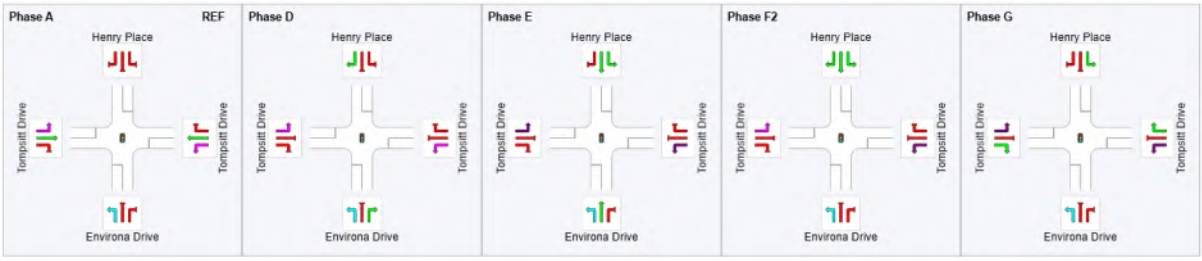


Figure 9: Traffic Signal Phasing – Existing Conditions

Table 3: Traffic Signal Timings – Existing Conditions

Peak Hour	Phase Time					Cycle Time
	A	D	E	F2	G	
Environa Drive / Henry Place / Tompsitt Drive						
Weekday PM Peak Hour	43s (45s, 95%)	14s (19s, 76%)	2s (14s, 17%)	1s (17s, 5%)	20s (20s, 100%)	**80s**
Saturday Peak Hour	31s (33s, 100%)	14s (18s, 79%)	2s (15s, 15%)	1s (17s, 2%)	18s (19s, 96%)	**66s**

Intersection Performance

Table 4 below summarises the performance of the road network under the 2023 existing conditions traffic volumes. Full details of the intersection performance analysis, under existing conditions, are provided at Appendix B.

Table 4: Intersection Performance Summary – 2023 Existing Conditions

Approach	Weekday PM Peak Hour				Saturday Peak Hour			
	DOS	Delay	LOS	Queue	DOS	Delay	LOS	Queue
Environa Drive / Henry Place / Tompsitt Drive								
S: Environa Drive	0.35	21s	B	5m	0.11	28s	B	1m
E: Tompsitt Drive	0.30	18s	B	46m	0.57	19s	B	76m
N: Henry Place	0.52	35s	C	51m	0.34	29s	C	28m
W: Tompsitt Drive	0.68	18s	B	132m	0.58	17s	B	78m
Total	**0.68**	**20s**	**B**	**-**	**0.58**	**19s**	**B**	**-**

During the weekday evening peak hour, the model indicates that:

- The demands for all vehicle movements are within their practical capacity,
- All vehicle movements experience acceptable average delays (LOS E or better), and
- All 95th percentile queues are accommodated within their respective lanes, noting that:
    - The 95th percentile queues in the through traffic lanes on the west approach extend back beyond the start of the adjacent short left-turn lane (132m queue adjacent to 100m lane).

During the Saturday peak hour, the model indicates that:

- The demands for all vehicle movements are within their practical capacity,
- All vehicle movements experience acceptable average delays (LOS E or better), and
- All 95th percentile queues are accommodated within their respective lanes.

3 Base Conditions

The following sections consider the likely conditions on the road network under a base scenario, which reflects the full development of Poplars North, but without the proposed licensed club. This base scenario is intended to be considered as a baseline against which the impacts of the proposed licensed club can be assessed.

This analysis adopts the indicative land uses and traffic demand assumptions as set out under the 'Proposed Zoning Scenario' in the *North Poplars Retail and Business Park Traffic Impact Assessment*, prepared by Egis in April 2024 (*Egis TIA*). It is noted that these (i.e. 9,515m^2 GFA of shop uses plus the proposed licensed club, within stage 2 of Poplars North) broadly align with those adopted in the *Poplars Stage 2 Retail and Services (North) Precinct Subdivision Transport Impact Assessment*, prepared by SCT Consulting in June 2024 (*SCT TIA*). Additionally, this analysis assumes that if the subject site (Lot 11) were not to be developed to accommodate the proposed licensed club, that it would instead be developed to accommodate shop land uses, similar to the remainder of stage 2 of Poplars North. Table 5 below presents the indicative land uses adopted for the base scenario.

Table 5: Poplars North Indicative Land Uses – Base Scenario

Land Uses	Size / Number
Stage 1	
Childcare Centre	60 places
Gym	850m^2 GFA
Stage 2	
Lot 8 – Retail & Services	1,359m^2 GFA
Lot 9 – Retail & Services	1,400m^2 GFA
Lot 10 – Retail & Services	3,563m^2 GFA
Lot 11 – Retail & Services[A]	2,300m^2 GFA[B]
Lot 12 – Conservation Area	-
Lot 13 – Retail & Services	1,415m^2 GFA
Lot 14 – Retail & Services	1,778m^2 GFA
Stage 3	
Lot 15 – Retail & Services	11,298m^2 GFA

Notes:
[A] Shop use assumed on subject site (lot 11) under base scenario.
[B] Similar to the floor area of stage 1 of the proposed licensed club. Conservatively reflects a much smaller plot ratio than other lots (0.12 vs 0.35).

3.1 Traffic Demands

3.1.1 Traffic Generation

Childcare Centre

For consistency with both the *Egis TIA* and the *SCT TIA*, this analysis adopts a traffic generation rate of 0.53 vehicle trips per childcare place per hour and an inbound split of 50%, during weekday PM peak hour, for the childcare centre. It is understood that these parameters were adopted from the *Guide to Traffic Generating Developments* (*GtTGD 2002*) which does not include any traffic demand data for childcare centres on Saturdays. Noting that childcare centres are typically closed on Saturdays, this analysis assumes negligible traffic demands

associated with the childcare centre, during the Saturday peak hour. As such, this analysis adopts the traffic generation rates presented at Table 6 below, for the childcare centre.

Table 6: Childcare Centre – Traffic Generation Rates

Time Period	Traffic Generation Rates
Weekday PM Peak Hour	0.53 vehicle trips per place per hour
Saturday Peak Hour	Negligible

Table 7 below presents the assumed in/out splits for the childcare centre.

Table 7: Childcare Centre – In/Out Splits

Time Period	Inbound Split
Weekday PM Peak Hour	50% of trips towards the site
Saturday Peak Hour	N/A

Gym

For consistency with both the *Egis TIA* and the *SCT TIA*, this analysis adopts a traffic generation rate of nine (9) vehicle trips per 100m^2 GFA per hour and an inbound split of 50%, during both the weekday PM and the Saturday peak hours, for the gym. As such, this analysis adopts the traffic generation rates presented at Table 8 below, for the gym.

Table 8: Gym – Traffic Generation Rates

Time Period	Traffic Generation Rates
Weekday PM Peak Hour	9 vehicle trips per 100m^2 GFA per hour
Saturday Peak Hour	9 vehicle trips per 100m^2 GFA per hour

Table 9 below presents the assumed in/out splits for the gym.

Table 9: Gym – In/Out Splits

Time Period	Inbound Split
Weekday PM Peak Hour	50% of trips towards the site
Saturday Peak Hour	50% of trips towards the site

Shop

For consistency with the *Egis TIA*, this analysis adopts a traffic generation rate of 6.2 vehicle trips per 100m^2 GLFA per hour and an inbound split of 50%, during the weekday PM peak hour, for shops. It is understood that these parameters were adopted from the *Guide to Traffic Generating Developments: Updated Traffic Surveys* (*GtTGD 2013*) for shops larger than 10,000m^2 GLFA (13,333m^2 GFA). On this basis, a traffic generation rate of 7.5 vehicle trips per 100m^2 GLFA per hour and an inbound split of 50% have been adopted for the Saturday peak hour. As such, this analysis adopts the traffic generation rates presented at Table 10 below, for shops.

Table 10: Shops – Traffic Generation Rates

Time Period	Traffic Generation Rates
Weekday PM Peak Hour	6.2 vehicle trips per 100m^2 GLFA per hour
Saturday Peak Hour	7.5 vehicle trips per 100m^2 GLFA per hour

Table 11 below presents the assumed in/out splits for shops.

Table 11: Shops – In/Out Splits

Time Period	Inbound Split
Weekday PM Peak Hour	50% of trips towards the site
Saturday Peak Hour	50% of trips towards the site

Summary

Table 12 below presents the adopted traffic demands during the road network peak hours.

Table 12: Traffic Demands – Poplars North

Land Use	Size / Number	Total Rate	Total Trips	Inbound Split	In Trips	Out Trips
Weekday PM (Road Network) Peak Hour						
Childcare Centre	60 places	0.53 vte per place per hour	32 vte per hour	50%	16 vte per hour	16 vte per hour
Gym	850m^2 GFA	9 vte per 100m^2 GFA per hour	77 vte per hour	50%	38 vte per hour	38 vte per hour
Lot 8 – Retail & Services	1,359m^2 GFA	6.2 vte per 100m^2 GLFA per hour	63 vte per hour	50%	32 vte per hour	32 vte per hour
Lot 9 – Retail & Services	1,400m^2 GFA	6.2 vte per 100m^2 GLFA per hour	65 vte per hour	50%	33 vte per hour	33 vte per hour
Lot 10 – Retail & Services	3,563m^2 GFA	6.2 vte per 100m^2 GLFA per hour	166 vte per hour	50%	83 vte per hour	83 vte per hour
Lot 11 – Retail & Services	2,300m^2 GFA	6.2 vte per 100m^2 GLFA per hour	107 vte per hour	50%	53 vte per hour	53 vte per hour
Lot 12 – Conservation Area	-	Negligible	-	N/A	-	-
Lot 13 – Retail & Services	1,415m^2 GFA	6.2 vte per 100m^2 GFA per hour	66 vte per hour	50%	33 vte per hour	33 vte per hour
Lot 14 – Retail & Services	1,778m^2 GFA	6.2 vte per 100m^2 GFA per hour	83 vte per hour	50%	41 vte per hour	41 vte per hour
Lot 15 – Retail & Services	11,298m^2 GFA	6.2 vte per 100m^2 GFA per hour	525 vte per hour	50%	263 vte per hour	263 vte per hour
Total			**1,183 vte per hour**		**592 vte per hour**	**592 vte per hour**

Land Use	Size / Number	Total Rate	Total Trips	Inbound Split	In Trips	Out Trips
Saturday (Road Network) Peak Hour						
Childcare Centre	60 places	Negligible	-	N/A	-	-
Gym	850m^2 GFA	9 vte per 100m^2 GFA per hour	77 vte per hour	50%	38 vte per hour	38 vte per hour
Lot 8 – Retail & Services	1,359m^2 GFA	7.5 vte per 100m^2 GLFA per hour	76 vte per hour	50%	38 vte per hour	38 vte per hour
Lot 9 – Retail & Services	1,400m^2 GFA	7.5 vte per 100m^2 GLFA per hour	79 vte per hour	50%	39 vte per hour	39 vte per hour
Lot 10 – Retail & Services	3,563m^2 GFA	7.5 vte per 100m^2 GLFA per hour	200 vte per hour	50%	100 vte per hour	100 vte per hour
Lot 11 – Retail & Services	2,300m^2 GFA	7.5 vte per 100m^2 GLFA per hour	129 vte per hour	50%	65 vte per hour	65 vte per hour
Lot 12 – Conservation Area	-	Negligible	-	N/A	-	-
Lot 13 – Retail & Services	1,415m^2 GFA	7.5 vte per 100m^2 GLFA per hour	80 vte per hour	50%	40 vte per hour	40 vte per hour
Lot 14 – Retail & Services	1,778m^2 GFA	7.5 vte per 100m^2 GLFA per hour	100 vte per hour	50%	50 vte per hour	50 vte per hour
Lot 15 – Retail & Services	11,298m^2 GFA	7.5 vte per 100m^2 GLFA per hour	636 vte per hour	50%	318 vte per hour	318 vte per hour
Total			**1,377 vte per hour**		**688 vte per hour**	**688 vte per hour**

Notes:
For consistency with the both the *Egis TIA* and the *SCT TIA*, 100m^2 GFA is assumed equivalent to 75m^2 GLFA.
vte = vehicle trip ends.

3.1.2 Traffic Distribution

For consistency with the *Egis TIA*, this analysis adopts the traffic distribution as set out at Table 13 below.

Table 13: Traffic Distribution – Poplars North

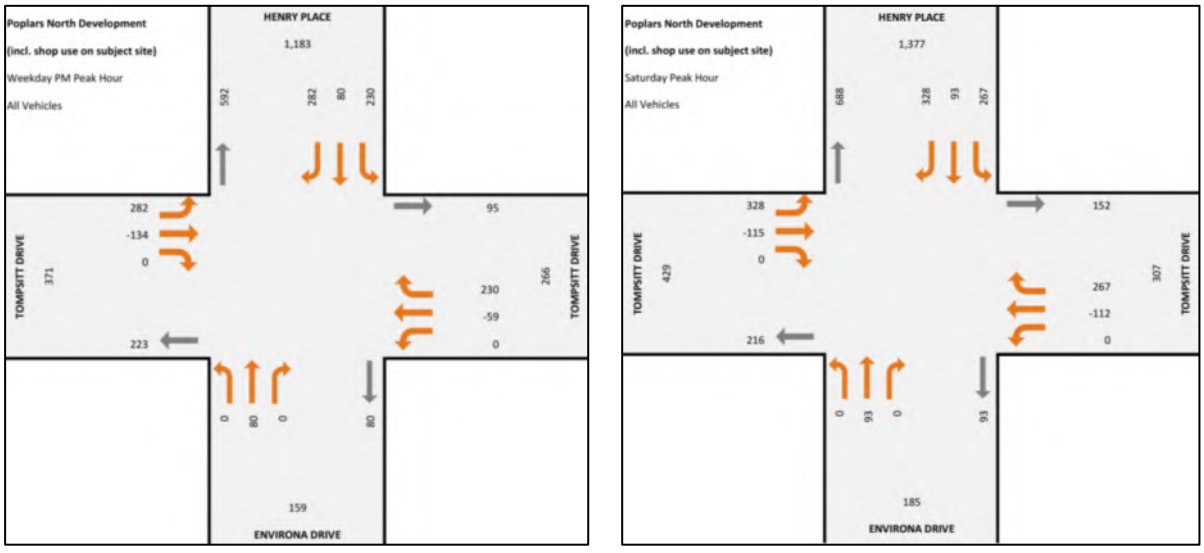
Direction	Proportion
South (Environa Drive)	13.5%
East (Tompsitt Drive)	38.8%
West (Tompsitt Drive)	47.7%

Undiverted Drop-In Trips

Furthermore, for consistency with both the *Egis TIA* and the *SCT TIA*, this analysis assumes that 35% of trips associated with the childcare centre and shops already pass-by Poplars North along Tompsitt Drive. In order to avoid double counting these trips, the Poplars North traffic demands include negative traffic demands for the through movements on the east and west approaches to the Environa Drive / Henry Place / Tompsitt Drive intersection, to reflect the existing through trips that would be expected to drop-in to Poplars North.

3.1.3 Summary

Figure 10 below, presents the traffic demands adopted for the indicative land uses in Poplars North. More detailed breakdowns of the Poplars North traffic demands, are provided at Appendix C.

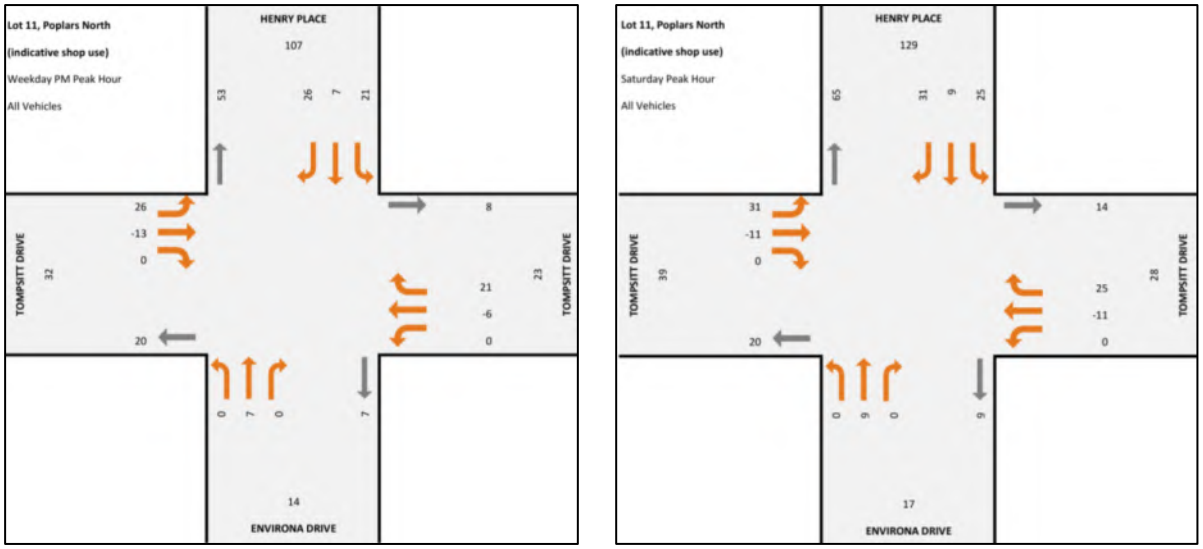


a) Weekday PM Peak Hour *b) Saturday Peak Hour*

Figure 10: Peak Hour Traffic Demands – Poplars North

Subject Site Traffic Demands

It is noted that the base scenario traffic demands include the traffic demands presented at Figure 11 below, associated with shop land use on the subject site (Lot 11). More detailed breakdowns of these traffic demands, are provided at Appendix D.



a) Weekday PM Peak Hour *b) Saturday Peak Hour*

Figure 11: Peak Hour Traffic Demands – Subject Site

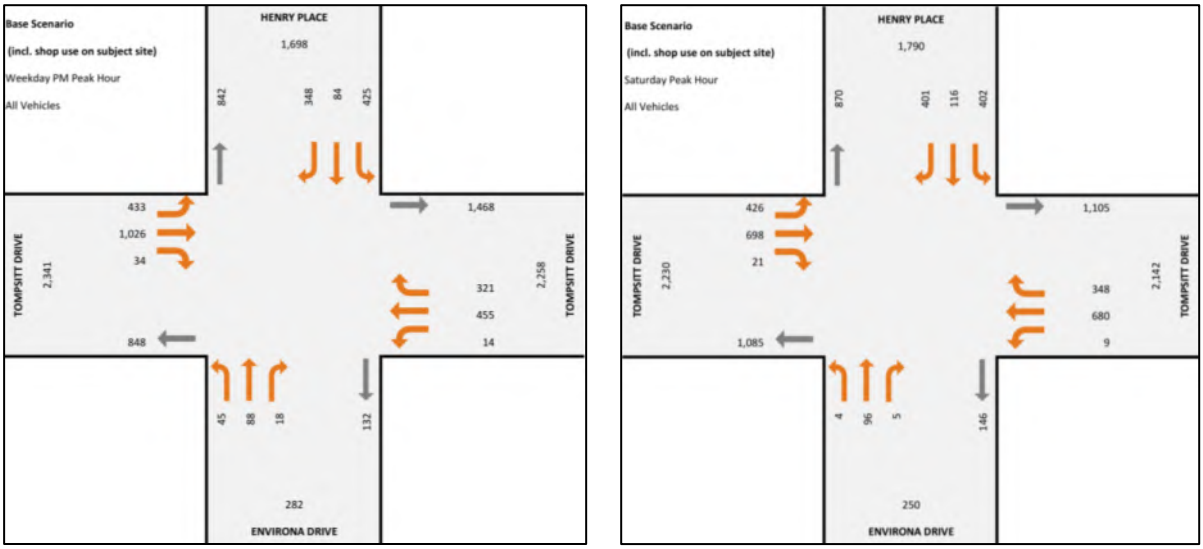
3.2 Traffic Conditions

3.2.1 Model Geometry

No changes have been made to the geometry of the Environa Drive / Henry Place / Tompsitt Drive intersection from that adopted for the existing conditions intersection analysis (Figure 7, page 10).

3.2.2 Traffic Demands

Figure 12 below presents the traffic demands adopted for the base scenario intersection performance analysis. These traffic demands reflect those movements observed under the existing conditions (Figure 8, page 11), plus the traffic demands associated with the full development of Poplars North (Figure 10, page 0). More detailed breakdowns of the base scenario traffic demands, are provided at Appendix E.



a) Weekday PM Peak Hour *b) Saturday Peak Hour*

Figure 12: Peak Hour Traffic Demands – Base Scenario

3.2.3 Traffic Signal Operation

Given the significant changes in traffic demands expected to result from the full development of Poplars North, it is expected that the traffic signal controller at the Environa Drive / Henry Place / Tompsitt Drive intersection would seek to dynamically adjust both the traffic signal phasing and timings based on the detected traffic volumes. On this basis, extended traffic signal phasing, which reflects the existing signal controller programming, has been provided to the SIDRA software, with the SIDRA software then allowed to optimise both the traffic signal phasing and timing to suit the input traffic demands. As such, Figure 13 below presents the extended traffic signal phasing input into the software, while Table 14 below presents the optimal traffic signal timings output from the software under the base scenario traffic demands.

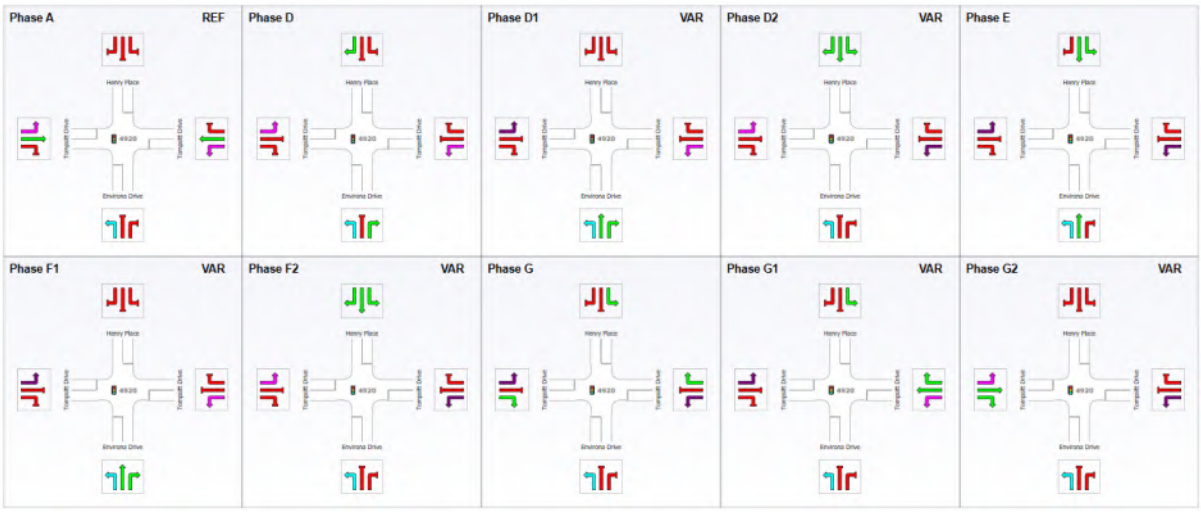


Figure 13: Extended Traffic Signal Phasing – Base Scenario

Table 14: Traffic Signal Timings – Base Scenario

Peak Hour	Phase Time										Cycle Time
	A	D	D1	D2	E	F1	F2	G	G1	G2	
Environa Drive / Henry Place / Tompsitt Drive											
Weekday PM Peak Hour	38s	12s	-	17s	12s	-	-	12s	14s	-	**105s**
Saturday Peak Hour	27s	12s	-	21s	-	12s	-	12s	16s	-	**100s**

3.2.4 Intersection Performance

Table 15 below summarises the performance of the road network under the base scenario traffic demands. Full details of the intersection performance analysis, under the base conditions, are provided at Appendix F.

Table 15: Intersection Performance Summary – Base Scenario

Approach	Weekday PM Peak Hour				Saturday Peak Hour			
	DOS	Delay	LOS	Queue	DOS	Delay	LOS	Queue
Environa Drive / Henry Place / Tompsitt Drive								
S: Environa Drive	0.83	46s	D	37m	0.86	44s	D	18m
E: Tompsitt Drive	0.96	44s	D	160m	0.90	28s	B	87m
N: Henry Place	0.94	45s	D	166m	0.92	31s	C	83m
W: Tompsitt Drive	0.94	47s	D	256m	0.90	27s	B	109m
Total	**0.96**	**46s**	**D**	**-**	**0.92**	**29s**	**C**	**-**

During the weekday evening peak hour, the model indicates that:

- The traffic demands for a number of movements are expected to exceed their practical capacity:
  - The demands for the right-turn from the east approach are expected to exceed the practical capacity of this movement (DOS 0.96),
  - The demands for the right-turn from the north approach are expected to exceed the practical capacity of this movement (DOS 0.94), and
  - The demands for the through movement from the west approach are expected to exceed the practical capacity of this movement (DOS 0.94).
- A single vehicle movement is expected to experience excessive average delays:
  - Vehicles undertaking the right-turn from the east approach are expected to experience delays of 79s (LOS F).
- A number of 95th percentile queues are expected to exceed the length of their respective lanes:
  - The queue for the right-turn from the east approach is expected to exceed the length of the short right-turn lane (160m queue vs 90m lane),
  - The queues for the left- and right-turns from the north approach are expected to exceed the length of their short lanes and extend back beyond Ferdinand Lane approximately 47% of signal cycles (112m and 166m queues, respectively vs 60m short lanes and 105m of queue storage in the through traffic lane), and
  - The 95th percentile queues in the through traffic lanes on the west approach are expected to extend back beyond the start of the adjacent short left- and right-turn lanes (237m and 256m queues, respectively vs 100m and 180m adjacent short-lanes, respectively).

During the Saturday peak hour, the model indicates that:

- The traffic demands for a single vehicle movement are expected to exceed its practical capacity:
  - The demands for the right-turn from the north approach are expected to exceed the practical capacity of this movement (DOS 0.92).
- All vehicle movements are expected to experience acceptable average delays (LOS E or better), and
- A number of 95th percentile queues are expected to exceed the length of their respective lanes:
  - The queue for the right-turn from the east approach is expected to exceed the length of the short right-turn lane (147m queue vs 90m lane),

- The queues for the left- and right-turns from the north approach are expected to exceed the length of their short lanes and extend back beyond Ferdinand Lane approximately 13% of signal cycles (88m and 174m queues, respectively vs 60m short lanes and 105m of queue storage in the through traffic lane), and
- The queues in the through traffic lanes on the west approach are expected to extend back beyond the start of the adjacent short left-turn lane (146m queues vs 100m adjacent short-lane).

4 Proposed Development

The proposal is to develop the site to accommodate a licensed club, over two (2) design stages, as set out at Table 16 below.

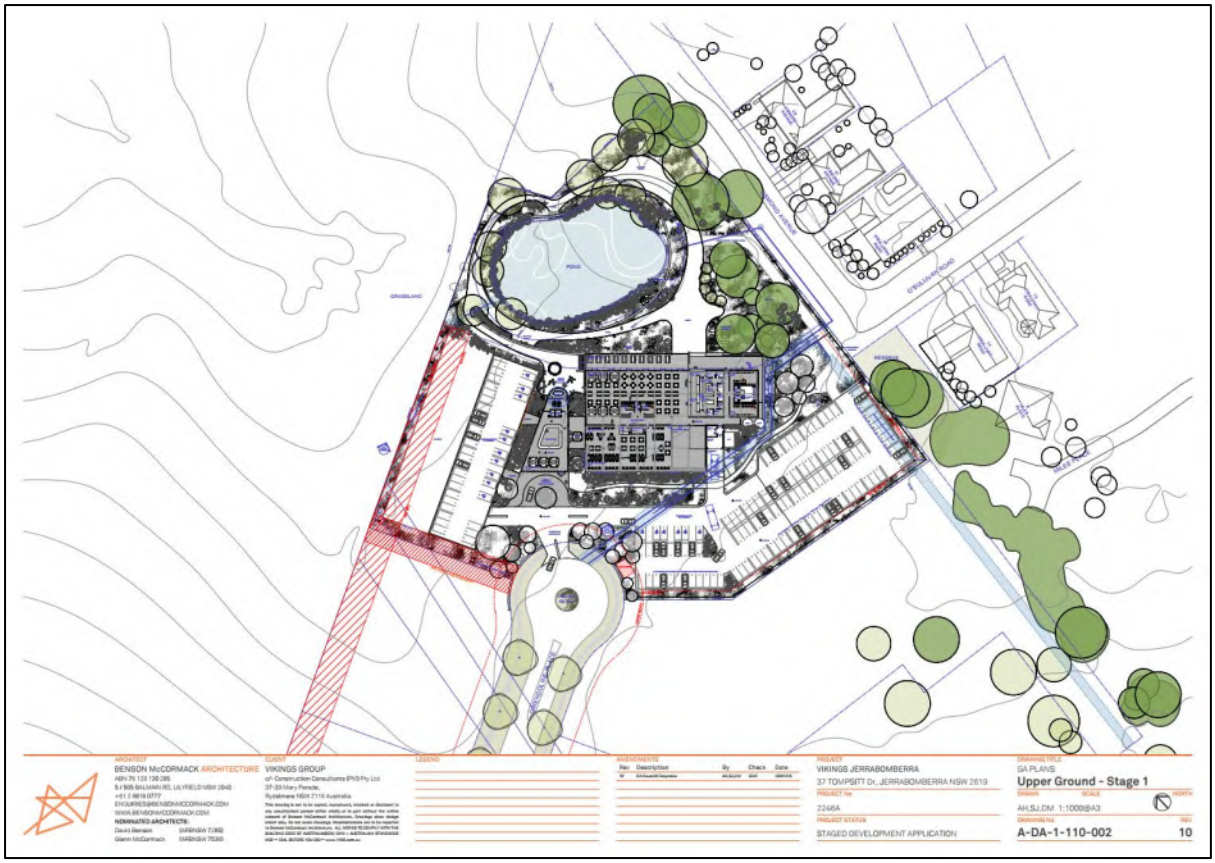
Table 16: Proposed Development Yields

Floor	Stage 1 Only	Stage 2 Only	Stages 1 & 2
Level 1	-	1,236m^2 GFA, including: 630m^2 licensed GFA[2]	1,236m^2 GFA, including: 630m^2 licensed GFA[2]
Mezzanine	146m^2 GFA, including: 112m^2 office GFA	-	146m^2 GFA, including: 112m^2 office GFA
Upper Ground	2,150m^2 GFA, including: 1,202m^2 licensed GFA[1] 153 car parking spaces	30m^2 GFA 36 car parking spaces	2,180m^2 GFA, including: 1,202m^2 licensed GFA[1] 189 car parking spaces
Lower Ground	-	83 car parking spaces	83 car parking spaces
Total	2,296m^2 GFA, including: 1,202m^2 licensed GFA[1] 112m^2 office GFA 153 car parking spaces	1,266m^2 GFA: including: 630m^2 licensed GFA[2] 119 car parking spaces	3,562m^2 GFA, including: 1,832m^2 licensed GFA[1,2] 112m^2 office GFA 272 car parking spaces

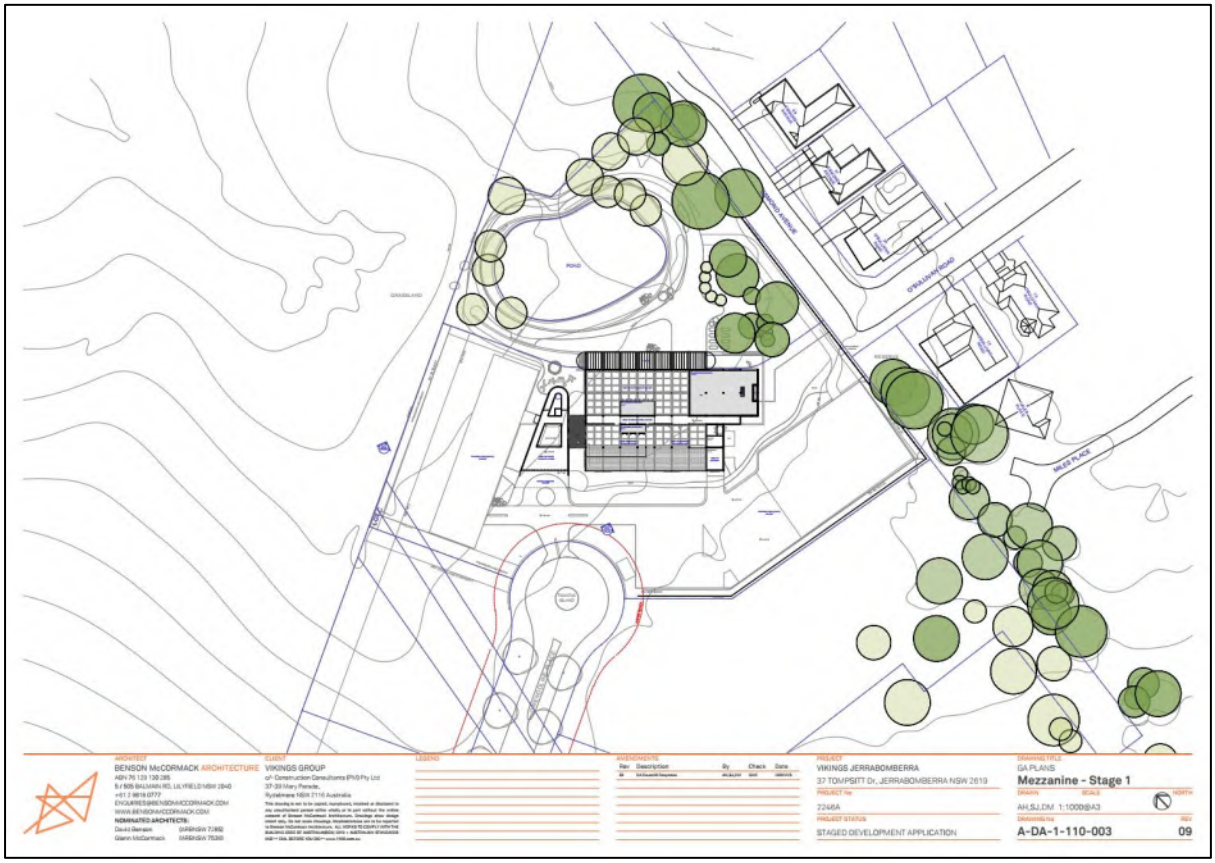
Notes:
[1] Bar/lounge, bistro and gaming spaces.
[2] Function rooms.

As such, this analysis considers both a 'stage 1 only' development comprising 1,202m^2 of licensed GFA, 112m^2 of office GFA and 153 on-site car parking spaces, as well as a 'stages 1 & 2' development comprising 1,832m^2 of licensed GFA, 112m^2 of office GFA and 272 on-site car parking spaces.

Figure 14 and Figure 15 below, present overviews of the proposed stage 1 only and stages 1 & 2 developments, respectively. Larger copies of these plans are provided at Appendix G.

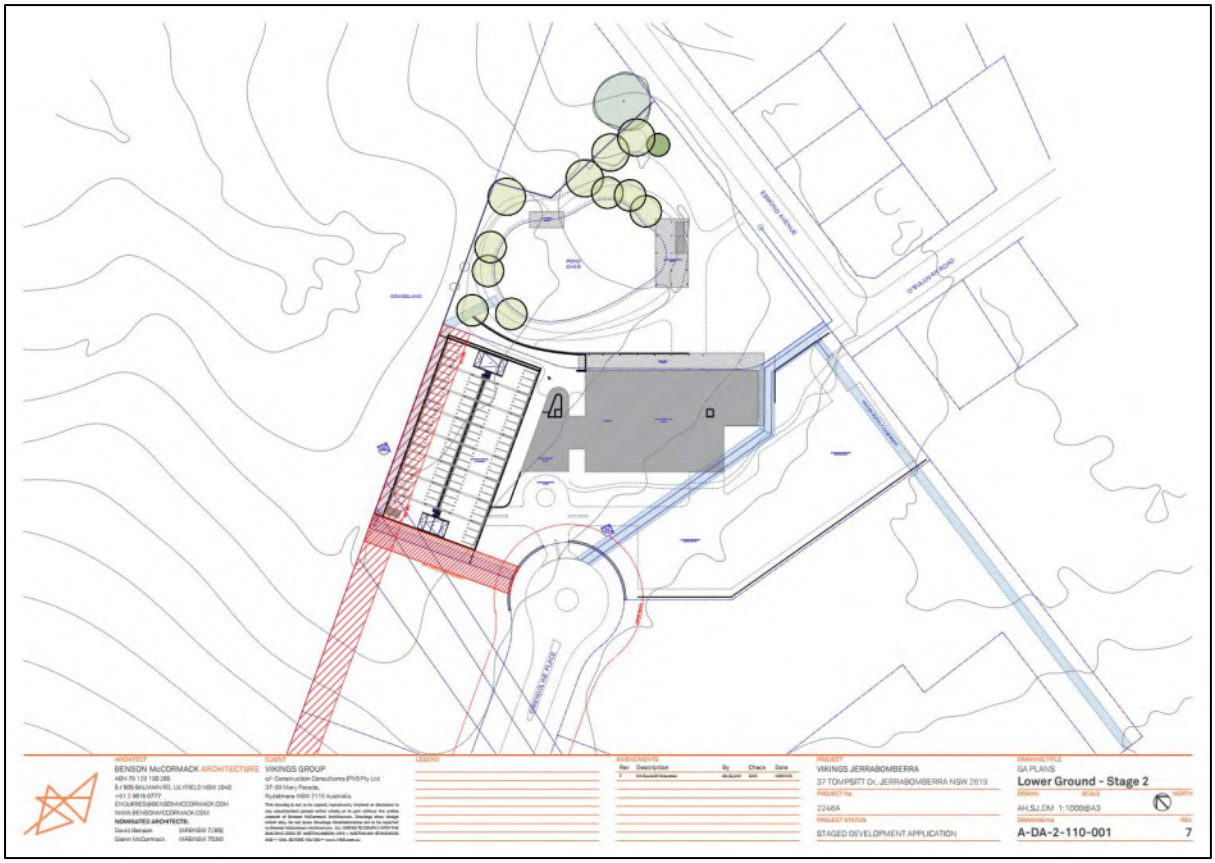


a) Upper Ground Floor

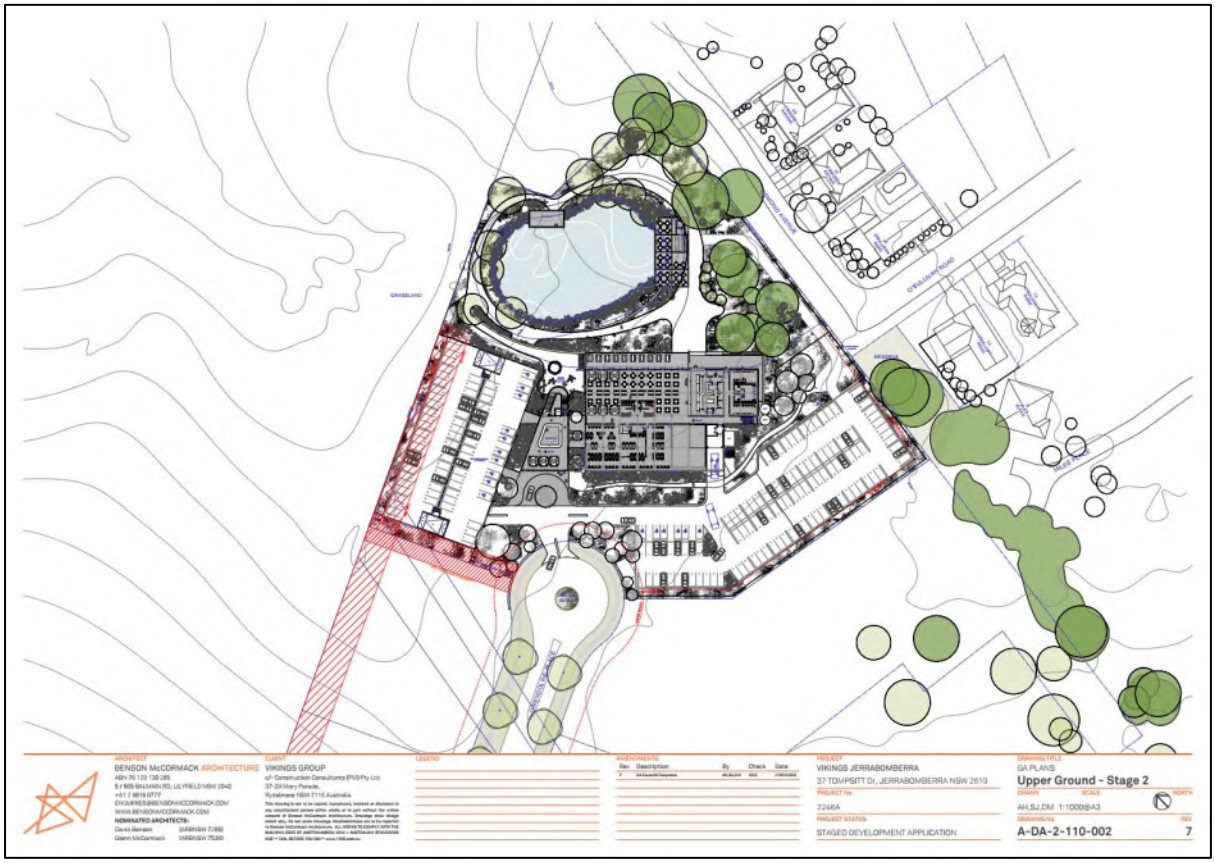


b) Mezzanine

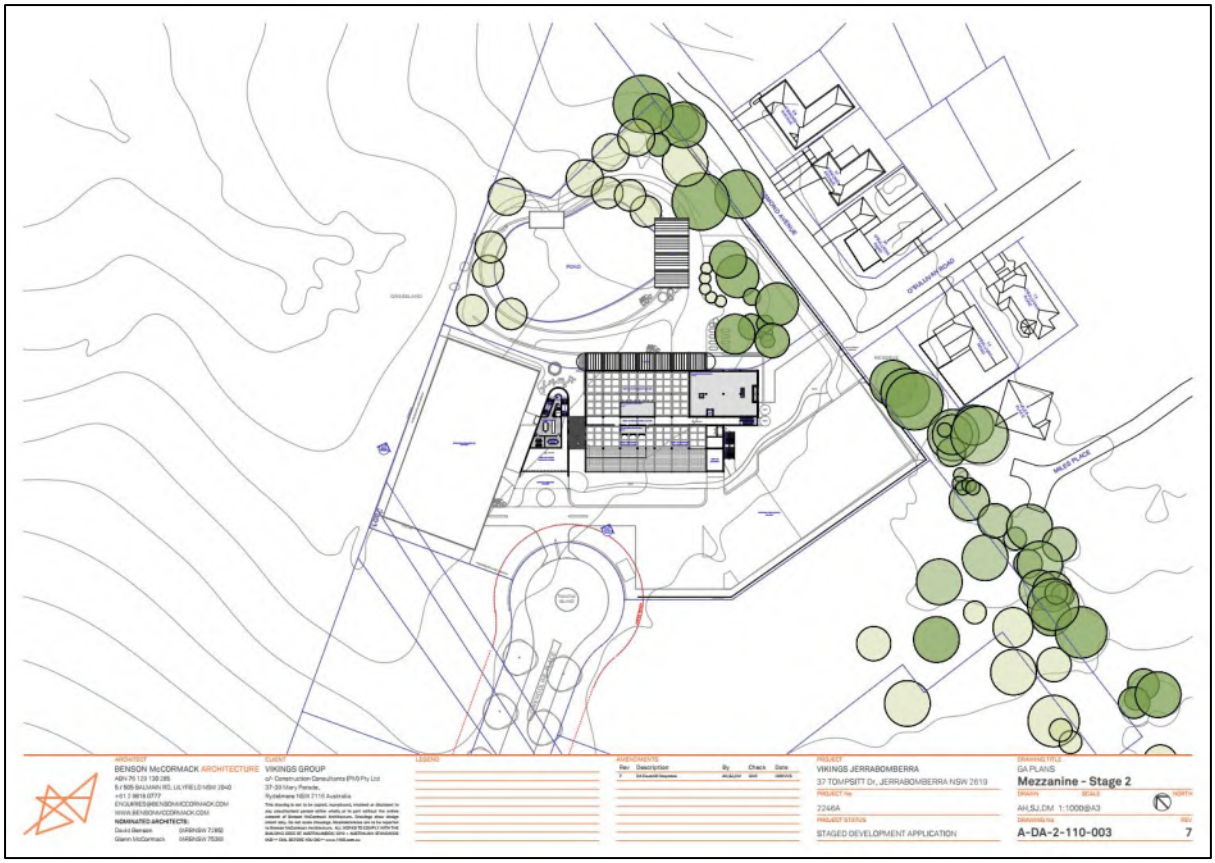
Figure 14: Proposed Stage 1 Only Development



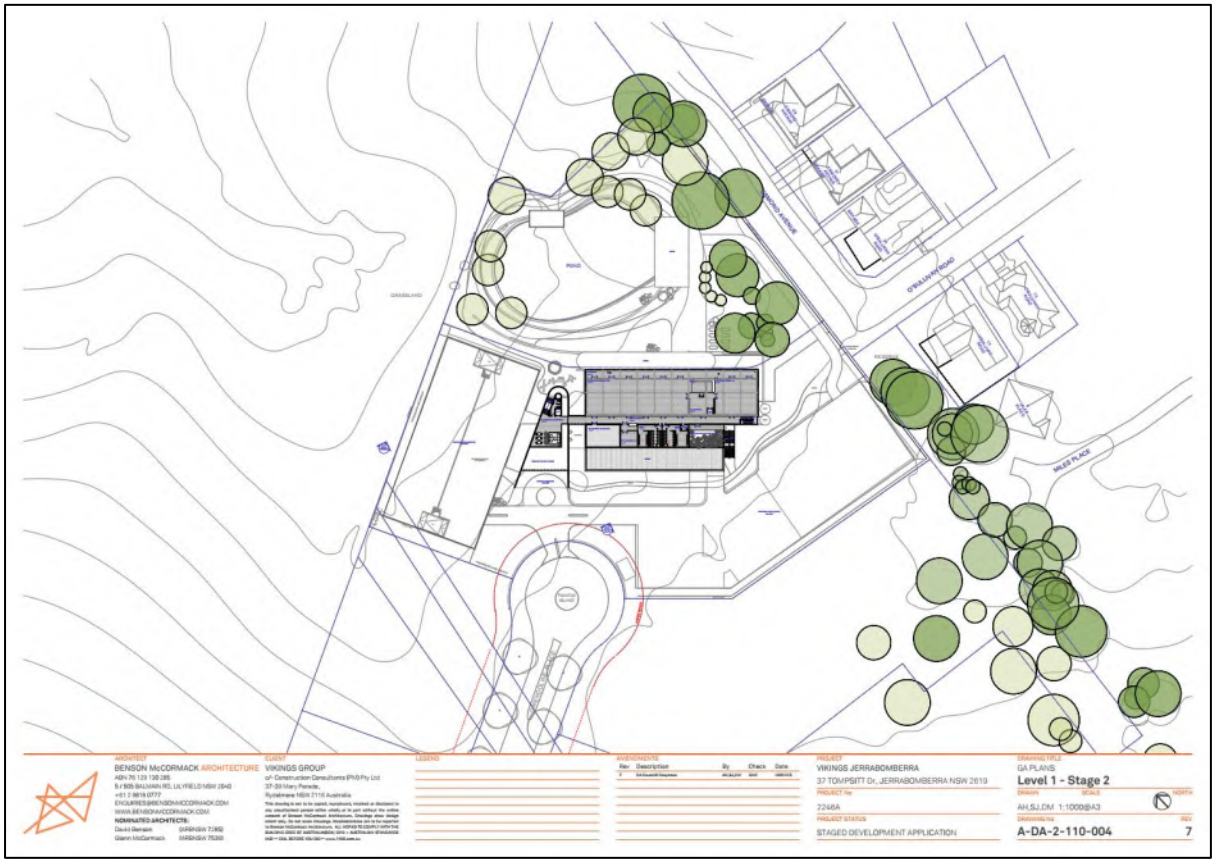
a) Lower Ground Floor



b) Upper Ground Floor



c) Mezzanine



d) Level 1

Figure 15: Proposed Stages 1 & 2 Development

Under all of the development stages, vehicle access to the site is proposed in two (2) locations:

- Light vehicle and heavy vehicle access, across the southwest boundary of the site, via the cul-de-sac of Gwendoline Place, and
- Emergency access only, across the east boundary of the site, via Esmond Avenue / O'Sullivan Road.

Within the subject site, a series of accessways is proposed to connect the Gwendoline Place cul-de-sac with two (2) off-street carparks (one (1) in the western corner of the site and the other adjacent to the southern boundary of the site) and a porte-cochere located adjacent to the main entrance. A loading dock is located to the north of the southeastern carpark.

4.1 Traffic and Car Parking Demands

The following sections set out the anticipated traffic and car parking demands associated with the proposed development. These demand estimates are based on three (3) sets of case study data collated from eight (8) sets of traffic and car parking demand observations, made at seven (7) different sites with land uses similar to the proposed development.

4.1.1 Case Study 1: Lanyon Vikings

The first case study dataset comprises traffic and car parking survey data, collected at Lanyon Vikings on behalf of Quantum Traffic on Friday, 19 May 2023 and Saturday, 20 May 2023.

Lanyon Vikings is an existing licensed club, located on the west side of Heidelberg Street in Conder, ACT. Compared to the proposed development, Lanyon Vikings:

1. Is of a similar scale to stages 1 & 2 (approximately 1,740m^2 licensed GFA),
2. Is located on a similarly car-dependant suburban site (bus stops served by four (4) bus routes within approximately 450m),
3. Is operated by Vikings Group (like the proposed development), and
4. Provides on-site car parking at a similar rate to the proposed development (approximately 13.3 on-site car parking spaces per 100m^2 licensed GFA).

This case study dataset reflects the number of vehicles (including private vehicles as well as rideshare vehicles and community buses) entering and exiting all publicly accessible off-street carparks (both Club- and Territory-managed) within approximately 200m walking distance of Lanyon Vikings. This traffic data was then used to derive the car parking accumulation and hence the car parking occupancy throughout the survey period. It is noted that there is negligible on-street car parking within approximately 200m walking distance of Lanyon Vikings and that the on-site (and most-proximate) carparks never exceeded 50% occupancy throughout the survey period. Furthermore, there were no other significant traffic generators operating in the area at the time of the surveys. On this basis, we are confident that these surveys captured the typical unconstrained traffic and car parking demands associated with Lanyon Vikings.

Car Parking Demands

The Lanyon Vikings data identified peak car parking demands for 4.4 car parking spaces per 100m^2 licensed GFA at 6:45pm and 7pm on Friday evening and for 4.5 car parking spaces per 100m^2 of licensed GFA at 6:45pm on Saturday evening. Figure 16 below presents the traffic demand profiles observed at Lanyon Vikings.

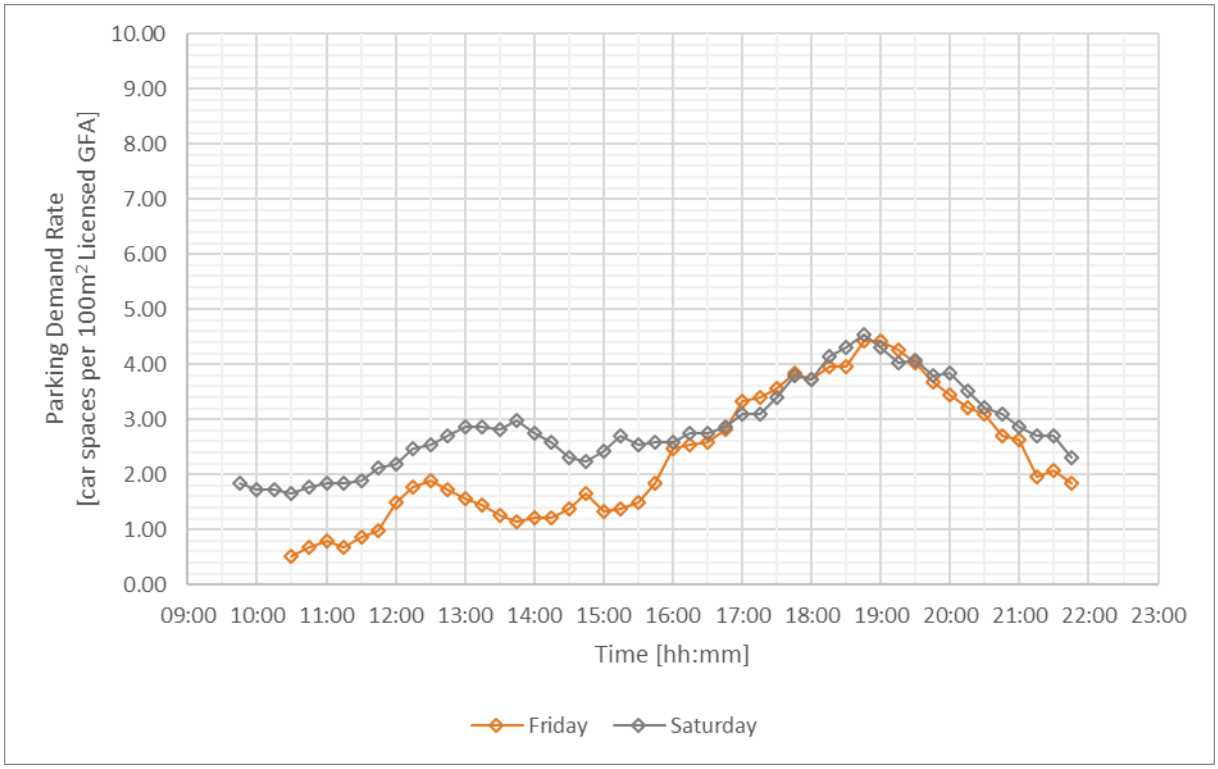


Figure 16: Observed Car Parking Demand Profile – Lanyon Vikings

Traffic Demands

The Lanyon Vikings data identified peak traffic demands for 4.7 vehicle trips per 100m² of licensed GFA per hour beginning at 5:15pm on Friday evening and for 2.9 vehicle trips per 100m² of licensed GFA per hour beginning at 5:30pm on Saturday evening. Figure 17 below presents the traffic demand profiles observed at Lanyon Vikings.

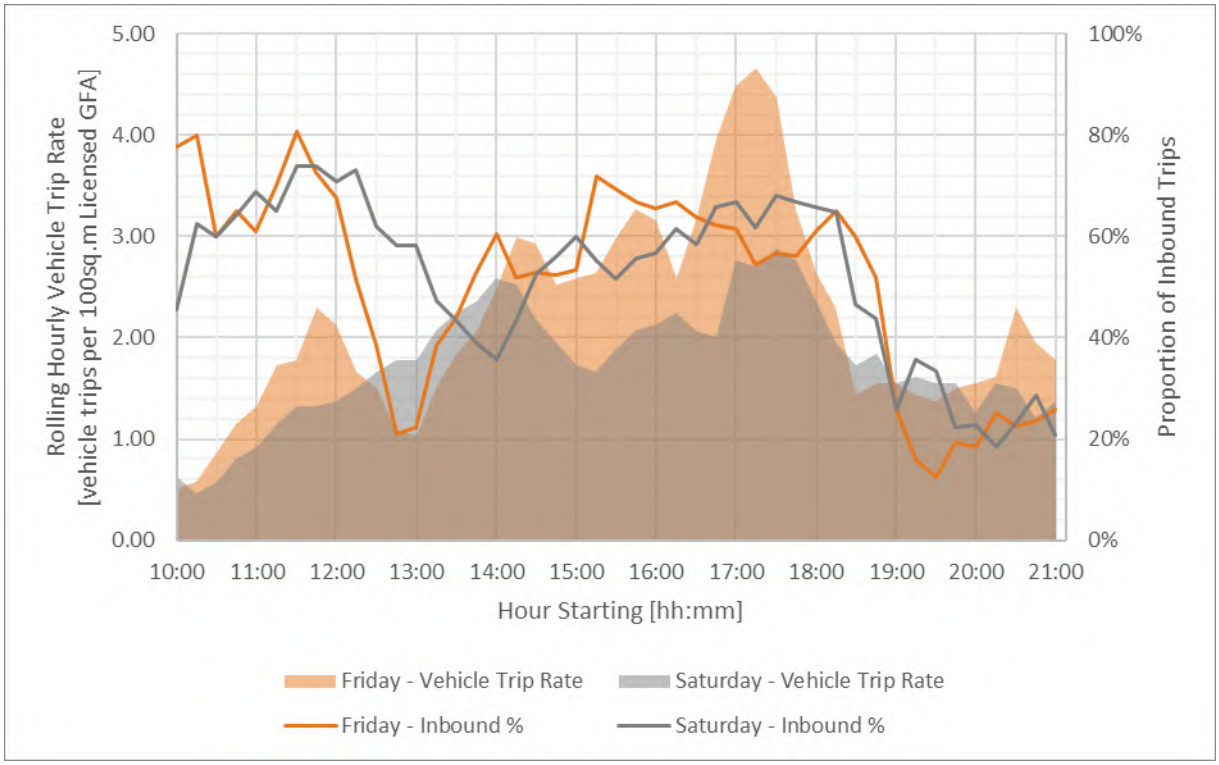


Figure 17: Observed Traffic Demand Profile – Lanyon Vikings

4.1.2 Case Study 2: Vikings Group

The second case study dataset comprises aggregated car parking demand data provided by Vikings Group across their four (4) locations (Chisholm, Erindale, Lanyon & Town Centre) in August 2023 – the busiest month of 2023.

Chisholm Vikings is an existing licensed club, located on the west side of Benham Street in Chisholm, ACT. Compared to the proposed development, Chisholm Vikings:

1. Is of a similar scale to stage 1 (approximately 1,310m^2 licensed GFA),
2. Is located on a marginally less car-dependant suburban site (stops served by four (4) bus routes within approximately 180m),
3. Is operated by Vikings Group (like the proposed development), and
4. Provides on-site car parking at a slightly lesser rate than the proposed development (approximately 10.2 on-site car parking spaces per 100m^2 licensed GFA).

Erindale Vikings is an existing licensed club, located on the west side of Ricardo Street in Wanniassa, ACT. Compared to the proposed development, Erindale Vikings:

1. Is larger in scale than the proposed development (approximately 2,525m^2 licensed GFA),
2. Is located on a somewhat less car-dependant suburban site (stops served by six (6) bus routes, including one (1) 'rapid' bus route, within approximately),
3. Is operated by Vikings Group (like the proposed development), and
4. Provides on-site car parking at a lesser rate than the proposed development (approximately 9.2 on-site car parking spaces per 100m^2 licensed GFA).

As aforementioned, Lanyon Vikings is an existing licensed club, located on the west side of Heidelberg Street in Conder, ACT. Compared to the proposed development, Lanyon Vikings:

1. Is of a similar scale to stages 1 & 2 (approximately 1,740m^2 licensed GFA),
2. Is located on a similarly car-dependant suburban site (bus stops served by four (4) bus routes within approximately 450m),
3. Is operated by Vikings Group (like the proposed development), and
4. Provides on-site car parking at a similar rate to the proposed development (approximately 13.3 on-site car parking spaces per 100m^2 licensed GFA).

Town Centre Vikings is an existing licensed club, located on the northwest side of Rowland Rees Crescent in Greenway, ACT. Compared to the proposed development, Town Centre Vikings:

1. Is larger in scale than the proposed development (approximately 2,192m^2 licensed GFA),
2. Is located on a somewhat less car-dependant urban site (bus stops served by 12 bus routes, including one (1) 'rapid' bus route, within approximately 450m),
3. Is operated by Vikings Group (like the proposed development), and
4. Provides on-site car parking at a slightly lesser rate than the proposed development (approximately 10.4 on-site car parking spaces per 100m^2 licensed GFA).

This case study dataset reflects the number of vehicles parked on-site at each of Vikings Group's four (4) locations, at hourly intervals, averaged across various days of the week, throughout August 2023.

Car Parking Demands

The Vikings Group data for Chisholm Vikings identified peak car parking demands for 6.1 car parking spaces per 100m^2 licensed GFA at 7pm on Mondays-Wednesdays, for 7.8 car parking spaces per 100m^2 licensed GFA at 6pm on Thursdays-Saturdays and for 6.6 car parking spaces per 100m^2 of licensed GFA at 7pm on Sundays. Figure 18 below presents the traffic demand profiles observed at Chisholm Vikings.

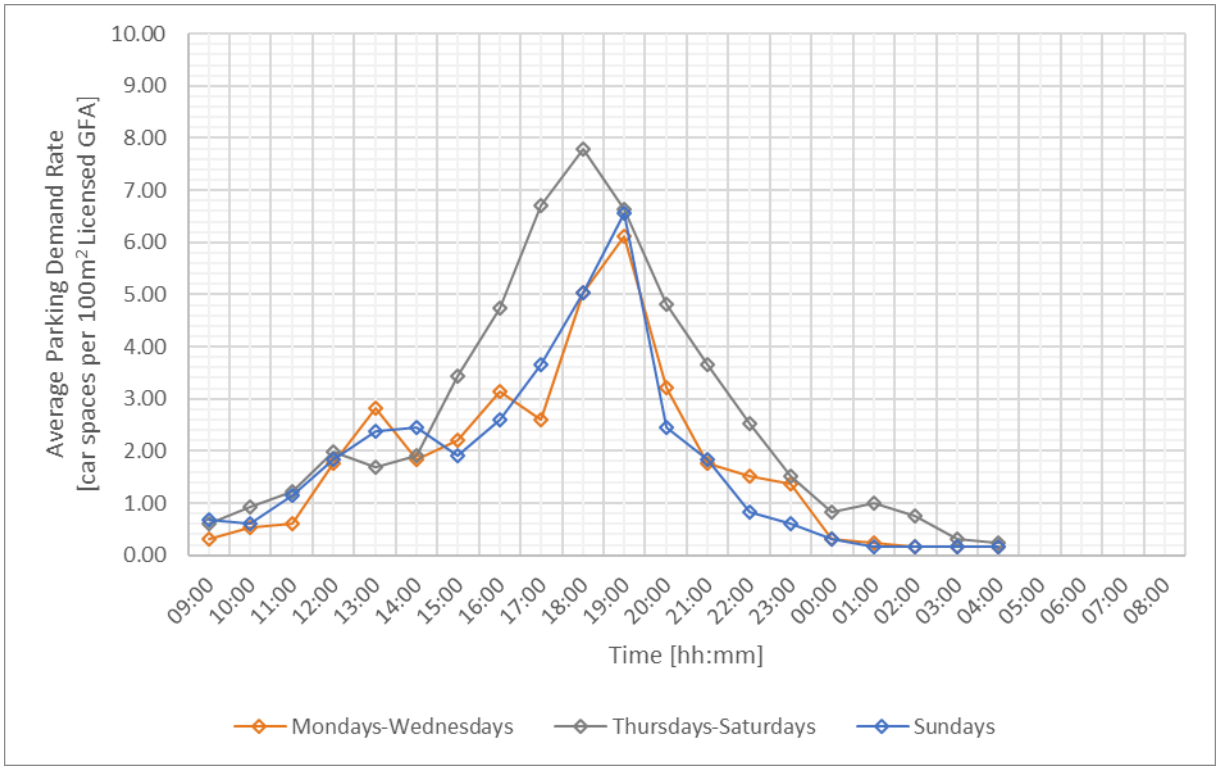


Figure 18: Observed Car Parking Demand Profile – Vikings Group (Chisholm Vikings)

The Vikings Group data for Erindale Vikings identified peak car parking demands for 4.6 car parking spaces per 100m^2 licensed GFA at 4pm on Mondays-Wednesdays, for 7.5 car parking spaces per 100m^2 licensed GFA at 7pm on Thursdays-Saturdays and for 5.1 car parking spaces per 100m^2 of licensed GFA at 2pm on Sundays. Figure 19 below presents the traffic demand profiles observed at Erindale Vikings.

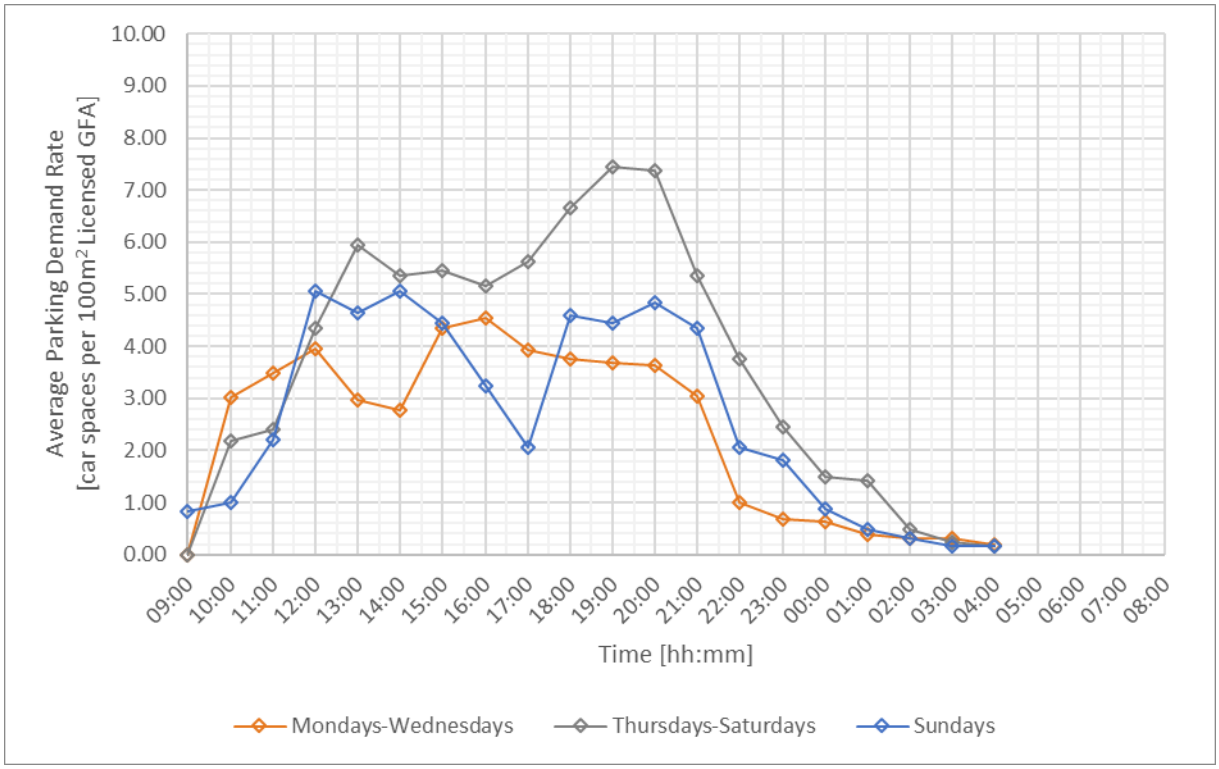


Figure 19: Observed Car Parking Demand Profile – Vikings Group (Erindale Vikings)

The Vikings Group data for Lanyon Vikings identified peak car parking demands for 4.0 car parking spaces per 100m² licensed GFA at 7pm on Mondays-Wednesdays, for 6.0 car parking spaces per 100m² licensed GFA at 7pm on Thursdays-Saturdays and for 2.7 car parking spaces per 100m² of licensed GFA at 7pm on Sundays. Figure 20 below presents the traffic demand profiles observed at Lanyon Vikings.

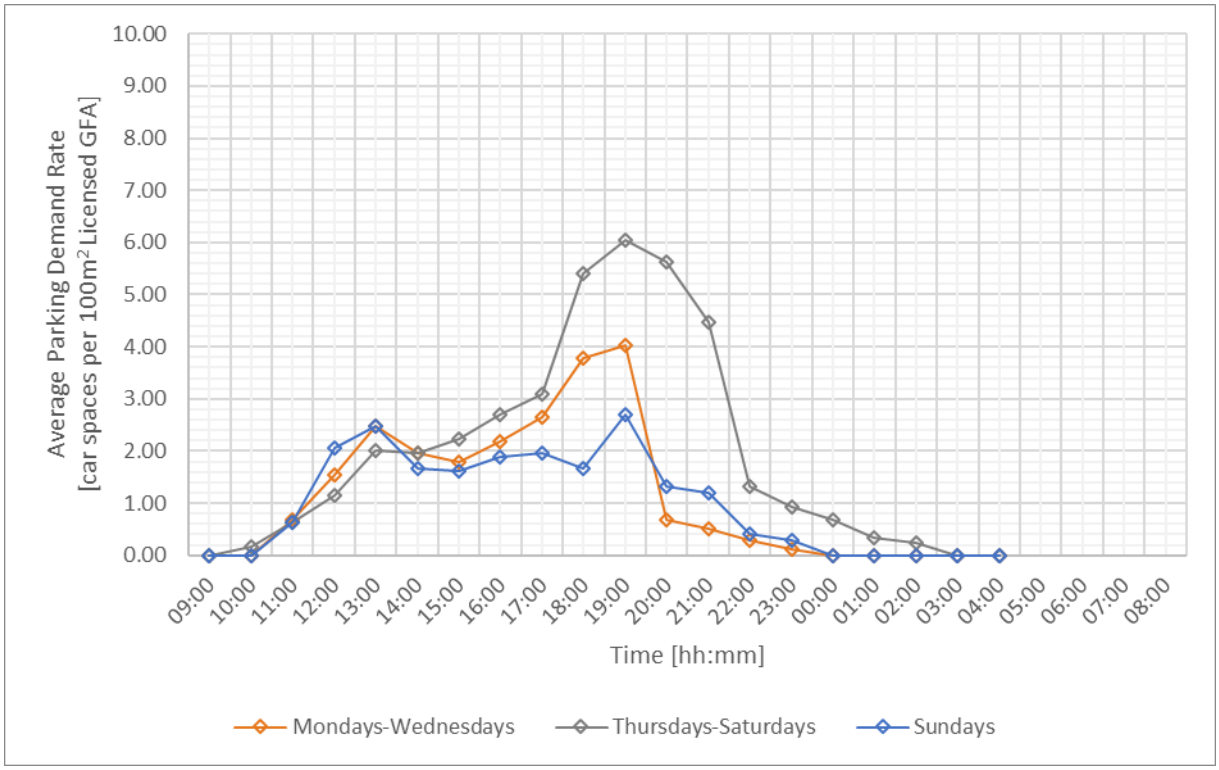


Figure 20: Observed Car Parking Demand Profile – Vikings Group (Lanyon Vikings)

The Vikings Group data for Town Centre Vikings identified peak car parking demands for 5.8 car parking spaces per 100m^2 licensed GFA at 2pm on Mondays-Wednesdays, for 6.2 car parking spaces per 100m^2 licensed GFA at 2pm on Thursdays-Saturdays and for 6.5 car parking spaces per 100m^2 of licensed GFA at 1pm on Sundays. Figure 21 below presents the traffic demand profiles observed at Town Centre Vikings.

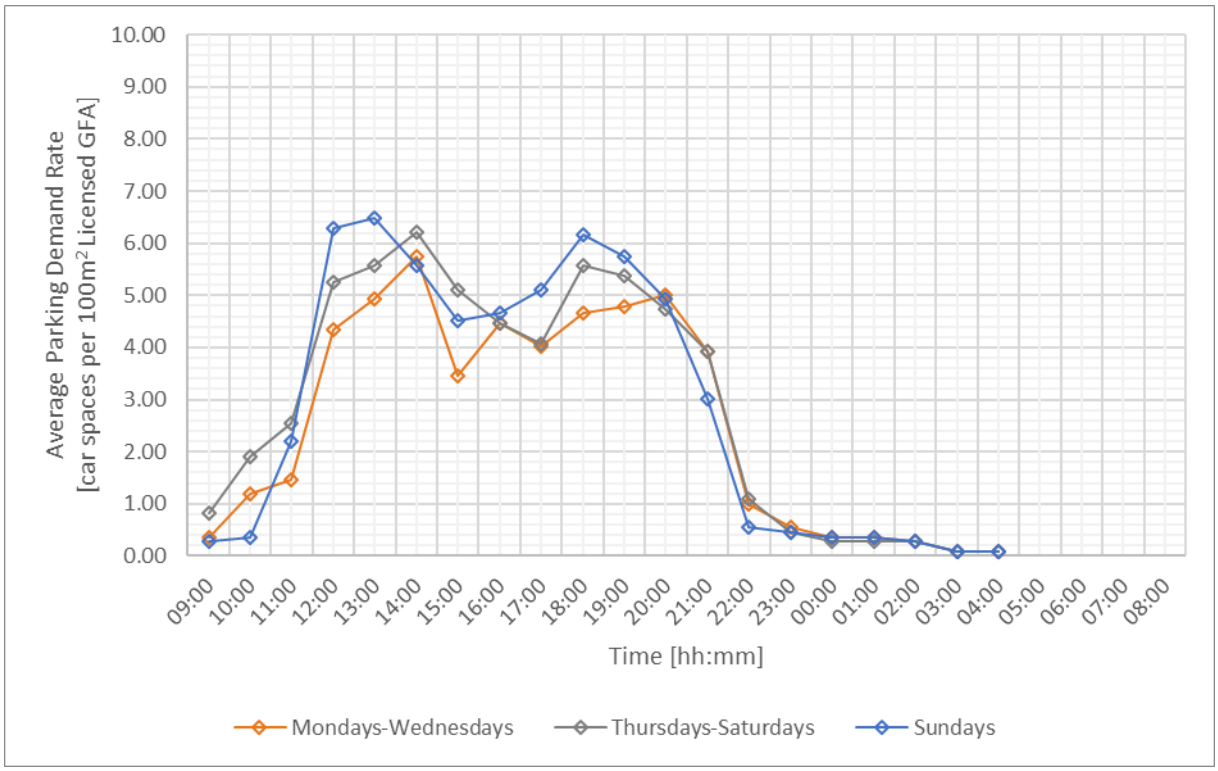


Figure 21: Observed Car Parking Demand Profile – Vikings Group (Town Centre Vikings)

4.1.3 Case Study 3: Googong Hotel TIA

The third case study dataset comprises car parking demand data referenced in *The Googong Hotel Development Application: Traffic Impact Assessment*, prepared in March 2023 by PTC Consultants and forming part of the associated Development Application, which was approved by QPRC.

Blue Cattle Dog Hotel is an existing pub, located on the east side of Mamre Road in St Clair. Compared to the proposed development, Blue Cattle Dog Hotel:

1. Is smaller in scale than the proposed development (approximately 1,056m^2 licensed GFA),
2. Is located on a marginally less car-dependant suburban site (bus stops served by three (3) bus routes within approximately 150m),
3. Is not operated by Vikings Group (unlike the proposed development), and
4. Provides on-site car parking at a slightly lesser rate than the proposed development (approximately 10.7 on-site car parking spaces per 100m^2 licensed GFA).

Jamison Hotel is an existing pub, located on the south side of Smith Street in Penrith. Compared to the proposed development, Jamison Hotel:

1. Is similar in scale to stage 1 of the proposed development (approximately 1,263m^2 licensed GFA),

2. Is located on a marginally less car-dependant suburban site (bus stops served by three (3) bus routes within approximately 320m),
3. Is not operated by Vikings Group (unlike the proposed development), and
4. Provides on-site car parking at a lesser rate than the proposed development (approximately 7.8 on-site car parking spaces per 100m^2 licensed GFA).

Plumpton Hotel is an existing pub, located on the south side of Richmond Road in Glendenning. Compared to the proposed development, Plumpton Hotel:

1. Has a scale which falls midway between stage 1 only and stages 1 & 2 of the proposed development (approximately 1,536m^2 licensed GFA),
2. Is located on a marginally less car-dependant suburban site (bus stops served by four (4) bus routes within approximately 280m),
3. Is not operated by Vikings Group (unlike the proposed development), and
4. Provides on-site car parking at a similar rate to the proposed development (approximately 12.0 on-site car parking spaces per 100m^2 licensed GFA).

This case study data reflects the observed on-site car parking demands, at hourly intervals during what were assumed to be the peak times for this type of land use (11am-2pm and 6pm-9pm) on a Friday and a Saturday.

Car Parking Demands

The Googong Hotel TIA data for Blue Cattle Dog Hotel identified peak car parking demands for 8.8 car parking spaces per 100m^2 licensed GFA at 2pm on Friday and for 6.8 car parking spaces per 100m^2 of licensed GFA at 2pm on Saturday. Figure 22 below presents the traffic demand profiles observed at Blue Cattle Dog Hotel.

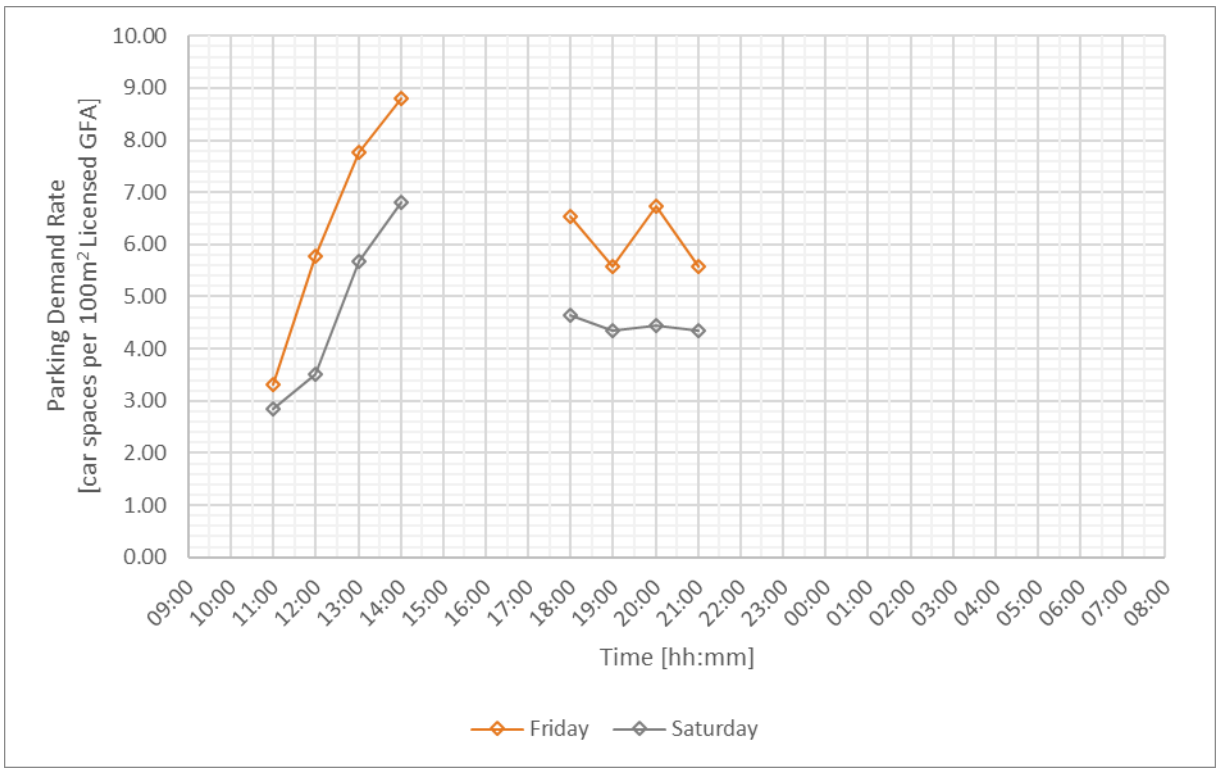


Figure 22: Observed Car Parking Demand Profile – Googong Hotel TIA (Blue Cattle Dog Hotel)

The Googong Hotel TIA data for Jamison Hotel identified peak car parking demands for 3.4 car parking spaces per 100m^2 licensed GFA at 1pm on Friday and for 3.7 car parking spaces per 100m^2 of licensed GFA at 6pm-7pm on Saturday. Figure 23 below presents the traffic demand profiles observed at Jamison Hotel.

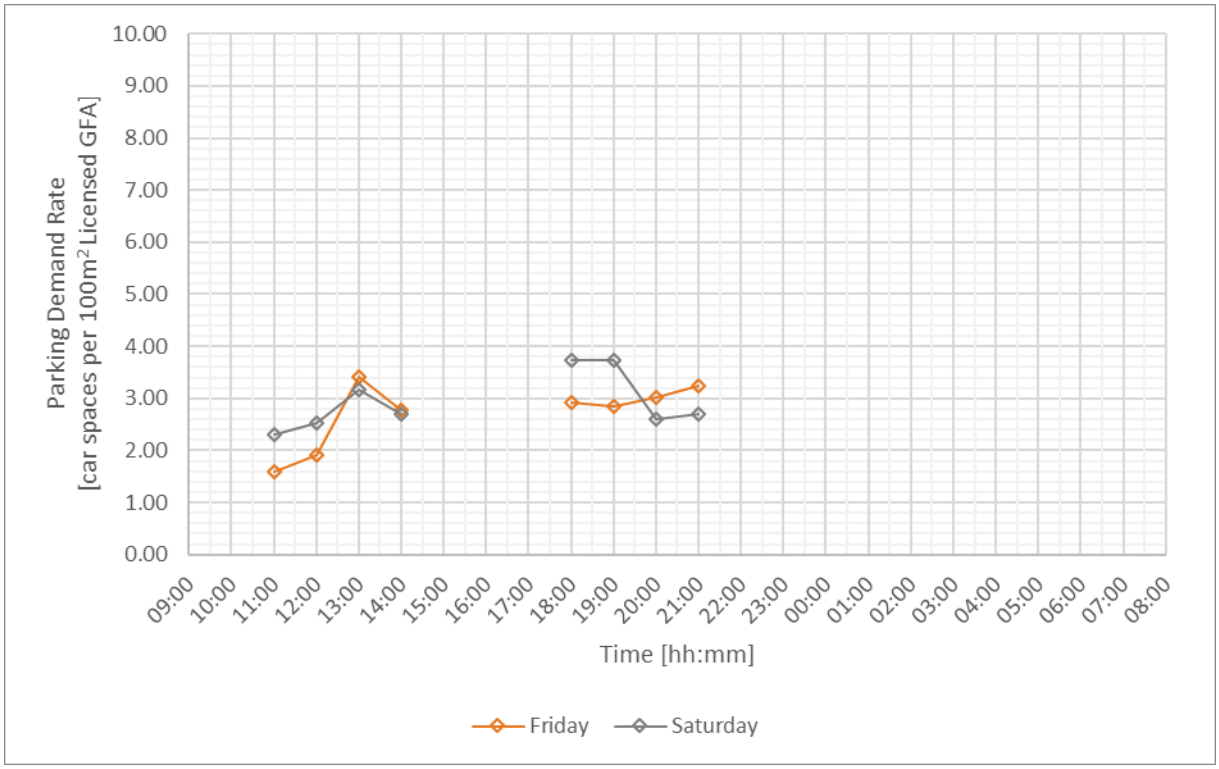


Figure 23: Observed Car Parking Demand Profile – Googong Hotel TIA (Jamison Hotel)

The Googong Hotel TIA data for Plumpton Hotel identified peak car parking demands for 3.5 car parking spaces per 100m^2 licensed GFA at 7pm on Friday and for 3.9 car parking spaces per 100m^2 of licensed GFA at 7pm on Saturday. Figure 24 below presents the traffic demand profiles observed at Plumpton Hotel.

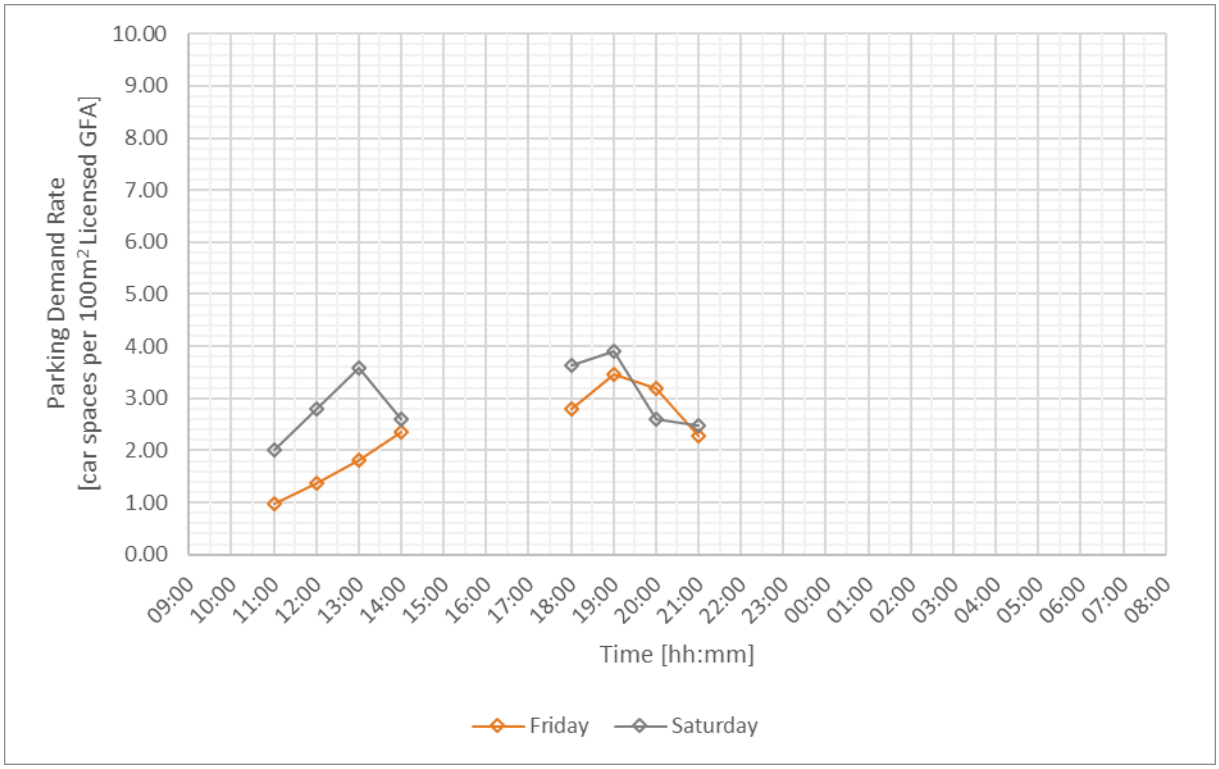


Figure 24: Observed Car Parking Demand Profile – Googong Hotel TIA (Plumpton Hotel)

4.1.4 Summary

Car Parking Demands

The case study data, summarised at Table 17 below, indicates that licensed club / pub land uses generate peak demands vary between 3.7-8.8 car parking spaces per 100m^2 licensed GFA. Even considering just the three (3) sites which are most similar to the proposed development (Lanyon Vikings, Chisholm Vikings and Plumpton Hotel), the peak car parking demand rates still show significant variability, between 3.9-7.8 car parking spaces per 100m^2 licensed GFA.

On this basis, the 1,202m^2 of licensed GFA that make up the proposed stage 1 only development would be expected to generate demands for between 47 and 94 car parking spaces.

Similarly, the 1,832m^2 of licensed GFA that make up the proposed stages 1 & 2 development would be expected to generate demands for between 72 and 143 car parking spaces.

Acknowledging QPRC's strong preference for an over-, rather than under-provision of on-site car parking, this analysis adopts the car parking demands at the upper end of these ranges (94 and 143 car parking spaces, associated with stage 1 only and stages 1 & 2, respectively), to reflect the maximum rate observed across the three (3) most similar case study sites (7.8 car spaces per 100m^2 licensed GFA).

Table 17: Case Study Summary – Car Parking Data

Site	Licensed GFA	On-Site Car Parking Provision		Observed Peak Car Parking Demand	
		Spaces	Rate	Spaces	Rate
Proposed Development					
Stage 1 Only	1,202m^2	153	12.7 car spaces per 100m^2 licensed GFA	-	-
Stages 1 & 2	1,832m^2	272	14.8 car spaces per 100m^2 licensed GFA	-	-
Case Study 1: Lanyon Vikings					
Lanyon Vikings	1,740m^2	231	13.3 car spaces per 100m^2 licensed GFA	79	4.5 car spaces per 100m^2 licensed GFA
Case Study 2: Vikings Group					
Chisholm Vikings	1,310m^2	133	10.2 car spaces per 100m^2 licensed GFA	102	7.8 car spaces per 100m^2 licensed GFA
Erindale Vikings	2,525m^2	233	9.2 car spaces per 100m^2 licensed GFA	188	7.5 car spaces per 100m^2 licensed GFA
Lanyon Vikings	1,740m^2	231	13.3 car spaces per 100m^2 licensed GFA	105	6.0 car spaces per 100m^2 licensed GFA
Town Centre Vikings	2,192m^2	227	10.4 car spaces per 100m^2 licensed GFA	142	6.5 car spaces per 100m^2 licensed GFA
Case Study 3: Googong Hotel TIA					
Googong Hotel	1,085m^2	40	3.7 car spaces per 100m^2 licensed GFA	-	-
Blue Cattle Dog Hotel	1,056m^2	113	10.7 car spaces per 100m^2 licensed GFA	93	8.8 car spaces per 100m^2 licensed GFA
Jamison Hotel	1,263m^2	98	7.8 car spaces per 100m^2 licensed GFA	47	3.7 car spaces per 100m^2 licensed GFA
Plumpton Hotel	1,536m^2	184	12.0 car spaces per 100m^2 licensed GFA	60	3.9 car spaces per 100m^2 licensed GFA

Traffic Demands

Noting that only the Lanyon Vikings case study captured traffic demand data, the case study data indicates that licensed club land uses typically generate up to approximately 4.7 vehicle trips per 100m^2 licensed GFA per hour on Fridays and up to approximately 2.9 vehicle trips per 100m^2 licensed GFA per hour on Saturdays. Further noting that the observed development peak hours (beginning at 5:15pm on a typical weekday and 5:30pm on a Saturday) do not align with those of the broader road network (beginning at 4:45pm on a typical weekday and 3:30pm on a Saturday), this analysis considers the road network peak hours which remain critical under the anticipated development traffic demands as shown at Figure 25 below.

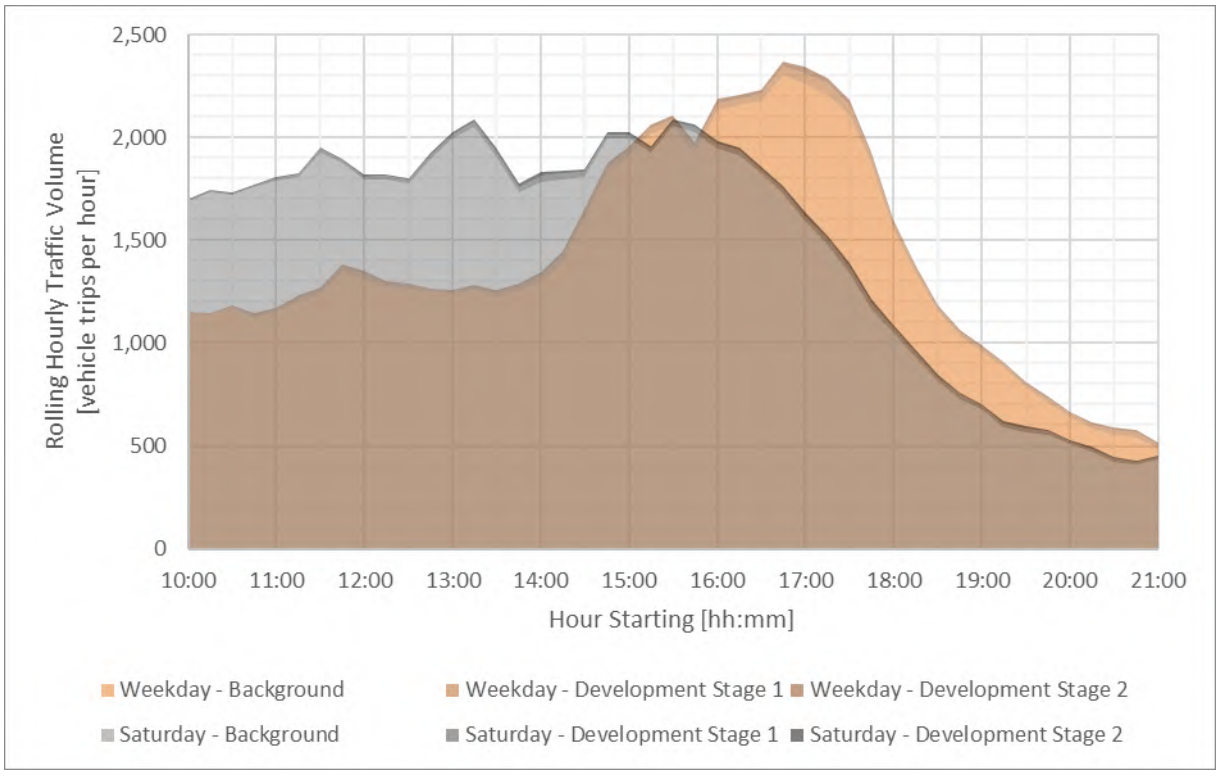


Figure 25: Post-Development Traffic Demand Profiles

On this basis, the 1,202m^2 of licensed GFA within the proposed stage 1 only development is expected to generate approximately 48 vehicle trips during the evening (road network) peak hour on a typical weekday and approximately 23 vehicle trips during the (road network) peak hour on Saturdays.

Similarly, the 1,832m^2 of licensed GFA that make up the proposed stages 1 & 2 development is expected to generate approximately 73 vehicle trips during the evening (road network) peak hour on a typical weekday and approximately 35 vehicle trips during the (road network) peak hour on Saturdays.

Table 18 below presents a summary of the anticipated traffic demand calculations during the road network peak hours.

Table 18: Traffic Demands – Proposed Development

Land Use	Size / Number	Total Rate	Total Trips	Inbound Percentage	In Trips	Out Trips
Weekday PM (Road Network) Peak Hour						
Stage 1 Only	1,202m^2 licensed GFA	3.97 vte per 100m^2 licensed GFA per hour	48 vte per hour	62%	30 vte per hour	18 vte per hour
Stage 2 Only	630m^2 licensed GFA		25 vte per hour		16 vte per hour	9 vte per hour
Stages 1 & 2	1,832m^2 licensed GFA		73 vte per hour		45 vte per hour	27 vte per hour
Saturday (Road Network) Peak Hour						
Stage 1 Only	1,202m^2 licensed GFA	1.90 vte per 100m^2 licensed GFA per hour	23 vte per hour	52%	12 vte per hour	11 vte per hour
Stage 2 Only	630m^2 licensed GFA		12 vte per hour		6 vte per hour	6 vte per hour
Stages 1 & 2	1,832m^2 licensed GFA		35 vte per hour		18 vte per hour	17 vte per hour

Notes:
vte = vehicle trip ends.

Traffic Distribution

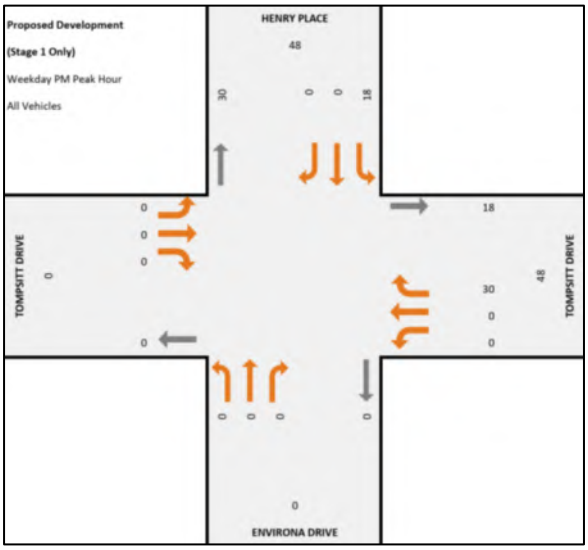
The directional traffic distribution of the proposed development has been adopted based on a review of the residential population distribution at the time of 2021 Australian Census. This analysis found that the proposed development would be the closest licensed club for residents of Jerrabomberra, who would primarily access the club via Tompsitt Drive to the east of Henry Place. Table 19 below presents the adopted directional splits.

Table 19: Directional Splits – Proposed Development Traffic Demands

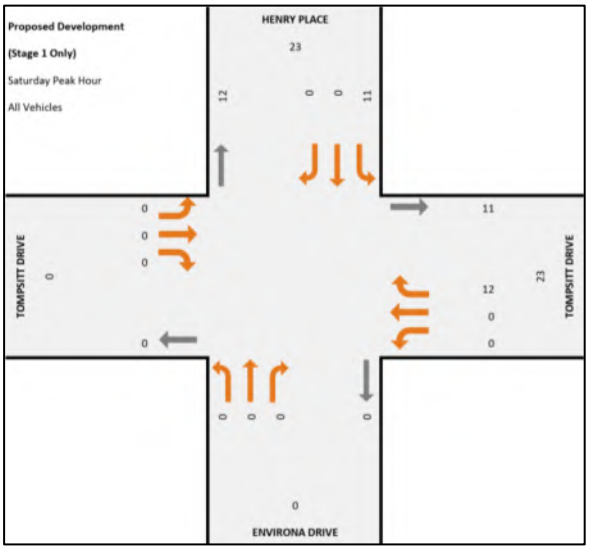
Direction	Proportion
South (Environa Drive)	-
East (Tompsitt Drive)	100%
West (Tompsitt Drive)	-

Summary

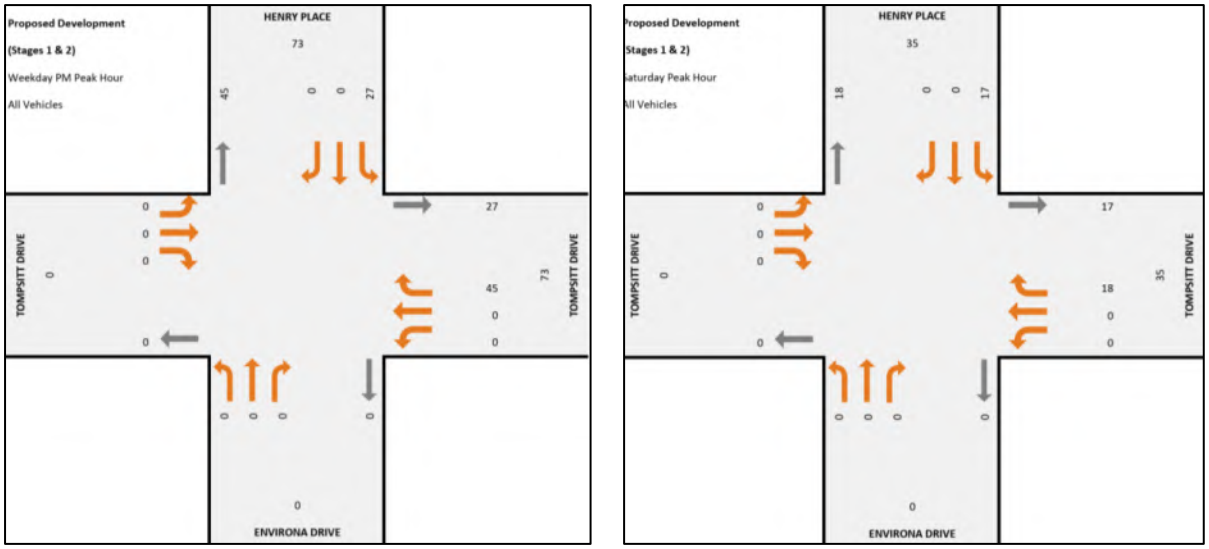
On this basis, Figure 26 below presents the development traffic demands adopted for this analysis. More detailed breakdowns of the peak hour traffic demands associated with the proposed development are provided at Appendix H.



a) Weekday PM Peak Hour – Stage 1 Only



b) Saturday Peak Hour – Stage 1 Only



c) Weekday PM Peak Hour – Stages 1 & 2 *d) Saturday Peak Hour – Stages 1 & 2*

Figure 26: Peak Hour Traffic Demands – Proposed Development

4.2 Design Review

The following sections summarise the design review that has been undertaken on development plans prepared by Benson McCormack Architects on 6 December 2023. This review has been undertaken referencing the requirements of:

- *Australian Standard 2890 Part 1: Off-street car parking* (*AS2890.1*),
- *Australian Standard 2890 Part 2: Off-street commercial vehicle facilities* (*AS2890.2*), and
- *Australian Standard 2890 Part 6: Off-street parking for people with disabilities* (*AS2890.6*).

4.2.1 Design of Car Parking Modules

Standard Car Space Dimensions

Table 1.1 and Figure 2.2 of *AS2890.1* recommend that spaces for medium-term car parking associated with entertainment centres (class 2) have minimum dimensions of 2.5m wide by 5.4m long and be located perpendicular to a 5.8m wide aisle.

The 258 standard car parking spaces proposed on the subject site (138 associated with stage 1 and 120 associated with stage 2) each have dimensions which accord with those listed above (2.5m wide by 5.4m long parking space located perpendicular to a 5.8m wide aisle).

Accessible Car Space Dimensions

Section 2.2.1 of *AS2890.6* specifies that accessible car parking space must have minimum dimensions of 2.4m wide by 5.4m long parking space and be located adjacent to a 2.4m wide by 5.4m long shared area.

The 16 accessible car parking spaces proposed on the subject site (all as part of stage 1) each have dimensions (2.5m wide by 5.4m long spaces, located adjacent to equally dimensioned shared areas) which satisfy those specified in *AS2890.6*.

Blind Aisles

Section 2.4.2 of *AS2890.1* specifies that blind (dead-end) aisles must be extended a minimum of 1m beyond the last parking space (to allow for vehicles manoeuvring to enter or exit the last parking space) and that the last parking space must have 0.3m lateral clearance from any vertical obstructions (i.e. walls or fences) located adjacent to the last parking space. Furthermore, it is necessary to include some provision for drivers to turn around when the blind aisle is longer than the width of six (6) car parking spaces and contains unallocated parking spaces.

All of the proposed car parking on the site includes aisle extensions which accord with the minimum length specified in *AS2890.1*. Similarly, there are no vertical obstructions shown within 0.3m of the last parking spaces.

The proposed carpark includes two (2) blind aisles with lengths which require turning provision. These are located immediately east of the Gwendoline Place cul-de-sac and at the far extent of the carpark to the west of the site. One (1) car parking space be removed from the aisle to the east of the Gwendoline Place cul-de-sac to allow vehicles to turn around in the case that all parking spaces are occupied. Similarly, there is sufficient space within the western carpark for a vehicle to turn around adjacent to the pedestrian bridge, while remaining outside of the designated shared areas.

Physical Controls

Section 2.4.5 of *AS2890.1* specifies that vehicle barriers are required to prevent vehicles running over the edge of a raised platform or deck, where the drop-off is greater than 0.6m. Where the drop-off is between 0.15m and 0.6m, wheel stops are considered to be sufficient.

Within stage 2 of the proposed development, the carpark on the west of the site is proposed to have a level difference of 1.6m between staggered parking levels. On this basis, vehicle barriers will be required along the edge of these decks.

Furthermore, it is noted that all of the parking spaces within the site are shown to contain wheelstops. It is noted that there are no car parking spaces within the site where wheelstops are required and that in some cases wheelstops can pose a trip hazard to pedestrians.

4.2.2 Design of Circulation Roadways and Ramps

Widths of Circulation Roadways and Ramps

Section 2.5.2 of *AS2890.1* specifies that straight circulation roadways require a minimum width of 3.0m between kerbs to accommodate one-way traffic flow and 5.5m between kerbs to accommodate two-way traffic flow. Furthermore, it is noted that a clearance of 0.3m is required between the roadway and any vertical obstruction (i.e. walls) which are more than 0.15m in height.

AS2890.1 also specifies that curved circulation roadways can be designed using a series of standardised circular curves, or alternatively must allow the B85 and B99 design vehicles to pass in opposite directions, with sufficient clearances.

The main circulation roadway which connects the two (2) proposed on-site carparks with the vehicle access and the porte-cochere has a width of 6.6m between kerbs, with 0.6m wide medians proposed in some locations. This arrangement satisfies the minimum dimensions

specified in *AS2890.1* for two-way traffic. It is noted that the median on the circulation roadway to the east of the accessway, along with that on the accessway itself, will need to be mountable in order to accommodate movements by heavy vehicles.

The plans show ramps within the western carpark as having 5.5m wide between walls, marginally narrower than the width required under *AS2890.1* to accommodate simultaneous two-way traffic on straight alignments (6.1m between walls) and significantly narrower than necessary in order to accommodate simultaneous two-way traffic flow. Noting that drivers informally giving way to one-another when navigating these ramps would not be unusual, nor would it be a significant safety concern (due to the available sight lines and slow vehicle speeds), it is recommended that these ramps be widened to accommodate simultaneous two-way traffic flow, as requested by QPRC. Swept path analysis presented at Figure 27 below and Appendix I, shows the additional width required in order to accommodate simultaneous two-way traffic flow around these ramps.

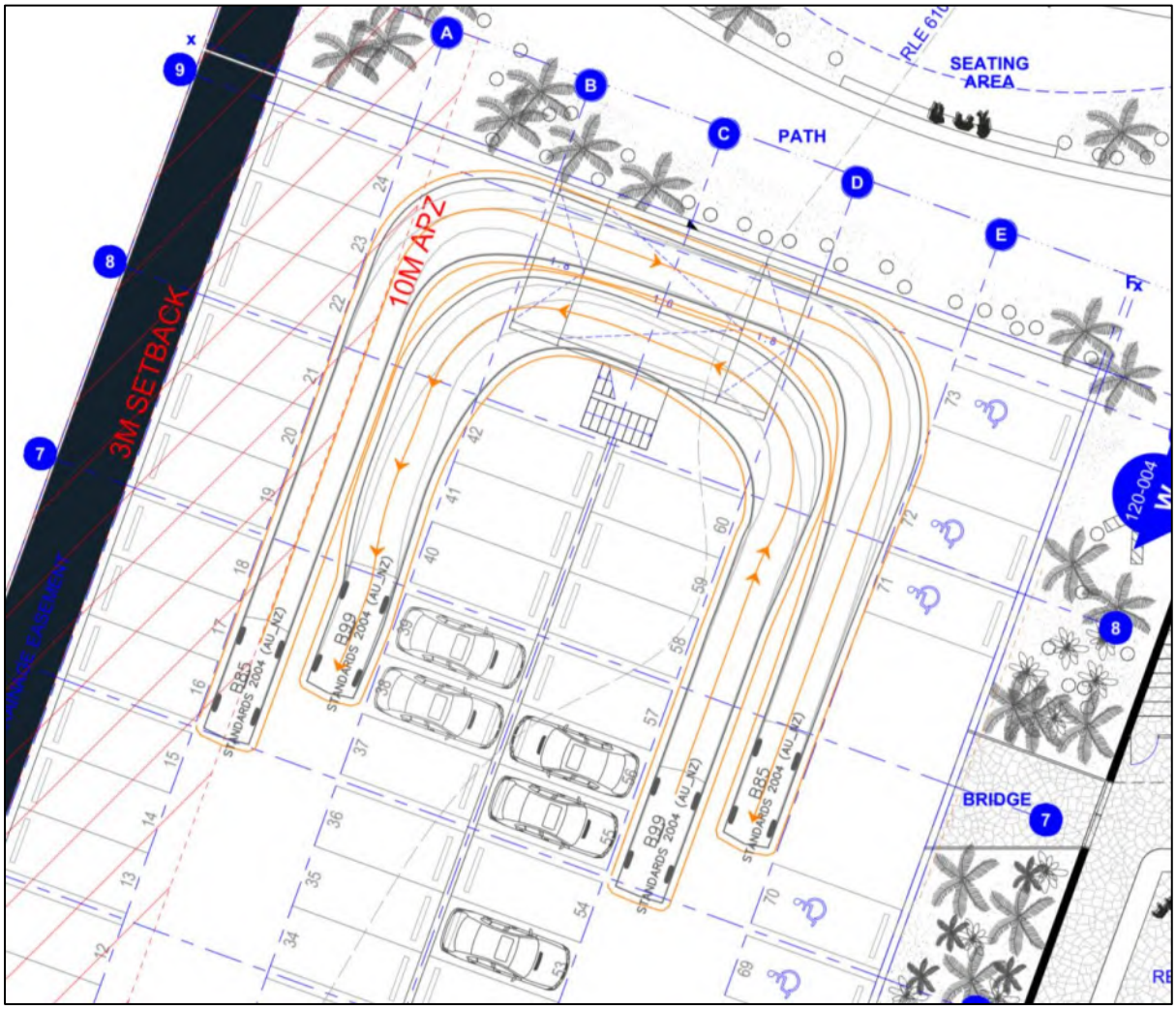


Figure 27: Simultaneous Two-Way Traffic Flow

The porte-cochere is proposed to have a curved alignment comprising a circular curve with internal radius of approximately 4m and a width of approximately 4m. These dimensions satisfy the requirements of *AS2890.1* for a single lane of traffic in public carparks. It is noted that a distinct surface treatment and comparatively constrained geometry of the porte cochere is proposed to distinguish this space as a lower speed environment from the adjacent circulation roadways.

Ramp Gradients

Section 2.5.3 of *AS2890.1* specifies that the maximum gradient of ramps which serve public carparks is 1:5 (20%) for ramp elements up to 20m length and that grade transitions are required to prevent the design vehicle from bottoming out on summit grade changes which exceed 1:8 (12.5%) or scraping on sag grade changes which exceed 1:6.7 (15%).

The ramps within the western carpark are proposed to have a maximum grade of 1:6 and transition sections which will permit the B99 design vehicle to pass without scraping or bottoming out (2.0m at 1:8 for both the top and bottom transitions). These ramp grades satisfy the requirements of *AS2890.1* for carparks which are open to the public.

4.2.3 Access Facilities

Pedestrian Sight Triangles

Pedestrian sight triangles, as set out in figure 3.3 of *AS2890.1* (a triangle extending 2.0m along the property boundary and 2.5m into the site along the vehicle access) are proposed to be kept clear of obstructions to visibility to ensure that there will be sufficient inter-visibility between drivers exiting the site and any pedestrians within the verge of Gwendoline Place.

Gradients

Section 3.3 of *AS2890.1* specifies that the gradient, for the first 6.0m from the property boundary, into the site must not exceed 1:20 (5.0%) except in specific circumstances (i.e. downgrade for vehicles leaving the site with limitations on the user class and size of the carpark).

The proposed basement vehicle access is proposed to have a grade of less than 1:20 (5.0%) gradient for the first 6.0m from the property boundary.

4.2.4 Additional Requirements for Car Parking Structures

Headroom

Section 5.3 of *AS2890.1* specifies that a minimum of 2.2m headroom clearance is required within the basement carpark to permit access by cars and light vans. Furthermore, section 2.4 of *AS2890.6* specifies that a minimum of 2.5m headroom clearance is required above accessible car parking spaces to permit the use of a wheelchair hoist mounted on the roof of a vehicle.

The development plans show minimum floor-to-floor heights of 3.2m within the western carpark. These are sufficient to accommodate up to 0.7m of structure and services above the accessible car parking spaces and up to 1m of structure and services elsewhere throughout the basement.

5 Statutory Parking Assessments

The following sections set out the statutory parking requirements and the proposed parking provisions associated with the development.

These assessments have been undertaken in accordance with the statutory requirements for car and motorcycle parking as set out in the *Queanbeyan Development Control Plan 2012* (*Queanbeyan DCP*).

5.1 Overall Car Parking

5.1.1 Overall Car Parking Requirements

Table 1 of the *Queanbeyan DCP* specifies that registered clubs located outside the Queanbeyan CBD have a requirement for the greater of:

- Comparisons with similar clubs, or
- One (1) car parking space per 3.5m^2 licensed GFA, plus
  One (1) car parking space per 40m^2 office GFA

It appears that the requirement for one (1) car parking space per 3.5m^2 licensed GFA (equivalent to 28.6 car spaces per 100m^2 licensed GFA) is based on the average peak car parking demand of 26.4 car parking spaces per 100m^2 licensed GFA as published in the *Guide to Traffic Generating Developments: Issue 2.2* (*GtTGD 2002*). Despite this empirical basis, there are a number of critical limitations of these observations which appear not to have been considered in the adoption of the car parking requirement within the *Queanbeyan DCP*. These include:

1. The lack of statistical significance in the average peak car parking demand rate, as demonstrated by the wide range in values derived across the 10 surveyed sites (from a minimum of 7.2 car spaces per 100m^2 licensed GFA to a maximum of 69.9m^2 car spaces per 100m^2 licensed GFA). The *GtTGD 2002* acknowledges this limitation as *"Research has indicated that the demand for parking varies substantially depending on the type of club and cannot readily be related to building floor areas or to the membership. The determination of the number of parking spaces required is therefore based on the characteristics of the proposed development. Comparisons must be drawn with similar clubs."*
2. These observations were made at in 1978, prior to the introduction of random breath testing and at a time when societal acceptance of drink-driving was much higher than the present. The *GtTGD 2002* acknowledged (in 2002) that *"since 1978 there have been some behavioural changes in the use of clubs, partly due to random breath testing."*

On this basis, the requirement for one (1) car parking space per 3.5m^2 licensed GFA is not considered to have been appropriate in 2002, let alone in the present day. As such, the proposed development seeks to provide sufficient on-site car parking to accommodate the anticipated peak car parking demands, based on observations made at three (3) similar developments (Chisholm Vikings, Lanyon Vikings and Plumpton Hotel), in accordance with the *Queanbeyan DCP* and as set out at section 4.1 of this report.

5.1.2 Anticipated Car Parking Demands

As aforementioned (section 4.1, page 9, of this report), the proposed development is expected to generate demands for up to 94 car parking spaces associated with stage 1 and up to 143 car parking spaces associated with stages 1 & 2, based on the maximum car parking demand rate observed at three (3) similar developments (Chisholm Vikings, Lanyon Vikings and Plumpton Hotel).

5.1.3 Proposed Car Parking Provision

The proposed development includes a total of 153 car parking spaces in the stage 1 only development and a total of 272 car parking spaces in the stages 1 & 2 development.

5.1.4 Summary

The proposed on-site car parking provision comfortably satisfies the anticipated peak demands under typical conditions, as set out at Table 20 below.

Table 20: Overall Car Parking Assessment

User Group	Size / Number	Car Parking		Proposed On-Site Provision	Surplus
		Rate	Requirement		
Stage 1 Only Development					
Staff & Patrons	1,202m^2 licensed GFA	Min. 7.8 car spaces per 100m^2 licensed GFA	94 car spaces	153 car spaces	59 car spaces
Stages 1 & 2 Development					
Staff & Patrons	1,832m^2 licensed GFA	Min. 7.8 car spaces per 100m^2 licensed GFA	143 car spaces	272 car spaces	129 car spaces

5.2 Accessible Car Parking

Table 3 of the *Queanbeyan DCP* and section D4D6 of the *NCC 2022* both set out a range of requirements for accessible car parking associated with non-residential land uses.

5.2.1 Accessible Car Parking Requirement

The *Queanbeyan DCP* specifies that entertainment facilities require accessible car parking at a rate equal to the greater of:

- One (1) accessible car parking space, or
- 3%-4% of the total number of car parking spaces.

Alternately, *NCC 2022* specifies that class 6 buildings require accessible car parking at a rate of:

- One (1) accessible car parking space per 50 total car parking spaces, or part thereof (for developments with up to 1,000 total car parking spaces).

On this basis, the requirements of the *Queanbeyan DCP* are critical and as such, the proposed development requires minimums of between five (5) and seven (7) accessible car parking spaces for the stage 1 only development (153 total car parking spaces) and between nine (9) and 11 accessible car parking spaces for the stages 1 & 2 development (272 total car parking spaces).

5.2.2 Accessible Car Parking Provision

The proposed development includes a total of 16 accessible car parking spaces as part of the stage 1 only development. This provision comfortably satisfies the accessible car parking requirements for both the stage 1 only, as well as the stages 1 & 2 developments, as set out at Table 21 below.

5.3 Service Vehicle Parking

Table 2 of the *Queanbeyan DCP* sets out the requirements for service vehicle parking associated with the proposed development.

5.3.1 Service Vehicle Parking Requirement

The *Queanbeyan DCP* specifies that land uses not specifically listed in Table 2 require service vehicle parking at a rate of one (1) space per 2,000m^2 GFA, with 50% of service vehicle spaces required to accommodate a truck (of unspecified dimensions).

On this basis, both the proposed stage 1 only and the proposed stages 1 & 2 developments have requirements for two (2) service vehicle spaces, including one (1) which must accommodate a truck.

5.3.2 Service Vehicle Parking Provision

The proposed development includes one (1) loading dock, which has been designed to accommodate trucks up to 12.5m in length (HRV design vehicle). It is noted that smaller service vehicles (up to B99-size) can share the on-site car parking throughout the subject site. On this basis, the proposed provision of service vehicle parking accords with the requirements of the *Queanbeyan DCP*, as demonstrated at Table 22 below.

Table 21: Accessible Car Parking Assessment

User Group	Size / Number	Accessible Car Parking		Proposed Provision	Surplus
		Rate	Requirement		
Stage 1 Only					
Staff & Patrons	153 car spaces	Min. 3%-4% of car spaces[1]	5-7 accessible car spaces	16 accessible car spaces	9-11 accessible car spaces
Stages 1 & 2					
Staff & Patrons	272 car spaces	Min. 3%-4% of car spaces[1]	9-11 accessible car space	16 accessible car spaces	5-7 accessible car spaces

Note:
[1] Rounded up to the nearest integer. *Queanbeyan DCP* requirements are critical compared to the *NCC 2022* requirements for the proposed development.

Table 22: Service Vehicle Parking Assessment

Land Use	Size / Number	Service Vehicle Parking		Proposed Provision	Surplus
		Rate	Requirement		
Stage 1 Only					
Licensed Club	2,296m^2 GFA	1 service vehicle space per 2,000m^2 GFA[1]	2 spaces, including: 1 truck space	2 spaces[2], including: 1 truck space	-
Stages 1 & 2					
Licensed Club	3,562m^2 GFA	1 service vehicle space per 2,000m^2 GFA[1]	2 spaces, including: 1 truck space	2 spaces[2], including: 1 truck space	-

Notes:
[1] 50% of spaces suitable for trucks.
[2] Non-truck service vehicles can utilise the on-site car parking.

6 Post-Development Conditions

The following sections consider the likely conditions on the road network under a post-development scenario, in which all of Poplars North, including the proposed licensed club, have been developed.

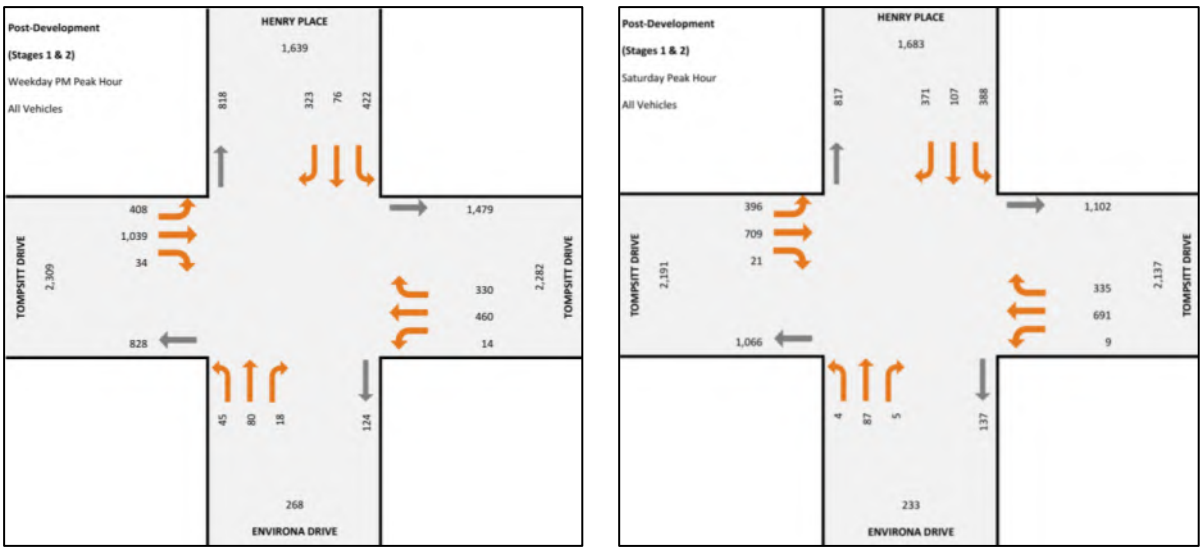
6.1 Traffic Conditions

6.1.1 Model Geometry

No changes have been made to the geometry of the Environa Drive / Henry Place / Tompsitt Drive intersection from that adopted for the existing conditions intersection analysis (Figure 7, page 10).

6.1.2 Traffic Demands

Figure 28 below, presents the traffic demands adopted for the post-development intersection analysis. These traffic demands represent the turning movements adopted for the base scenario intersection analysis (Figure 12, page 1), plus the traffic demands associated with the proposed licensed club (Figure 15, page 8). For simplicity, this analysis considers only the scenario in which both stages 1 & 2 of the proposed development are developed. Due to the lesser development traffic demands with only stage 1 of the proposed development, it would follow that only stage 1 of the proposed development would result in lesser traffic impacts than set out below for both stages 1 & 2. More detailed breakdowns of the peak hour traffic demands, under the post-development conditions, are provided at Appendix J.



a) Weekday PM Peak Hour – Stages 1 & 2 *b) Saturday Peak Hour – Stages 1 & 2*

Figure 28: Peak Hour Traffic Demands – Post-Development

6.1.3 Traffic Signal Operation

For simplicity, no changes have been made to the traffic signal phasing at the Environa Drive / Henry Place / Tompsitt Drive intersection from that adopted for the base scenario intersection analysis (Figure 13, page 2). The SIDRA software has again been utilised to calculate the optimal traffic signal timings based on the input traffic demands. Table 23 below presents these optimal traffic signal timings.

Table 23: Traffic Signal Timings – Post-Development Scenario

Peak Hour	Phase Time										Cycle Time
	A	D	D1	D2	E	F1	F2	G	G1	G2	
Environa Drive / Henry Place / Tompsitt Drive											
Weekday PM Peak Hour	39s	12s	-	15s	12s	-	-	12s	15s	-	**105s**
Saturday Peak Hour	27s	12s	-	17s	12s	-	-	12s	15s	-	**95s**

6.1.4 Intersection Performance

Table 24 below summarises the performance of the road network under the post-development conditions traffic demands. Full details of the intersection performance analysis, under the post-development conditions, are provided at Appendix K.

Table 24: Intersection Performance Summary – Post-Development

Approach	AM Peak Hour				PM Peak Hour			
	DOS	Delay	LOS	Queue	DOS	Delay	LOS	Queue
Environa Drive / Henry Place / Tompsitt Drive								
S: Environa Drive	0.76	44s	D	33m	0.74	53s	D	32m
E: Tompsitt Drive	0.94	41s	C	157m	0.86	34s	C	127m
N: Henry Place	0.94	45s	D	155m	0.90	37s	C	150m
W: Tompsitt Drive	0.92	44s	D	246m	0.87	36s	C	135m
Total	**0.94**	**43s**	**D**	**-**	**0.90**	**36s**	**C**	**-**

During the weekday evening peak hour, the model indicates that:

- The traffic demands for a number of vehicle movements are expected to exceed their practical capacity:
  - The demands for the right-turn from the east approach are expected to exceed the practical capacity of this movement (DOS 0.94),
  - The demands for the right-turn from the north approach are expected to exceed the practical capacity of this movement (DOS 0.94), and
  - The demands for the through movement from the west approach are expected to exceed the practical capacity of this movement (DOS 0.92).
- A number of vehicle movements are expected to experience excessive average delays (LOS F):
  - Vehicles undertaking the right-turn from the east approach are expected to experience delays of 73s (LOS F), and
  - Vehicles undertaking the right-turn from the north approach are expected to experience delays of 72s (LOS F).
- A number of 95th percentile queues are expected to exceed the length of their respective lanes:
  - The queue for the right-turn from the east approach is expected to exceed the length of the short right-turn lane (157m queue vs 90m lane),
  - The queues for the left- and right-turns from the north approach are expected to exceed the length of their short lanes and extend back beyond Ferdinand Lane approximately 56% of signal cycles (113m and 155m queues, respectively vs 60m short lanes and 105m of queue storage in the through traffic lane), and

- The 95th percentile queues in the through traffic lanes on the west approach are expected to extend back beyond the start of the adjacent short left- and right-turn lanes (228m and 246m queues, respectively vs 100m and 180m adjacent short lanes, respectively).

During the Saturday peak hour, the model indicates that:

- The traffic demands for a single vehicle movement are expected to exceed its practical capacity:
  - The demands for the right-turn from the north approach are expected to marginally exceed the practical capacity of this movement (DOS 0.90),
- All vehicle movements are expected to experience acceptable average delays (LOS E or better), and
- A number of 95th percentile queues are expected to exceed the length of their respective lanes:
  - The queue for the right-turn from the east approach is expected to exceed the length of the short right-turn lane (127m queue vs 90m lane),
  - The queues for the left- and right-turns from the north approach are expected to exceed the length of their short lanes and extend back beyond Ferdinand Lane approximately 38% of signal cycles (80m and 150m queues, respectively vs 60m short lanes and 105m of queue storage in the through traffic lane), and
  - The queues in the through traffic lanes on the west approach are expected to extend back beyond the start of the adjacent short left-turn lane (135m queues vs 100m adjacent short-lane).

It is noted that these post-development conditions represent an improvement over the base conditions (section 3.2.4, page 2). This is primarily due to the lesser traffic demands associated with the proposed licensed club, compared to even the conservatively small shop land use assumed on the subject site under the base scenario.

7 Conclusions

Quantum Traffic have been engaged by Tuggeranong Valley Rugby Union Limited to undertake a TIA in relation to a proposed licensed club development in Jerrabomberra. As part of this assessment, it has been concluded that:

b) The subject site is zoned as B1: Neighbourhood Centre and is located approximately 4.74km southwest of Queanbeyan Railway Station and 400m northwest of Jerrabomberra Village shopping centre,

c) Under the existing conditions, the subject site is vacant with no formal vehicle access,

d) The land which accommodates the subject site is, at the time of writing, subject to a separate development application (DA.2023.0348) which seeks to subdivide both lot 6 DP1246134 and the adjoining lot 1 DP1243031 into 10 new lots, along with the construction of new roads and associated infrastructure. As such, Henry Place is proposed to be extended to the north to intersect with a new road (Gwendoline Place) which is proposed to extend northeast to terminate in a cul-de-sac located immediately southwest of the subject site. This analysis assumes that DA.2023.0348 is approved without significant changes,

e) There is limited active travel infrastructure located in close proximity of the subject site. That which does exist supports walking and cycling trips along Tompsitt Drive between Henry Place and Jerrabomberra Village shopping centre,

f) There are three (3) bus routes which serve the Jerrabomberra Village Shops stop located within close walking distance (approximately 400m) of the subject site,

g) Under the existing conditions, intersection analysis found that the existing traffic volumes at the Environa Drive / Henry Place / Tompsitt Drive intersection were well within the practical capacity of this intersection and that the intersection operates with acceptable delays and queue lengths during both the weekday evening and Saturday peak hours,

h) Under a base scenario, which reflects the full development of Poplars North, intersection analysis found that the base scenario traffic demands would exceed the practical capacity of the Environa Drive / Henry Place / Tompsitt Drive intersection during both the weekday evening and Saturday peak hours,

i) The proposal is to develop the site, over two (2) stages, to accommodate a licensed club as follows:

- Stage 1 only – 2,296m^2 GFA, comprising:
  - 1,202m^2 licensed GFA,
  - 112m^2 office GFA, and
  - 153 car parking spaces.
- Stages 1 & 2 – 3,562m^2 GFA, comprising:
  - 1,832m^2 licensed GFA,
  - 112m^2 office GFA, and
  - 272 car parking spaces.

j) Vehicle access is proposed in two (2) locations as follows:
   - Light vehicle and heavy vehicle access, across the southwest boundary of the site, via the cul-de-sac of Gwendoline Place, and
   - Emergency access only, across the east boundary of the site, via Esmond Avenue / O'Sullivan Road.

k) The proposed development is expected to generate traffic demands of up to 48 vehicle trips per hour under stage 1 only and up to 73 vehicle trips per hour under stages 1 & 2,

l) The proposed development is expected to generate demands for up to 94 car parking spaces under stage 1 only and up to 143 car parking spaces under stages 1 & 2,

m) The design of the on-site parking and vehicle access arrangements have been reviewed against the requirements of the relevant standards. The design review found that the proposed development generally accords with the relevant design requirements, but that it is recommended to widen the ramps within the western carpark to accommodate simultaneous two-way traffic flow as requested by QPRC,

n) Parking assessments have been undertaken in accordance with the *Queanbeyan DCP*. These assessments found that:
   - The proposed development includes sufficient on-site car parking to comfortably satisfy the anticipated peak car parking demands,
   - The proposed development includes sufficient accessible car parking to comfortably satisfy the relevant requirements, and
   - The proposed development accords with the relevant requirements for service vehicle parking.

o) Under a post-development scenario, intersection analysis found that the anticipated post-development scenario traffic demands (reflecting stages 1 & 2 of the proposed licensed club) would exceed the practical capacity of the Environa Drive / Henry Place / Tompsitt Drive intersection during both the weekday evening and Saturday peak hours, but with lesser delays and queue lengths than under the base scenario. This is primarily due to the anticipated traffic demands associated with the proposed licensed club being significantly lesser than those associated with even a conservatively small shop development on the subject site.

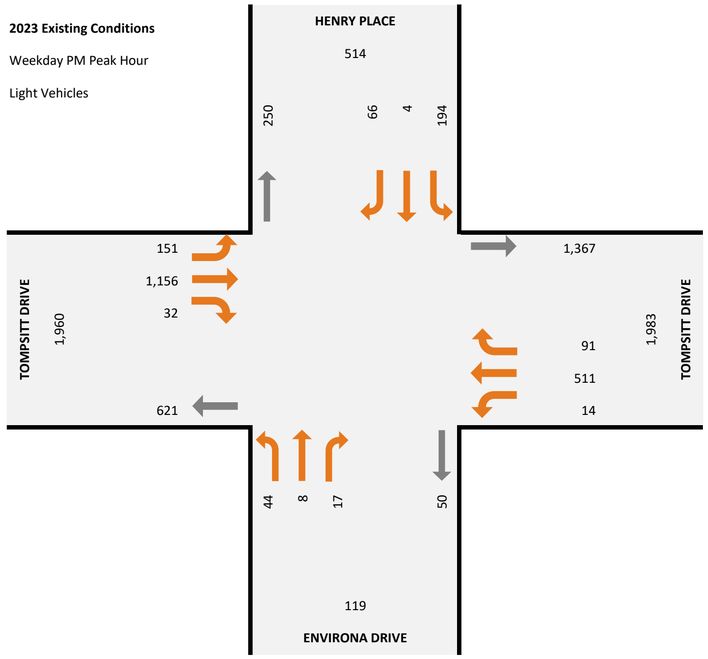
On this basis, there are no traffic engineering reasons why the proposed development should not be approved, subject to appropriate conditions.

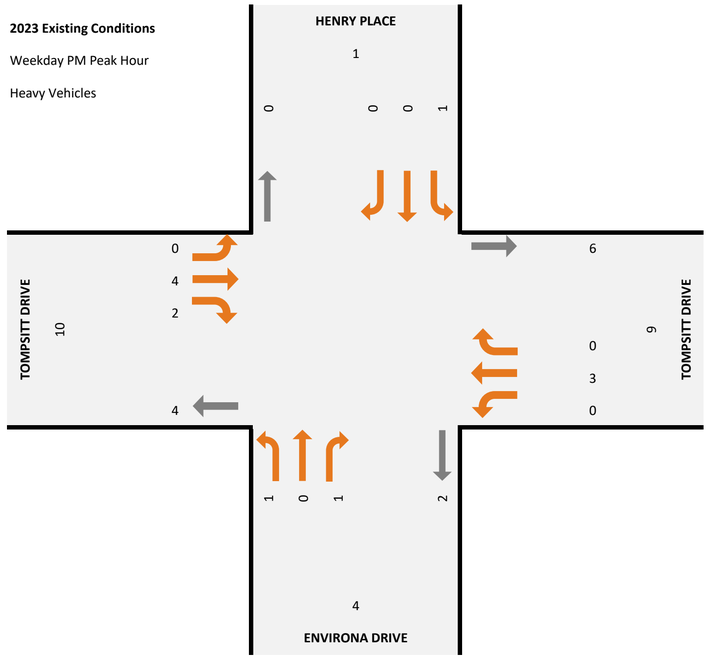
Appendix A:

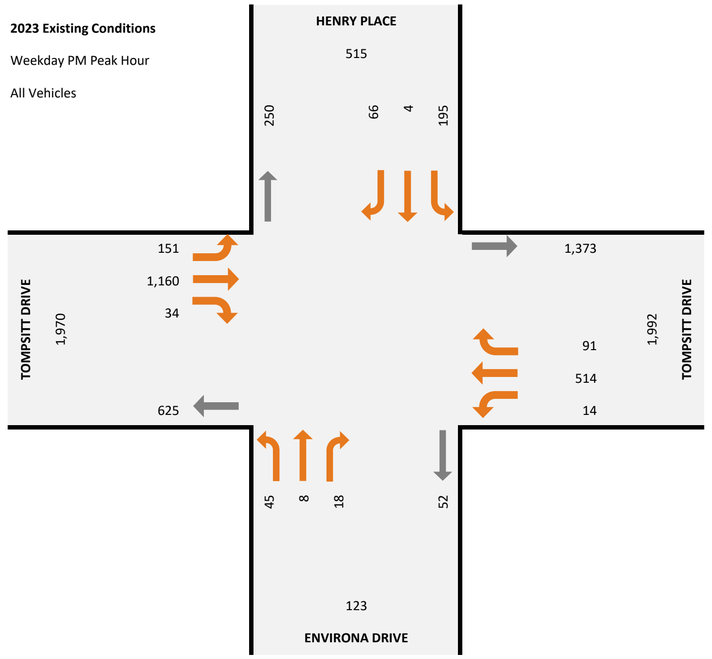
Peak Hour Traffic Volumes – Existing Conditions

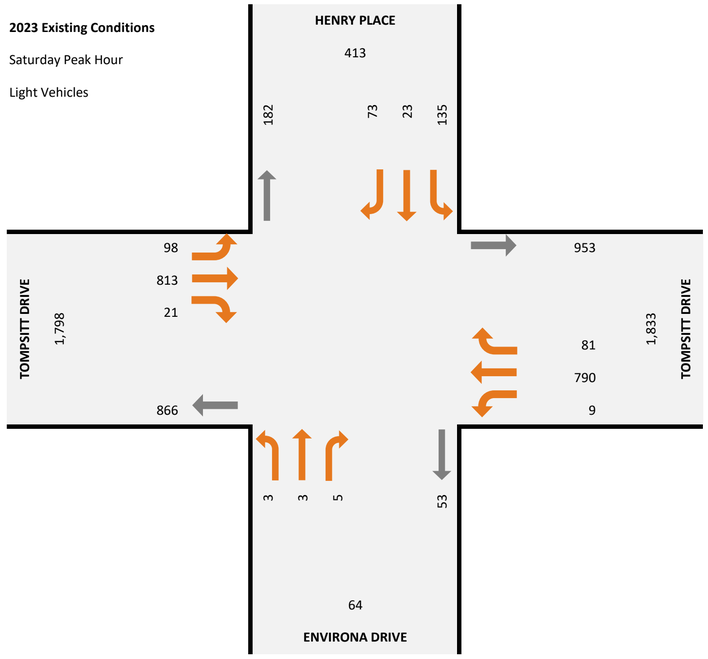
23-0130: Jerrabomberra Vikings

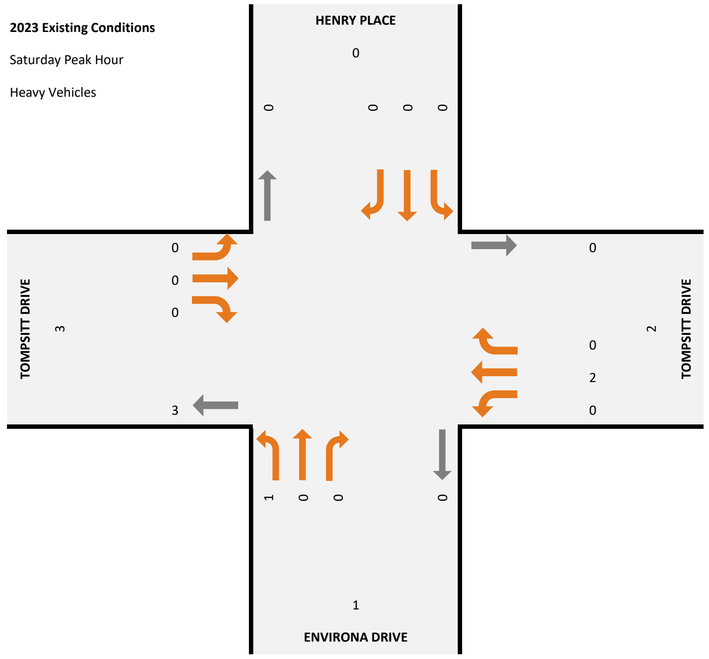
Peak Hour Traffic Volumes

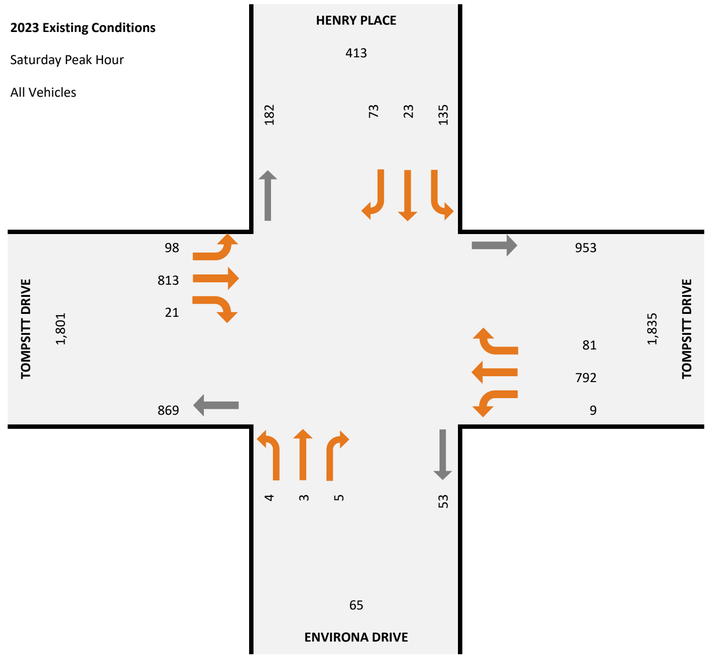












Appendix B:

Intersection Performance Results – Existing Conditions

USER REPORT FOR SITE

Project: 23-0130_20250120

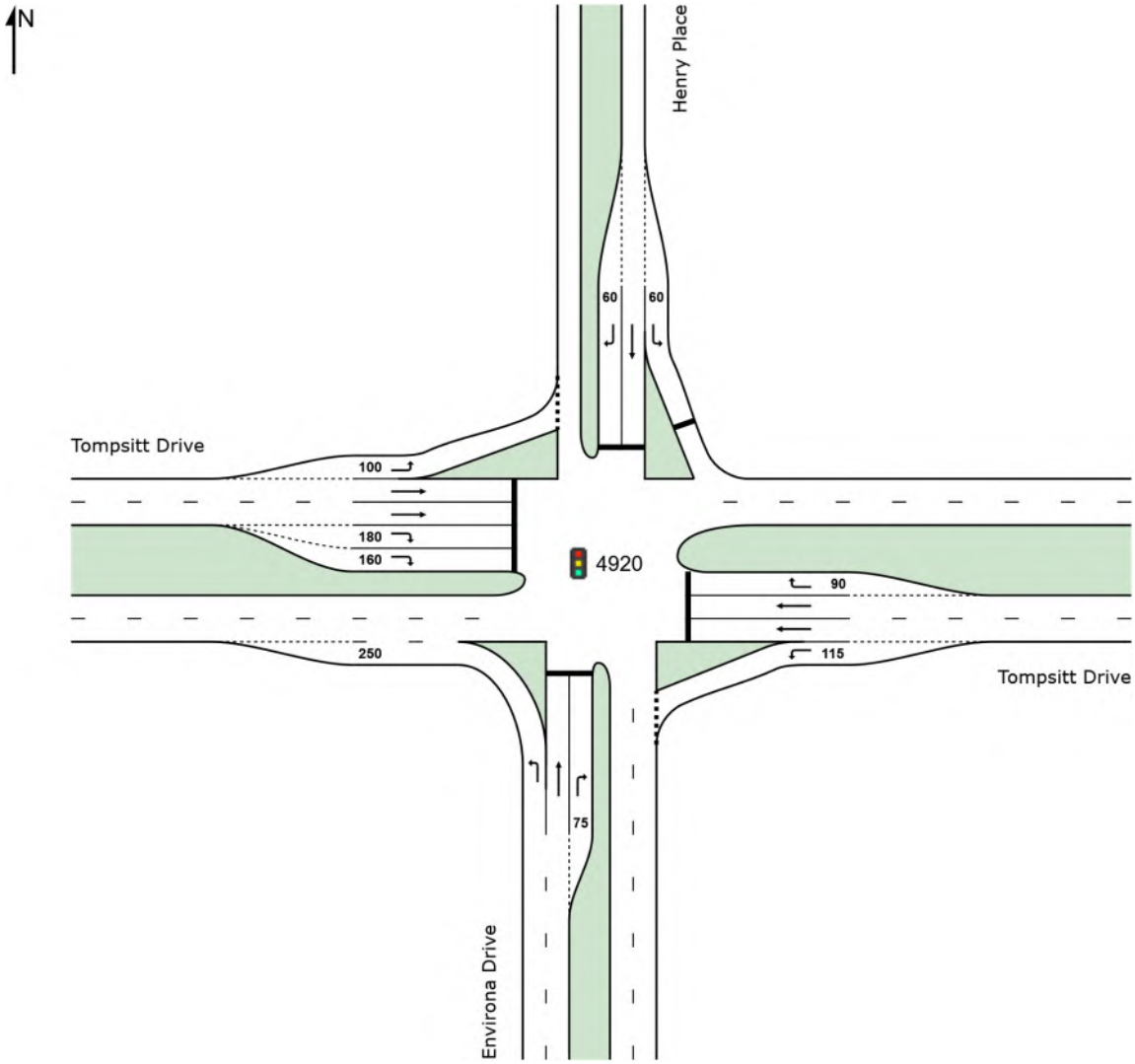
Template: Default Site User Report

Site: 4920 [ExCond PM: ED-HP-TD]

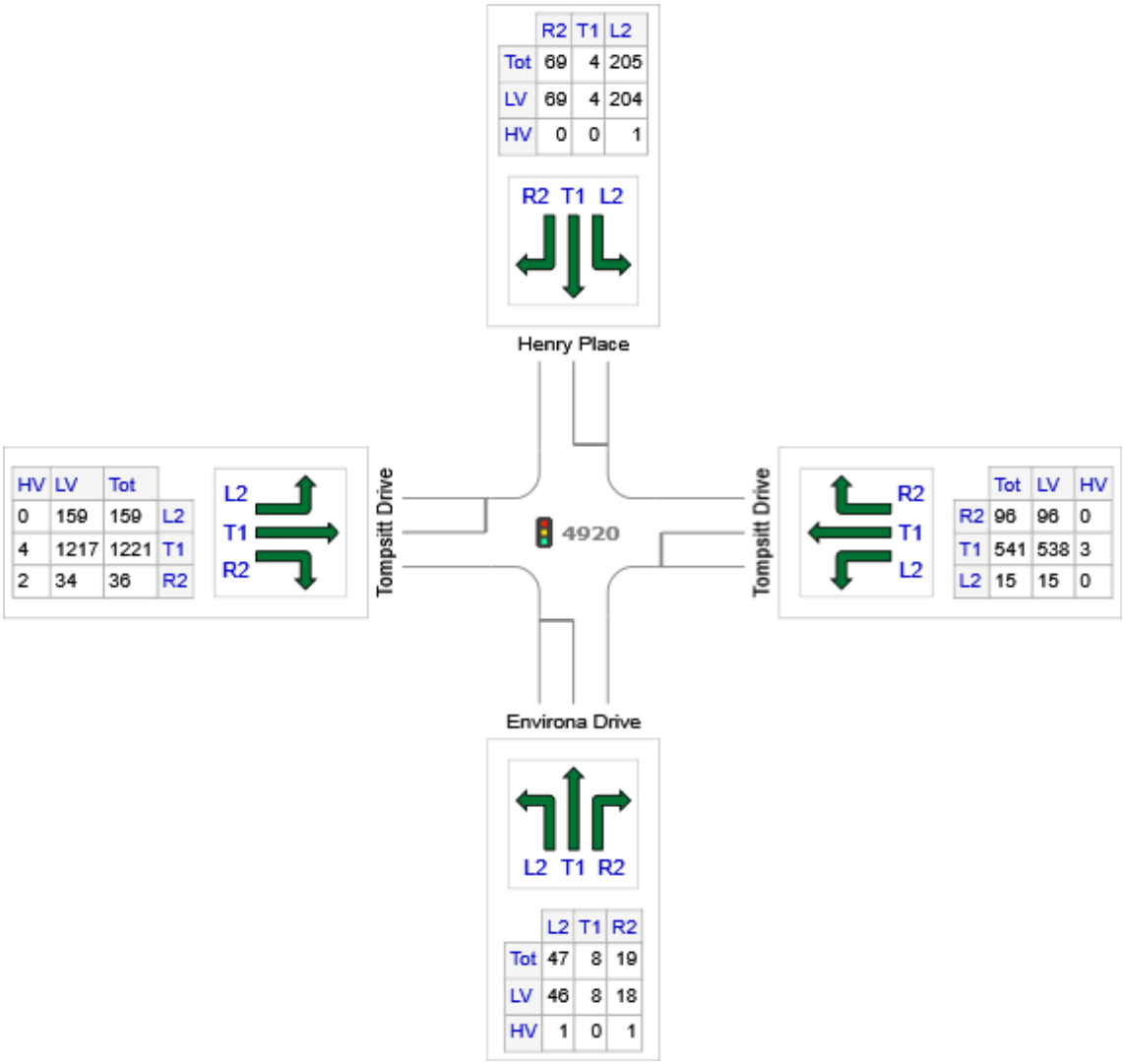
Environa Drive / Henry Place / Tompsitt Drive
Existing Signalised Intersection
Weekday PM Peak Hour
Site Category: 2023 Existing Conditions
Signals - Fixed Time Isolated Cycle Time = 80 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: SCATS-PM
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F2, G
Output Phase Sequence: A, D, E, F2, G

Site Layout



OD Demand Flows



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Environa Drive	75	73	2
E: Tompsitt Drive	652	648	3
N: Henry Place	279	278	1
W: Tompsitt Drive	1416	1409	6
Total	2421	2408	13

Input Phase Sequence

Movement Class: All Movement Classes

REF: Reference Phase
VAR: Variable Phase

Phase Timing Summary

Phase	A	D	E	F2	G
Phase Change Time (sec)	0	43	57	64	66
Green Time (sec)	37	8	1	1	14
Phase Time (sec)	43	14	2	1	20
Phase Split	54%	18%	3%	1%	25%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation

and Phase Frequency values (user-specified or implied) less than 100%.

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: Environa Drive												
1	L2	47	2.2	0.026	6.7	LOS A	0.0	0.0	0.00	0.57	0.00	38.4
2	T1	8	0.0	0.345	54.0	LOS D	0.4	2.8	1.00	0.64	1.00	13.7
3	R2	19	5.6	0.106	43.5	LOS D	0.7	5.2	0.94	0.70	0.94	23.7
Approach		75	2.8	0.345	21.3	LOS B	0.7	5.2	0.35	0.61	0.35	25.6
East: Tompsitt Drive												
4	L2	15	0.0	0.010	8.1	LOS A	0.1	0.5	0.20	0.63	0.20	50.3
5	T1	541	0.6	0.301	14.4	LOS A	6.6	46.3	0.66	0.56	0.66	40.3
6	R2	96	0.0	0.295	39.0	LOS C	3.4	23.5	0.91	0.77	0.91	24.9
Approach		652	0.5	0.301	17.9	LOS B	6.6	46.3	0.69	0.60	0.69	36.4
North: Henry Place												
7	L2	205	0.5	0.522	35.4	LOS C	7.3	51.4	0.94	0.80	0.94	25.3
8	T1	4	0.0	0.058	43.4	LOS D	0.2	1.2	0.99	0.62	0.99	16.2
9	R2	69	0.0	0.333	34.5	LOS C	2.4	16.5	0.96	0.75	0.96	10.8
Approach		279	0.4	0.522	35.3	LOS C	7.3	51.4	0.94	0.79	0.94	22.3
West: Tompsitt Drive												
10	L2	159	0.0	0.107	8.2	LOS A	0.8	5.6	0.22	0.66	0.22	61.7
11	T1	1221	0.3	0.678	18.2	LOS B	18.7	131.5	0.84	0.75	0.84	57.1
12	R2	36	5.9	0.057	37.4	LOS C	0.6	4.4	0.86	0.70	0.86	38.1
Approach		1416	0.4	0.678	17.5	LOS B	18.7	131.5	0.77	0.74	0.77	56.9
All Vehicles		2421	0.5	0.678	19.8	LOS B	18.7	131.5	0.76	0.70	0.76	48.5

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.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Environa Drive													
Lane 1	47	2.2	1828	0.026	100	6.7	LOS A	0.0	0.0	Full	130	0.0	0.0
Lane 2	8	0.0	24	0.345	100	54.0	LOS D	0.4	2.8	Full	130	0.0	0.0
Lane 3	19	5.6	179	0.106	100	43.5	LOS D	0.7	5.2	Short	75	0.0	NA
Approach	75	2.8		0.345		21.3	LOS B	0.7	5.2				
East: Tompsitt Drive													
Lane 1	15	0.0	1486	0.010	100	8.1	LOS A	0.1	0.5	Short	115	0.0	NA
Lane 2	271	0.6	898	0.301	100	14.4	LOS A	6.6	46.3	Full	300	0.0	0.0
Lane 3	271	0.6	898	0.301	100	14.4	LOS A	6.6	46.3	Full	300	0.0	0.0
Lane 4	96	0.0	325	0.295	100	39.0	LOS C	3.4	23.5	Short	90	0.0	NA
Approach	652	0.5		0.301		17.9	LOS B	6.6	46.3				
North: Henry Place													
Lane 1	205	0.5	393	0.522	100	35.4	LOS C	7.3	51.4	Short	60	0.0	NA
Lane 2	4	0.0	73	0.058	100	43.4	LOS D	0.2	1.2	Full	105	0.0	0.0
Lane 3	69	0.0	209	0.333	100	34.5	LOS C	2.4	16.5	Short	60	0.0	NA
Approach	279	0.4		0.522		35.3	LOS C	7.3	51.4				
West: Tompsitt Drive													
Lane 1	159	0.0	1481	0.107	100	8.2	LOS A	0.8	5.6	Short	100	0.0	NA
Lane 2	611	0.3	900	0.678	100	18.2	LOS B	18.7	131.5	Full	690	0.0	0.0
Lane 3	611	0.3	900	0.678	100	18.2	LOS B	18.7	131.5	Full	690	0.0	0.0
Lane 4	18	5.9	312	0.057	100	37.4	LOS C	0.6	4.4	Short	180	0.0	NA
Lane 5	18	5.9	312	0.057	100	37.4	LOS C	0.6	4.4	Short	160	0.0	NA
Approach	1416	0.4		0.678		17.5	LOS B	18.7	131.5				
Intersection	2421	0.5		0.678		19.8	LOS B	18.7	131.5				

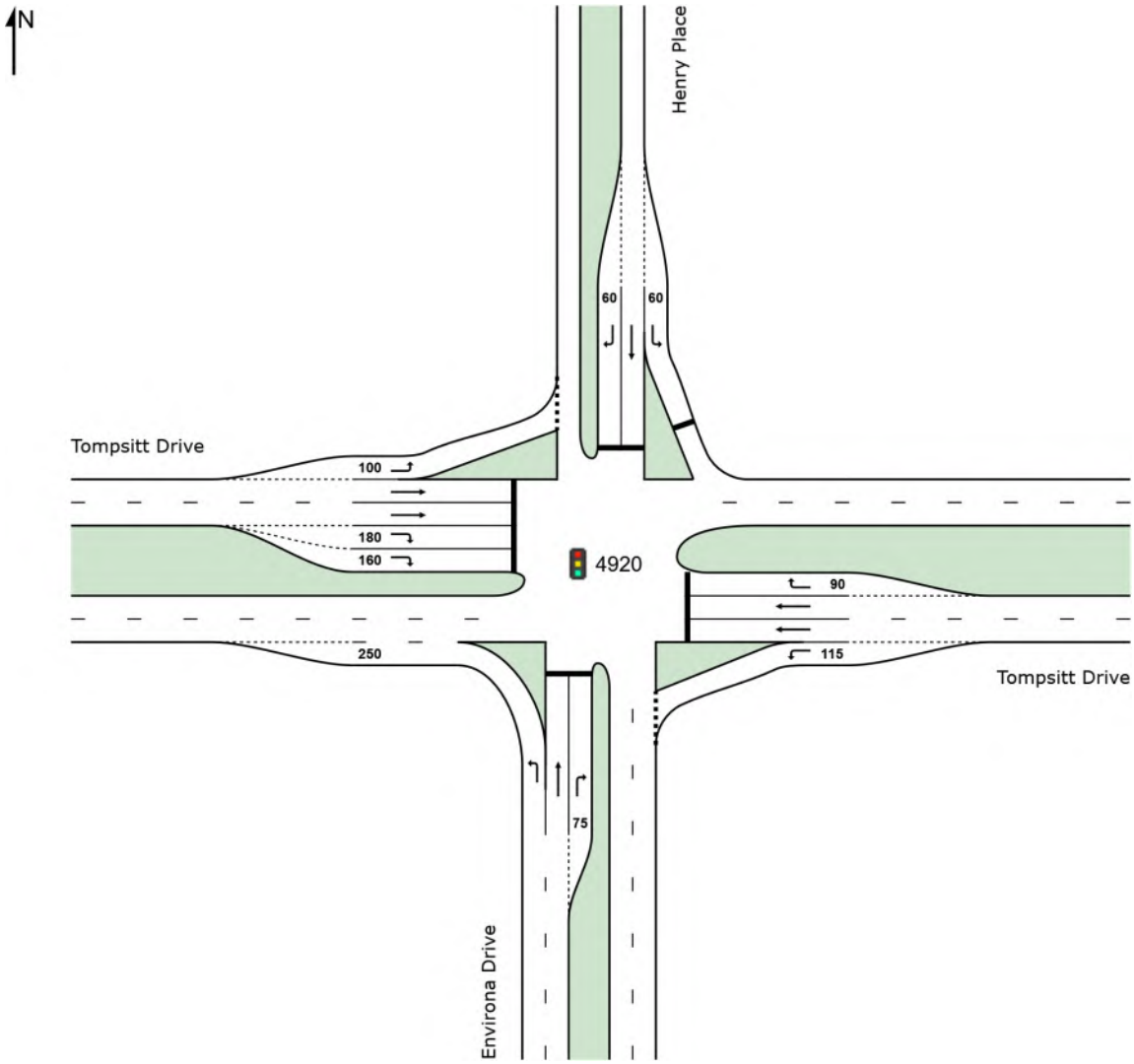
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control 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.

Site: 4920 [ExCond Sat: ED-HP-TD]

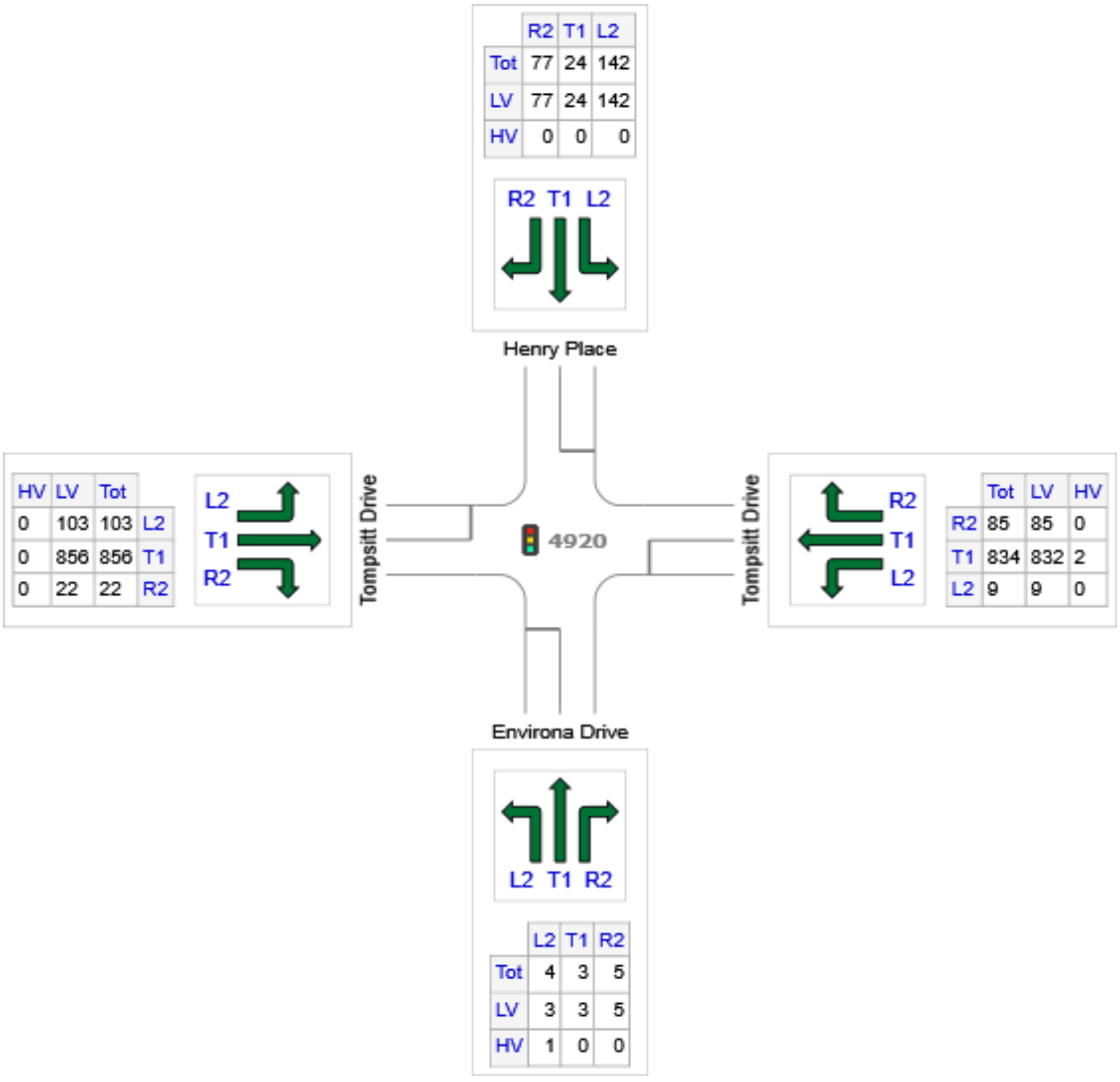
Environa Drive / Henry Place / Tompsitt Drive
Existing Signalised Intersection
Saturday Peak Hour
Site Category: 2023 Existing Conditions
Signals - Fixed Time Isolated Cycle Time = 66 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: SCATS-Sat
Reference Phase: Phase A
Input Phase Sequence: A, D, E, F2, G
Output Phase Sequence: A, D, E, F2, G

Site Layout



OD Demand Flows



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Environa Drive	13	12	1
E: Tompsitt Drive	928	926	2
N: Henry Place	243	243	0
W: Tompsitt Drive	981	981	0
Total	2165	2162	3

Input Phase Sequence

Movement Class: All Movement Classes

REF: Reference Phase
VAR: Variable Phase

Phase Timing Summary

Phase	A	D	E	F2	G
Phase Change Time (sec)	0	31	45	52	54
Green Time (sec)	25	8	1	1	12
Phase Time (sec)	31	14	2	1	18
Phase Split	47%	21%	3%	2%	27%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation

and Phase Frequency values (user-specified or implied) less than 100%.

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: Environa Drive												
1	L2	4	25.0	0.003	6.7	LOS A	0.0	0.0	0.00	0.56	0.00	38.4
2	T1	3	0.0	0.107	43.7	LOS D	0.1	0.8	1.00	0.60	1.00	16.0
3	R2	5	0.0	0.023	34.9	LOS C	0.2	1.1	0.90	0.65	0.90	27.5
Approach		13	8.3	0.107	27.7	LOS B	0.2	1.1	0.63	0.61	0.63	25.0
East: Tompsitt Drive												
4	L2	9	0.0	0.007	8.3	LOS A	0.0	0.3	0.24	0.63	0.24	50.0
5	T1	834	0.3	0.565	17.7	LOS B	10.8	75.6	0.84	0.73	0.84	36.2
6	R2	85	0.0	0.253	33.0	LOS C	2.4	17.1	0.90	0.76	0.90	27.6
Approach		928	0.2	0.565	19.0	LOS B	10.8	75.6	0.84	0.73	0.84	35.0
North: Henry Place												
7	L2	142	0.0	0.337	28.2	LOS B	4.0	27.7	0.88	0.77	0.88	28.7
8	T1	24	0.0	0.273	36.6	LOS C	0.8	5.9	1.00	0.70	1.00	18.3
9	R2	77	0.0	0.303	26.9	LOS B	2.0	14.2	0.94	0.74	0.94	13.0
Approach		243	0.0	0.337	28.6	LOS C	4.0	27.7	0.91	0.75	0.91	23.8
West: Tompsitt Drive												
10	L2	103	0.0	0.072	8.2	LOS A	0.4	3.1	0.24	0.66	0.24	61.6
11	T1	856	0.0	0.579	17.8	LOS B	11.1	78.0	0.85	0.74	0.85	57.4
12	R2	22	0.0	0.033	31.6	LOS C	0.3	2.1	0.85	0.68	0.85	41.3
Approach		981	0.0	0.579	17.1	LOS B	11.1	78.0	0.78	0.73	0.78	57.4
All Vehicles		2165	0.1	0.579	19.3	LOS B	11.1	78.0	0.82	0.73	0.82	46.6

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.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Environa Drive													
Lane 1	4	25.0	1576	0.003	100	6.7	LOS A	0.0	0.0	Full	130	0.0	0.0
Lane 2	3	0.0	30	0.107	100	43.7	LOS D	0.1	0.8	Full	130	0.0	0.0
Lane 3	5	0.0	225	0.023	100	34.9	LOS C	0.2	1.1	Short	75	0.0	NA
Approach	13	8.3		0.107		27.7	LOS B	0.2	1.1				
East: Tompsitt Drive													
Lane 1	9	0.0	1426	0.007	100	8.3	LOS A	0.0	0.3	Short	115	0.0	NA
Lane 2	417	0.3	737	0.565	100	17.7	LOS B	10.8	75.6	Full	300	0.0	0.0
Lane 3	417	0.3	737	0.565	100	17.7	LOS B	10.8	75.6	Full	300	0.0	0.0
Lane 4	85	0.0	338	0.253	100	33.0	LOS C	2.4	17.1	Short	90	0.0	NA
Approach	928	0.2		0.565		19.0	LOS B	10.8	75.6				
North: Henry Place													
Lane 1	142	0.0	422	0.337	100	28.2	LOS B	4.0	27.7	Short	60	0.0	NA
Lane 2	24	0.0	89	0.273	100	36.6	LOS C	0.8	5.9	Full	105	0.0	0.0
Lane 3	77	0.0	253	0.303	100	26.9	LOS B	2.0	14.2	Short	60	0.0	NA
Approach	243	0.0		0.337		28.6	LOS C	4.0	27.7				
West: Tompsitt Drive													
Lane 1	103	0.0	1443	0.072	100	8.2	LOS A	0.4	3.1	Short	100	0.0	NA
Lane 2	428	0.0	739	0.579	100	17.8	LOS B	11.1	78.0	Full	690	0.0	0.0
Lane 3	428	0.0	739	0.579	100	17.8	LOS B	11.1	78.0	Full	690	0.0	0.0
Lane 4	11	0.0	338	0.033	100	31.6	LOS C	0.3	2.1	Short	180	0.0	NA
Lane 5	11	0.0	338	0.033	100	31.6	LOS C	0.3	2.1	Short	160	0.0	NA
Approach	981	0.0		0.579		17.1	LOS B	11.1	78.0				
Intersection	2165	0.1		0.579		19.3	LOS B	11.1	78.0				

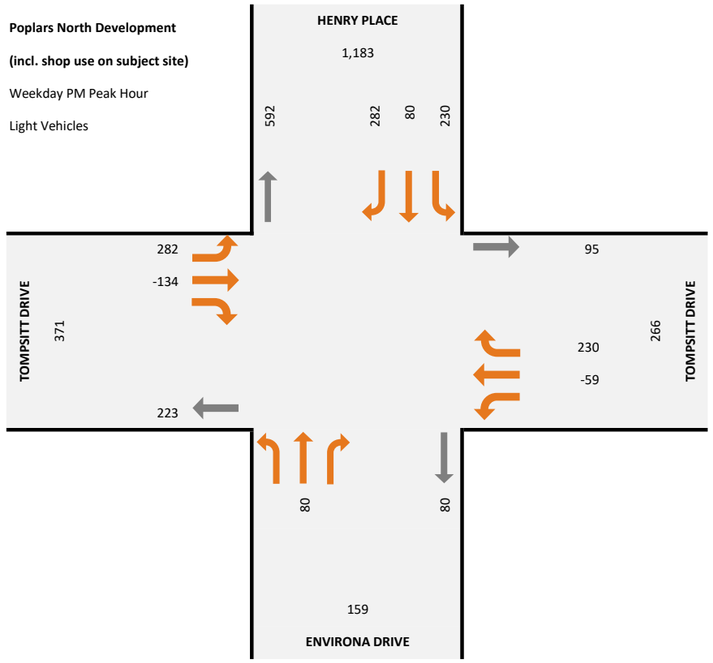
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
SIDRA Standard Delay Model is used. Control 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.

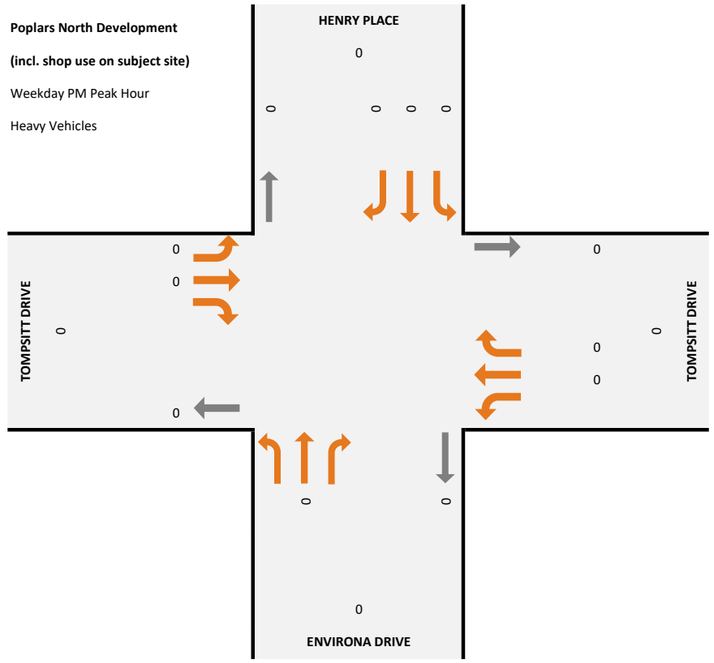
Appendix C:

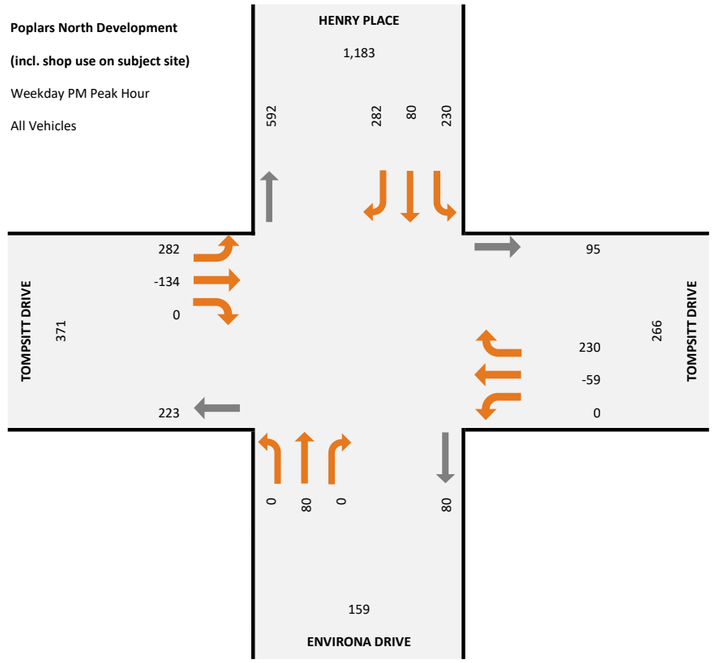
Peak Hour Traffic Demands – Poplars North

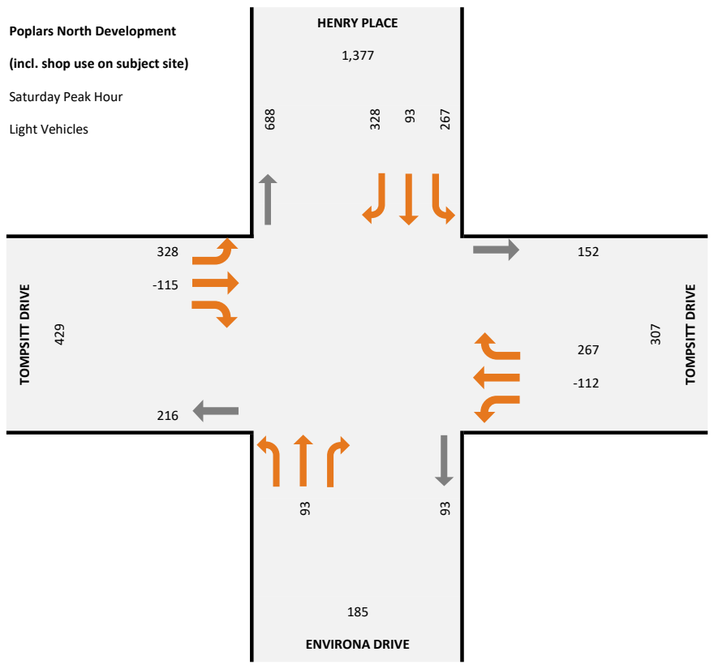
23-0130: Jerrabomberra Vikings

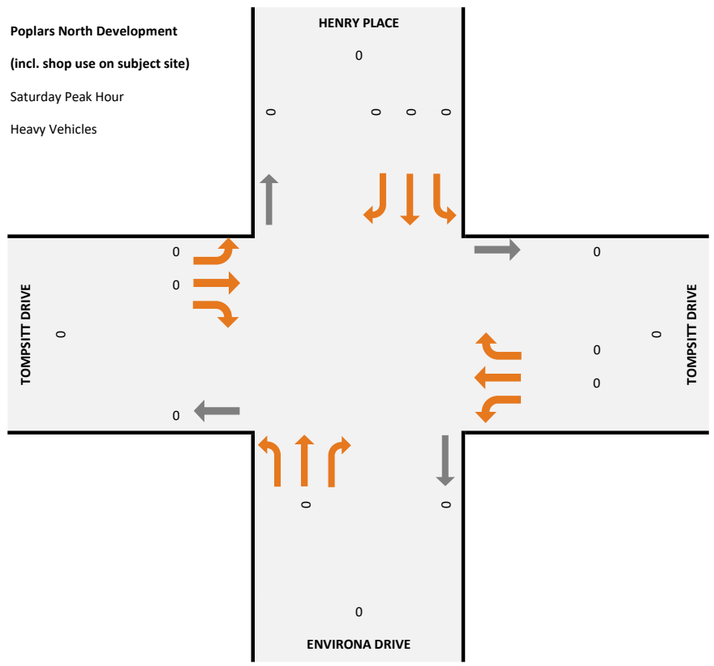
Peak Hour Traffic Demands

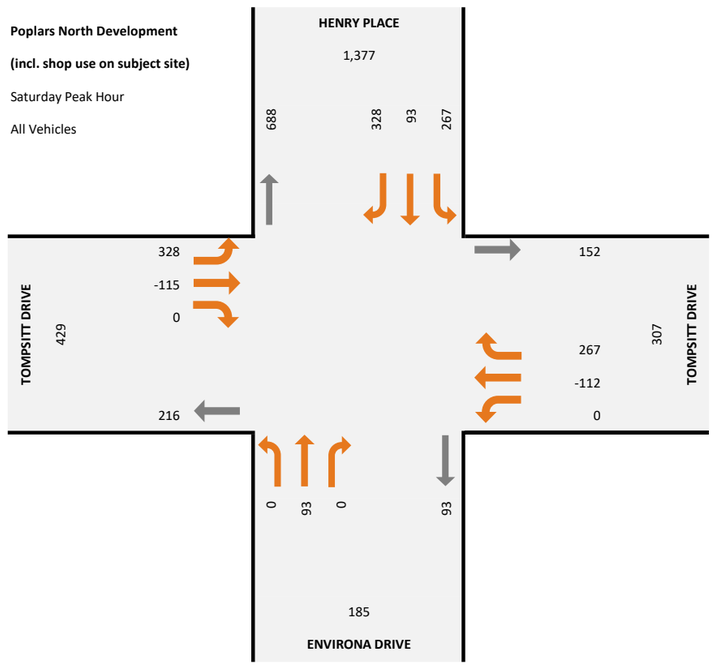










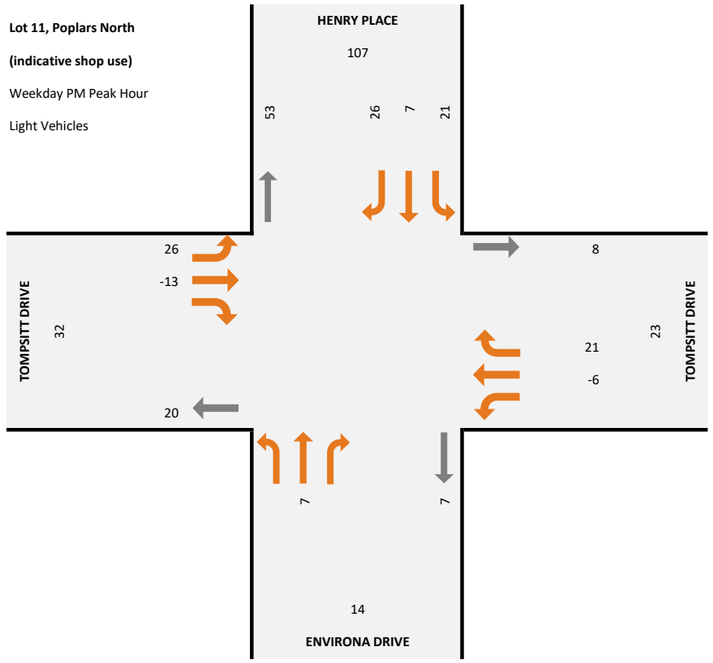


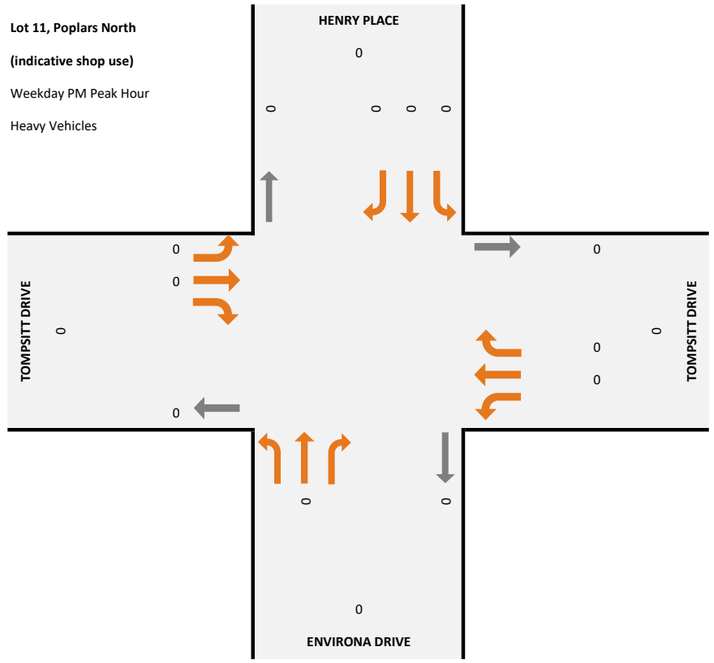
Appendix D:

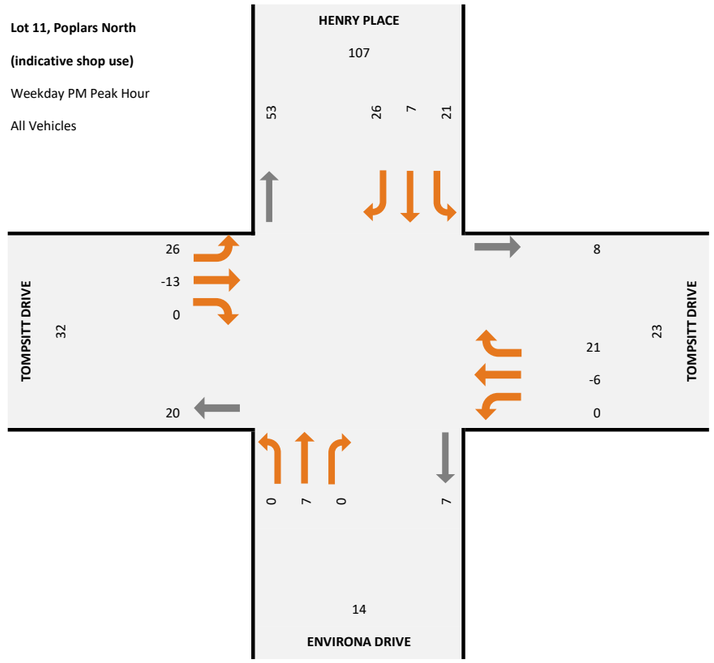
Peak Hour Traffic Demands – Subject Site (Base Scenario)

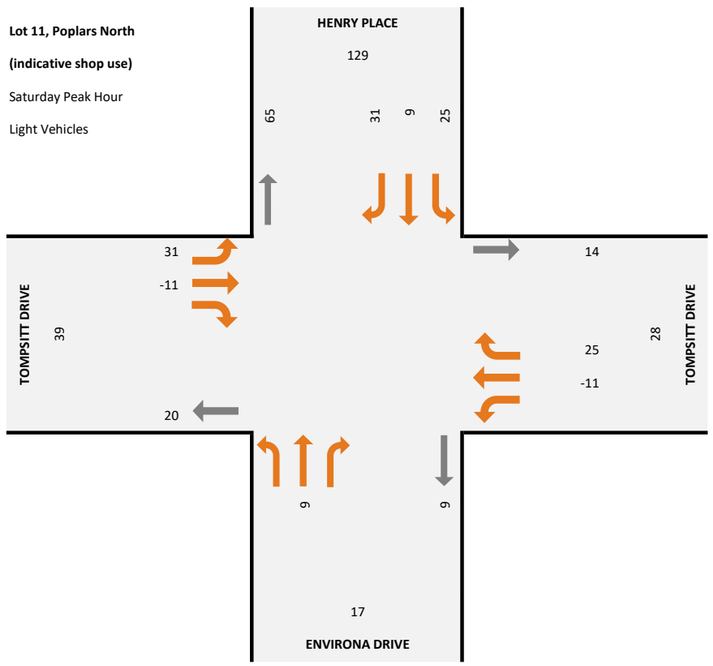
23-0130: Jerrabomberra Vikings

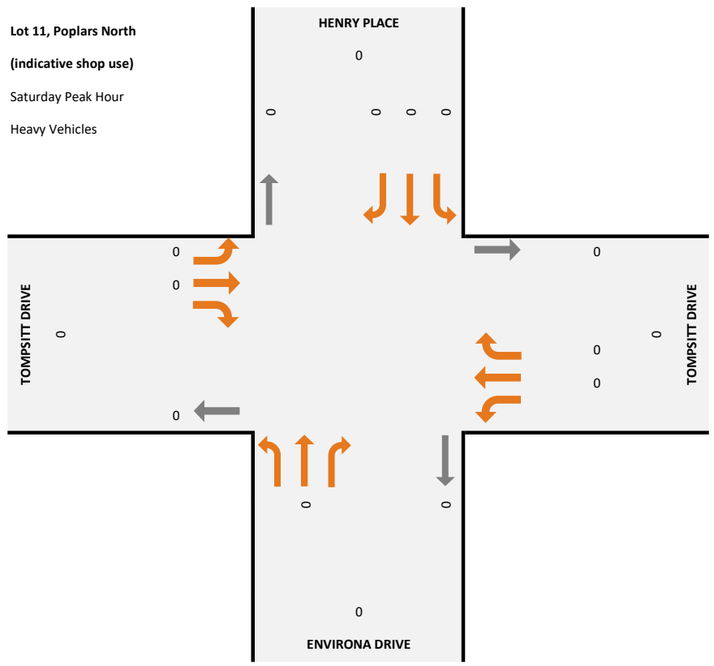
Peak Hour Traffic Demands

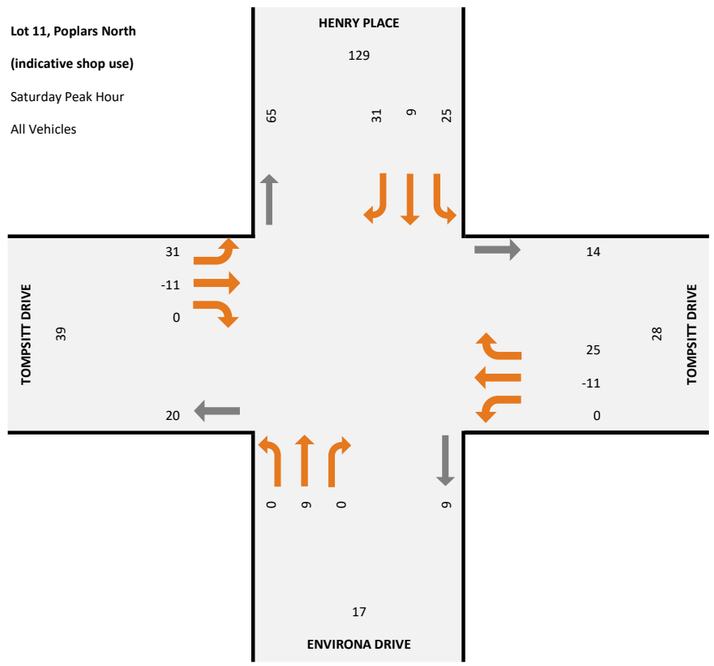










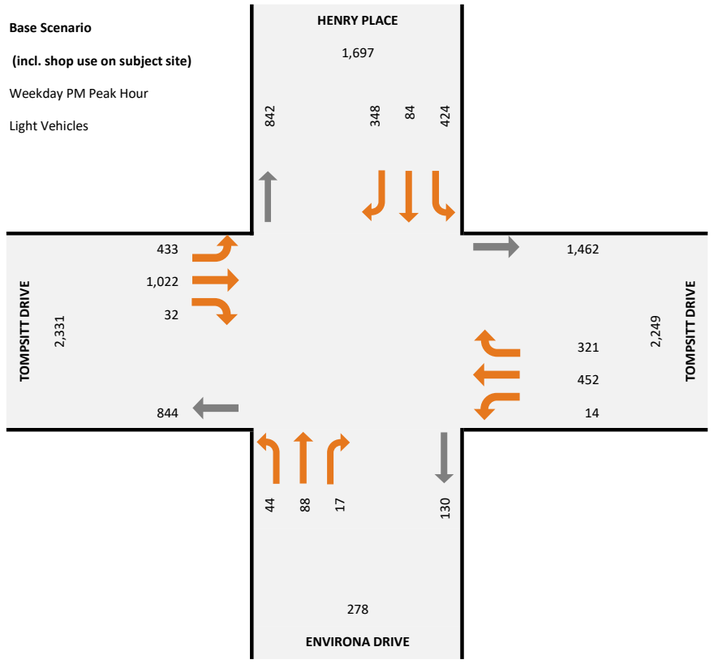


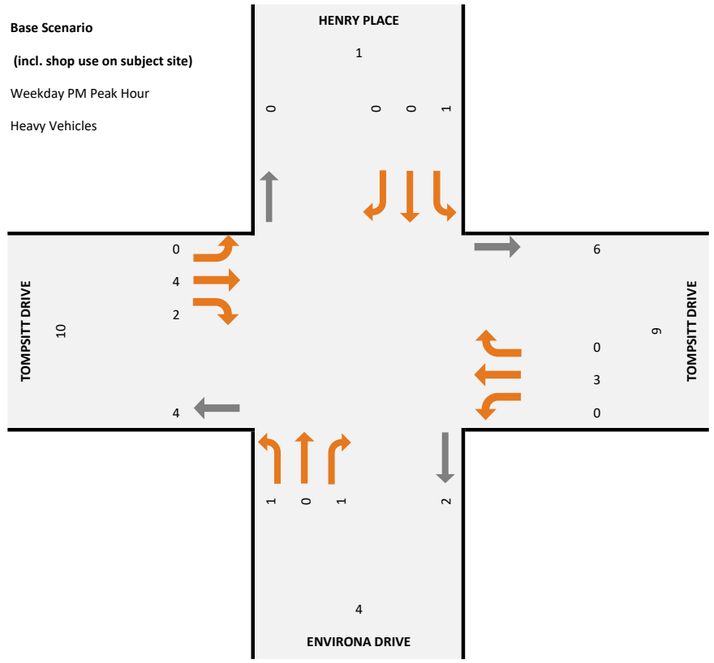
Appendix E:

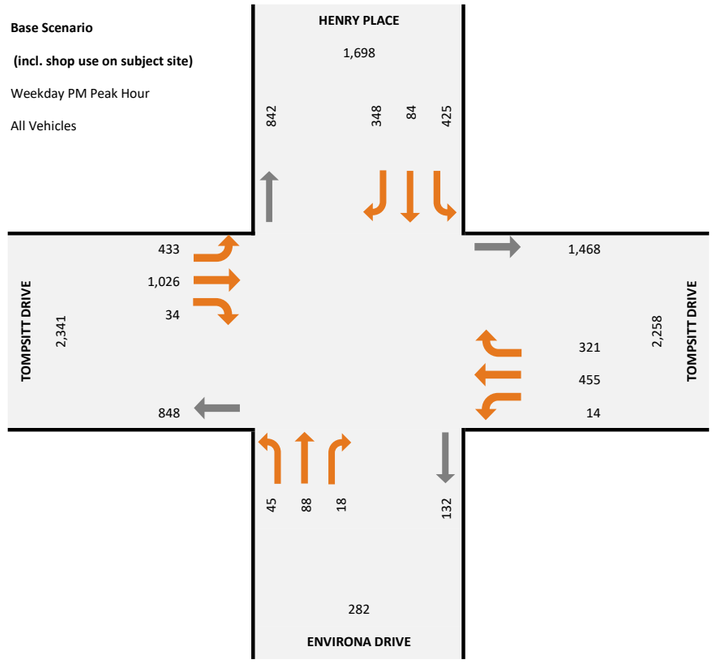
Peak Hour Traffic Demands – Base Conditions

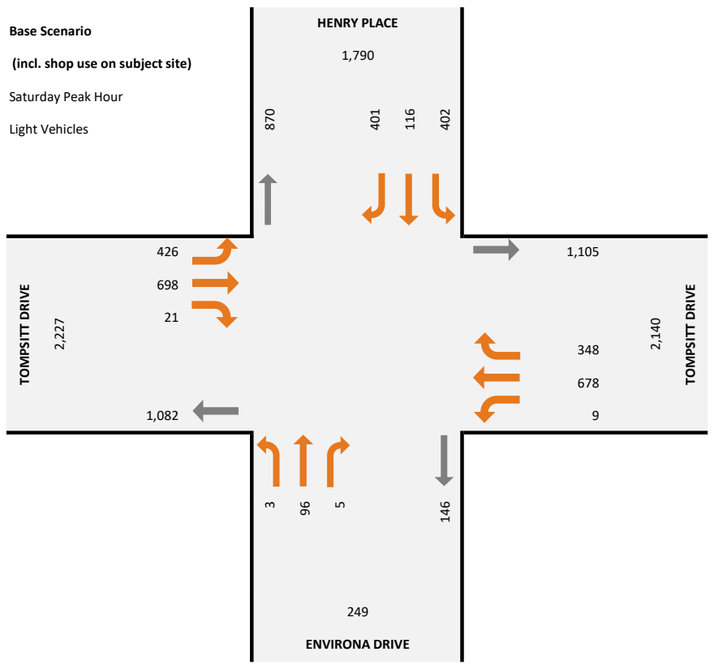
23-0130: Jerrabomberra Vikings

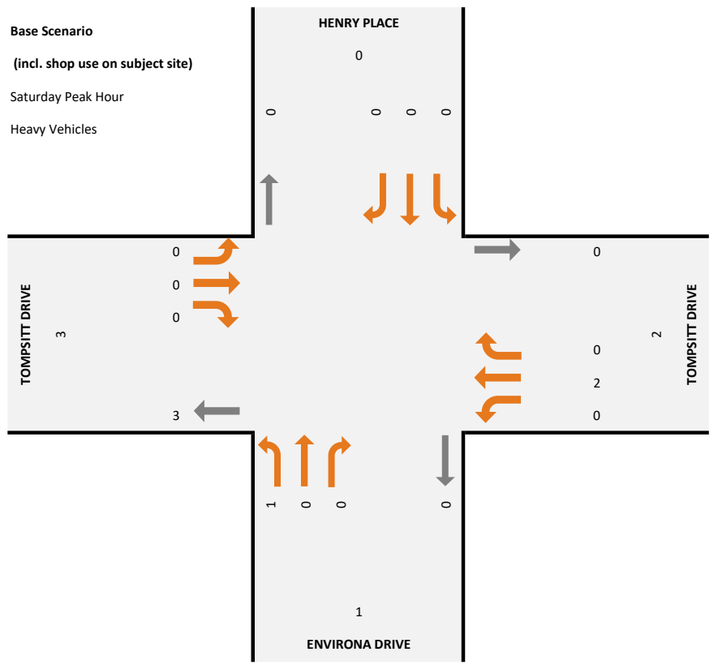
Peak Hour Traffic Demands

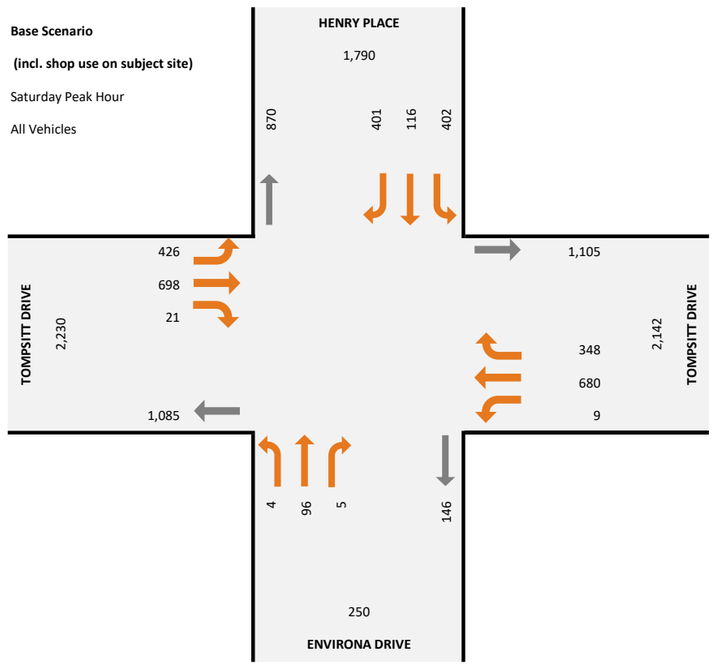












Appendix F:

Intersection Performance Results – Base Conditions

USER REPORT FOR SITE

Project: 23-0130_20250121

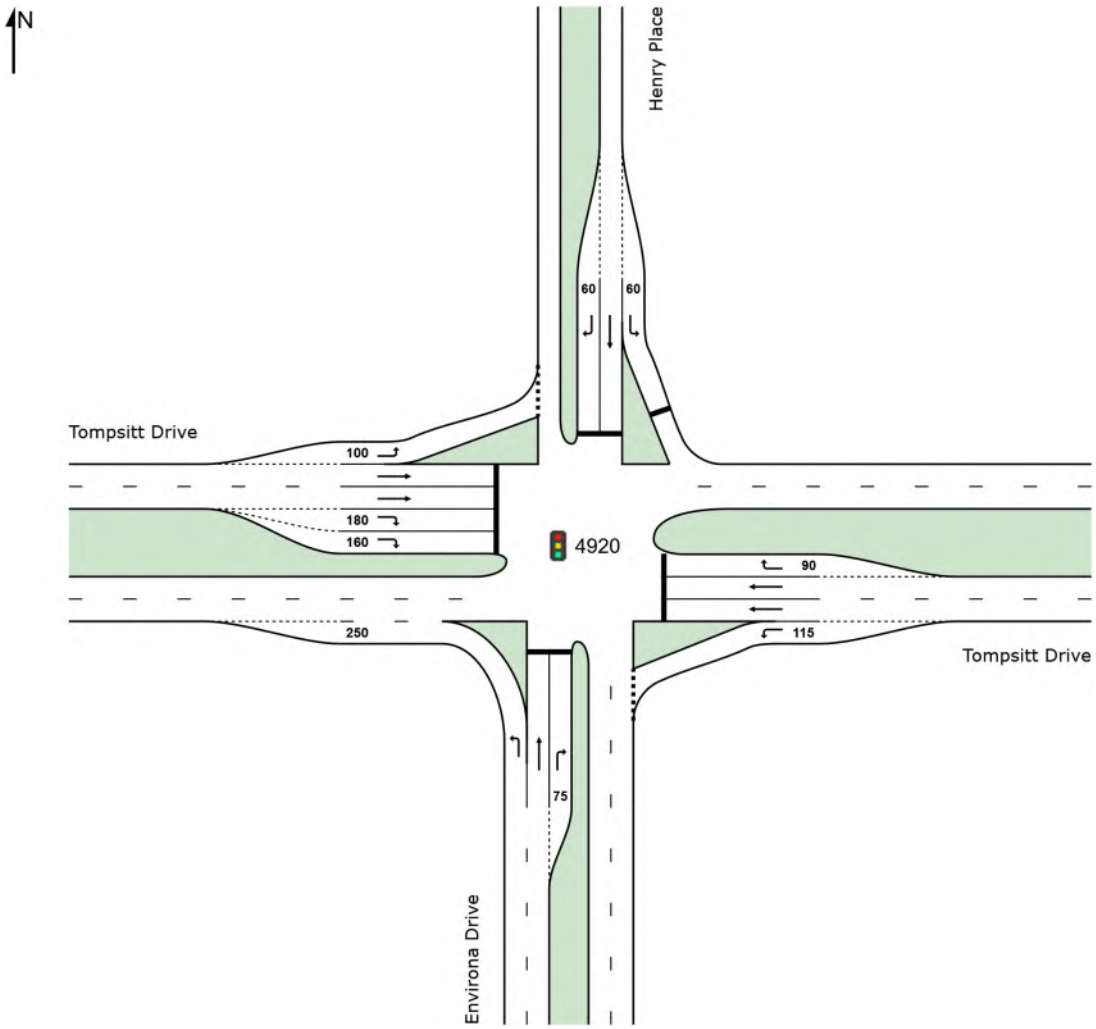
Template: Default Site User Report

Site: 4920 [Base PM: ED-HP-TD]

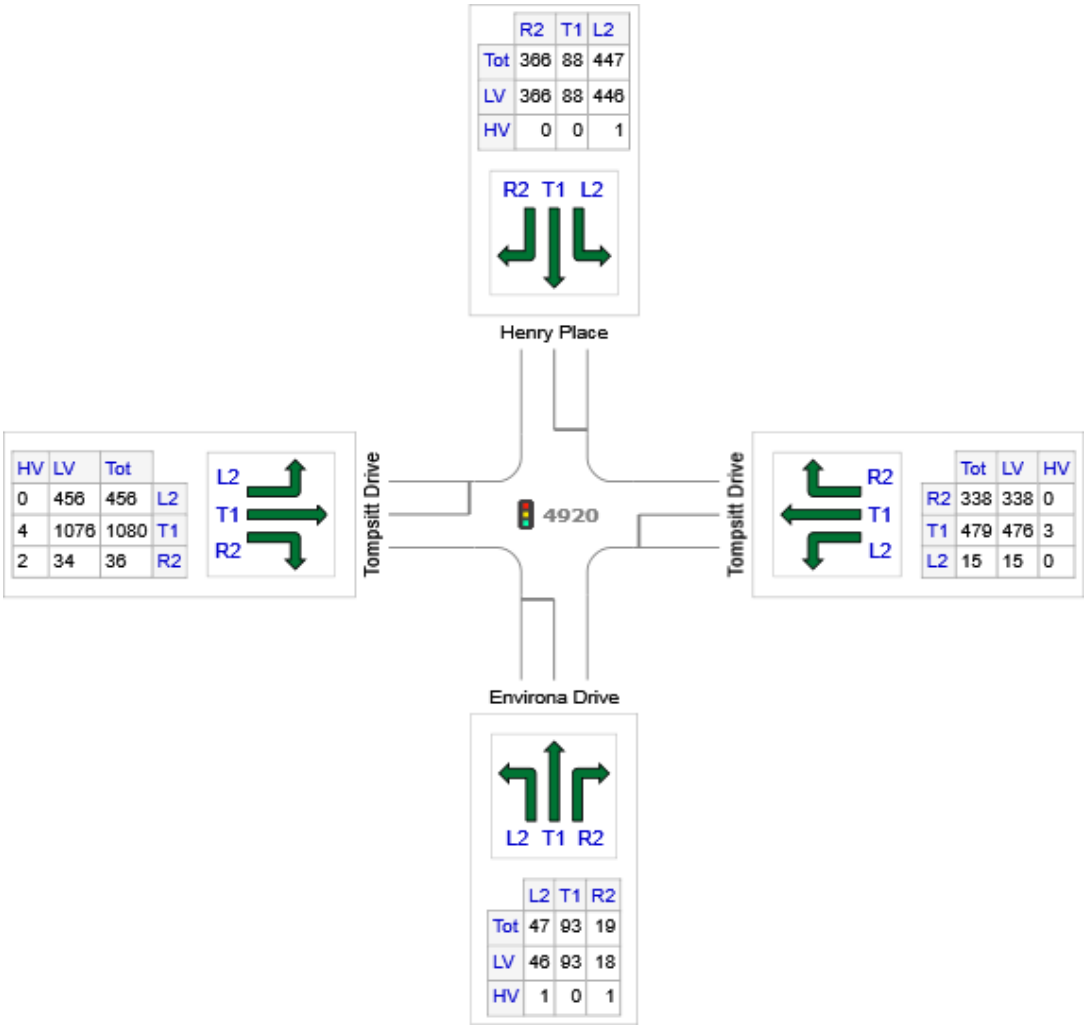
Environa Drive / Henry Place / Tompsitt Drive
Existing Signalised Intersection
Weekday PM Peak Hour
Site Category: Base Scenario
Signals - Fixed Time Isolated Cycle Time = 105 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: SCATS-PM
Reference Phase: Phase A
Input Phase Sequence: A, D, D1*, D2*, E, F1*, F2*, G, G1*, G2*
Output Phase Sequence: A, D, D2*, E, G, G1*
(* Variable Phase)

Site Layout



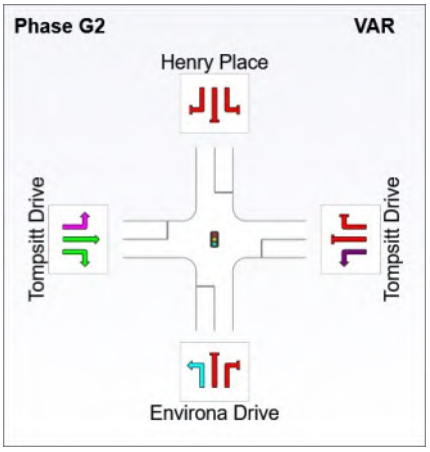
OD Demand Flows



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Environa Drive	159	157	2
E: Tompsitt Drive	832	828	3
N: Henry Place	902	901	1
W: Tompsitt Drive	1572	1565	6
Total	3464	3452	13

Input Phase Sequence

Movement Class: All Movement Classes



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

Phase Timing Summary

Phase	A	D	D2	E	G	G1
Phase Change Time (sec)	0	38	50	67	79	91
Green Time (sec)	32	6	11	6	6	8
Phase Time (sec)	38	12	17	12	12	14
Phase Split	36%	11%	16%	11%	11%	13%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

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: Environa Drive												
1	L2	47	2.2	0.026	6.7	LOS A	0.0	0.0	0.00	0.57	0.00	38.4
2	T1	93	0.0	0.831	63.3	LOS E	5.3	37.2	1.00	0.90	1.39	12.0
3	R2	19	5.6	0.186	60.7	LOS E	1.0	7.2	0.98	0.70	0.98	19.0
Approach		159	1.3	0.831	46.1	LOS D	5.3	37.2	0.70	0.78	0.92	15.2
East: Tompsitt Drive												
4	L2	15	0.0	0.010	8.0	LOS A	0.1	0.5	0.16	0.63	0.16	50.5
5	T1	479	0.7	0.282	20.1	LOS B	7.8	54.8	0.68	0.58	0.68	33.6
6	R2	338	0.0	0.955	79.0	LOS F	22.8	159.7	1.00	1.03	1.53	15.0
Approach		832	0.4	0.955	43.8	LOS D	22.8	159.7	0.80	0.76	1.02	21.4
North: Henry Place												
7	L2	447	0.2	0.536	25.5	LOS B	16.0	112.2	0.75	0.79	0.75	30.2
8	T1	88	0.0	0.207	36.3	LOS C	3.7	26.1	0.86	0.67	0.86	18.4
9	R2	366	0.0	0.939	70.1	LOS E	23.7	166.0	1.00	1.10	1.46	6.0
Approach		902	0.1	0.939	44.7	LOS D	23.7	166.0	0.86	0.90	1.05	16.7
West: Tompsitt Drive												
10	L2	456	0.0	0.365	13.6	LOS A	9.0	62.9	0.46	0.72	0.46	55.4
11	T1	1080	0.4	0.941	61.3	LOS E	36.5	256.2	1.00	1.11	1.38	34.1
12	R2	36	5.9	0.176	61.3	LOS E	0.9	6.8	0.98	0.70	0.98	29.3
Approach		1572	0.4	0.941	47.4	LOS D	36.5	256.2	0.84	0.99	1.11	37.6
All Vehicles		3464	0.4	0.955	45.8	LOS D	36.5	256.2	0.83	0.90	1.06	29.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Environa Drive													
Lane 1	47	2.2	1828	0.026	100	6.7	LOS A	0.0	0.0	Full	130	0.0	0.0
Lane 2	93	0.0	111	0.831	100	63.3	LOS E	5.3	37.2	Full	130	0.0	0.0
Lane 3	19	5.6	102	0.186	100	60.7	LOS E	1.0	7.2	Short	75	0.0	NA
Approach	159	1.3		0.831		46.1	LOS D	5.3	37.2				
East: Tompsitt Drive													
Lane 1	15	0.0	1515	0.010	100	8.0	LOS A	0.1	0.5	Short	115	0.0	NA
Lane 2	239	0.7	851	0.282	100	20.1	LOS B	7.8	54.8	Full	300	0.0	0.0
Lane 3	239	0.7	851	0.282	100	20.1	LOS B	7.8	54.8	Full	300	0.0	0.0
Lane 4	338	0.0	354	0.955	100	79.0	LOS F	22.8	159.7	Short	90	0.0	NA
Approach	832	0.4		0.955		43.8	LOS D	22.8	159.7				
North: Henry Place													
Lane 1	447	0.2	835[1]	0.536	100	25.5	LOS B	16.0	112.2	Short	60	0.0	NA
Lane 2	88	0.0	427	0.207	100	36.3	LOS C	3.7	26.1	Full	105	0.0	47.0[8]
Lane 3	366	0.0	390[1]	0.939	100	70.1	LOS E	23.7	166.0	Short	60	0.0	NA
Approach	902	0.1		0.939		44.7	LOS D	23.7	166.0				
West: Tompsitt Drive													
Lane 1	456	0.0	1249	0.365	100	13.6	LOS A	9.0	62.9	Short	100	0.0	NA
Lane 2	522	0.4	555[1]	0.941	100	61.3	LOS E	33.7	236.8	Full	690	0.0	0.0
Lane 3	558	0.4	593	0.941	100	61.3	LOS E	36.5	256.2	Full	690	0.0	0.0
Lane 4	18	5.9	102	0.176	100	61.3	LOS E	0.9	6.8	Short	180	0.0	NA
Lane 5	18	5.9	102	0.176	100	61.3	LOS E	0.9	6.8	Short	160	0.0	NA
Approach	1572	0.4		0.941		47.4	LOS D	36.5	256.2				
Intersection	3464	0.4		0.955		45.8	LOS D	36.5	256.2				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

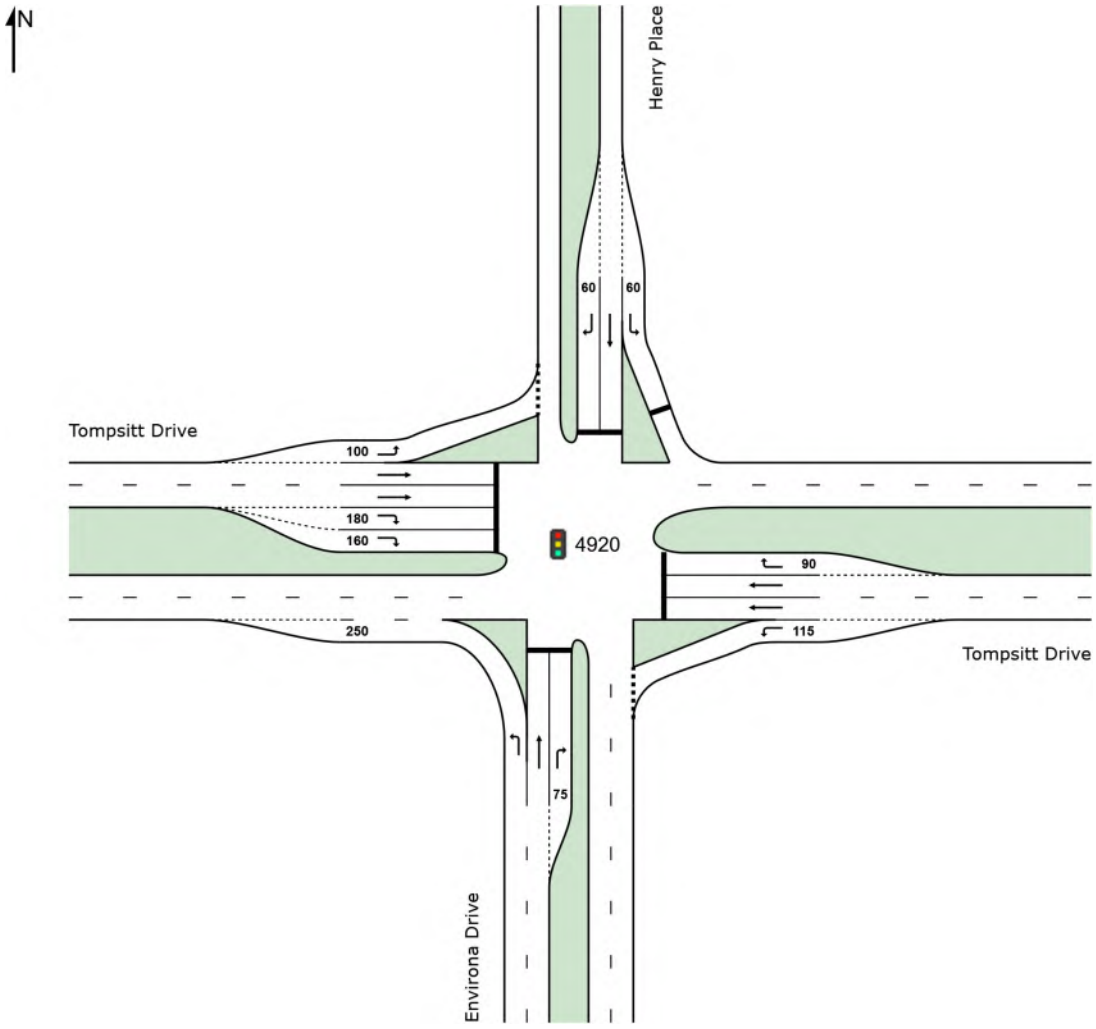
8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.

Site: 4920 [Base Sat: ED-HP-TD]

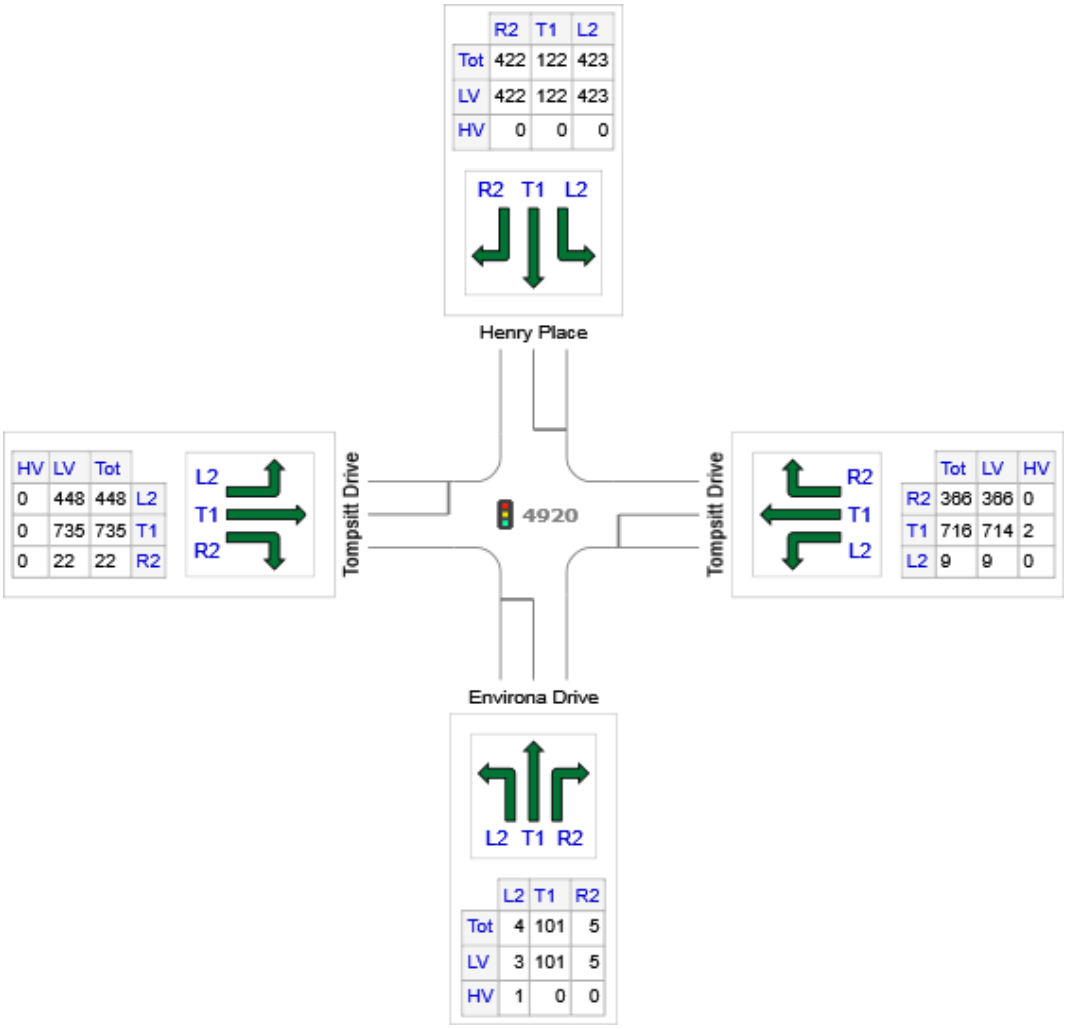
Environa Drive / Henry Place / Tompsitt Drive
Existing Signalised Intersection
Saturday Peak Hour
Site Category: Base Scenario
Signals - Fixed Time Isolated Cycle Time = 100 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: SCATS-Sat
Reference Phase: Phase A
Input Phase Sequence: A, D, D1*, D2*, E, F1*, F2*, G, G1*, G2*
Output Phase Sequence: A, D, D2*, F1*, G, G1*
(* Variable Phase)

Site Layout



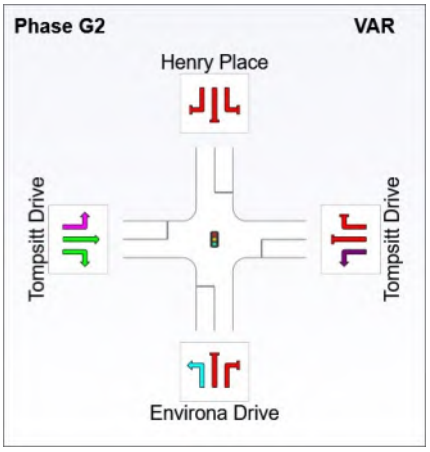
OD Demand Flows



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Environa Drive	111	109	1
E: Tompsitt Drive	1092	1089	2
N: Henry Place	967	967	0
W: Tompsitt Drive	1205	1205	0
Total	3375	3372	3

Input Phase Sequence

Movement Class: All Movement Classes



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

Phase Timing Summary

Phase	A	D	D2	F1	G	G1
Phase Change Time (sec)	0	27	39	60	72	84
Green Time (sec)	21	6	15	6	6	10
Phase Time (sec)	27	12	21	12	12	16
Phase Split	27%	12%	21%	12%	12%	16%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

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: Environa Drive												
1	L2	4	25.0	0.003	6.7	LOS A	0.0	0.0	0.00	0.56	0.00	38.4
2	T1	101	0.0	0.864	62.1	LOS E	5.6	39.4	1.00	0.93	1.47	12.2
3	R2	5	0.0	0.024	31.7	LOS C	0.2	1.2	0.90	0.64	0.90	29.1
Approach		111	1.0	0.864	58.5	LOS E	5.6	39.4	0.96	0.90	1.39	13.1
East: Tompsitt Drive												
4	L2	9	0.0	0.006	8.3	LOS A	0.1	0.4	0.19	0.63	0.19	50.1
5	T1	716	0.3	0.497	26.2	LOS B	13.5	94.5	0.82	0.71	0.82	28.7
6	R2	366	0.0	0.897	61.2	LOS E	20.9	146.5	1.00	0.97	1.33	18.3
Approach		1092	0.2	0.897	37.8	LOS C	20.9	146.5	0.88	0.80	0.99	23.5
North: Henry Place												
7	L2	423	0.0	0.616	21.6	LOS B	12.6	88.0	0.87	0.81	0.87	32.8
8	T1	122	0.0	0.417	42.6	LOS D	5.6	38.9	0.95	0.76	0.95	16.4
9	R2	422	0.0	0.918	60.0	LOS E	24.8	173.9	1.00	1.07	1.37	6.9
Approach		967	0.0	0.918	41.0	LOS C	24.8	173.9	0.94	0.92	1.10	17.2
West: Tompsitt Drive												
10	L2	448	0.0	0.374	14.2	LOS A	9.1	63.4	0.50	0.73	0.50	54.7
11	T1	735	0.0	0.897	54.3	LOS D	20.9	146.3	1.00	1.02	1.33	36.5
12	R2	22	0.0	0.099	57.7	LOS E	0.5	3.8	0.97	0.68	0.97	30.4
Approach		1205	0.0	0.897	39.4	LOS C	20.9	146.3	0.81	0.91	1.01	40.8
All Vehicles		3375	0.1	0.918	40.0	LOS C	24.8	173.9	0.87	0.87	1.04	29.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Environa Drive													
Lane 1	4	25.0	1576	0.003	100	6.7	LOS A	0.0	0.0	Full	130	0.0	0.0
Lane 2	101	0.0	117	0.864	100	62.1	LOS E	5.6	39.4	Full	130	0.0	0.0
Lane 3	5	0.0	223	0.024	100	31.7	LOS C	0.2	1.2	Short	75	0.0	NA
Approach	111	1.0		0.864		58.5	LOS E	5.6	39.4				
East: Tompsitt Drive													
Lane 1	9	0.0	1504	0.006	100	8.3	LOS A	0.1	0.4	Short	115	0.0	NA
Lane 2	358	0.3	720	0.497	100	26.2	LOS B	13.5	94.5	Full	300	0.0	0.0
Lane 3	358	0.3	720	0.497	100	26.2	LOS B	13.5	94.5	Full	300	0.0	0.0
Lane 4	366	0.0	409	0.897	100	61.2	LOS E	20.9	146.5	Short	90	0.0	NA
Approach	1092	0.2		0.897		37.8	LOS C	20.9	146.5				
North: Henry Place													
Lane 1	423	0.0	687	0.616	100	21.6	LOS B	12.6	88.0	Short	60	0.0	NA
Lane 2	122	0.0	293	0.417	100	42.6	LOS D	5.6	38.9	Full	105	0.0	51.4[8]
Lane 3	422	0.0	460[1]	0.918	100	60.0	LOS E	24.8	173.9	Short	60	0.0	NA
Approach	967	0.0		0.918		41.0	LOS C	24.8	173.9				
West: Tompsitt Drive													
Lane 1	448	0.0	1200	0.374	100	14.2	LOS A	9.1	63.4	Short	100	0.0	NA
Lane 2	367	0.0	410	0.897	100	54.3	LOS D	20.9	146.3	Full	690	0.0	0.0
Lane 3	367	0.0	410	0.897	100	54.3	LOS D	20.9	146.3	Full	690	0.0	0.0
Lane 4	11	0.0	111	0.099	100	57.7	LOS E	0.5	3.8	Short	180	0.0	NA
Lane 5	11	0.0	111	0.099	100	57.7	LOS E	0.5	3.8	Short	160	0.0	NA
Approach	1205	0.0		0.897		39.4	LOS C	20.9	146.3				
Intersection	3375	0.1		0.918		40.0	LOS C	24.8	173.9				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.

Appendix G:

Proposed Development Plans

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NOMINATED ARCHITECTS:

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LEGEND

AMENDMENTS

Rev	Description	By	Check	Date
09	DA Councill Response	AH,SJ,DM	GMC	20/01/25

PROJECT

VIKINGS JERRABOMBERRA

37 TOMPSITT Dr, JERRABOMBERRA NSW 2619

PROJECT No

2246A

PROJECT STATUS

STAGED DEVELOPMENT APPLICATION

DRAWING TITLE

GA PLANS

Lower Ground - Stage 1

DRAWN AH,SJ,DM

SCALE 1:1000@A3

NORTH

DRAWING No

A-DA-1-110-001

REV

09

ARCHITECT

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PROJECT
VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619

PROJECT No
2246A

PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GA PLANS
Upper Ground - Stage 1

DRAWN AH,SJ,DM | SCALE 1:1000@A3 | NORTH

DRAWING No
A-DA-1-110-002

REV
10

ARCHITECT

BENSON McCORMACK ARCHITECTURE

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PROJECT
VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619

PROJECT No
2246A

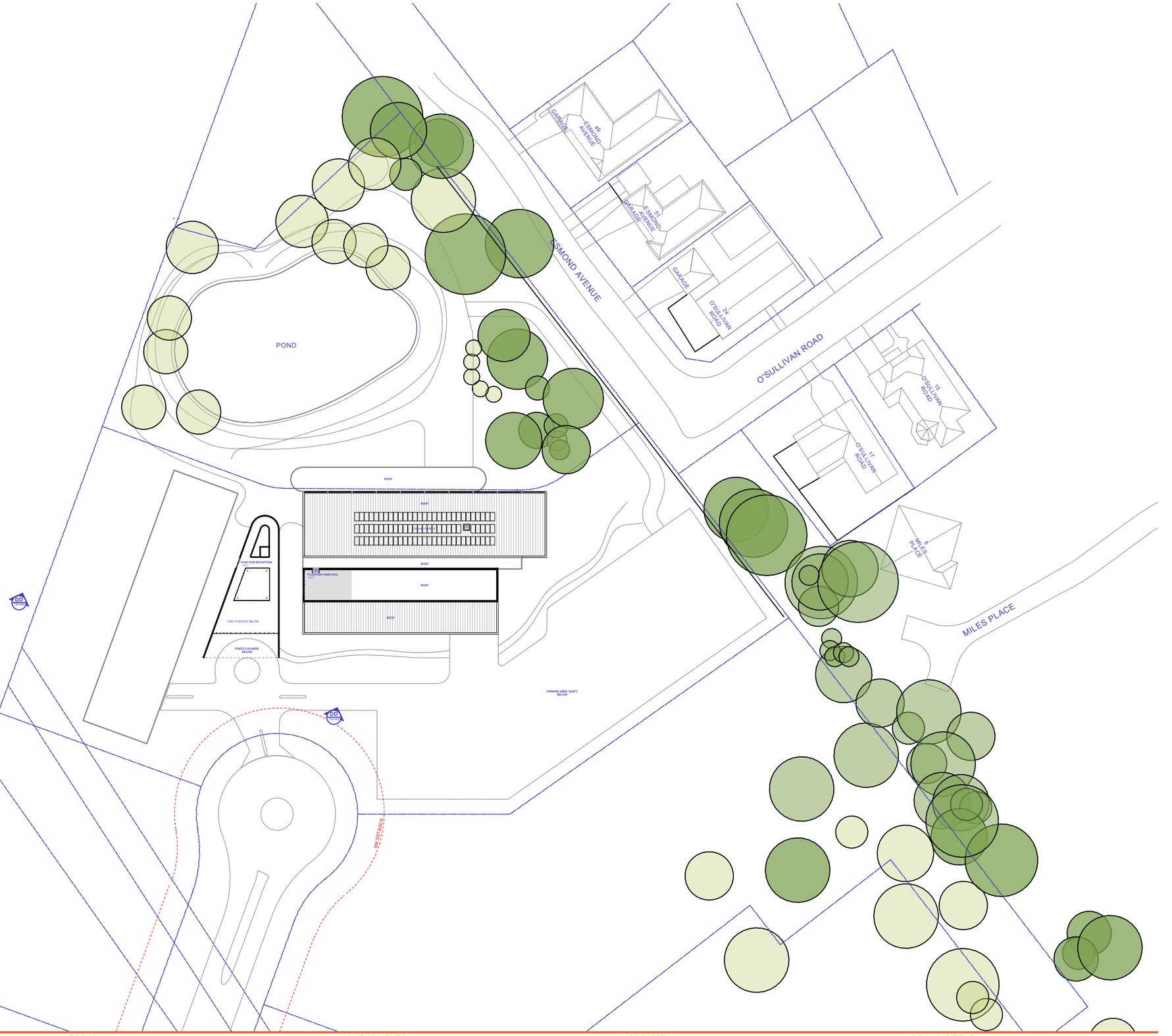
PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GA PLANS
Mezzanine - Stage 1

DRAWN AH,SJ,DM
SCALE 1:1000@A3
NORTH

DRAWING No
A-DA-1-110-003

REV
09



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37 TOMPSITT Dr, JERRABOMBERRA NSW 2619
PROJECT No
2246A
PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GA PLANS
Level 1 - Stage 1
DRAWN SCALE NORTH
AH,SJ,DM 1:1000@A3
DRAWING No REV
A-DA-1-110-004 **09**

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PROJECT
VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619
PROJECT No
2246A
PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GA PLANS
Roof Plan - Stage 1
DRAWN AH,SJ,DM
SCALE 1:1000@A3
NORTH
DRAWING No
A-DA-1-110-005
REV
09

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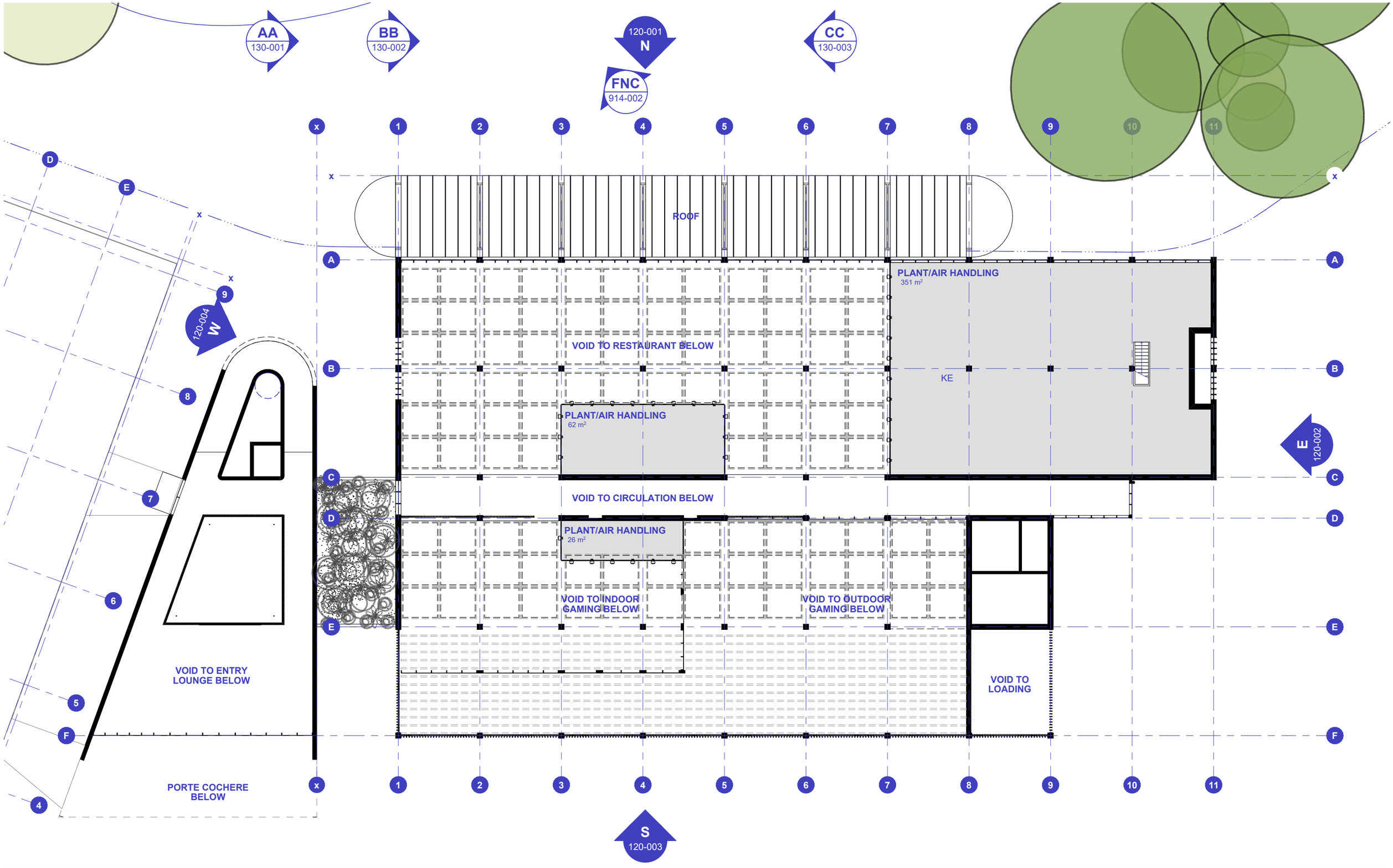
08	DA Councill Response	AH,SJ,DM	GMC	20/01/25

PROJECT
VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619
PROJECT No
2246A
PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GA PLANS - LARGE
Upper Ground - Stage 1
DRAWN AH,SJ,DM
SCALE 1:250@A3
NORTH
DRAWING No **A-DA-1-115-000**
REV **08**



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AMENDMENTS

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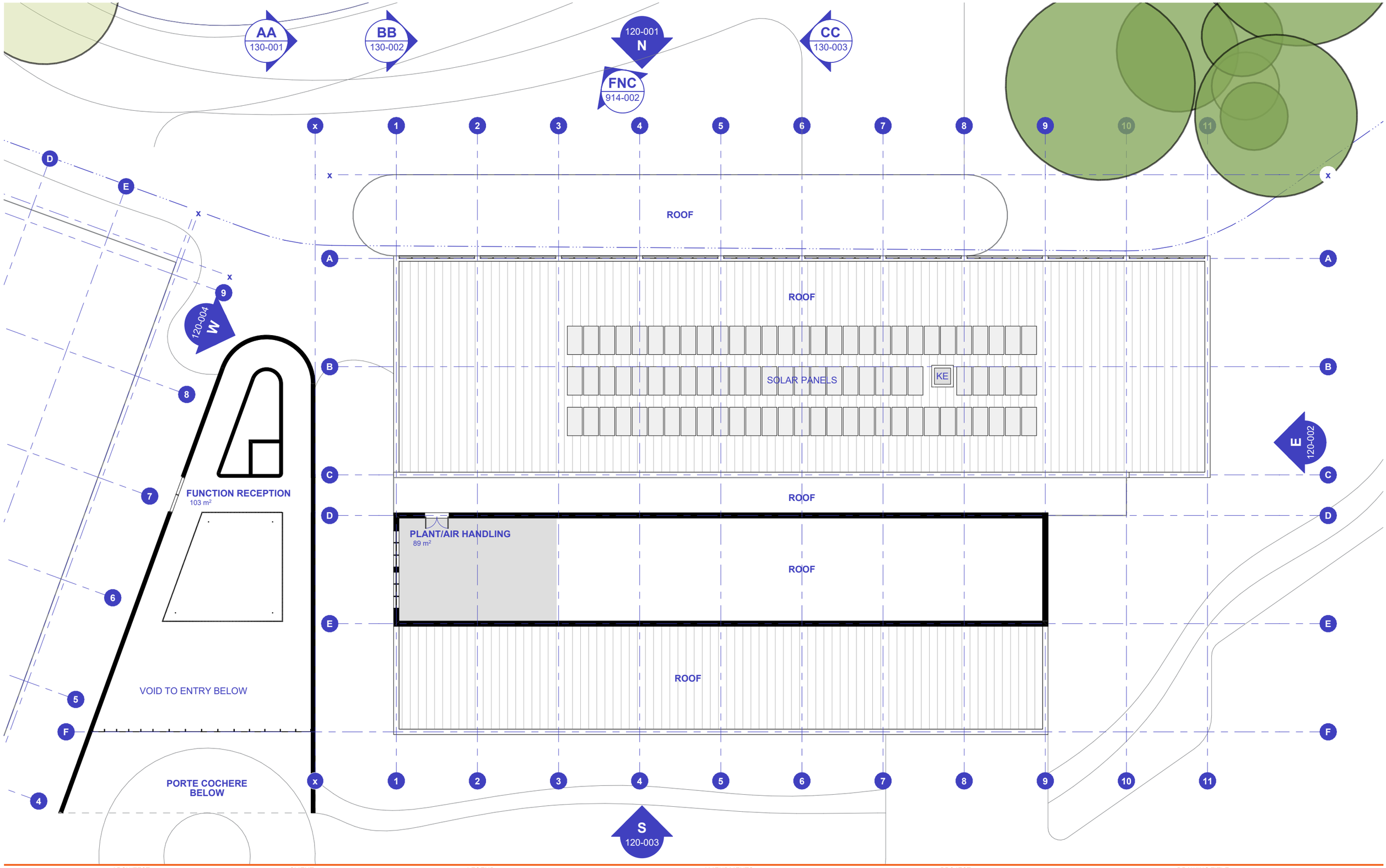
07	DA Councill Response	AH,SJ,DM	GMC	20/01/25

PROJECT
VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619
PROJECT No
2246A
PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GA PLANS - LARGE
Mezzanine - Stage 1
DRAWN SCALE NORTH
AH,SJ,DM 1:250@A3
DRAWING No REV
A-DA-1-115-001 07



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07	DA Councill Response	AH,SJ,DM	GMC	20/01/25

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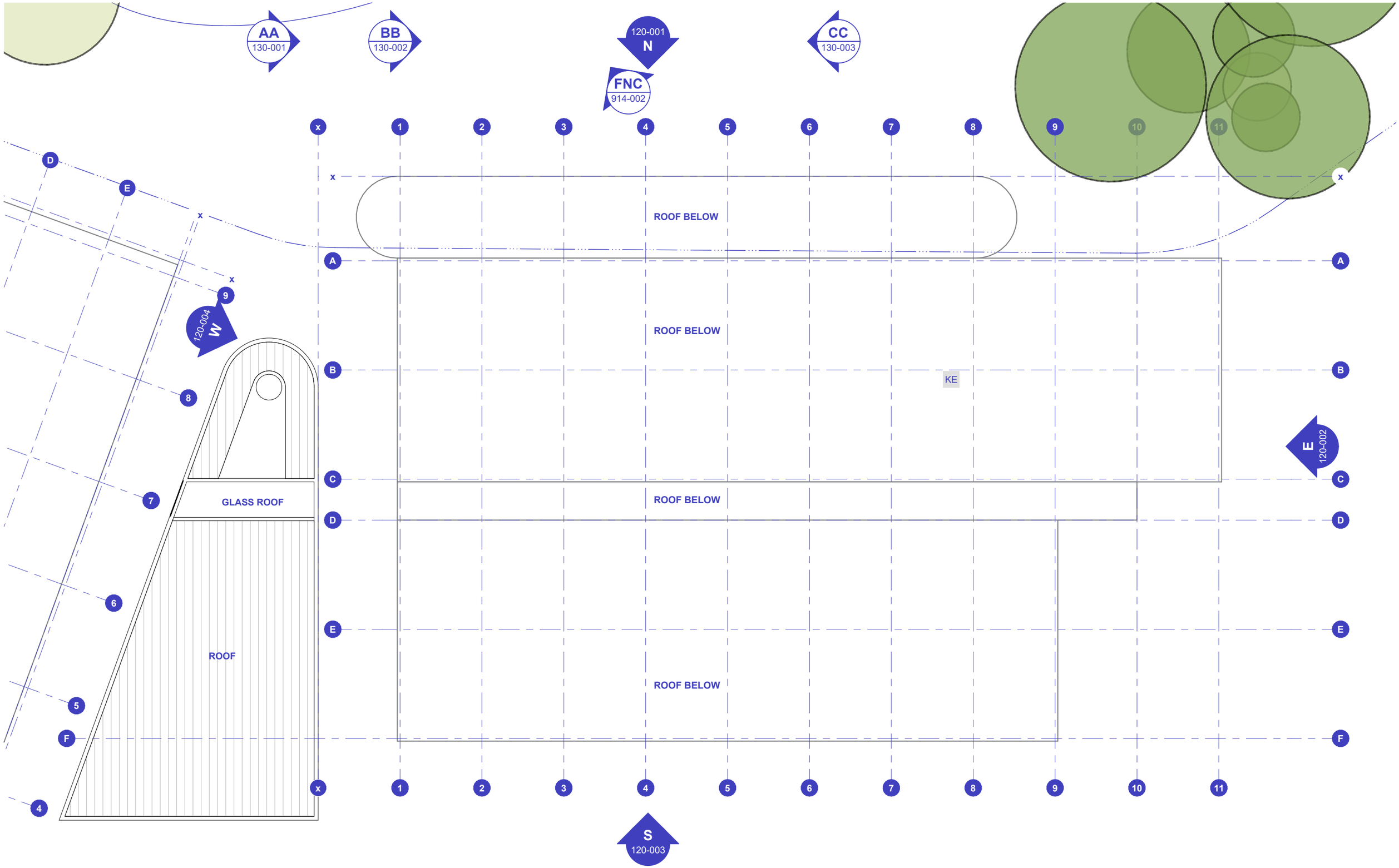
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619
PROJECT No
2246A
PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GA PLANS - LARGE
Level 1 - Stage 1
DRAWN AH,SJ,DM
SCALE 1:250@A3
NORTH
DRAWING No **A-DA-1-115-002**
REV **07**



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AMENDMENTS

Rev	Description	By	Check	Date
05	DA Councill Response	AH,SJ,DM	GMC	20/01/25

PROJECT

VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619

PROJECT No

2246A

PROJECT STATUS

STAGED DEVELOPMENT APPLICATION

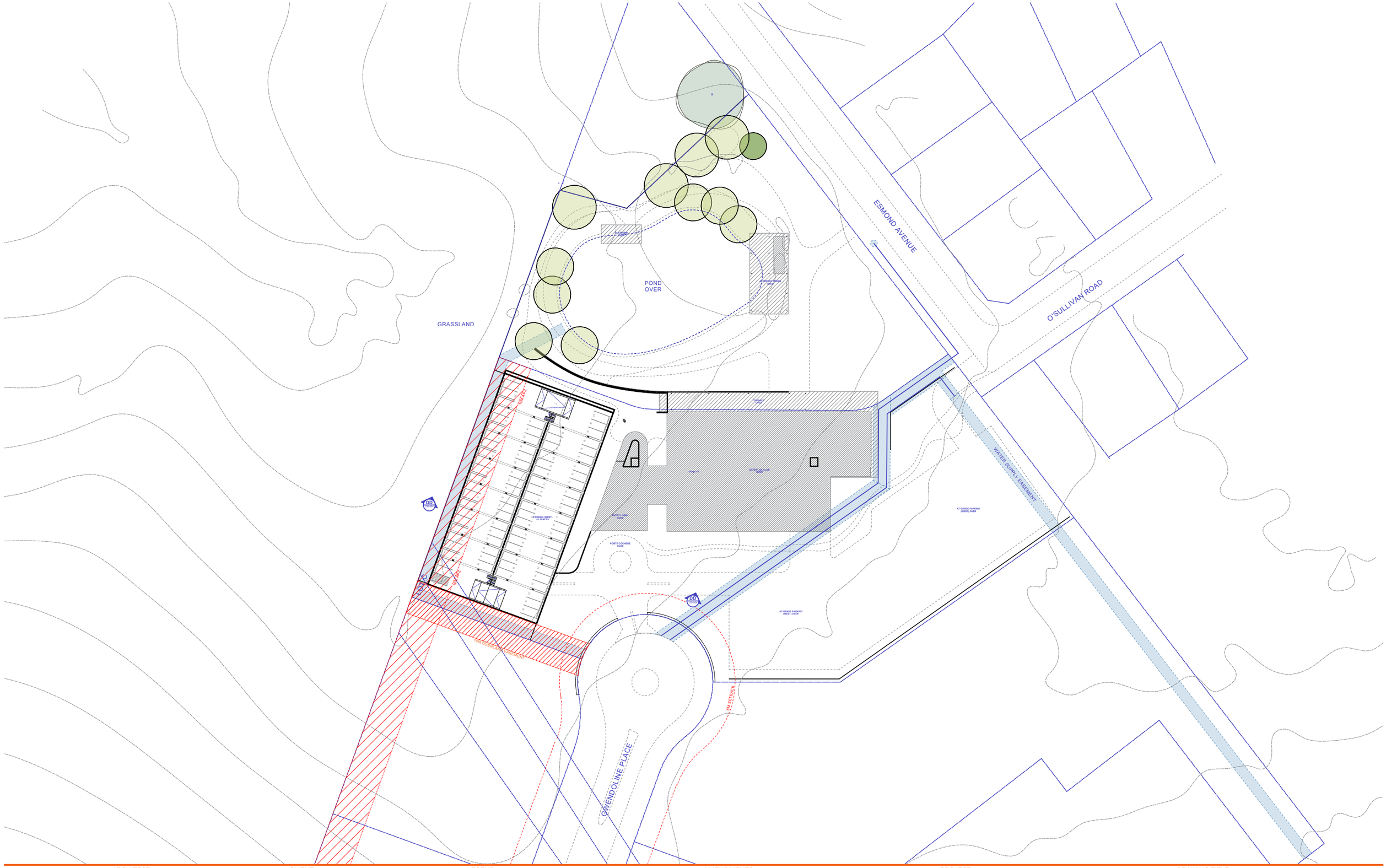
DRAWING TITLE

GA PLANS - LARGE

Roof Plan - Stage 1

DRAWN: AH,SJ,DM
SCALE: 1:250@A3
NORTH

DRAWING No: A-DA-1-115-003
REV: 05



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7	DA Councill Response	AH,SJ,DM	GMC	20/01/25

PROJECT

VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619

PROJECT No

2246A

PROJECT STATUS

STAGED DEVELOPMENT APPLICATION

DRAWING TITLE

GA PLANS
Lower Ground - Stage 2

DRAWN AH,SJ,DM | SCALE 1:1000@A3 | NORTH

DRAWING No **A-DA-2-110-001** | REV **7**

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7	DA Councill Response	AH,SJ,DM	GMC	21/01/2025

PROJECT
VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619

PROJECT No
2246A

PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GA PLANS
Upper Ground - Stage 2

DRAWN AH,SJ,DM
SCALE 1:1000@A3
NORTH

DRAWING No A-DA-2-110-002
REV 7

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PROJECT

VIKINGS JERRABOMBERRA

37 TOMPSITT Dr, JERRABOMBERRA NSW 2619

PROJECT No

2246A

PROJECT STATUS

STAGED DEVELOPMENT APPLICATION

DRAWING TITLE

GA PLANS

Mezzanine - Stage 2

DRAWN AH,SJ,DM

SCALE 1:1000@A3

NORTH

DRAWING No A-DA-2-110-003

REV 7

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PROJECT

VIKINGS JERRABOMBERRA

37 TOMPSITT Dr, JERRABOMBERRA NSW 2619

PROJECT No

2246A

PROJECT STATUS

STAGED DEVELOPMENT APPLICATION

DRAWING TITLE

GA PLANS

Level 1 - Stage 2

DRAWN SCALE NORTH

AH,SJ,DM 1:1000@A3

DRAWING No REV

A-DA-2-110-004 7

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PROJECT

VIKINGS JERRABOMBERRA

37 TOMPSITT Dr, JERRABOMBERRA NSW 2619

PROJECT No

2246A

PROJECT STATUS

STAGED DEVELOPMENT APPLICATION

DRAWING TITLE

GA PLANS

Roof Plan - Stage 2

DRAWN AH,SJ,DM | SCALE 1:1000@A3 | NORTH

DRAWING No A-DA-2-110-005 | REV 7

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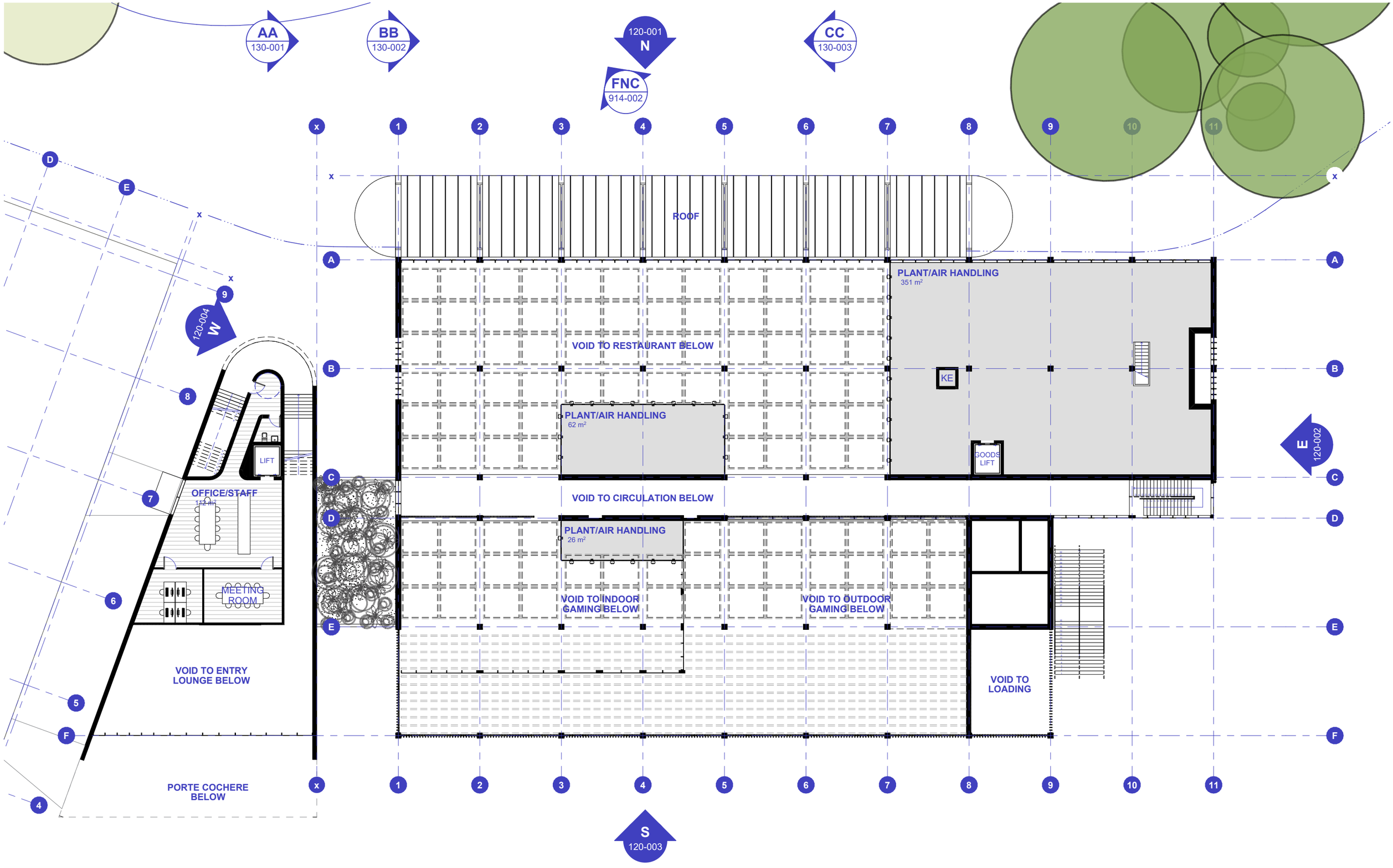
LEGEND

AMENDMENTS

Rev	Description	By	Check	Date
05	DA Councill Response	AH,SJ,DM	GMC	21/01/2025

PROJECT
VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619
PROJECT No
2246A
PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GA PLANS - LARGE
Upper Ground - Stage 2
DRAWN AH,SJ,DM
SCALE 1:250@A3
NORTH
DRAWING No A-DA-2-115-000
REV 05



ARCHITECT
BENSON McCORMACK ARCHITECTURE
ABN 76 129 130 285
5 / 505 BALMAIN RD, LILYFIELD NSW 2040
+61 2 9818 0777
ENQUIRIES@BENSONMCCORMACK.COM
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NOMINATED ARCHITECTS:
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Glenn McCormack (ARBNSW 7536)

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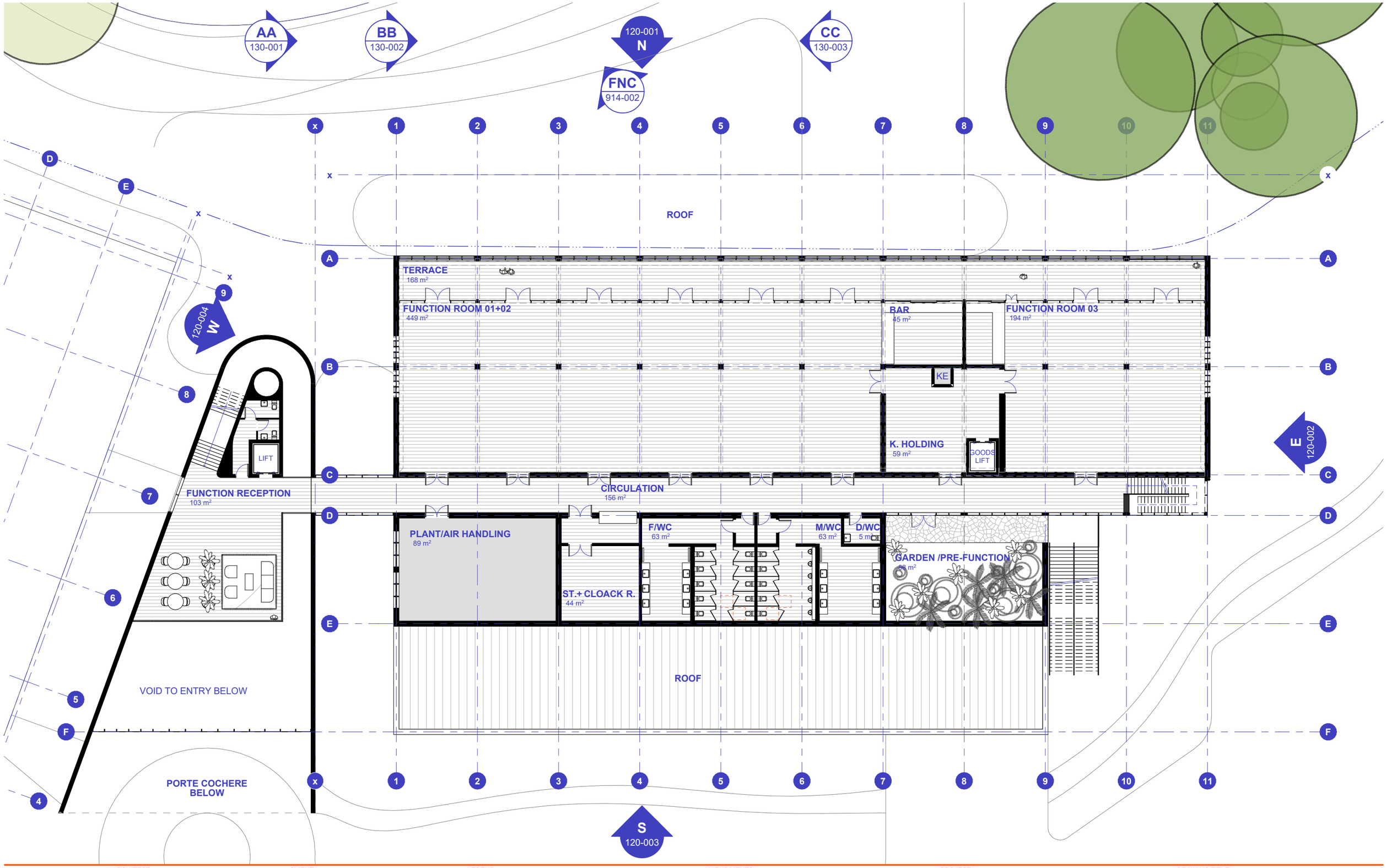
LEGEND

AMENDMENTS

Rev	Description	By	Check	Date
05	DA Councill Response	AH,SJ,DM	GMC	20/01/25

PROJECT
VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619
PROJECT No
2246A
PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GA PLANS - LARGE
Mezzanine - Stage 2
DRAWN AH,SJ,DM
SCALE 1:250@A3
NORTH
DRAWING No A-DA-2-115-001
REV 05



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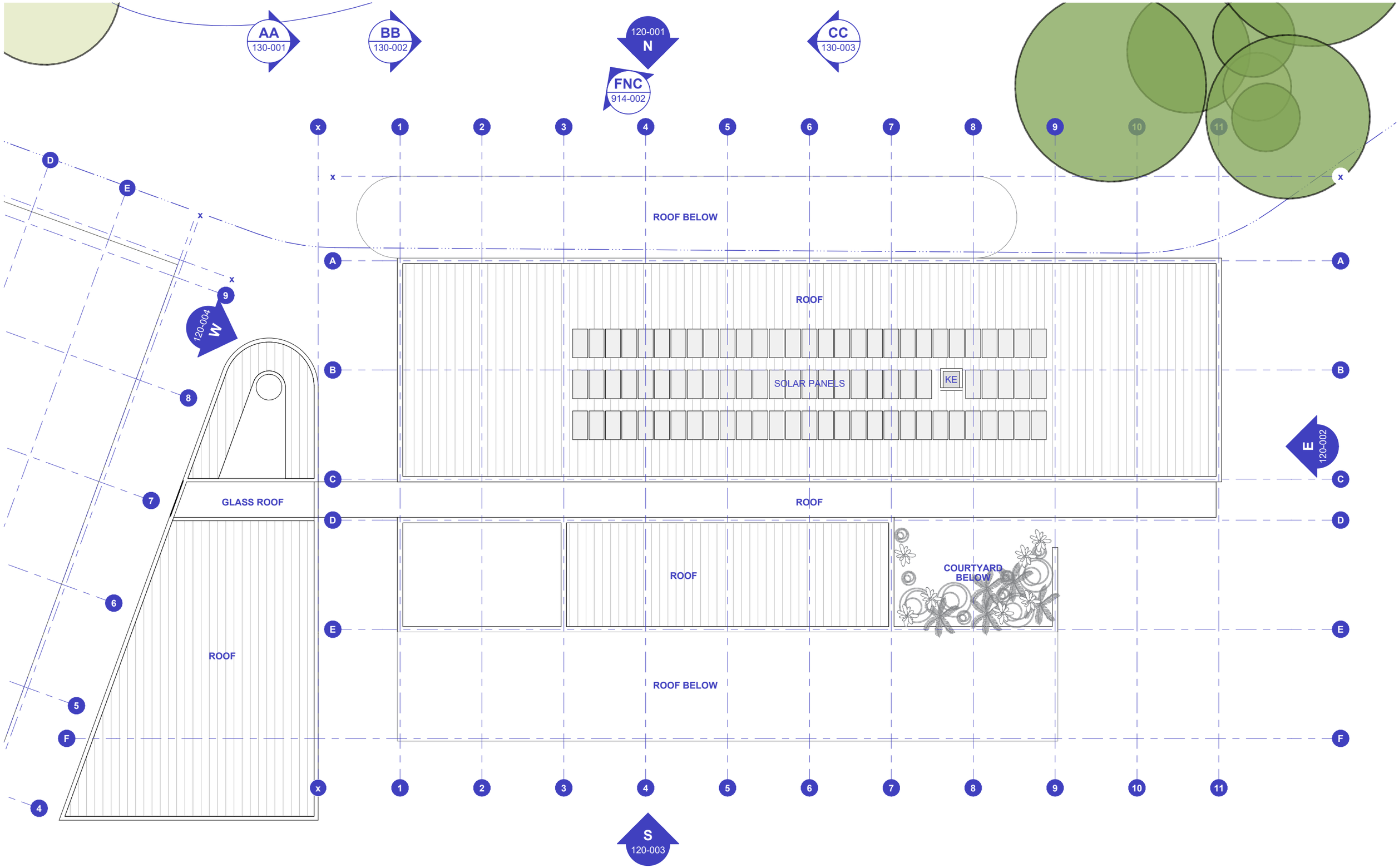
LEGEND

AMENDMENTS

Rev	Description	By	Check	Date
05	DA Councill Response	AH,SJ,DM	GMC	20/01/25

PROJECT
VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619
PROJECT No
2246A
PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GA PLANS - LARGE
Level 1 - Stage 2
DRAWN AH,SJ,DM
SCALE 1:250@A3
NORTH
DRAWING No **A-DA-2-115-002**
REV **05**



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LEGEND

AMENDMENTS

Rev	Description	By	Check	Date
05	DA Councill Response	AH,SJ,DM	GMC	20/01/25

PROJECT
VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619
PROJECT No
2246A
PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GA PLANS - LARGE
Roof Plan - Stage 2
DRAWN AH,SJ,DM
SCALE 1:250@A3
NORTH
DRAWING No A-DA-2-115-003
REV 05

CLUB POPLARS, JERRABOMBERRA

NEW REGISTERED CLUB 29.11.2023

PRE-DA AREA AND ACCOMMODATION SCHEDULE

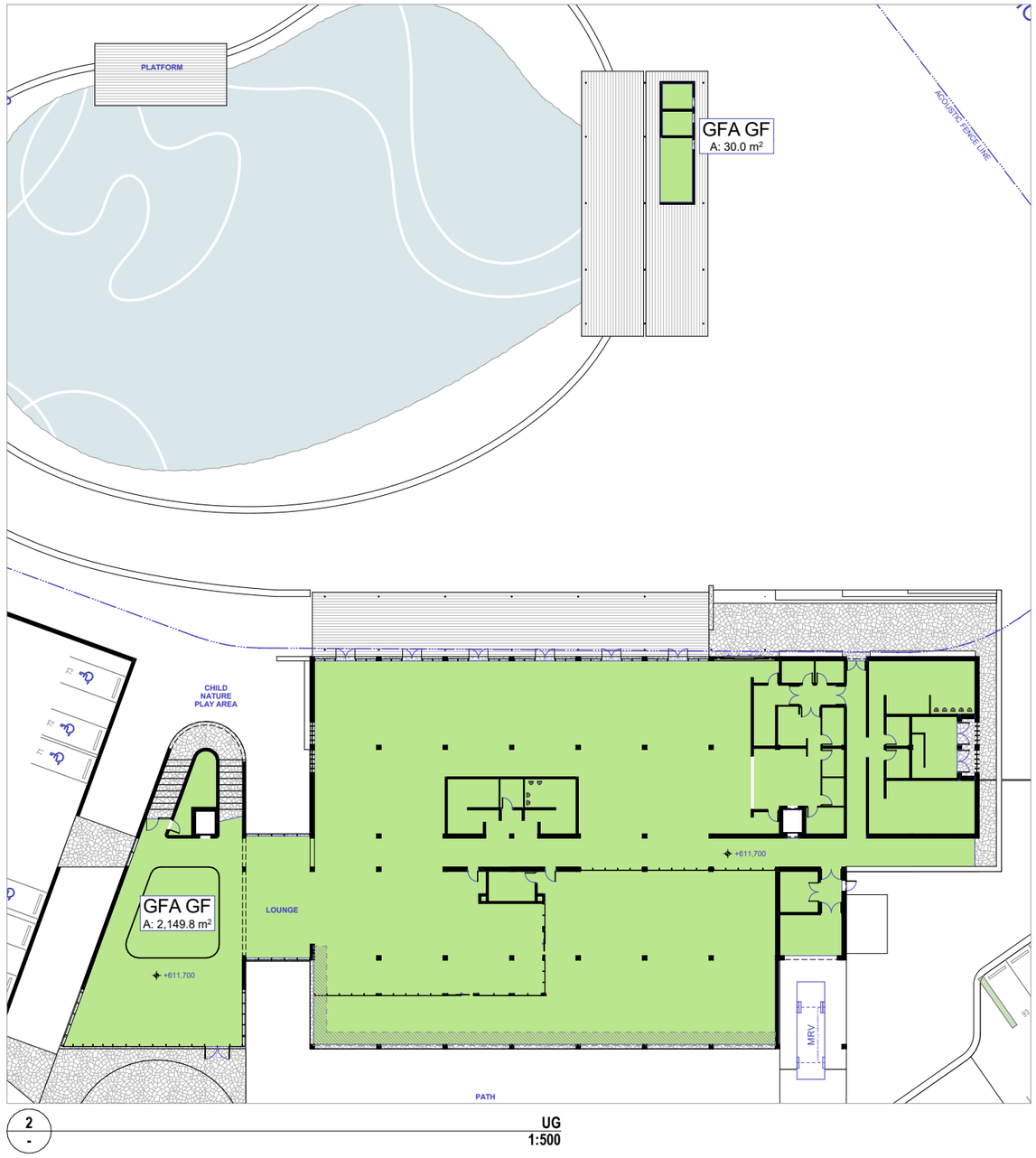
SITE AREA	19829.0	M² (TBC)
MAX. FSR	1.0	:1
MAX. GFA	**19829.0**	**M²**
ZONING	B1	
HEIGHT OF BUILDING	12.0	M
ACID SULPAHTE	NA	
LAND RESERVATION	NA	
HERITAGE	NA	

SETBACKS	FRONT (NEW ROAD)	**6.0M**	TBD
	SIDE (NORTH)	**10.0M**	APZ (TBD)
	SIDE	**3.0M**	TBD
	REAR (ECO)	**3.0M**	TBD
PARKING CLUB	CLUB	**1/3.5M²**	TBD
	BICYCLES		TBD
	MOTORCYCLES		TBD
PRECINCTS	STH JERRABOMBERRA DCP		

PROPOSED GBA/GFA	**LOCATION**
LOWER GROUND	PARKING
UPPER GROUND	CLUB/PARKING
MEZZANINE	CLUB
LEVEL 01	PARKING
TOTAL	
FSR	

STAGE 2

GFA
0.0
2179.8
146.0
1236.1
3561.9
0.18
FSR



2 - UG 1:500

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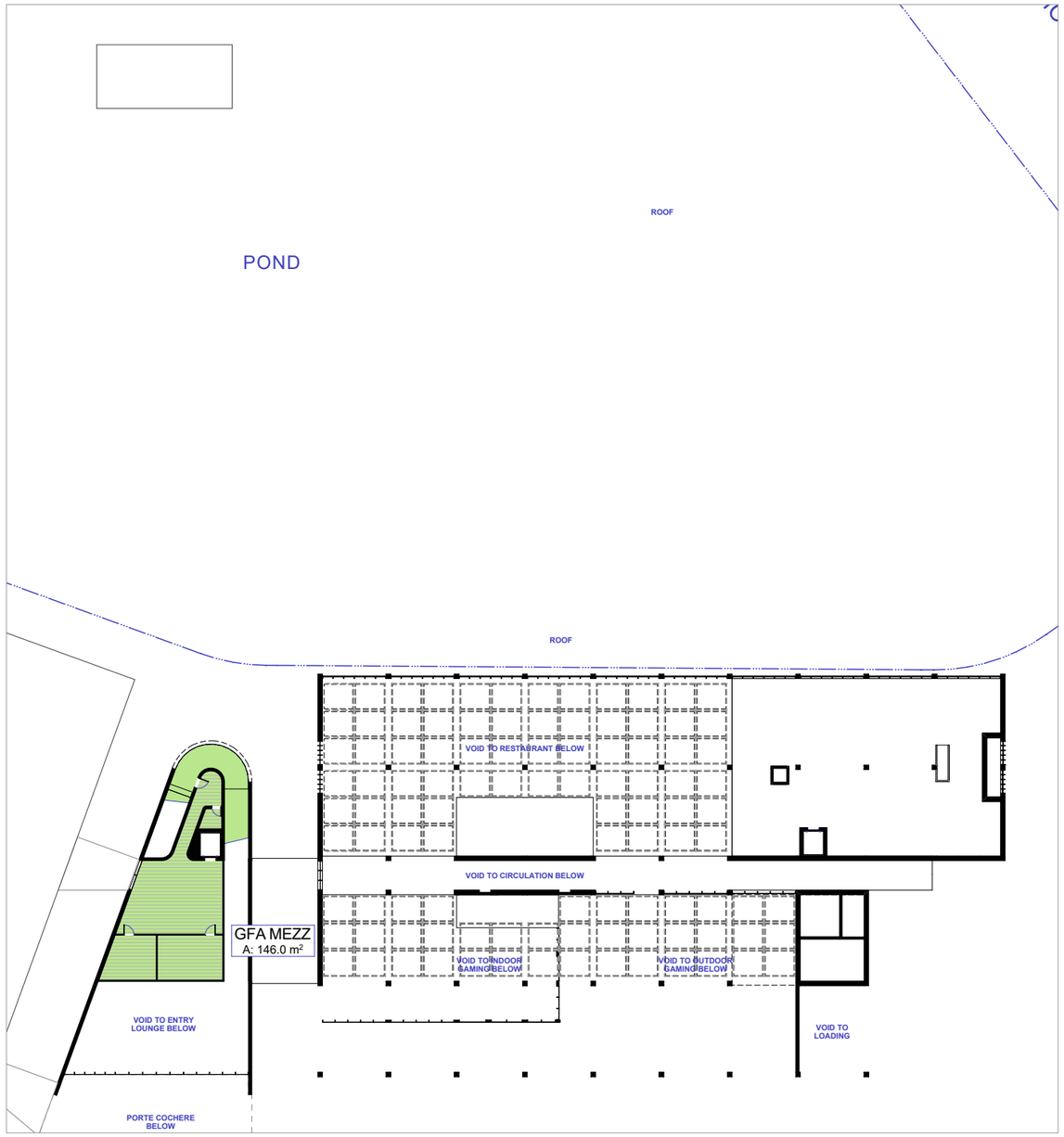
LEGEND

AMENDMENTS

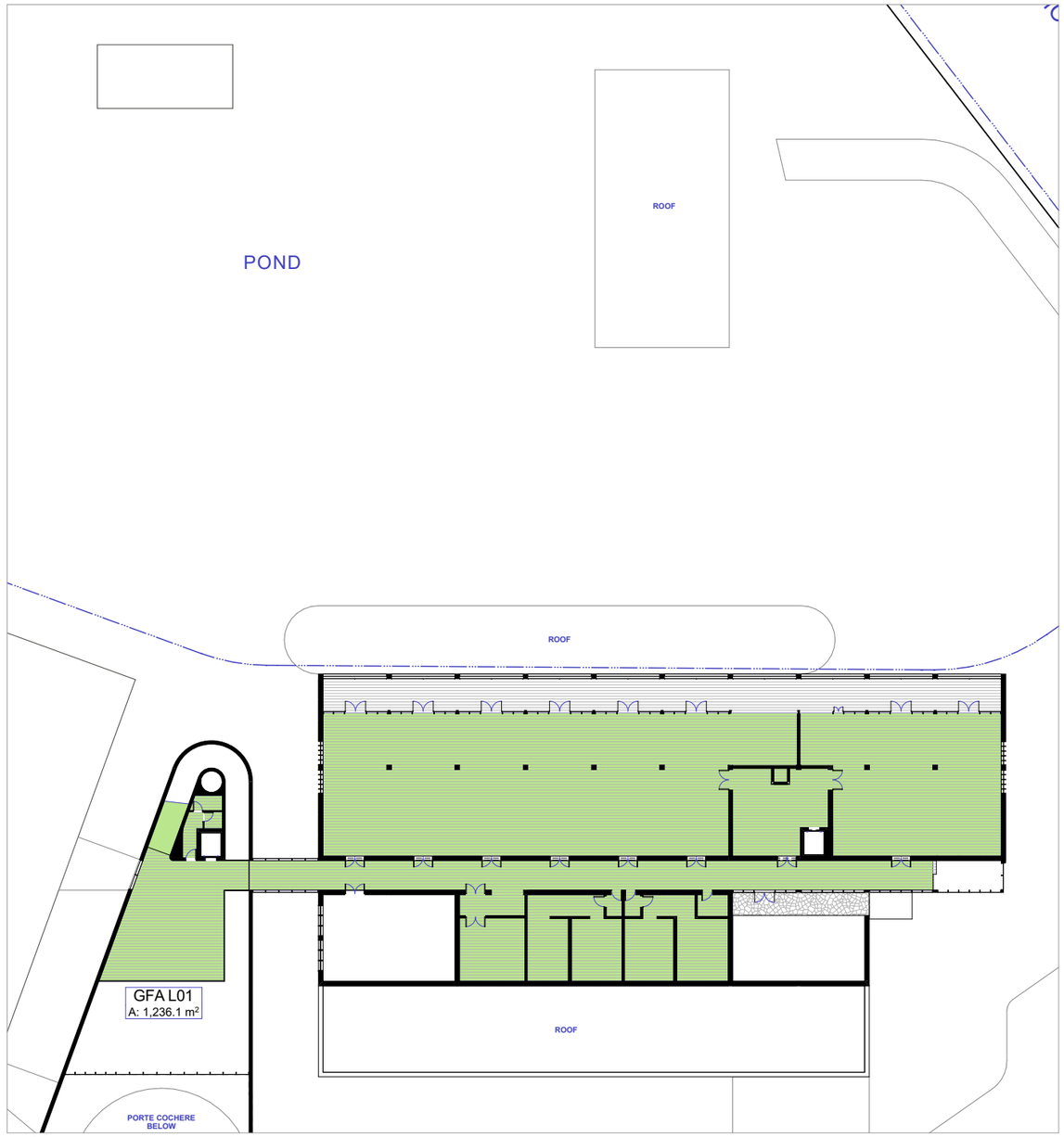
Rev	Description	By	Check	Date
06	DA Councill Response	AH,SJ,DM	GMC	20/01/25

PROJECT
VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619
PROJECT No
2246A
PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GFA DIAGRAMS
Summary
DRAWN AH,SJ,DM
SCALE 1:500@A3
NORTH
DRAWING No **A-DA-2-710-000**
REV **06**



1 - Mezzanine 1:500



2 - Level 1 1:500

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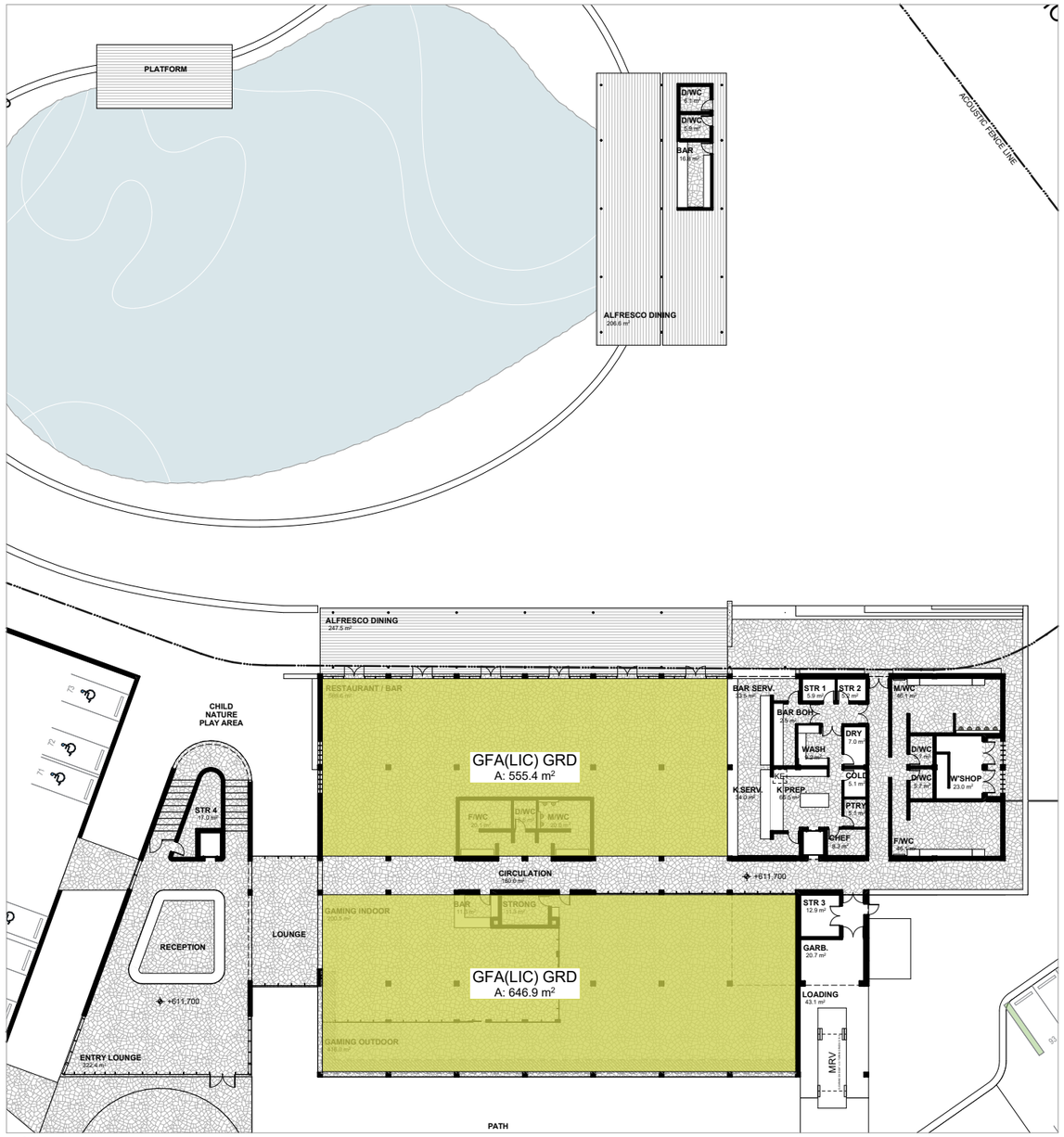
LEGEND

AMENDMENTS

Rev	Description	By	Check	Date
06	DA Councill Response	AH,SJ,DM	GMC	20/01/25

PROJECT
VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619
PROJECT No
2246A
PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GFA DIAGRAMS
Gross Floor Area
DRAWN AH,SJ,DM
SCALE 1:500@A3
NORTH
DRAWING No **A-DA-2-710-001**
REV **06**



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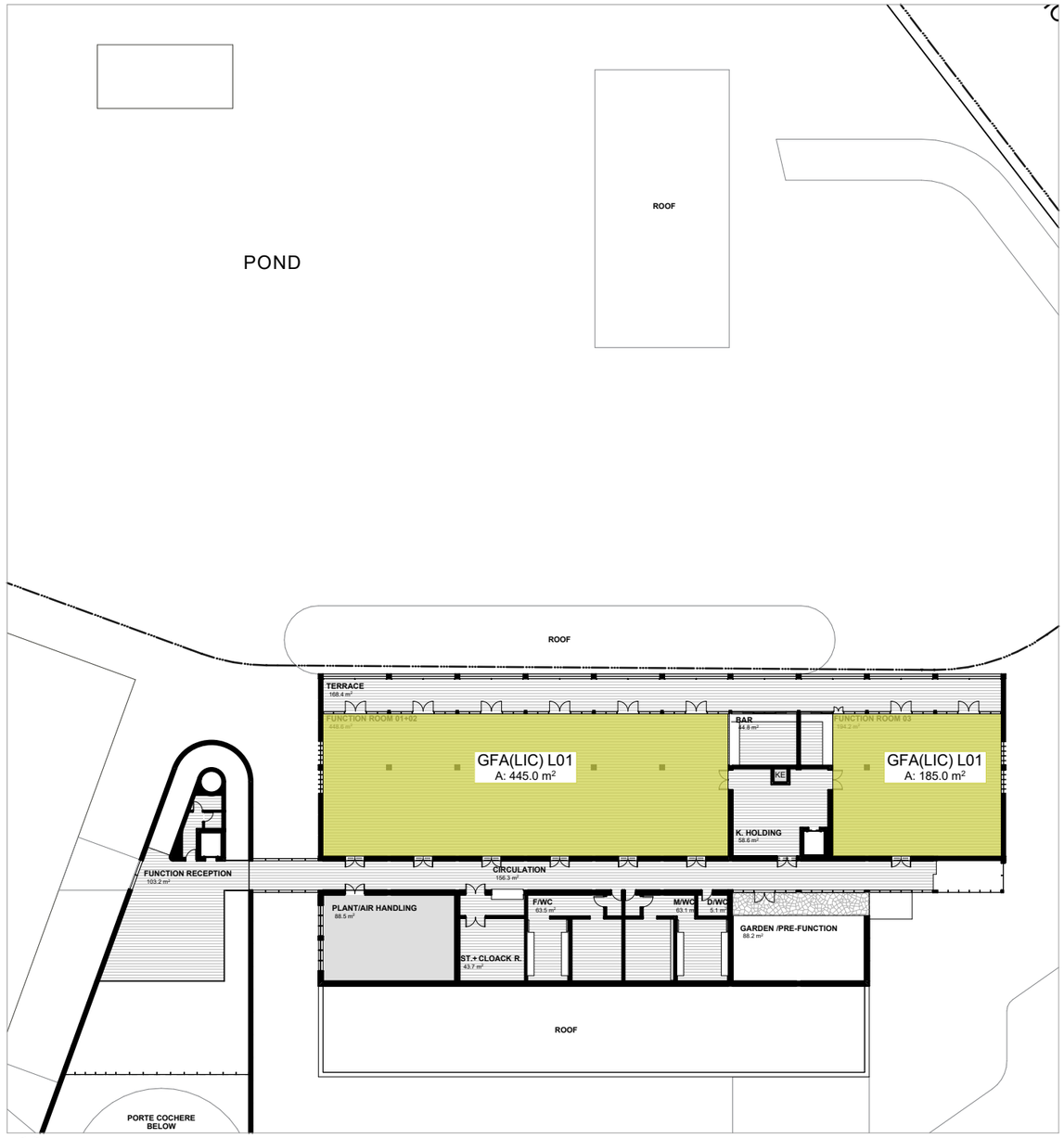

2 - Level 1 1:500

SITE AREA : **19,829.0m²**

GROSS FLOOR AREA (LICENSED)

GROUND - LOWER	0.0m²
GROUND - UPPER	1202.3m²
LEVEL 1	630.0m²
TOTAL	**1832.3m²**

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LEGEND

AMENDMENTS

Rev	Description	By	Check	Date
05	DA Councill Response	AH,SJ,DM	GMC	20/01/25

PROJECT
VIKINGS JERRABOMBERRA
37 TOMPSITT Dr, JERRABOMBERRA NSW 2619

PROJECT No
2246A

PROJECT STATUS
STAGED DEVELOPMENT APPLICATION

DRAWING TITLE
GFA DIAGRAMS
Gross Floor Area (Licensed)

DRAWN AH,SJ,DM | SCALE 1:500@A3 | NORTH

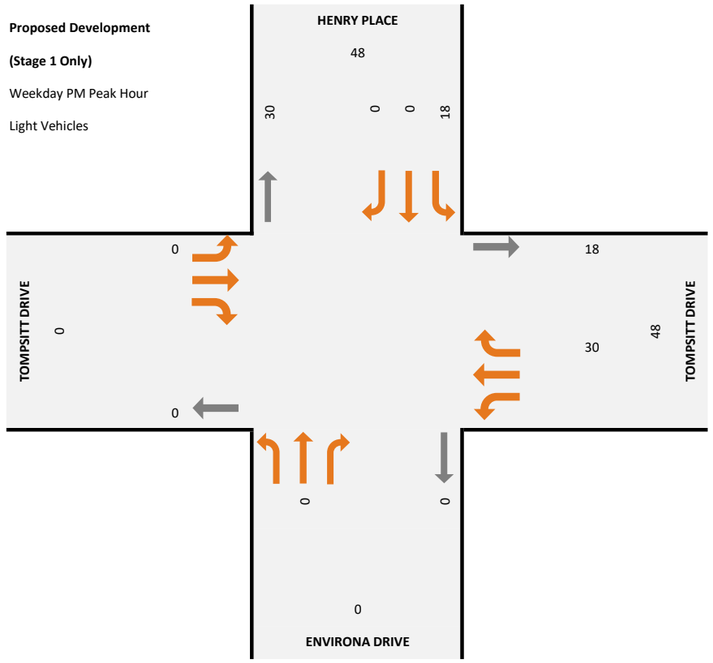
DRAWING No **A-DA-2-710-002** | REV **05**

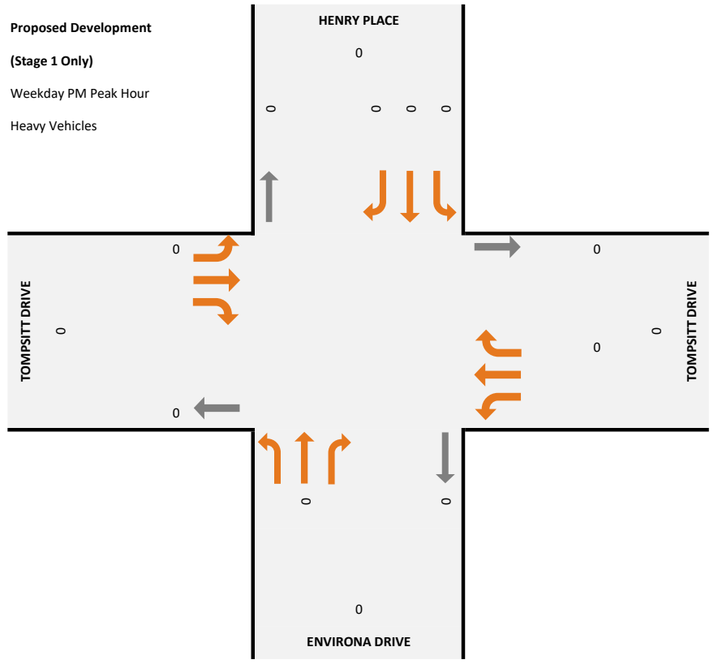
Appendix H:

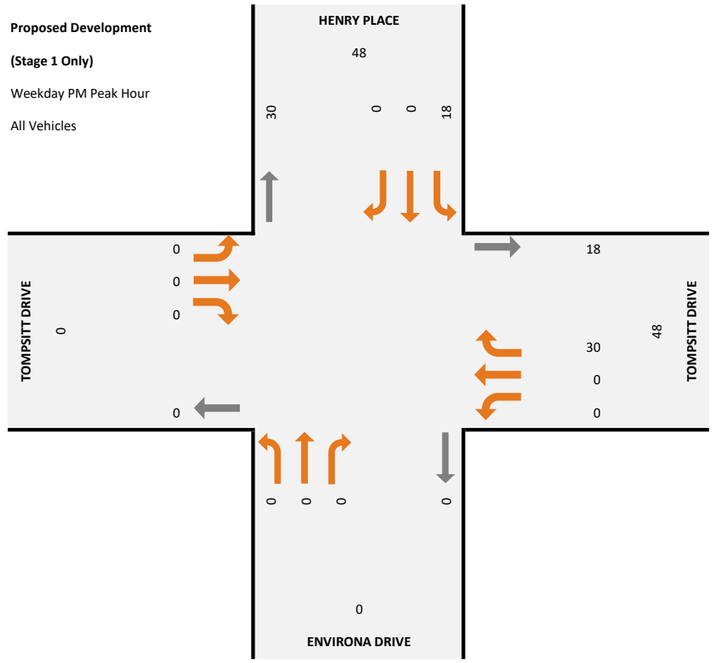
Peak Hour Traffic Demands – Proposed Development

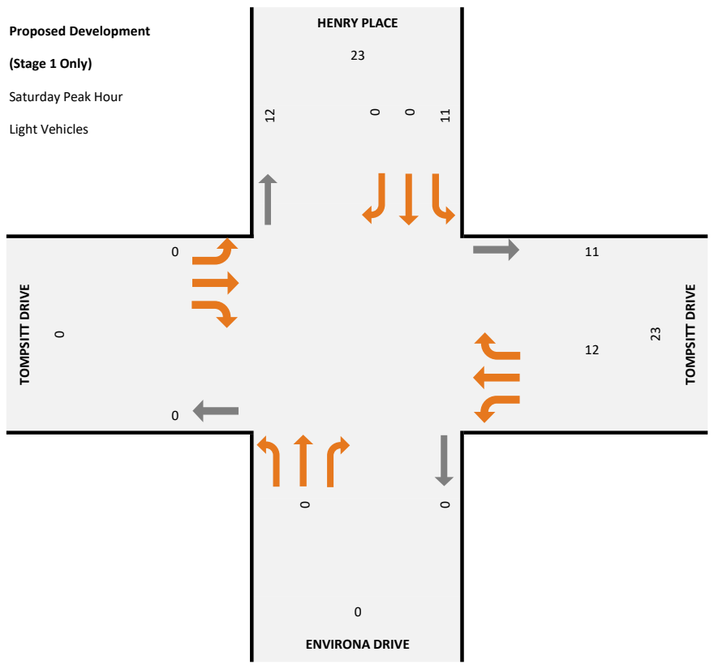
23-0130: Jerrabomberra Vikings

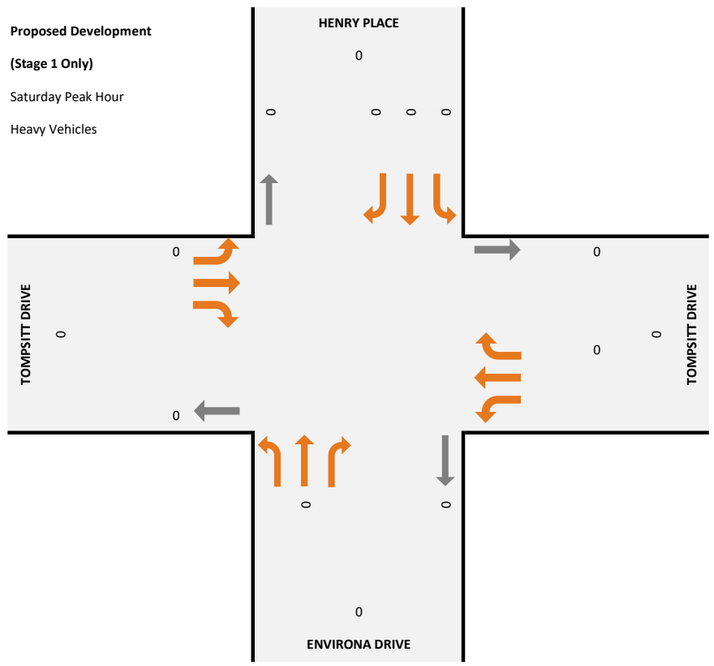
Peak Hour Traffic Volumes

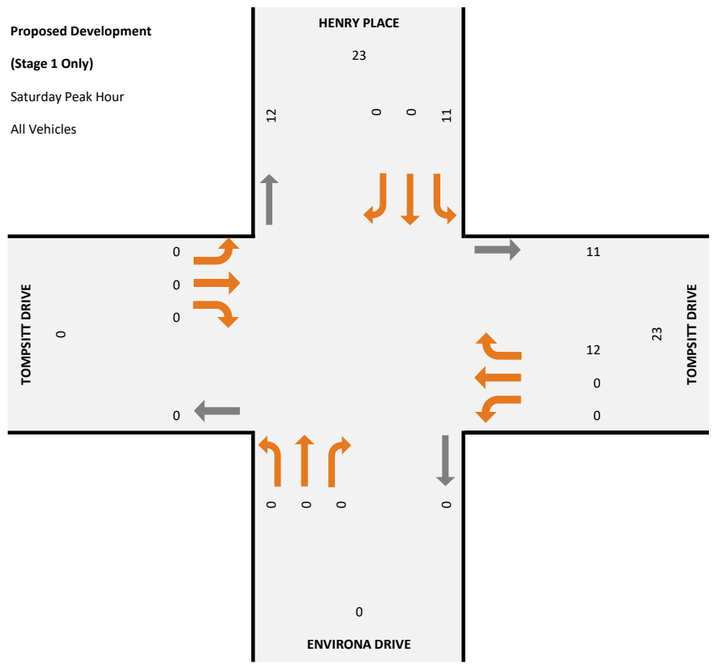






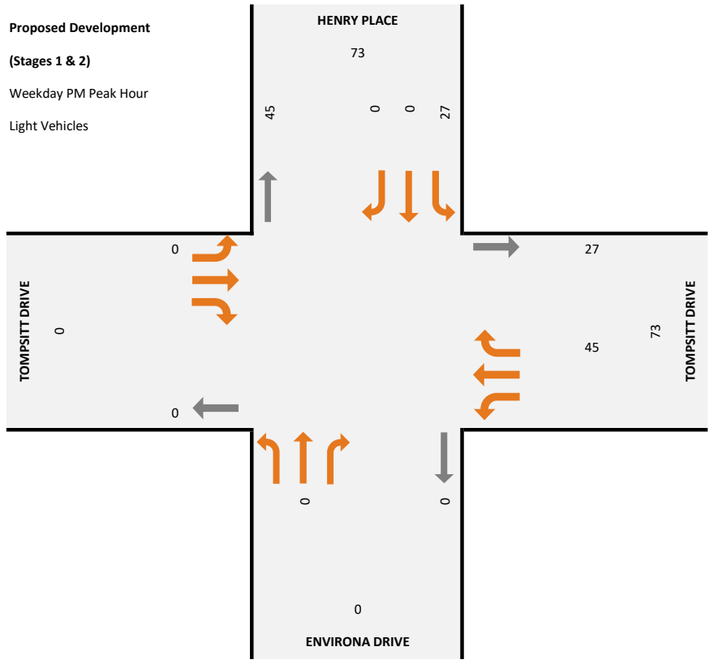


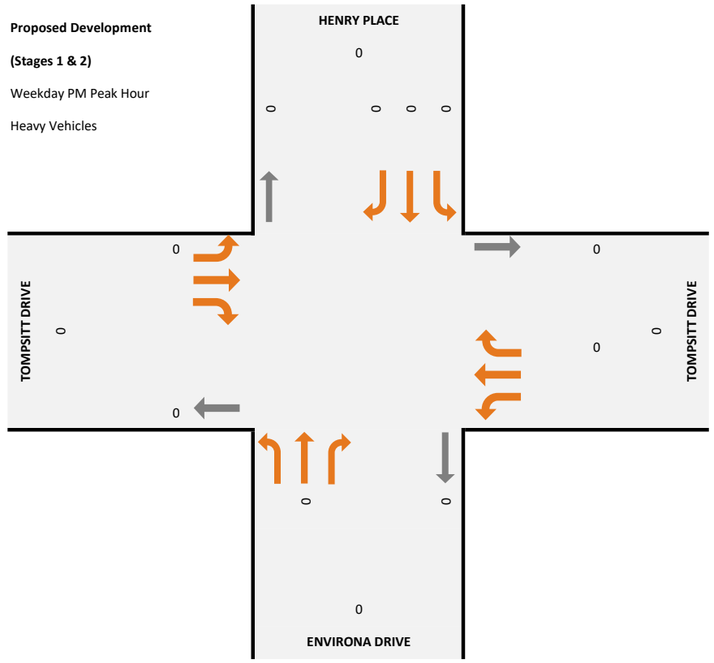


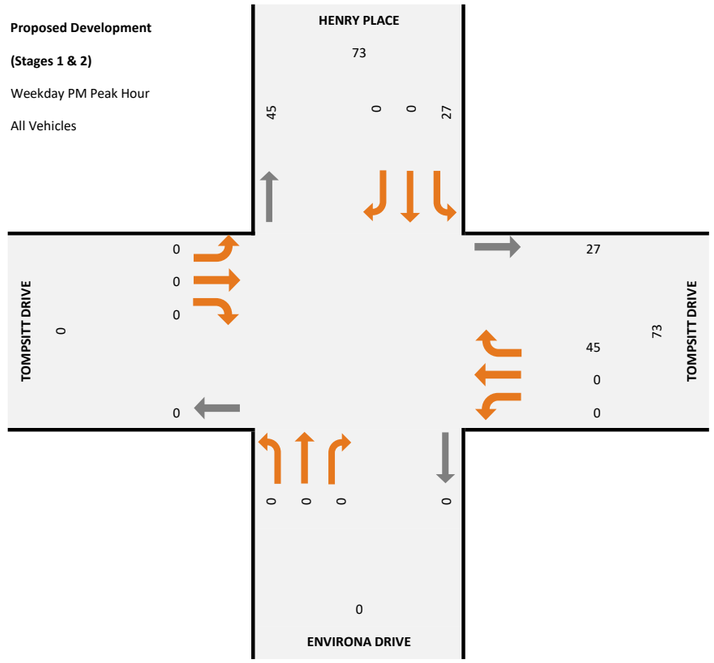


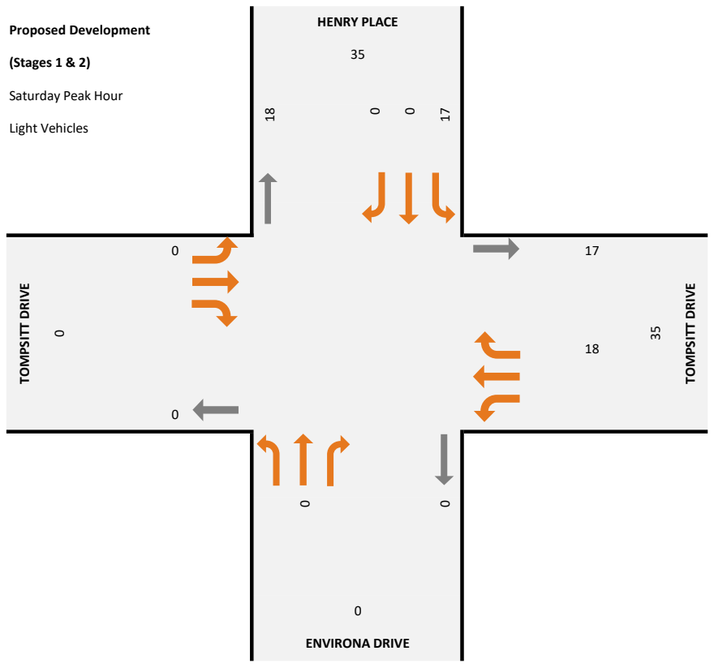
23-0130: Jerrabomberra Vikings

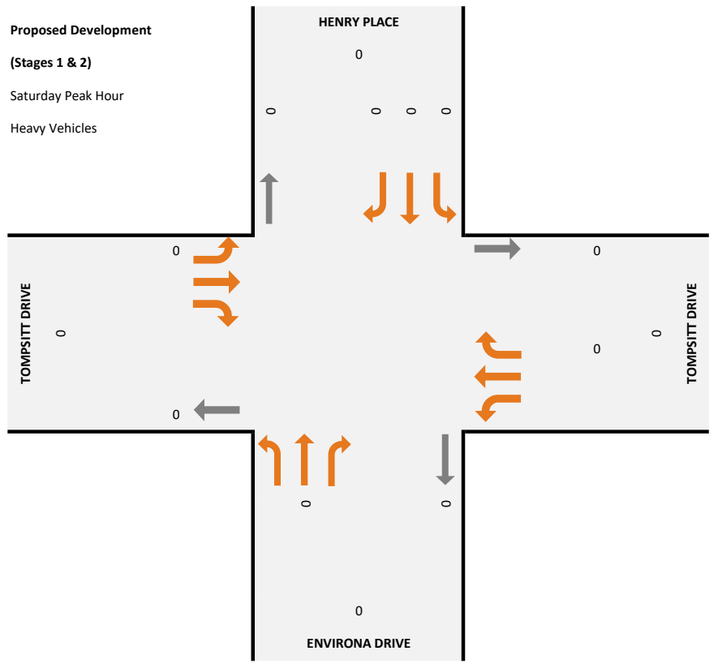
Peak Hour Traffic Volumes

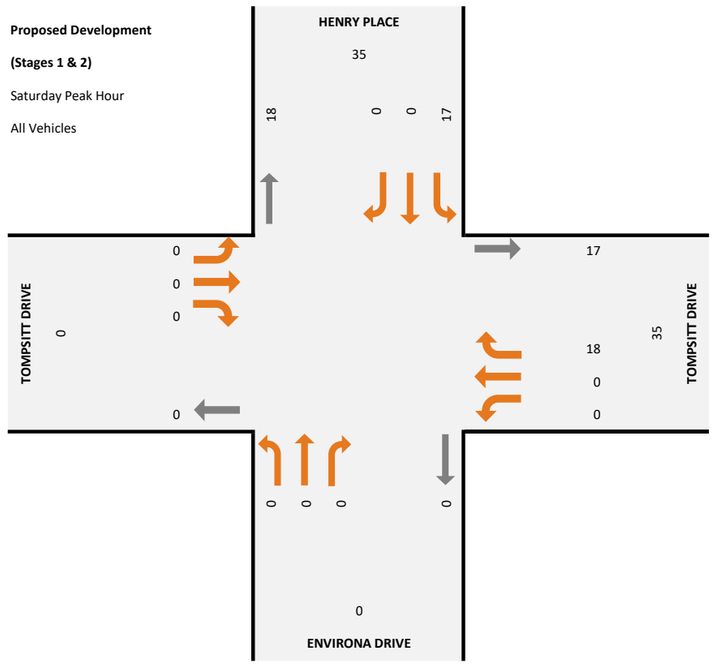








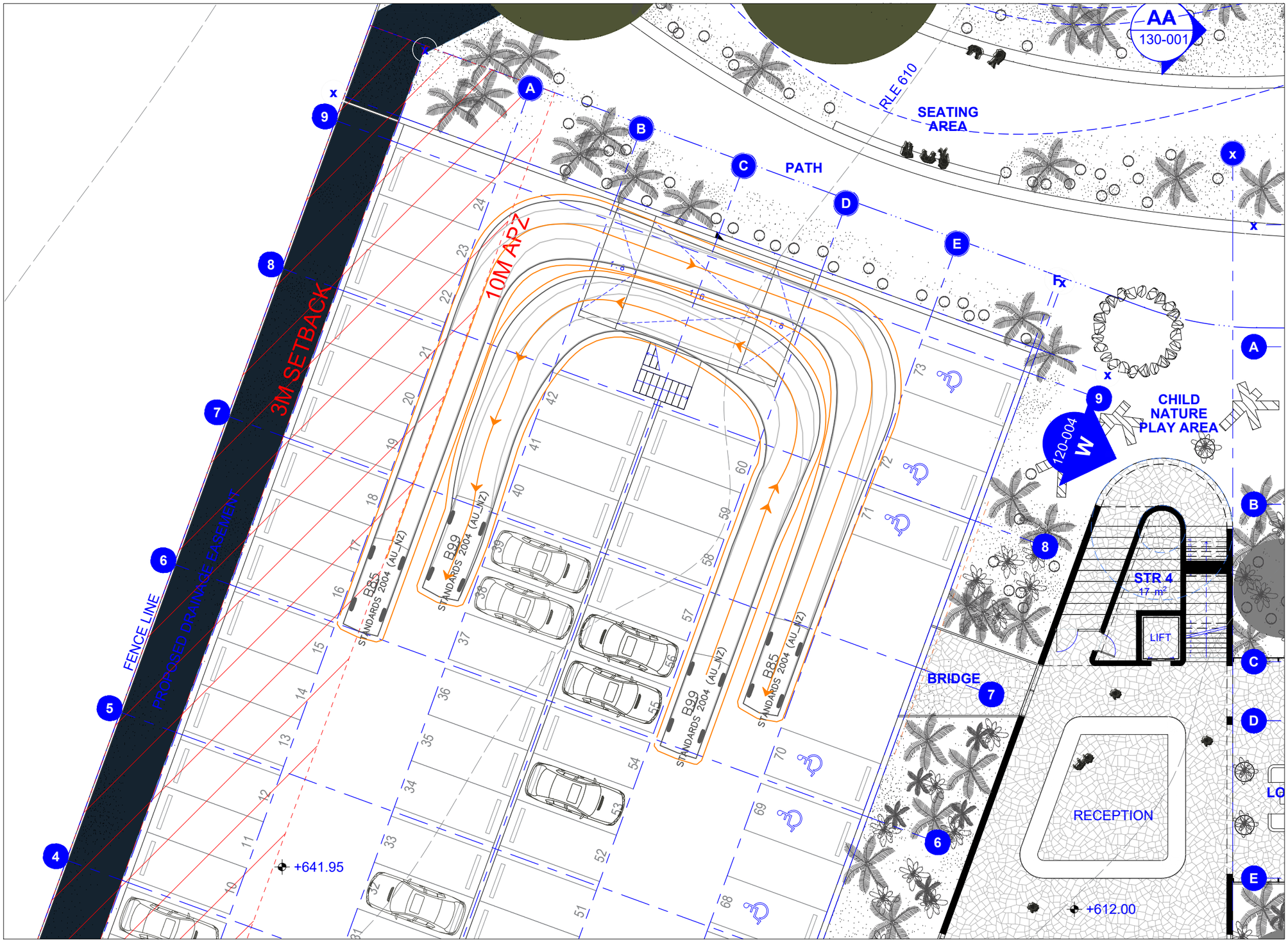




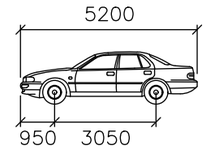
Appendix I:

Swept Path Diagrams

Western Carpark Ramps

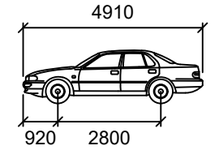


DESIGN VEHICLES USED IN SIMULATION



B99 Design Car

Width	: 1940 mm
Track	: 1840 mm
Lock to Lock Time	: 6.0 sec
Steering Angle	: 37.5 degrees



B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

LEGEND

- Vehicle Body
- Wheel Tracks
- Clearance Lines (300mm)

ISSUE	DATE	DESCRIPTION
A	13/08/2024	Initial Issue

DESIGNED	H McDonald
CHECKED	H McDonald
DATE	13/08/2024
PROJECT REF	23-0130

Quantum Traffic
e: admin@quantumtraffic.com.au
p: (02) 6243 3672
w: www.quantumtraffic.com.au
c: Level 9, 2 Phillip Law Street CANBERRA CITY ACT 2601

GENERAL NOTES

1.
2.
3.
4.
5.

PROPOSED LICENSED CLUB DEVELOPMENT
JERRABOMBERRA VIKINGS
SWEPT PATH DIAGRAMS

DRAWING NO.	ISSUE	SCALE
23-0130-01	A	1:200 @ A3

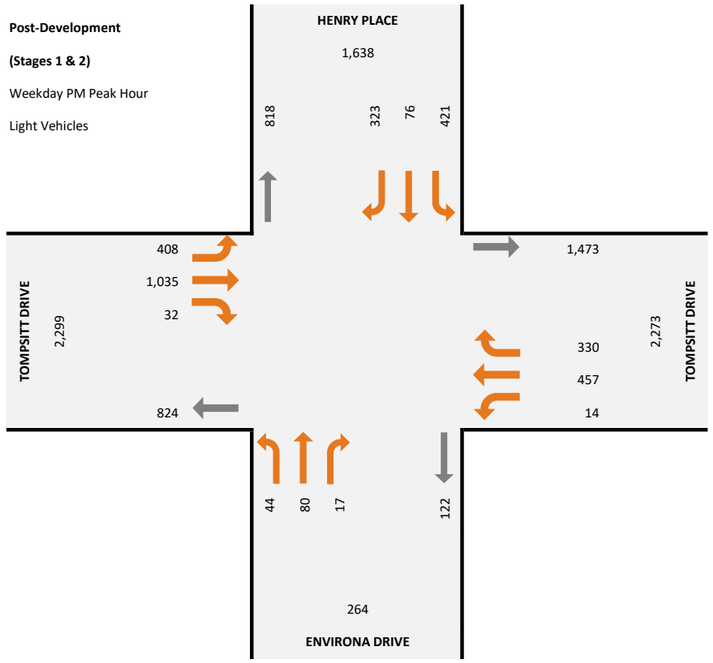
0 1 2 3 4

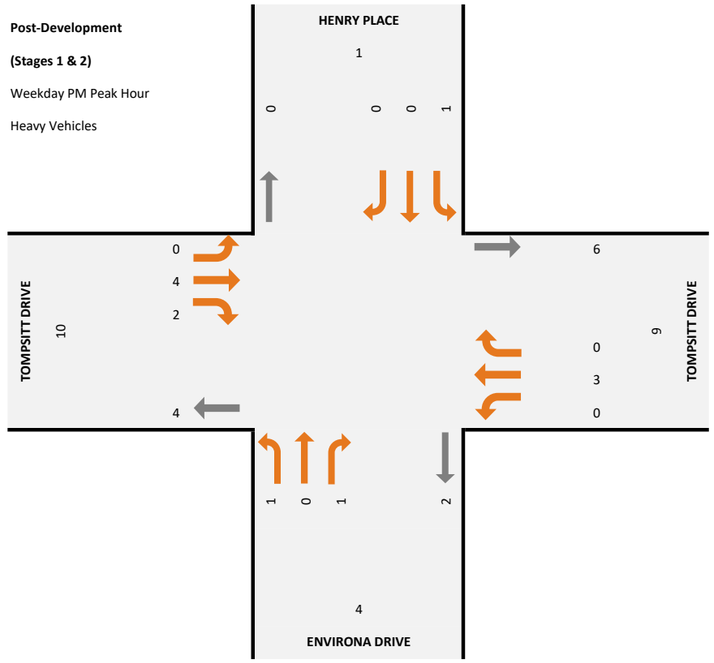
Appendix J:

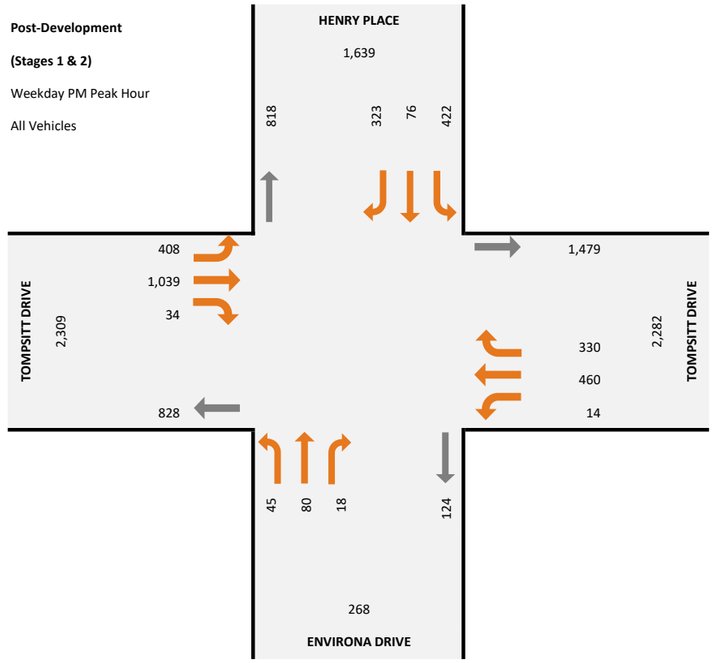
Peak Hour Traffic Demands – Post-Development Conditions

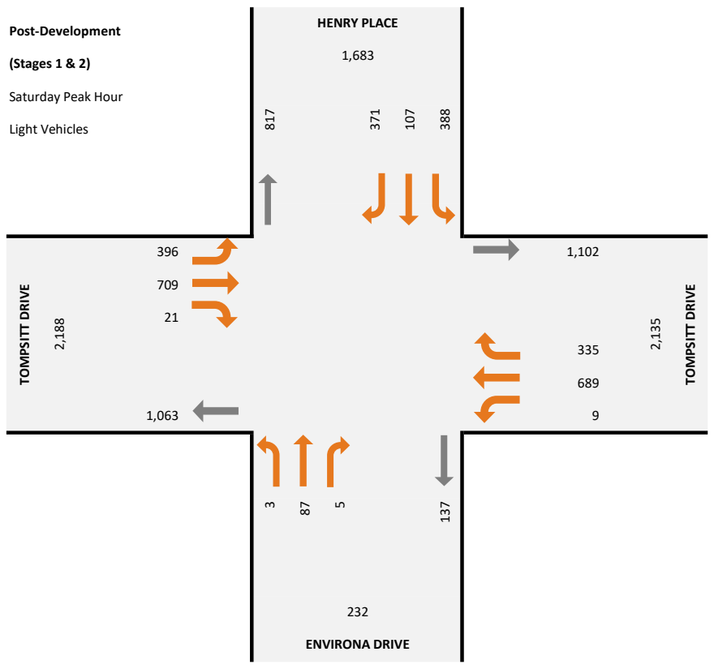
23-0130: Jerrabomberra Vikings

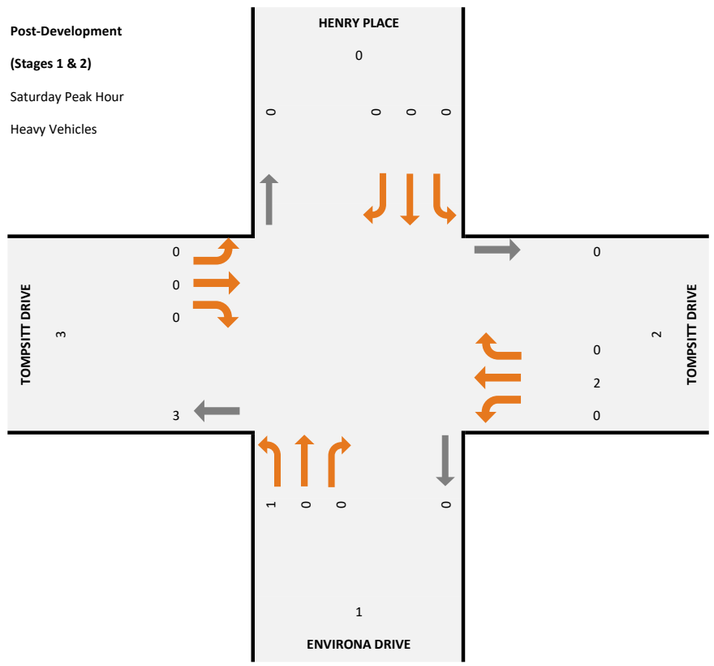
Peak Hour Traffic Demands

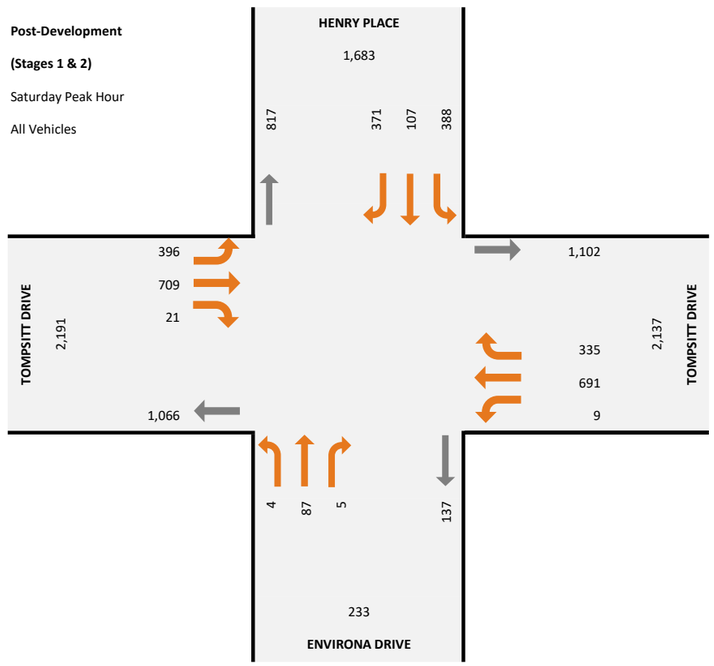












Appendix K:

Intersection Performance Results – Post-Development Conditions

USER REPORT FOR SITE

Project: 23-0130_20250121

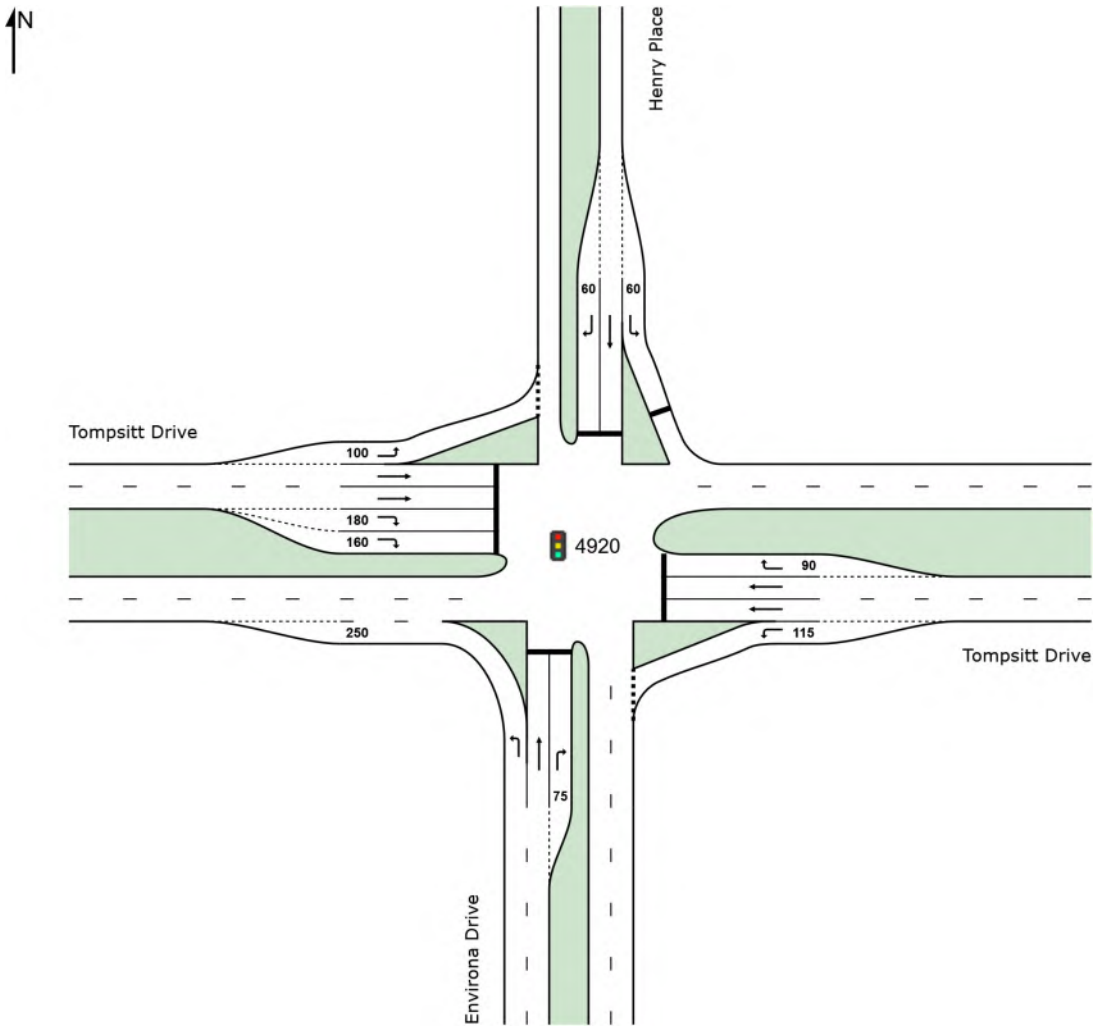
Template: Default Site User Report

Site: 4920 [PostDev1&2 PM: ED-HP-TD]

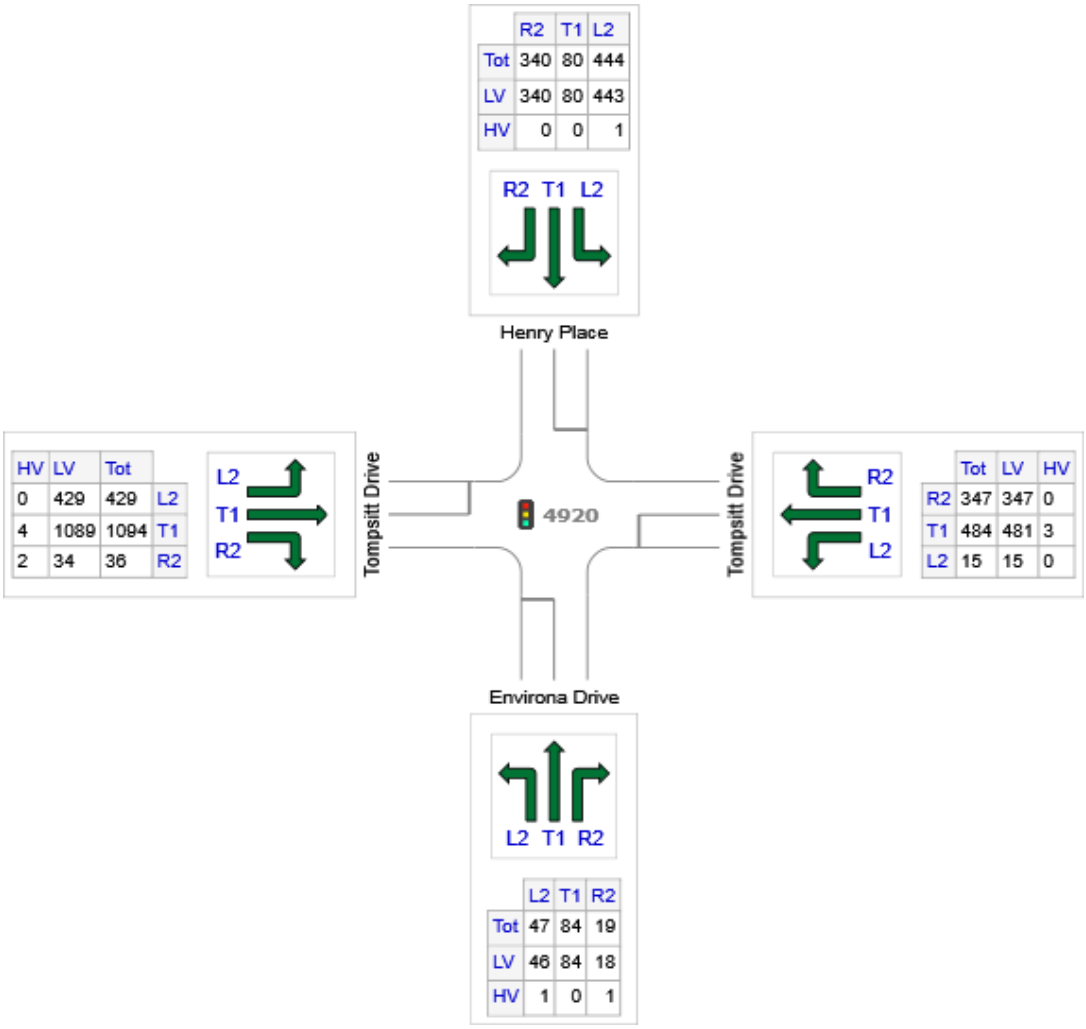
Environa Drive / Henry Place / Tompsitt Drive
Existing Signalised Intersection
Weekday PM Peak Hour
Site Category: Post-Development (Stages 1 & 2) Conditions
Signals - Fixed Time Isolated Cycle Time = 105 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: SCATS-PM
Reference Phase: Phase A
Input Phase Sequence: A, D, D1*, D2*, E, F1*, F2*, G, G1*, G2*
Output Phase Sequence: A, D, D2*, E, G, G1*
(* Variable Phase)

Site Layout



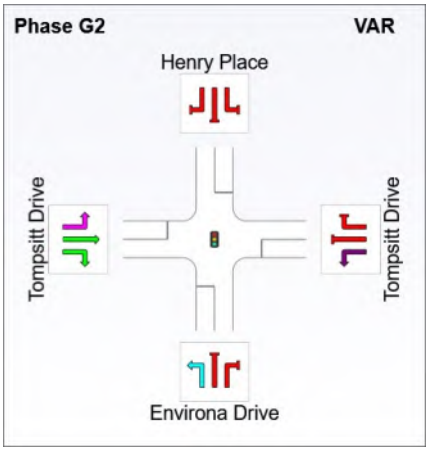
OD Demand Flows



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Environa Drive	151	148	2
E: Tompsitt Drive	846	843	3
N: Henry Place	864	863	1
W: Tompsitt Drive	1559	1553	6
Total	3420	3407	13

Input Phase Sequence

Movement Class: All Movement Classes



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

Phase Timing Summary

Phase	A	D	D2	E	G	G1
Phase Change Time (sec)	0	39	51	66	78	90
Green Time (sec)	33	6	9	6	6	9
Phase Time (sec)	39	12	15	12	12	15
Phase Split	37%	11%	14%	11%	11%	14%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

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: Environa Drive												
1	L2	47	2.2	0.026	6.7	LOS A	0.0	0.0	0.00	0.57	0.00	38.4
2	T1	84	0.0	0.756	61.0	LOS E	4.7	32.9	1.00	0.85	1.25	12.4
3	R2	19	5.6	0.186	60.7	LOS E	1.0	7.2	0.98	0.70	0.98	19.0
Approach		151	1.4	0.756	43.9	LOS D	4.7	32.9	0.68	0.74	0.82	15.8
East: Tompsitt Drive												
4	L2	15	0.0	0.010	8.0	LOS A	0.1	0.5	0.16	0.63	0.16	50.5
5	T1	484	0.7	0.273	18.8	LOS B	7.6	53.5	0.66	0.56	0.66	35.0
6	R2	347	0.0	0.935	72.6	LOS F	22.4	156.6	1.00	1.01	1.45	16.1
Approach		846	0.4	0.935	40.7	LOS C	22.4	156.6	0.79	0.74	0.98	22.6
North: Henry Place												
7	L2	444	0.2	0.545	26.3	LOS B	16.1	113.3	0.77	0.79	0.77	29.8
8	T1	80	0.0	0.205	38.1	LOS C	3.5	24.2	0.87	0.68	0.87	17.8
9	R2	340	0.0	0.941	71.5	LOS F	22.1	154.8	1.00	1.11	1.48	5.9
Approach		864	0.1	0.941	45.2	LOS D	22.1	154.8	0.87	0.90	1.06	16.8
West: Tompsitt Drive												
10	L2	429	0.0	0.345	13.5	LOS A	8.3	58.4	0.46	0.72	0.46	55.5
11	T1	1094	0.4	0.922	55.2	LOS D	35.0	245.8	1.00	1.07	1.31	36.1
12	R2	36	5.9	0.176	61.3	LOS E	0.9	6.8	0.98	0.70	0.98	29.3
Approach		1559	0.4	0.922	43.9	LOS D	35.0	245.8	0.85	0.97	1.07	39.2
All Vehicles		3420	0.4	0.941	43.4	LOS D	35.0	245.8	0.83	0.89	1.03	30.1

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.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Environa Drive													
Lane 1	47	2.2	1828	0.026	100	6.7	LOS A	0.0	0.0	Full	130	0.0	0.0
Lane 2	84	0.0	111	0.756	100	61.0	LOS E	4.7	32.9	Full	130	0.0	0.0
Lane 3	19	5.6	102	0.186	100	60.7	LOS E	1.0	7.2	Short	75	0.0	NA
Approach	151	1.4		0.756		43.9	LOS D	4.7	32.9				
East: Tompsitt Drive													
Lane 1	15	0.0	1526	0.010	100	8.0	LOS A	0.1	0.5	Short	115	0.0	NA
Lane 2	242	0.7	888	0.273	100	18.8	LOS B	7.6	53.5	Full	300	0.0	0.0
Lane 3	242	0.7	888	0.273	100	18.8	LOS B	7.6	53.5	Full	300	0.0	0.0
Lane 4	347	0.0	371	0.935	100	72.6	LOS F	22.4	156.6	Short	90	0.0	NA
Approach	846	0.4		0.935		40.7	LOS C	22.4	156.6				
North: Henry Place													
Lane 1	444	0.2	814[1]	0.545	100	26.3	LOS B	16.1	113.3	Short	60	0.0	NA
Lane 2	80	0.0	390	0.205	100	38.1	LOS C	3.5	24.2	Full	105	0.0	40.5[8]
Lane 3	340	0.0	361[1]	0.941	100	71.5	LOS F	22.1	154.8	Short	60	0.0	NA
Approach	864	0.1		0.941		45.2	LOS D	22.1	154.8				
West: Tompsitt Drive													
Lane 1	429	0.0	1245	0.345	100	13.5	LOS A	8.3	58.4	Short	100	0.0	NA
Lane 2	530	0.4	575[1]	0.922	100	55.2	LOS D	32.5	228.3	Full	690	0.0	0.0
Lane 3	564	0.4	611	0.922	100	55.3	LOS D	35.0	245.8	Full	690	0.0	0.0
Lane 4	18	5.9	102	0.176	100	61.3	LOS E	0.9	6.8	Short	180	0.0	NA
Lane 5	18	5.9	102	0.176	100	61.3	LOS E	0.9	6.8	Short	160	0.0	NA
Approach	1559	0.4		0.922		43.9	LOS D	35.0	245.8				
Intersection	3420	0.4		0.941		43.4	LOS D	35.0	245.8				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

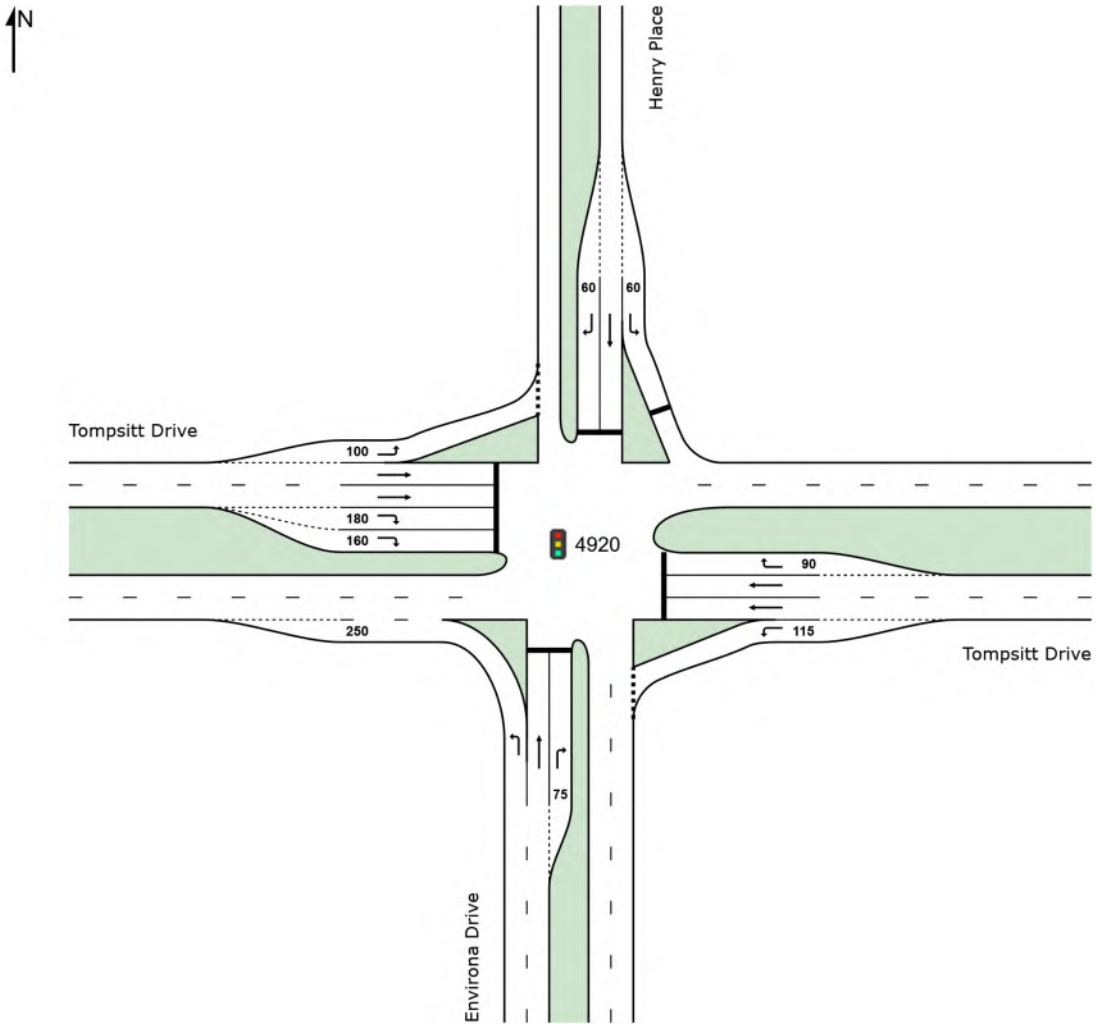
8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.

Site: 4920 [PostDev1&2 Sat: ED-HP-TD]

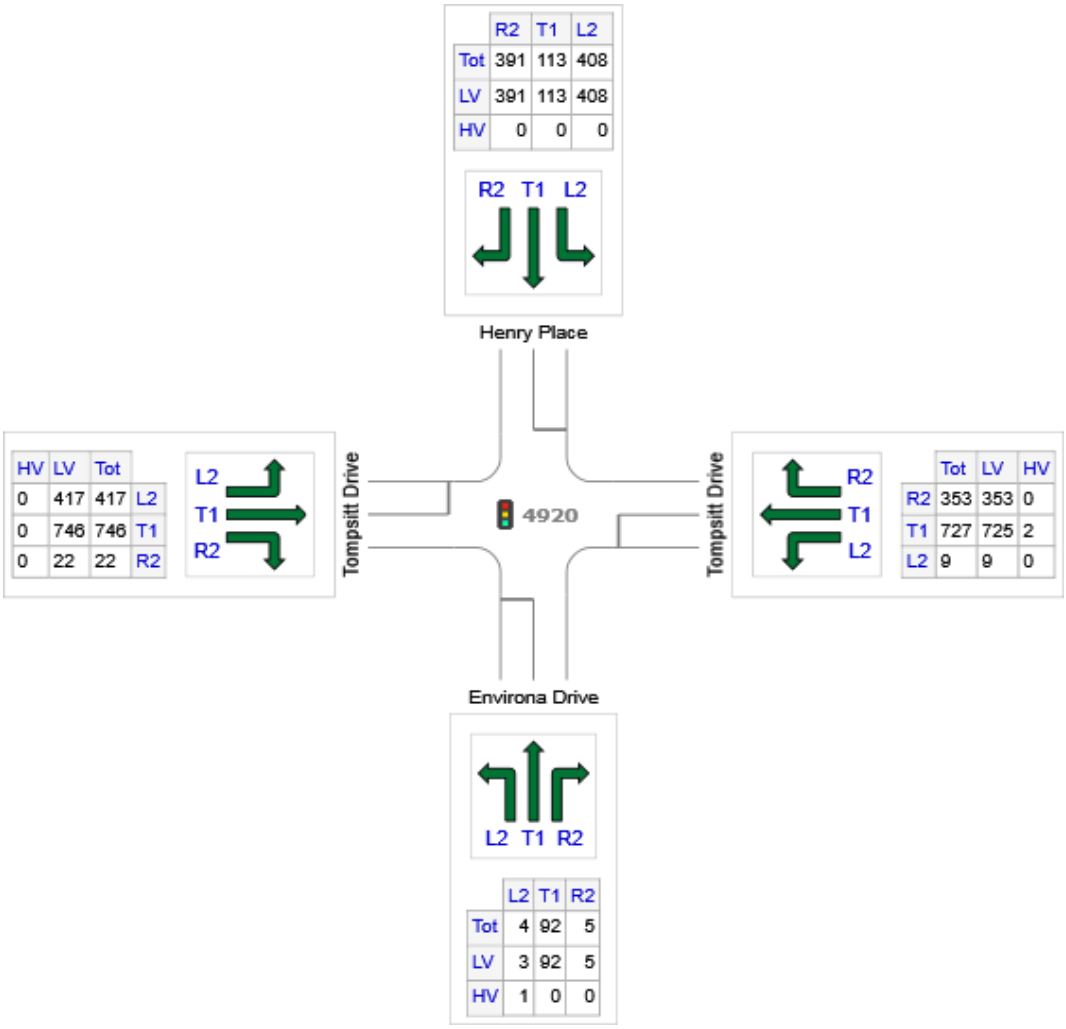
Environa Drive / Henry Place / Tompsitt Drive
Existing Signalised Intersection
Saturday Peak Hour
Site Category: Post-Development (Stages 1 & 2) Conditions
Signals - Fixed Time Isolated Cycle Time = 95 seconds (Site Optimum Cycle Time - Minimum Delay)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: SCATS-Sat
Reference Phase: Phase A
Input Phase Sequence: A, D, D1*, D2*, E, F1*, F2*, G, G1*, G2*
Output Phase Sequence: A, D, D2*, E, G, G1*
(* Variable Phase)

Site Layout



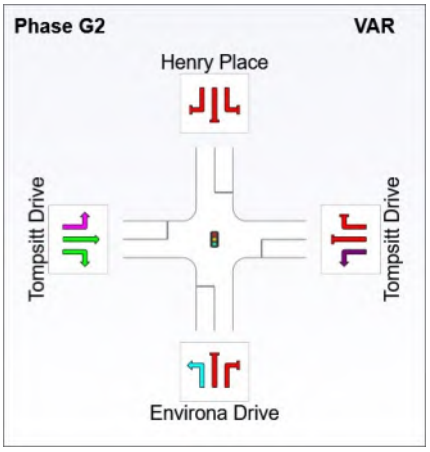
OD Demand Flows



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Environa Drive	101	100	1
E: Tompsitt Drive	1089	1087	2
N: Henry Place	912	912	0
W: Tompsitt Drive	1185	1185	0
Total	3287	3284	3

Input Phase Sequence

Movement Class: All Movement Classes



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

Phase Timing Summary

Phase	A	D	D2	E	G	G1
Phase Change Time (sec)	0	27	39	56	68	80
Green Time (sec)	21	6	11	6	6	9
Phase Time (sec)	27	12	17	12	12	15
Phase Split	28%	13%	18%	13%	13%	16%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

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: Environa Drive												
1	L2	4	25.0	0.003	6.7	LOS A	0.0	0.0	0.00	0.56	0.00	38.4
2	T1	92	0.0	0.744	55.0	LOS D	4.6	32.4	1.00	0.85	1.24	13.5
3	R2	5	0.0	0.045	53.6	LOS D	0.2	1.7	0.96	0.65	0.96	20.9
Approach		101	1.0	0.744	52.9	LOS D	4.6	32.4	0.96	0.82	1.17	14.1
East: Tompsitt Drive												
4	L2	9	0.0	0.006	8.1	LOS A	0.0	0.3	0.17	0.63	0.17	50.3
5	T1	727	0.3	0.493	24.3	LOS B	12.9	90.4	0.82	0.70	0.82	30.1
6	R2	353	0.0	0.859	54.2	LOS D	18.1	127.0	1.00	0.94	1.25	19.9
Approach		1089	0.2	0.859	33.8	LOS C	18.1	127.0	0.87	0.78	0.95	25.3
North: Henry Place												
7	L2	408	0.0	0.418	19.1	LOS B	11.4	79.8	0.65	0.74	0.65	34.6
8	T1	113	0.0	0.239	31.4	LOS C	4.2	29.6	0.85	0.67	0.85	20.3
9	R2	391	0.0	0.903	56.3	LOS D	21.5	150.3	1.00	1.05	1.35	7.2
Approach		912	0.0	0.903	36.6	LOS C	21.5	150.3	0.82	0.87	0.98	18.7
West: Tompsitt Drive												
10	L2	417	0.0	0.345	13.2	LOS A	7.5	52.8	0.48	0.73	0.48	55.8
11	T1	746	0.0	0.866	47.4	LOS D	19.3	134.9	1.00	0.99	1.26	39.2
12	R2	22	0.0	0.094	54.8	LOS D	0.5	3.6	0.97	0.68	0.97	31.3
Approach		1185	0.0	0.866	35.5	LOS C	19.3	134.9	0.82	0.89	0.98	42.9
All Vehicles		3287	0.1	0.903	35.8	LOS C	21.5	150.3	0.84	0.85	0.97	31.3

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.

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Environa Drive													
Lane 1	4	25.0	1576	0.003	100	6.7	LOS A	0.0	0.0	Full	130	0.0	0.0
Lane 2	92	0.0	123	0.744	100	55.0	LOS D	4.6	32.4	Full	130	0.0	0.0
Lane 3	5	0.0	117	0.045	100	53.6	LOS D	0.2	1.7	Short	75	0.0	NA
Approach	101	1.0		0.744		52.9	LOS D	4.6	32.4				
East: Tompsitt Drive													
Lane 1	9	0.0	1479	0.006	100	8.1	LOS A	0.0	0.3	Short	115	0.0	NA
Lane 2	364	0.3	738	0.493	100	24.3	LOS B	12.9	90.4	Full	300	0.0	0.0
Lane 3	364	0.3	738	0.493	100	24.3	LOS B	12.9	90.4	Full	300	0.0	0.0
Lane 4	353	0.0	411	0.859	100	54.2	LOS D	18.1	127.0	Short	90	0.0	NA
Approach	1089	0.2		0.859		33.8	LOS C	18.1	127.0				
North: Henry Place													
Lane 1	408	0.0	977	0.418	100	19.1	LOS B	11.4	79.8	Short	60	0.0	NA
Lane 2	113	0.0	472	0.239	100	31.4	LOS C	4.2	29.6	Full	105	0.0	37.8[8]
Lane 3	391	0.0	433[1]	0.903	100	56.3	LOS D	21.5	150.3	Short	60	0.0	NA
Approach	912	0.0		0.903		36.6	LOS C	21.5	150.3				
West: Tompsitt Drive													
Lane 1	417	0.0	1208	0.345	100	13.2	LOS A	7.5	52.8	Short	100	0.0	NA
Lane 2	373	0.0	431	0.866	100	47.4	LOS D	19.3	134.9	Full	690	0.0	0.0
Lane 3	373	0.0	431	0.866	100	47.4	LOS D	19.3	134.9	Full	690	0.0	0.0
Lane 4	11	0.0	117	0.094	100	54.8	LOS D	0.5	3.6	Short	180	0.0	NA
Lane 5	11	0.0	117	0.094	100	54.8	LOS D	0.5	3.6	Short	160	0.0	NA
Approach	1185	0.0		0.866		35.5	LOS C	19.3	134.9				
Intersection	3287	0.1		0.903		35.8	LOS C	21.5	150.3				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.