TRAFFIC AND PARKING IMPACT ASSESSMENT OF THE PROPOSED MIXED USE DEVELOPMENT (RESIDENTIAL AND TAVERN) AT 1 VENO STREET, HEATHCOTE

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240281.02FA - 3 July 2024

Development Type: **Mixed Use Development (Residential and Tavern)**

Site Address: **1 Veno Street, Heathcote**

Prepared for: **Duffy Kennedy Constructions**

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1 INTRODUCTION

M^CLaren Traffic Engineering was commissioned by *Duffy Kennedy Constructions* to provide a Traffic and Parking Impact Assessment of the proposed Mixed Use Development (Residential and Tavern) at 1 Veno Street, Heathcote as depicted in **Annexure A**.

1.1 Description and Scale of Development

The proposed development has the following characteristics relevant to traffic and parking:

- Redevelopment of existing Heathcote Hotel tavern property, consisting of:
  - 1,109m^2 GFA of Licenced premises, including bar, gaming and food service;
- 25 Affordable Housing units, including:
  - 20 one-bedroom units;
  - 5 two-bedroom units.
- 143 residential apartments, including:
  - 30 one-bedroom units;
  - 72 two-bedroom units;
  - 41 three-bedroom units.
- 190m^2 Gross Floor Area (GFA) of Retail;
- Parking with separate basement entries accommodating 249 car parking spaces;
- Vehicular access to Building A is provided from a two-way driveway from Strickland Street, providing access to 57 car parking spaces;
- Vehicular access to Building B & C (including the Tavern) is provided from a two-way driveway from Veno Street, providing access to 192 car parking spaces.

1.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The proposed development has frontage to a classified road and therefore qualifies as such with reference to *Clause 2.119 of SEPP (Transport and Infrastructure) 2021*. The development therefore must satisfy that:

> *(b) the safety, efficiency, and ongoing operation of the classified road will not be adversely affected by the development as a result of:*
>
> *(i) the design of the vehicular access to the land.*
>
> *(ii) the emission of smoke or dust from the development*
>
> *(iii) the nature, volume or frequency of vehicles using the classified road to gain access to the land.*

The proposed site has a road frontage to Princes Highway, a TfNSW Classified State Road (No. 1) and accordingly, Sutherland Shire Council must be satisfied that the development meets the above criteria. Further assessment in relation to *Clause 2.119* of the SEPP is detailed in **Section 4.4** of this report.

The proposed development also does qualify as a traffic generating development with relevant size and/or capacity under *Clause 2.122* of the *SEPP (Transport and Infrastructure) 2021 due to the having more than 75 dwellings with driveway access within 90m of a classified road.* Accordingly, formal referral to Transport for NSW (TfNSW) is necessary, and the application will be assessed by Sutherland Shire Council officers with consideration to the comments of TfNSW officers.

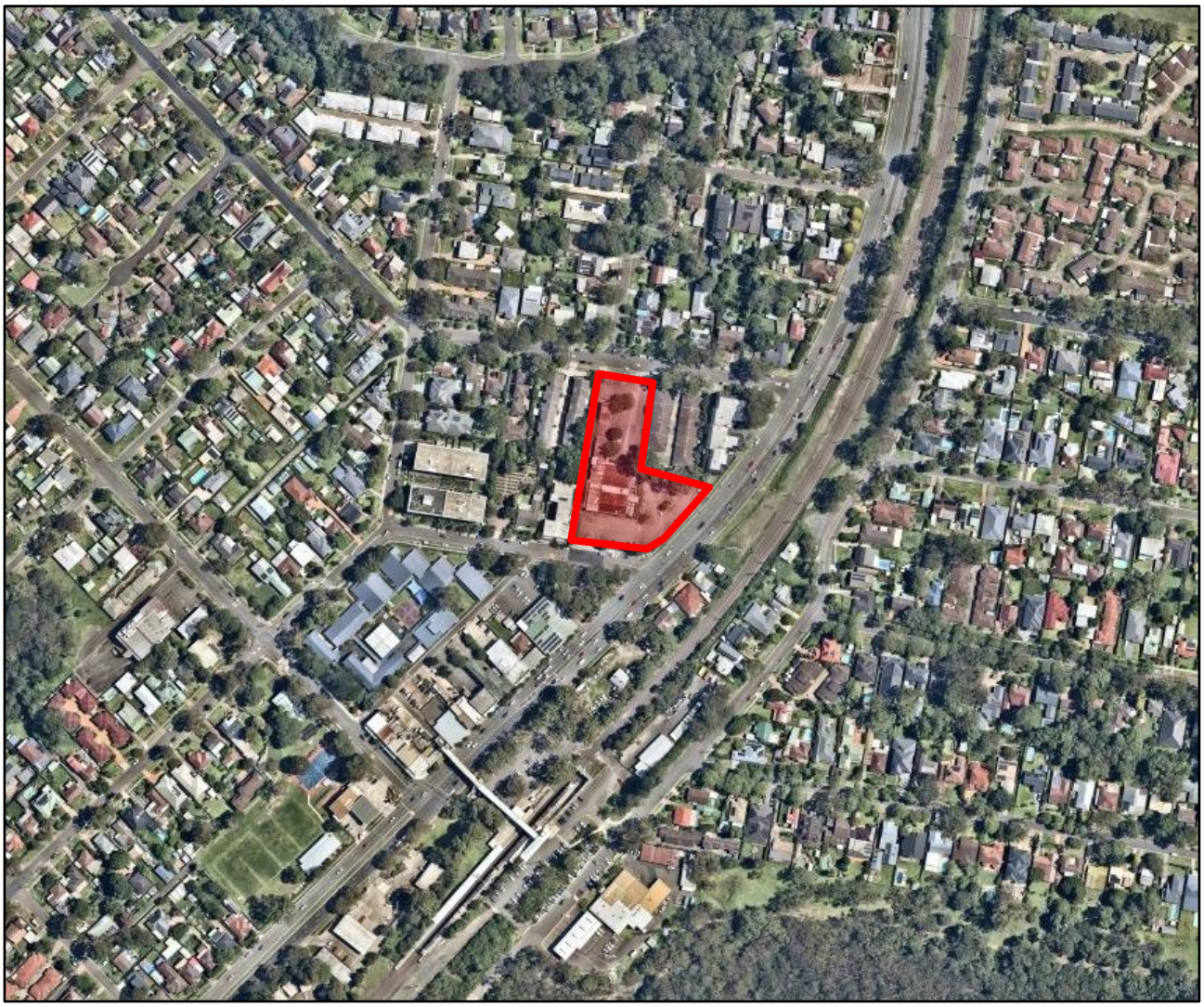
1.3 Site Description

The site includes seven (7) lots legally identified as Lots 1,2,3 of DP455292 and Lots 9A, 10A, 23A and 24A of DP2499. The site is currently zoned as E1 – Local Centre under the Sutherland Shire LEP 2015 (SSLEP) and is occupied by a combined licenced premises with drive through bottle-shop and motel. The site has frontage to Princes Highway, Veno Street and Strickland Street with road access to both Veno Street and Strickland Street.

The site is surrounded by low and medium density residential dwelling to the north and west with the Heathcote town centre to the south, with low and medium density commercial developments. Heathcote Train Station is directly opposite the town centre on Princes Highway. Heathcote Public School (Primary) is 50m to the west of the site on Veno Street.

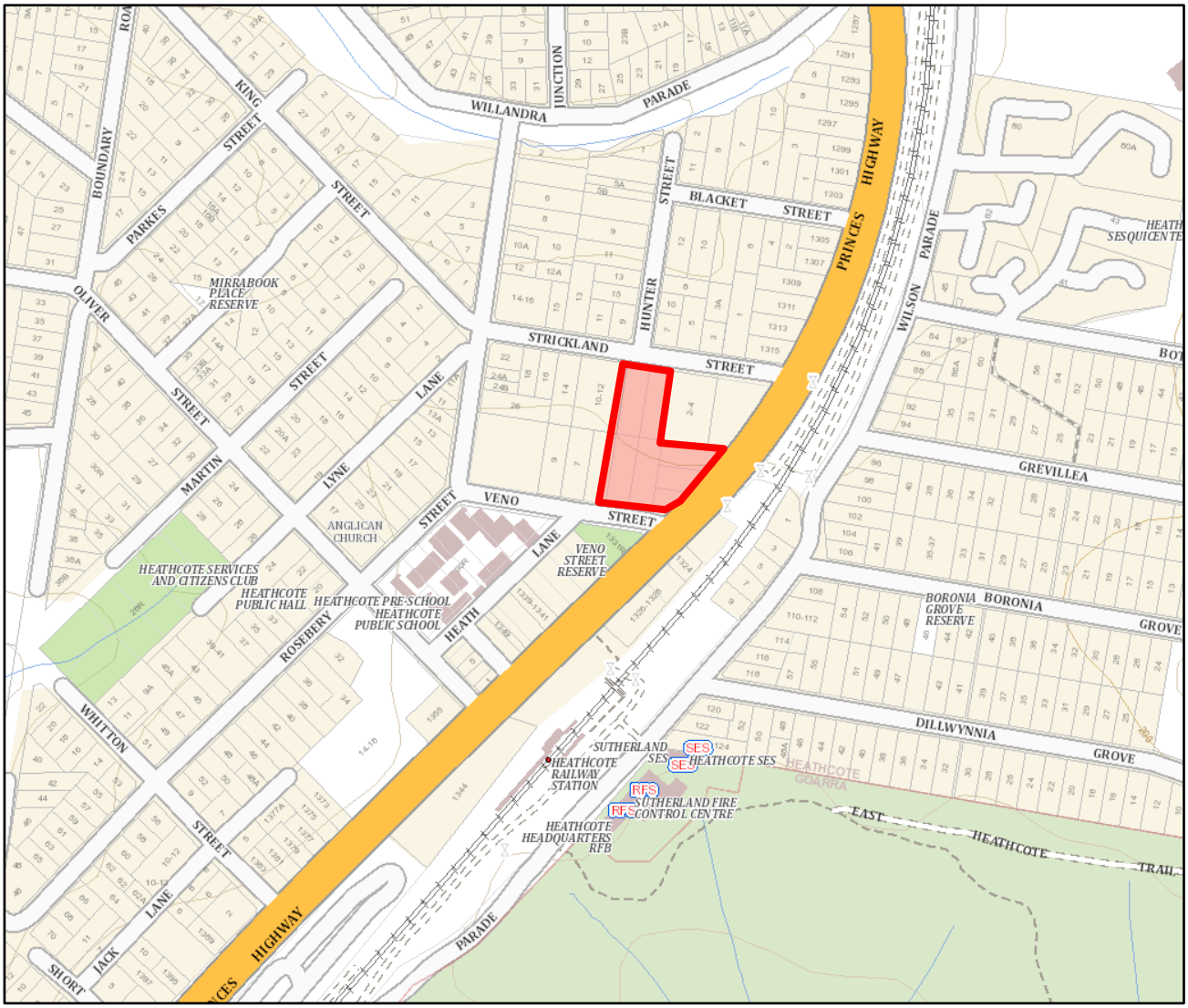
1.4 Site Context

The location of the site is shown on an aerial photo and a street map in **Figure 1** and **Figure 2** respectively.



Site Location

FIGURE 1: SITE CONTEXT – AERIAL PHOTO



Site Location

FIGURE 2: SITE CONTEXT – STREET MAP

2 EXISTING TRAFFIC AND PARKING CONDITIONS

2.1 Road Hierarchy

The road network servicing the site has characteristics as described in the following sub-sections.

2.1.1 Princes Highway

- Classified STATE Road (No.01)
- Approximately 22m wide carriageway facilitating three (3) traffic lanes in each direction. Kerbside parking is permitted on both sides of the road.
- Sign posted speed limit of 60km/h.
- The western side of the road is a designated TfNSW Clearway (Princes Highway Jennings Road to Heathcote Road) operating from 3pm-7pm on Sundays and Public Holidays to increase capacity for vehicles arriving back to Sydney from the South Coast. The clearway has been in effect for summer periods since 2011 and was extended to the full year from 2016.
- No-Parking, 1P (8am to 6pm Mon-Fri and 8am to 12pm Sat) and No-Stopping variously apply on the eastern side of the road.
- No-Parking, 1P (8am to 6pm Mon-Fri and 8am to 12pm Sat) and No-Stopping variously apply on the western side of the road outside clearway times.

2.1.2 Veno Street

- Unclassified LOCAL Road operating as a Connector Street.
- Approximately 10.0m wide carriageway facilitating one (1) traffic lane in each direction and kerbside parking on both sides of the road.
- Signposted 50km/h speed limit and 40km/h during school zone periods.
- School zones apply west of the site from 7:30am to 9am and 2:30pm to 4pm on school days, with 40km/h speed limited signposted.
- Generally unrestricted kerbside parking on both sides of the road including one (1) designated disabled bay opposite the site.

2.1.3 Strickland Street

- Unclassified LOCAL Road operating as a Neighbourhood Street.
- Approximately 10.0m wide carriageway facilitating two-way traffic flow and kerbside parking on both sides of the road.
- Signposted 50km/h speed limit.
- Generally unrestricted kerbside parking on both sides of the road.

2.2 Existing Traffic Management

- "Give Way" controlled intersection of Princes Highway / Veno Street with "No Right Turn" from Princes Highway into Veno Street.
- Priority controlled intersection of Strickland Street / Hunter Street.
- Right turn lane from Princes Highway onto Strickland Street
- "Stop" controlled intersection of Veno Street / Heath Lane.
- Traffic calming speed hump on Heath Lane on approach to Veno Street.
- "Give Way" controlled intersection of Veno Street / Rosebery Street.

2.3 Existing Traffic Environment

Turning movement count traffic surveys were conducted at the intersections of Princes Highway / Oliver Street, Princes Highway / Strictland Street, Princes Highway / Veno Street and Veno Street / Roseberry Street from 7:00AM to 9:30AM and 2:30PM to 6:00PM on Wednesday 12 June 2024 representing a typical operating weekday. The full survey results are shown in **Annexure B** for reference.

2.3.1 Existing Road Performance

The performance of the surrounding intersections under the existing traffic conditions has been assessed using SIDRA INTERSECTION 9.1, **Table 1** summarises the resultant intersection performance data, with full SIDRA results reproduced in **Annexure C**.

The following considerations have been undertaken to ensure a realistic calibrated model for the signalised intersection of Princes Highway / Oliver Street:

- Consideration to the TCS Plan (**Annexure D**);
- A review of the phase length and cycle times based upon video footage which is reproduced in **Annexure E** for reference:
    - Output cycle and phase lengths fall within observed cycle and phase lengths.

As part of the SIDRA results, a detailed review of the video footage was undertaken for critical movements to ensure a calibrated model, specifically the following:

- Intersection of Princes Highway / Strictland Street:
    - Right turn movement from Princes Highway into Strictland Street;
    - Left turn movement from Strictland Street into Princes Highway.
- Intersection of Princes Highway / Veno Street:
    - Left turn movement from Veno Street into Princes Highway;
    - Right turn movement from Veno Street into Princes Highway.

Table 2 and **Table 3** below provides a summary of the review against the SIDRA output results.

TABLE 1: EXISTING INTERSECTION PERFORMANCES (SIDRA INTERSECTION 9.1)

Intersection	Peak Hour	Degree of Saturation[1]	Average Delay[2] (sec/veh)	Level of Service[3][4]	Control Type	Worst Movement	95th Percentile Queue
EXISTING PERFORMANCE							
Princes Highway /Oliver Street	AM	0.53	2.9	**A**	Signals	RT from Oliver Street	5.9 veh (44.1m) Oliver Street
	PM	0.49	2.7	**A**		RT from Oliver Street	4.9 veh (34.5m) Princes Highway
Princes Highway /Strickland Street	AM	0.51	1.3 (Worst: 47.6)	**NA** (Worst: D)	Give Way	RT from Princes Highway	1.9 veh (14.7m) Princes Highway
	PM	0.57	1.2 (Worst: 22.5)	**NA** (Worst: B)		RT from Princes Highway	3.3 veh (23.5m) Princes Highway
Princes Highway /Veno Street	AM	1.00	1.4 (Worst: >70)	**NA** (Worst: F)	Give Way	RT from Veno Street	2.8 veh (20.4m) Veno Street
	PM	0.59	0.7 (Worst: 8.6)	**NA** (Worst: A)		LT from Veno Street	0.6 veh (4.4m) Veno Street
Roseberry Street /Veno Street	AM	0.14	2.6 (Worst: 5.8)	**NA** (Worst: A)	Give Way	RT from Roseberry Street	0.4 veh (2.6m) Roseberry Street
	PM	0.12	3.3 (Worst: 5.2)	**NA** (Worst: A)		RT from Roseberry Street	0.4 veh (3.1m) Roseberry Street

Notes:

(1) The Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.

(2) The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.

(3) The Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.

(4) No overall Level of Service is provided for Give Way and Stop controlled intersections as the low delays associated with the dominant movements skew the average delay of the intersection. The Level of Service of the worst approach is an indicator of the operation of the intersection, with a worse Level of Service corresponding to long delays and reduced safety outcomes for that approach.

As shown, the intersections of Princes Highway / Oliver Street and Roseberry Street / Veno Street are currently performing at a high level of efficiency, with an overall or worst movement Level of Service “A” conditions in both the AM & PM peak hour periods. The Level of Service “A” performance is characterised by low approach delays and spare capacity.

The intersection of Princes Highway / Strickland Street is operating with a worst turn movement of LoS “D” in the AM peak hour period and LoS “B” in the PM peak hour period. The LoS “B” performance is characterised by low approach delays and spare capacity, whilst a LoS “D” condition indicates the turn movement is operating near capacity.

The intersection of Princes Highway / Veno Street is operating with a worst turn movement of LoS “F” in the AM peak hour period and LoS “A” in the PM peak hour period. It is relevant to note that there were only 4 vehicles recorded making this worst turn movement (Right turn from Veno Street) and all other movements were LoS “A”.

It should be noted that in some circumstances, with intersections controlled by give way and stop signs, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a Level of Service “A”, except one which is at Level of Service “E”, may not necessarily define the intersection Level of Service as “E” if that movement is of a relatively small traffic volume. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue were also involved.

TABLE 2: OBSERVED AVERAGE DELAY AGAINST SIDRA OUTPUT AVERAGE DELAY FOR CRITICAL MOVEMENTS – PRINCES HIGHWAY / STRICKLAND STREET

Intersection Movement	Peak Period	Sample Size	Observed Average Delay	95th Percentile Queue	SIDRA Output Average Delay	SIDRA Output 95th percentile Queue	Modification for calibration
Right Turn from Princes Highway into Strickland Street	AM Weekday (7:15am to 8:15am)	61	39.8 seconds	4 vehicles	47.6 seconds	1.9 vehicles	Bunching Factor 50% applied to the southern leg only. Gap acceptance modified to 4.0 seconds and 2.0 seconds.
	PM Weekday (4:45pm to 5:45pm)	193	19.2 seconds	4.8 vehicles	22.5 seconds	3.3 vehicles	
Left turn from Strickland Street into Princes Highway	AM Weekday (7:15am to 8:15am)	79	26.7 seconds	3 vehicles	25.2 seconds	1.9 vehicles	Bunching Factor 50% applied to the southern leg only. Gap acceptance modified to 8.0 seconds and 5.5 seconds.
	PM Weekday (4:45pm to 5:45pm)	39	17.9 seconds	2 vehicles	12.2 seconds	0.5 vehicles	

TABLE 3: OBSERVED AVERAGE DELAY AGAINST SIDRA OUTPUT AVERAGE DELAY FOR CRITICAL MOVEMENTS – PRINCES HIGHWAY / VENO STREET

Intersection Movement	Peak Period	Sample Size	Observed Average Delay	95th Percentile Queue	SIDRA Output Average Delay	SIDRA Output 95th percentile Queue	Modification for calibration
Left Turn from Veno Street into Princes Highway	AM Weekday (7:30am to 8:30am)	243	19.7 seconds	4.8 vehicles	15.3 seconds	2.8 vehicles	No modification was applied.
	PM Weekday (4:45pm to 5:45pm)	125	8.3 seconds	2.2 vehicle	8.6 seconds	0.6 vehicles	
Right turn from Veno Street into Princes Highway	AM Weekday (7:15am to 8:15am)	4	47.5 seconds	1 vehicle	206.3 seconds	1.8 vehicles	No modification was applied due to the small sample size observed.
	PM Weekday (4:45pm to 5:45pm)	0	*No right turn movements were observed.*				

As shown above, the average delay outputs closely reflect the observed average delays which indicates that the base case models are fit for purpose and can be relied upon for future development scenario modelling.

It should be noted that the gap acceptance for the left turn from Strickland Street into Princes Highway has been increased to 8.0 seconds and 5.5 seconds. The video review indicated that all vehicles were attempting to turn left from when they entered the intersection, that is, no driver entered the intersection attempting to turn right and changed their mind after not being able to make the right turn movement. It is concluded that vehicles turning left from Strickland Street into Princes Highway require a larger gap acceptance.

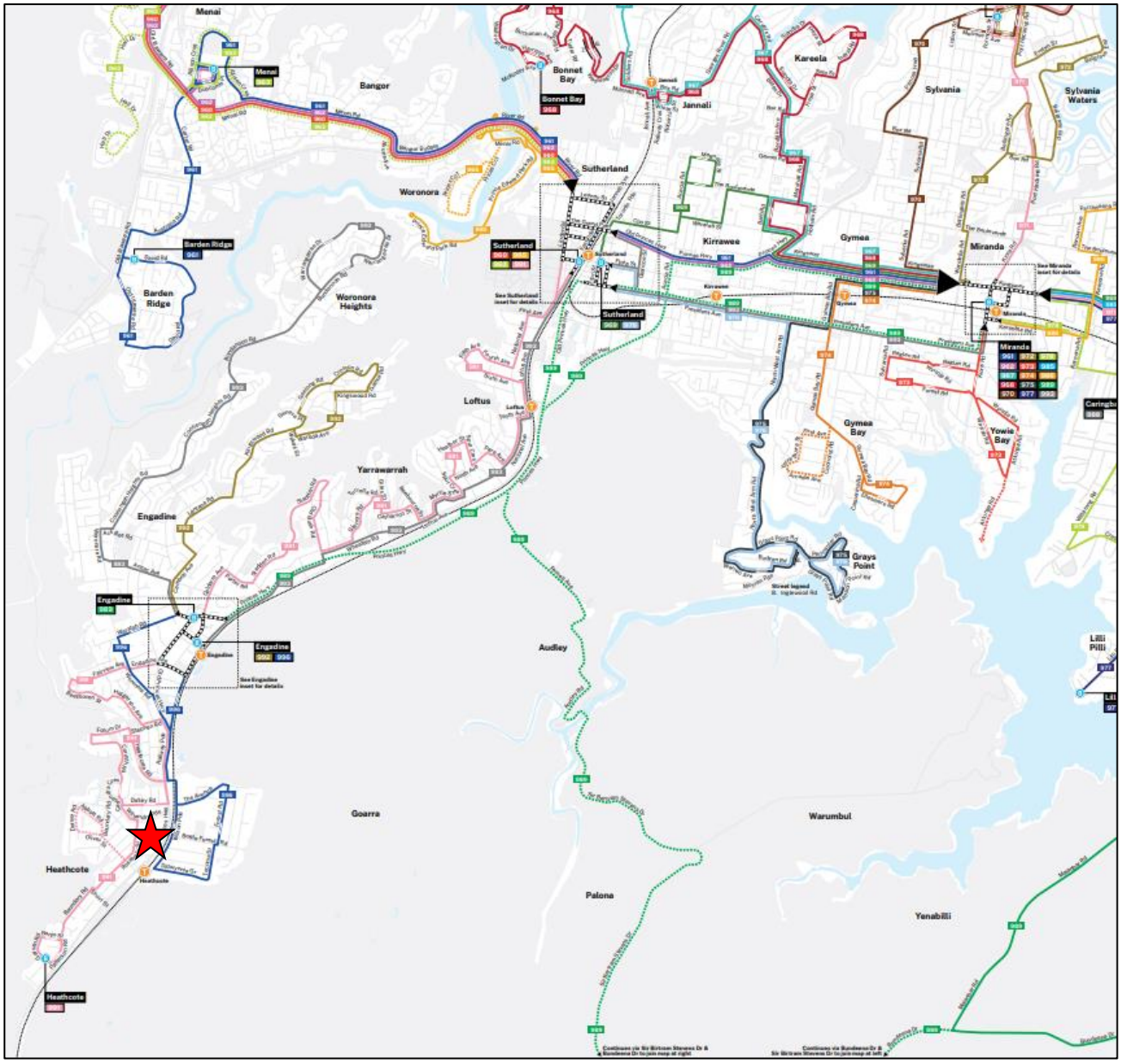
It is relevant to note that the observed 95th percentile queues are larger than the SIDRA output queues. This is predominantly due to SIDRA considering queues when no vehicles are present at the intersection, which results in lower output 95th percentile queues.

2.4 Public Transport

The subject site has access to existing bus stops (ID 223325 and 223345) located approximately 200m walking distance to the west of the site. The bus stop services route 991 (Heathcote to Sutherland) irregularly throughout the day, with only four (4) services daily in total.

Heathcote Train Station is located 250m walking distance to the south of the site, servicing the T4 (Illawarra to Eastern Suburbs) line. A train service northbound is provided every 30 minutes throughout the day and increases to every 20 minutes during commuter peak periods.

The location of the site subject to the surrounding public transport network is shown in **Figure 3**.



Site Location

FIGURE 3: PUBLIC TRANSPORT NETWORK MAP

2.5 Future Road and Infrastructure Upgrades

From Sutherland Shire Council Development Application tracker and TfNSW Projects website, it appears that there are no future planned road or public transport changes that will affect traffic conditions within the immediate vicinity of the subject site. Heathcote Train Station was upgraded for pedestrian accessibility in 2017, including an overpass of Princes Highway. The upgrade improves safety and accessibility for future patrons and residents of the proposal compared to before the upgrade.

3 PARKING ASSESSMENT

3.1 Council Parking Requirement

Reference is made to the *Sutherland Shire Council Development Control Plan 2015 Chapter 15 B2 Local Centre Heathcote,* which designates the following parking rates applicable to the proposed development:

> *Residential Flat Building*
>
> *Minimum: 1 space per dwelling*
>
> *Maximum: 3 spaces per dwelling*
>
> *No visitor parking*
>
> *Retail Premises (including food and drink premises, except Pubs)*
>
> *1 space per 30m² GFA*
>
> *Larger developments may require a Traffic & Parking Report*
>
> *2. Where a proposed development is not listed in these controls, … then the parking requirement specified in the RMS Guide to Traffic Generating Development shall apply.*

As a result, *McLaren Traffic Engineering* (*MTE*) has completed a parking study to determine the appropriate parking demand for the development.

3.2 Pub/Tavern Parking Demand

3.2.1 TfNSW Parking Requirement

The *RTA Guide to Traffic Generating Developments 2002* (RTA Guide) details the following in relation to car parking spaces required for Clubs:

> *Off-street car parking must be provided to satisfy the average maximum demand.*

The "average maximum" represents the average peak parking demand on peak days. For the purposes of a tavern development, the peak days have been assumed to be Fridays and Saturdays. Furthermore, the average maximum demand can also be represented in another way by determining the 85th percentile parking demand of the site over the entire year. This parking requirement has been considered in the following subsections to determine an appropriate parking requirement for the proposed development.

3.2.2 MTE Surveys

McLaren Traffic Engineering (MTE) has undertaken extensive surveys of 12 pubs, clubs, taverns and hotels across New South Wales, including in metropolitan and regional areas. The annual sales data was obtained from these 12 venues, and regression analysis was applied to determine the parking rate on the 85th percentile day of the year.

The existing Heathcote Hotel was not surveyed as it is anticipated that the Hotel is currently underutilised, and any renovation of the hotel will increase sales and popularity. Surveying the current site would likely result in a lower parking rate than the proposed development would actually demand, and therefore, parking rates from alternative venues have been used.

3.2.3 Similar Sites – MTE Surveyed

From the 12 surveyed venues, it has been considered that two (2) sites contain similar characteristics as the proposed development, these being *The Royal Hotel Camden* and *Dapto Leagues Club*. These venues have been chosen based upon their location being within a town centre and similar level of public transport accessibility. The 85th percentile parking rates of the two (2) venues are detailed below:

Dapto Leagues Club	*6.1 spaces per 100m^2 GFA*
Royal Hotel Camden	*7.75 spaces per 100m^2 GFA*
Average	***6.9 spaces per 100m^2 GFA***

As shown above, the average of the two venues' 85th percentile parking rate is 6.9 spaces per 100m^2 GFA and will therefore be used for the proposed development at Heathcote Hotel.

3.2.4 Similar Approved Sites within Sutherland Shire

The traffic reports for other approved venues within the Sutherland Shire, including *The Union Hotel*, Jannali and *The Prince Hotel,* Kirrawee have been provided or publicly accessed. These traffic reports have adopted and identified the following parking rates for each venue respectively:

The Union Hotel, Jannali — *4.9 spaces per 100m^2 GFA*

The Prince Hotel, Kirrawee — *5.54 spaces per 100m^2 GFA*

Without having access to the data or analysis method that underpins these parking rates it is difficult to adopt these parking rates, especially considering there is no mention of these rates representing the 85th percentile parking demand. Both the above venues have recently been approved by the Sutherland Shire Council. It is important to note that the parking rate being adopted for the Heathcote Hotel proposal is greater and, therefore, more conservative than those parking rates previously approved by the Council for similar venues.

3.2.5 Proposed Tavern - Car Parking Demand

The patron generating area in the tavern consists of 1,109m^2 (Bistro/Lounge/Public Bar/Gaming Lounge) and therefore demands **77** car spaces for patrons (at a rate of 6.9 spaces per 100m^2 GFA).

Further to this, the staff parking rate has been considered separately to the patron demand above. A staff parking rate of 1 parking space per two (2) staff members has been adopted for the subject site given the site's proximity to public transport and consideration of the staff/employee parking rates outlined for Hotels, Motels and Serviced Apartments within the *SSDCP 2015 Chapter 15*, for Heathcote.

3.3 SEPP (Housing) 2021 Parking Requirement

Reference is made to the SEPP (Housing) 2021, which designates the following non-discretionary parking rates applicable to the residential aspect of the proposed development:

> ***Part 2: Development of affordable housing***
>
> ***Division 1: In-fill affordable housing***
>
> ***19 Non-discretionary development standards – the Act, s 4.15***
>
> *(1) The object of this section is to identify development standards for particular matters relating to residential development under this division that, if complied with, prevent the consent authority from requiring more onerous standards for the matters.*
>
> *(2) The following are non-discretionary development standards in relation to the residential development to which this division applies –*

(e) the following number of parking spaces for dwellings used for affordable housing –

(i) for each dwelling containing 1 bedroom – at least 0.4 parking spaces,

(ii) for each dwelling containing 2 bedrooms – at least 0.5 parking spaces,

(iii) for each dwelling containing 3 bedrooms – at least 1 parking space,

(f) the following number of parking spaces for dwellings not used for affordable housing –

(i) for each dwelling containing 1 bedroom – at least 0.5 parking spaces,

(ii) for each dwelling containing 2 bedrooms – at least 1 parking space,

(iii) for each dwelling containing 3 bedrooms – at least 1.5 parking spaces,

Table 4 presents the non-discretionary parking requirements of the proposal according to *SEPP (Housing) 2021* above car parking rates.

TABLE 4: SEPP (HOUSING) 2021 CAR PARKING REQUIREMENTS

Category	Sub-Category	Scale	Parking Rate	Parking Required
Affordable Housing	1-bed	20	0.4 per unit	8
	2-bed	5	0.5 per unit	2.5
	3-bed	0	1 per unit	0
Subtotal				**10.5**
Residential	1-bed	30	0.5 per unit	15
	2-bed	72	1 per unit	72
	3-bed	41	1.5 per unit	61.5
Subtotal				**148.5**
Total				**159**

As shown above, the non-discretionary parking requirements for this affordable housing development result in **159** residential parking spaces in total being required.

It is noted that the application of the Council's DCP parking rates of a minimum of 1 space per dwelling results in a total parking requirement of 168 car parking spaces for 168 units. As per the *SEPP (Housing) 2021*, the consent authority cannot require more car parking than the minimum parking rates identified within the *SEPP (Housing) 2021*, which have been complied with as outlined above.

3.4 Parking Requirement Summary

Table 5 presents the parking requirements of the proposal according to SSDCP 2015, *SEPP (Housing) 2021* and *McLaren Traffic Engineering's* survey of similar pubs/tavern's in accordance with the RTA Guide.

TABLE 5: REQUIRED PARKING RATES

Land Use	Scale	Rate	Spaces Required	Spaces Provided
Retail	190m^2 GFA	1 per 30m^2 GFA(1)	6.3	89
Tavern	1,109m^2 GFA	6.9 per 100m^2 GFA(2)	76.5	
Tavern Staff	14	1 per 2 staff(3)	7	
Residential (Affordable Housing)	25 units	See **Table 4** (4)	10.5	160
Residential (Other)	143 units	See **Table 4** (4)	148.5	
Car Parking Total			**249**	**249**

Notes:

(1) Retail Premises parking rate as per SSDCP 2015 - Chapter 15 B2 Local Centre Heathcote
(2) The 85th percentile demand for pubs/taverns based on similar surveyed sites. Refer to **Section 3.2**.
(3) The appropriate staff parking rate considering access to public transport and other SSDCP 2015 employee parking rates.
(4) In accordance with the SEPP (Housing) 2021 minimum non-discretionary standards

As shown above, the proposed development has a requirement of **249** car parking spaces across the proposal. The proposal provides **249** car parking spaces meeting the minimum parking requirements for the subject development.

It is noted Building A (With access from Strictland Street), requires **57** car parking spaces when considered in isolation. A total of **57** car parking spaces are provided independently for Building A, achieving compliance with the minimum requirements. Building B & C (With access from Veno Street) requires **192** car parking spaces when considered in isolation. A total of **192** car parking spaces have been provided for Building B & C, including **89** for commercial use and **103** for residential use, have been provided, achieving compliance with the minimum requirements.

3.5 Parking for People with Disabilities

3.5.1 Adaptable Housing

Reference is made to *SSDCP 2015 - Chapter 15*, which requires 20% of dwellings within the proposal to be adaptable housing, resulting in a requirement for **34** adaptable dwellings (**12** within Building A and **22** within Building B & C). Each adaptable dwelling shall have one (1) accessible car parking space allocated to the dwelling to allow for a person with a wheelchair to get in and out of both the car and parking space.

Building A provides **12** accessible car parking spaces compliant with *AS2890.6:2022*, achieving compliance for the accessible car parking for this building. Building B & C provide **22** accessible car parking spaces compliant with *AS2890.6:2022,* achieving compliance for accessible residential parking for Building B & C.

3.5.2 Tavern & Commercial

SSDCP 2015 does not outline car parking rates for people with disabilities for commercial premises. As such, reference is made to *Section D4D6* of the *Building Code of Australia* (BCA) as part of the *National Construction Code 2022* (NCC), which categorises these elements of the proposal as a Class 6 building and therefore requires the provision of car parking for people with disabilities at a rate of:

Class 6	*1 accessible space for every 50 carparking spaces or part thereof.*

In accordance with the BCA requirements, two (2) car parking spaces for people with disabilities are to be provided within the commercial car parking area. The proposed car parking layout details the provision of two (**2**) car parking spaces designed in accordance with *AS2890.6:2022*, complying with BCA requirements.

3.6 Bicycle Parking Requirements

Reference is made to the *SSDCP 2015 – Chapter 15,* which outlines the following requirements for bicycle parking:

> *4. In addition to the car parking requirements, bicycle parking spaces must be provided at the rate of 1 space per 10 car parking spaces for the first 200 car spaces, then 1 space per 20 parking spaces thereafter. In addition, 1 unisex shower is required per 10 employees.*

The SSDCP 2015 does not provide differentiation between residential and commercial (visitor and staff) bicycle parking. Applying the above bicycle parking rates to the entire development results in a required provision of 23 bicycle parking spaces. The proposed plans identify 26 bicycle parking spaces exceeding the SSDCP 2015 requirements. Given only the Tavern will demand more than 10 employees, the provision of unisex shower facilities can be considered for staff within the fit-out of the tavern development.

3.7 Motorcycle Parking Requirements

Reference is made to the *SSDCP 2015 – Chapter 15,* which outlines the following requirements for motorcycle parking:

> *3. Motor cycle parking shall be provided for all non residential development at a rate of 1 motorcycle space per 25 car spaces or part thereof. For example, where 26 car spaces are required then 2 motorbike parking spaces are to be provided. Motor cycle parking spaces shall comply with the relevant standards.*

The proposal requires **89** non-residential parking spaces and, therefore, four (4) motorcycle spaces are required. The proposed plans detail seven (7) motorcycle spaces; however, these motorcycle parking spaces are only provided within the residential parking areas and will not be accessible to visitors. As such, three (3) motorcycle parking spaces are still required to be provided within the commercial car park within Building B & C, to achieve compliance with the SSDCP 2015.

3.8 Servicing & Loading

The *SSDCP 2015 – Chapter 15* provides the following in relation to waste, servicing and loading traffic management:

> ***8. Building Layout***
>
> *2. All loading, unloading and manoeuvring of vehicles shall take place within the curtilage of the site, and vehicles are to enter and exit the site from a rear laneway wherever possible and in a forward direction at all times.*
>
> *3. Loading areas shall be located so as to avoid on-street loading and be freely available for use at all times.*

Further to the above, the SSDCP 2015 – Chapter 15, identifies some 15

> ***15.2 Controls for multi dwelling housing, residential flat buildings and the residential components of shop top housing and mixed use developments***
>
> *1. For new multi-dwelling housing, residential flat buildings and the residential components of shop top housing and mixed use developments, provision for waste management … collection areas and the like must be in accordance with the Sutherland Shire Council's "Waste Collection Policy for Multi-Unit Dwellings and Residential Flat Buildings"*

Under this Policy the following criteria will be considered, including Serviceability of bins, Traffic flow, and pedestrian safety, which have all been considered within the proposed design for residential waste collection. All residential waste vehicles can enter and exit the site in a forward direction, with loading areas freely available at all times.

15.3 Controls (except for multi dwelling housing, residential flat buildings and the residential components of shop top housing for mixed use developments).

> *10. It is preferable for waste trucks to enter the site in a forward direction, but it is permitted for waste trucks to reverse onto a site, where design and site conditions make it safe to do so. It is never acceptable for a truck to reverse out of a site.*

The proposed non-residential components loading and servicing is provided such that the vehicles can enter and exit the site in a forward direction.

The proposed development provides an on-site loading area for each main building area. Building A, which is entirely residential, provides an on-site collection area accessible from Strickland Street for a private mini-waste collection vehicle, such as a WasteWise Miniloader or similar. The waste vehicle can enter and exit the site in a forward direction, with swept path testing of a Small Rigid Vehicle (SRV) provided in **Annexure F**.

Buildings B and C are served by a common loading area for residential and commercial waste and deliveries. This loading area is suitable for a 12.5m Heavy Rigid Vehicle (HRV) accessed from Veno Street. The 12.5m HRV can enter and exit the site in a forward direction and load and unload without infringing on access to the basement car park. The loading area is in compliance with *AS2890.2:2018* requirements. Swept path testing of the loading bays has been completed with the results presented within **Annexure F**.

3.9 Car Park Design & Compliance

The car parking layout, as depicted in **Annexure A,** has been assessed to achieve the relevant clauses and objectives of *AS2890.1:2004*, *AS2890.2:2018* and *AS2890.6:2022*. Swept path testing has been undertaken, and the results are reproduced within **Annexure F** for reference.

The proposed car parking and vehicular access design achieves the following:

- 7.7m wide two-way driveway facilitating access to Veno Street;
- 5.5m wide two-way driveway facilitating access to Strickland Street;
- Minimum 5.8m wide parking aisles;
- Minimum 6.1m wall-to-wall width along ramp;
- Compliant ramp grades not exceeding 25% for private developments and no grade change greater than 12.5%:
- Minimum 5.4m long, 2.4m wide spaces for staff & residents;
- Minimum 5.4m long, 2.5m wide spaces for visitors;
- Minimum 5.4m long, 2.4m wide accessible spaces with adjacent associated 5.4m long, 2.4m wide shared space;
- Minimum headroom of 2.2m for general circulation and 2.5m headroom clearance provided over accessible and adaptable parking areas;
- Minimum headroom of 4.5m for loading and manoeuvring areas for Building B & C;
- Motorcycle spaces with minimum dimensions of 1.2m by 2.5m;
- 2.0m x 2.5m pedestrian sight triangles clear of obstructions.

Whilst the plans have been assessed to comply with the relevant standards, it is usual and expected that a design certificate be required at the Construction Certificate stage to account for any changes following the development application.

4 TRAFFIC ASSESSMENT

The impact of the expected traffic generation levels associated with the subject proposal is discussed in the following sub-sections.

4.1 Traffic Generation

The estimated traffic generation for the proposed development must follow a similar procedure to that of the parking demand in that each land use must be calculated separately in terms of traffic generation and then combined to provide the total traffic generation for the entire site. The general procedure will align in order of priority with the RTA Guide, empirical survey data and first principal assessments.

4.1.1 Restaurants and Clubs

The estimated traffic generation level for the licensed premise development is based upon the *RTA Guide to Traffic Generating Developments 2002.*

The RTA Guide states a traffic generation rate of 10 veh/hr/100m2; however, this value was obtained by surveys conducted in 1978, following which driver behaviour has changed, partly due to the introduction of random breath testing and the introduction of blood alcohol driving limits. It has therefore been assumed that the traffic generation of the site will follow the same reduction from the guide as the parking rate in **Section 3** of this report.

The adopted parking rate from the MTE surveyed results of licensed premises is 6.9 car parking spaces per 100m^2 (77 spaces). The 1978 RTA surveys showed that the average vehicle length of stay for visitors of the club over the 10 surveyed sites was 91.45 minutes, or approximately 1 hour 31 minutes. Through the calculation of this parking demand and parking turnover, the resultant peak hour traffic generation is **50** trips per hour (77 parking spaces / 91 minutes). The traffic generation is appropriate, considering the development has good access to public transport, is located within a town centre (resulting in dual purpose trips) and typically the use of pubs/taverns occurs after the PM peak period (after 6pm) during the week.

Furthermore, the same approach can be taken to estimate the anticipated traffic generation of the existing tavern on the property. Considering an existing GFA of 660m^2, and the 6.9 car parking spaces per 100m^2, this results in a total demand of 46 car parking spaces for the existing site. Assuming the same parking turnover rate of 1 hour 31 minutes, the peak hour traffic generation is 30 trips per hour (46 parking spaces / 91 minutes).

4.1.2 RTA Guide / TDT 2013/04a

Traffic generation rates for the relevant land uses are provided in the *RTA Guide to Traffic Generating Developments (2002)* and recent supplements, specifically *RMS TDT 2013/04a* as adopted by *Transport for NSW* (TfNSW) and are as follows:

TDT 2013/04a

High density residential flat dwellings

Sydney Average

AM peak (1 hour) vehicle trips per unit	*0.19*
PM peak (1 hour) vehicle trips per unit	*0.15*

RTA Guide

3.4.1 Motels

Evening peak hour vehicle trips = 0.4 per unit.

3.6.1 Shopping centres.

Peak Parking = 11 A(S) + 23 A(F) + 138 A(SM) + 56 A(SS) + 5 A(OM)

Demand (per 1,000m2).

where:

…

A(SS): Speciality Shops and Secondary retail GLFA, includes speciality shops and take-away stores such as McDonalds. These stores are grouped since they tend not be primary attractors to the centre.

The resulting AM and PM peak hourly traffic generation of both the existing pub/tavern and motel and the proposed development is summarised in **Table 6.**

TABLE 6: ESTIMATED WEEKDAY TRAFFIC GENERATION

Use	Scale	Generation Rate	Peak Hour Trips	
			AM	PM
Existing Traffic Generation				
Hotel / Tavern (1)	~660m^2 GFA	See **Section 4.1.1**	-	-30 (-15 in, -15 out)
Motel (1)	~9 Units	0.4 per unit	-4 (-2 in, -2 out)	-4 (-2 in, -2 out)
Subtotal (Existing)	**-**	**-**	**-4 (-2 in, -2 out)**	**-34 (-17 in, -17 out)**
Proposed Future Traffic Generation				
Residential (2) (Building A)	60 Units	0.19 trips per unit (AM)	+11 (+2 in, +9 out)	+9 (+7 in, +2 out)
Residential (2) (Building B&C)	108 Units	0.15 trips per unit (PM)	+21 (+4 in, +17 out)	+16 (+13 in, +3 out)
Hotel / Tavern (1)	1,109m^2 GFA	See **Section 4.1.1**	-	+50 (+25 in, +25 out)
Retail (1)	190m^2 GFA	5.6 trips per 100m^2 GLFA	+11 (+6 in, +5 out)	+11 (+5 in, +6 out)
Subtotal (Proposed Future)	**-**	**-**	**+43 (+12 in, +31 out)**	**+86 (+50 in, +36 out)**
Total	**-**	**-**	**+39 (+10 in, +29 out)**	**+52 (+33 in, +19 out)**

Notes:
(1) Assumes 50% inbound & 50% outbound during PM peak. Does not operate during the AM peak hour.
(2) Assumes 20% inbound & 80% outbound during AM peak. Vice versa for PM.

As shown above, the proposed future development's expected traffic generation is **43** vehicle trips in the AM peak hour period (12 in, 31 out) and **86** vehicle trips in the PM peak hour period (50 in, 36 out).

It is relevant to note the existing operating tavern and motel generate an existing quantum of traffic. Based on the same approach and industry rates for motels, the site has an existing traffic of **4** vehicle trips in the AM peak hour period (2 in, 2 out) and **34** vehicle trips in the PM peak hour period (17 in, 17 out). It is noted no consideration has been made for the traffic generation of the bottle shop in this assessment, resulting in a conservative approach.

Given both the existing and proposed future traffic generation, the expected net difference in traffic generation associated with the proposed development is in the order of **+39** vehicle trips in the AM peak hour period (+10 in, +29 out) and **+52** vehicle trips in the PM peak hour period (+33 in, +19 out).

4.2 Traffic Assignment

The road network, traffic surveys and locations of residential and employment areas surrounding the site have been assessed. Given the different land uses within the proposal, two traffic distributions have been considered, with residential traffic distribution outlined in **Figure 4** and commercial (tavern/retail) traffic distribution outlined in **Figure 5**.

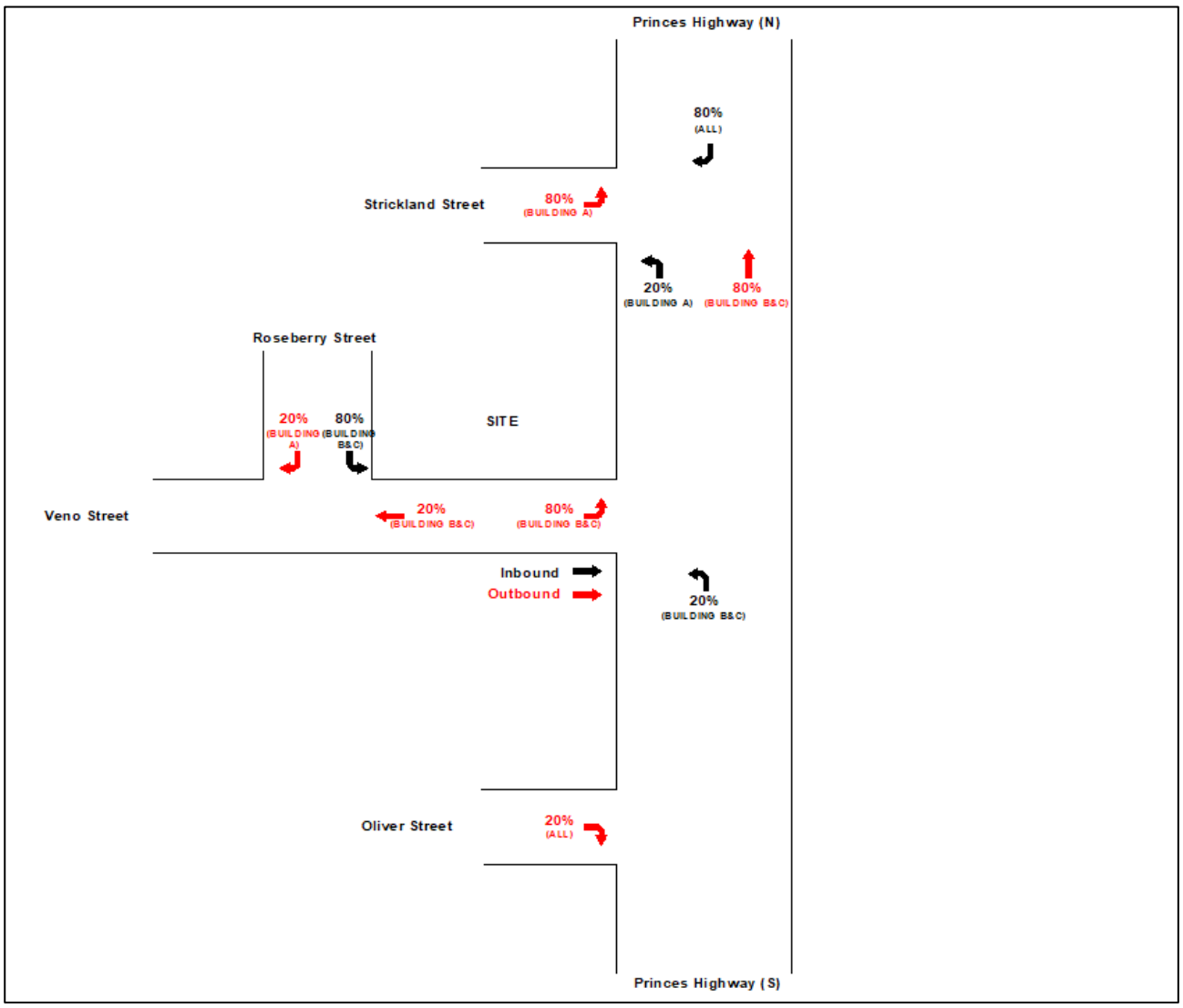


FIGURE 4: TRIP DISTRIBUTION – RESIDENTIAL

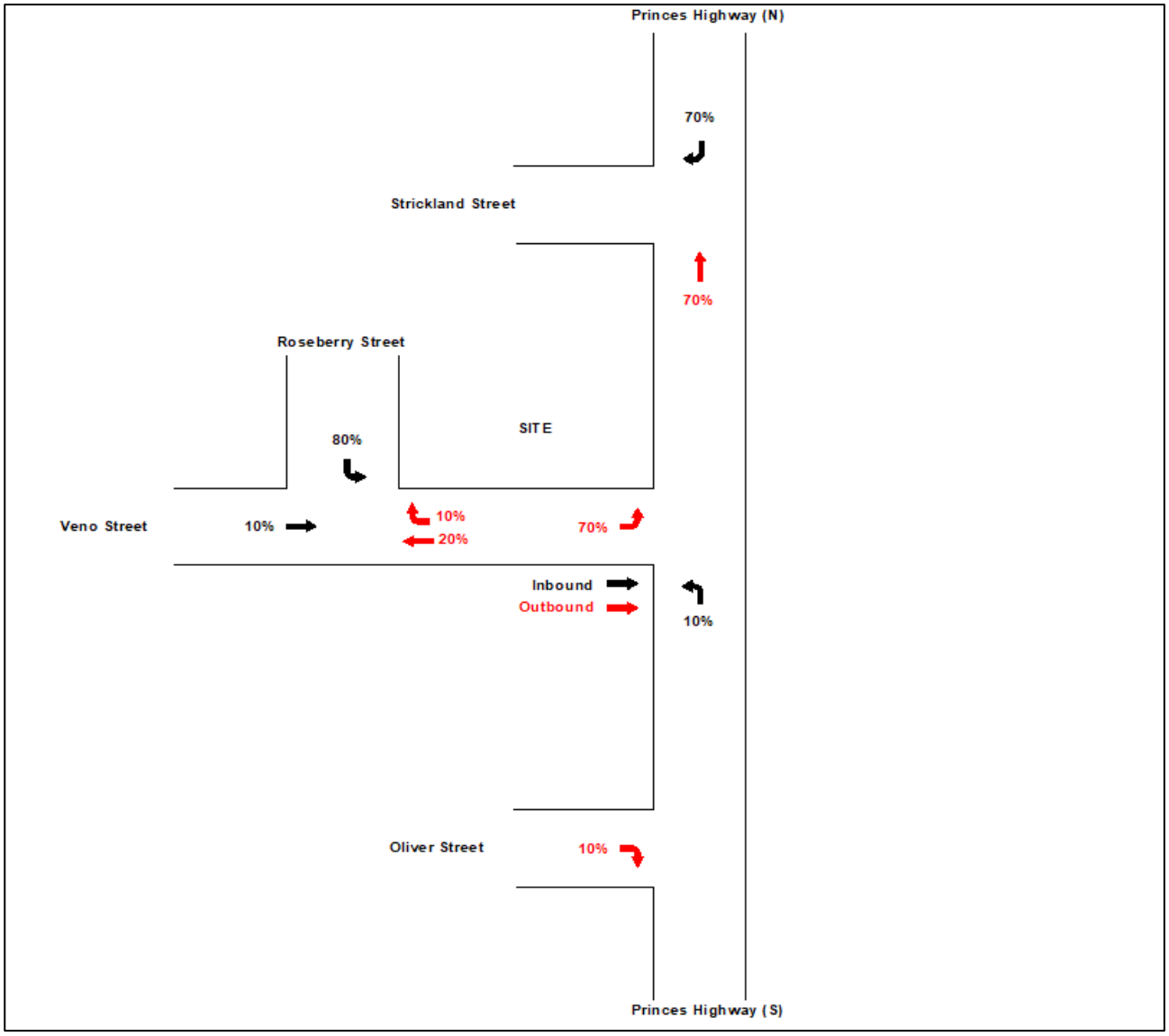


FIGURE 5: TRIP DISTRIBUTION – TAVERN & RETAIL

4.3 Traffic Impact

The traffic generation outlined in **Section 4.1** & **4.2** above has been added to the existing traffic volumes recorded. SIDRA INTERSECTION 9.1 was used to assess the intersections performance. The purpose of this assessment is to compare the existing intersection operations to the future scenario under the increased traffic load. The results of this assessment are shown in **Table 7**.

It should be noted that this traffic modelling has been completed using only the proposed future traffic generation by the development (without any subtraction for existing traffic generated by the site). Given the approach to assessing the total traffic generation (rather than just the net change in traffic generation), it results in a conservative approach.

The adopted traffic generation used in the SIDRA model is in the order of **43** vehicle trips in the AM peak period (12 in, 31 out) and **86** vehicle trips in the PM peak period (50 in, 36 out), in-line with the total traffic generation of the proposed future development.

TABLE 7: INTERSECTION PERFORMANCE (SIDRA INTERSECTION 9.1)

Intersection	Peak Hour	Degree of Saturation[1]	Average Delay[2] (sec/veh)	Level of Service[3][4]	Control Type	Worst Movement	95th Percentile Queue
EXISTING PERFORMANCE							
Princes Highway / Oliver Street	AM	0.53	2.9	**A**	Signals	RT from Oliver Street	5.9 veh (44.1m) Oliver Street
	PM	0.49	2.7	**A**		RT from Oliver Street	4.9 veh (34.5m) Princes Highway
Princes Highway / Strickland Street	AM	0.51	1.3 (Worst: 47.6)	**NA** (Worst: D)	Give Way	RT from Princes Highway	1.9 veh (14.7m) Princes Highway
	PM	0.57	1.2 (Worst: 22.5)	**NA** (Worst: B)		RT from Princes Highway	3.3 veh (23.5m) Princes Highway
Princes Highway / Veno Street	AM	1.00	1.4 (Worst: >70)	**NA** (Worst: F)	Give Way	RT from Veno Street	2.8 veh (20.4m) Veno Street
	PM	0.59	0.7 (Worst: 8.6)	**NA** (Worst: A)		LT from Veno Street	0.6 veh (4.4m) Veno Street
Roseberry Street / Veno Street	AM	0.14	2.6 (Worst: 5.8)	**NA** (Worst: A)	Give Way	RT from Roseberry Street	0.4 veh (2.6m) Roseberry Street
	PM	0.12	3.3 (Worst: 5.2)	**NA** (Worst: A)		RT from Roseberry Street	0.4 veh (3.1m) Roseberry Street
FUTURE (POST-DEVELOPMENT) PERFORMANCE							
Princes Highway / Oliver Street	AM	0.54	3	**A**	Signals	RT from Oliver Street	5.9 veh (43.6m) Oliver Street
	PM	0.48	2.8	**A**		RT from Oliver Street	5.1 veh (35.9m) Princes Highway
Princes Highway / Strickland Street	AM	0.57	1.5 (Worst: 50.4)	**NA** (Worst: D)	Give Way	RT from Princes Highway	2.3 veh (17.1m) Princes Highway
	PM	0.66	1.5 (Worst: 25.6)	**NA** (Worst: B)		RT from Princes Highway	4.3 veh (30.7m) Princes Highway
Princes Highway / Veno Street	AM	1.00	1.5 (Worst: >70)	**NA** (Worst: F)	Give Way	RT from Veno Street	3.2 veh (22.8m) Veno Street
	PM	0.59	0.7 (Worst: 8.7)	**NA** (Worst: A)		LT from Veno Street	0.8 veh (5.3m) Veno Street
Roseberry Street / Veno Street	AM	0.14	2.7 (Worst: 5.9)	**NA** (Worst: A)	Give Way	RT from Roseberry Street	0.4 veh (2.8m) Roseberry Street
	PM	0.14	3.5 (Worst: 5.3)	**NA** (Worst: A)		RT from Roseberry Street	0.6 veh (4m) Roseberry Street

NOTES: Refer to **Table 1**.

As shown, the intersections of Princes Highway / Oliver Street, Princes Highway / Strickland Street, Princes Highway / Veno Street and Roseberry Street / Veno Street all retain the same overall level of service under future conditions with minimal delays and additional capacity, indicating that there will be no adverse impact on the existing road network as a result of the proposed development.

The 95th percentile queue lengths on the Princes Highway increase by 1.0 vehicle lengths or less, with the right turn from Princes Highway into Strickland Street increasing by 0.4 vehicle lengths in the AM peak period and by 1.0 vehicle lengths in the PM peak period. The 85th percentile queue lengths will not exceed the 50m right turn lane capacity in the post-development scenario. This minor increase in the 95th percentile queue length indicates that there will be no adverse impact on the existing road network as a result of the proposed development.

4.4 SEPP (Transport and Infrastructure) 2021 Clause 2.119

The proposed development has frontage to the Princes Highway and as such, an assessment against the criteria in *Clause 2.119 of SEPP (Transport and Infrastructure)* 2021 is presented below. The relevant items raised in Clause 2.119 are presented below (italicised) with MTE response thereafter.

> *(a) where practicable and safe, vehicular access to the land is provided by a road other than the classified road, and*

MTE Response: The subject site does not propose direct vehicular access to the Classified Road (Princes Highway). Access to the proposal is from local roads other than the classified road, satisfying this requirement.

> *(b) the safety, efficiency, and ongoing operation of the classified road will not be adversely affected by the development as a result of:*

i. the design of the vehicular access to the land.

MTE Response: The driveway location is maximally distant from the classified road and there is sufficient Stopping Sight Distance for vehicles approaching from the classified road. The proposed driveways are also located in the same location as existing driveways that serve the site.

ii. the emission of smoke or dust from the development

MTE Response: For others to address.

iii. the nature, volume or frequency of vehicles using the classified road to gain access to the land.

MTE Response: Section 4 outlines the expected peak hour traffic generation and impact on the surrounding intersections. The traffic generation of the site will peak at times besides the commuter peaks on the classified roads. The vehicular trips are largely pre-existing and the small increase at peak times will have no adverse impact on the surrounding intersections. It is important to note the proximity of the proposal to a train station to reduce reliance on private motor vehicles.

5 CONCLUSION

In view of the foregoing, the subject Mixed Use Development (Residential and Tavern) proposal at 1 Veno Street, Heathcote (as depicted in **Annexure A**) is fully supportable in terms of its traffic and parking impacts. The following outcomes of this traffic and parking impact assessment are relevant to note:

a) The proposal includes the provision of **249** car parking spaces within a proposed carpark, comprised of **160** for residential use and **89** for commercial/tavern use, satisfying the relevant controls applicable to the development, including the SEPP (Housing) 2021 and council's DCP requirements, where applicable.

b) Council's DCP does not provide a parking rate for taverns, and there for a parking rate of 6.9 parking spaces per 100m^2 of tavern GFA has been adopted, which represents the 85th percentile parking demand of the tavern. This parking rate is considered most appropriate based on numerous surveys of operating pubs and taverns within NSW.

c) Council's DCP requires the provision of **23** bicycle parking spaces and four (**4**) motorcycle parking spaces to be provided onsite. While the total number of spaces provided on-site is compliant with motorcycle and bicycle parking, the proposed motorcycle parking spaces shall be located within the commercial parking area rather than the residential parking area.

d) The parking areas of the site have been assessed against the relevant sections of *AS2890.1:2004*, *AS2890.2:2018* and *AS2890.6:2022* and have been found to satisfy the objectives of each standard. Swept path testing has been undertaken, and the results are reproduced within **Annexure F**.

e) The traffic generation of the existing site has been estimated at some **4** vehicle trips in the AM peak hour period (2 in, 2 out) and **34** vehicle trips in the PM peak hour period (17 in, 17 out).

f) The traffic generation of the proposed future development has been estimated to be some **43** vehicle trips in the AM peak hour period (12 in, 31 out) and **86** vehicle trips in the PM peak hour period (50 in, 36 out).

g) The net traffic generation of the proposed development has been estimated to be some **+39** trips in the AM peak period (+10 in, +29 out) and **+52** trips in the PM peak period (+33 in, +19 out).

h) The impacts of the traffic generation have been assessed using the total future traffic generation (43 trips in the AM peak hour and 86 vehicle trips in the PM peak hour). Modelling of this scenario has been undertaken using SIDRA INTERSECTION 9.1, indicating that there will be no adverse impact to the performance of the intersections as a result of the generated traffic.

i) Access to the proposed site is not located on the classified road, and the design of the access will not adversely affect the safety, efficiency or ongoing operation of the Princes Highway, satisfying the requirements of Clause 2.119 of SEPP (Transport and Infrastructure) 2021.

ANNEXURE A: PROPOSED PLANS
(6 SHEETS)

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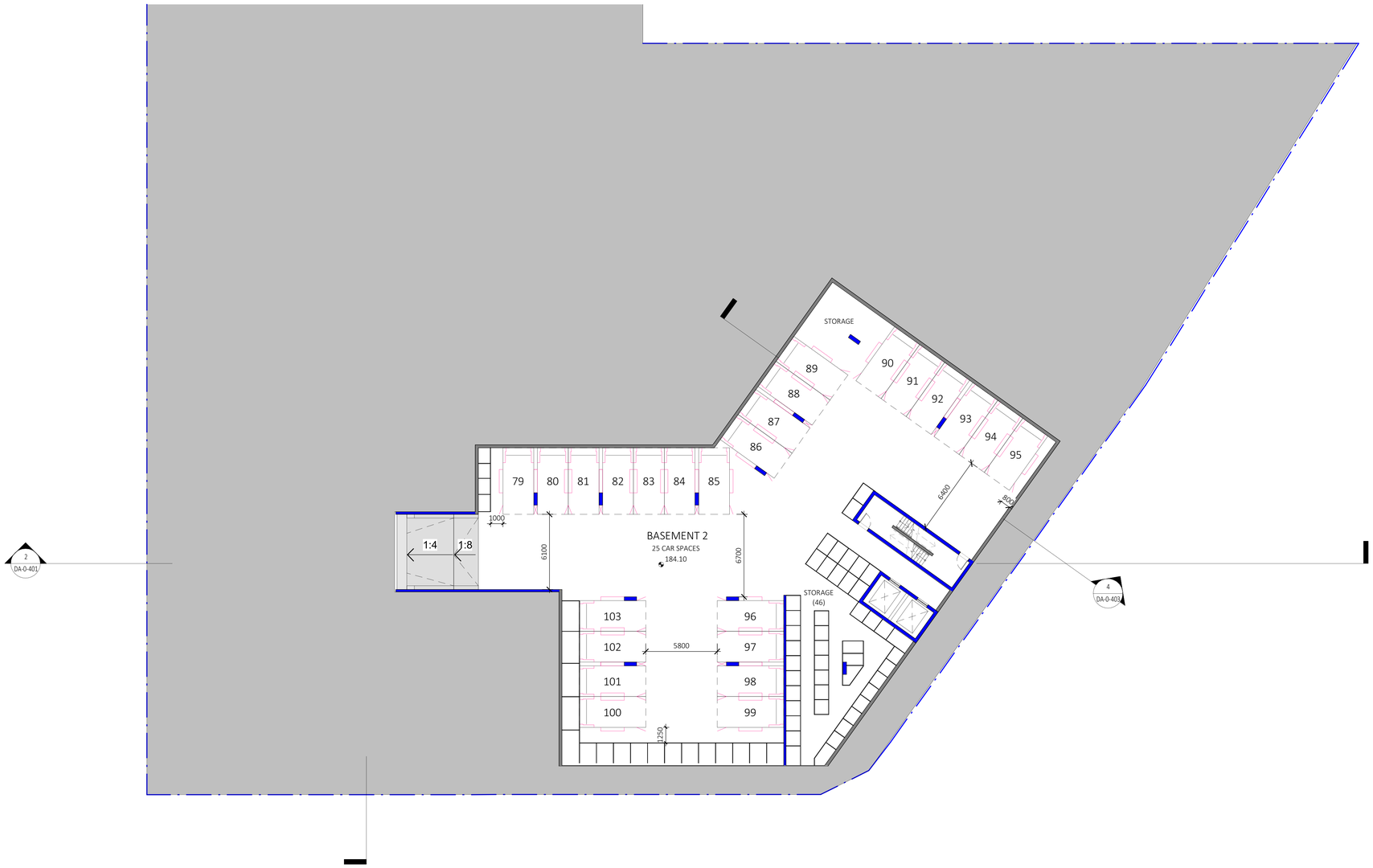

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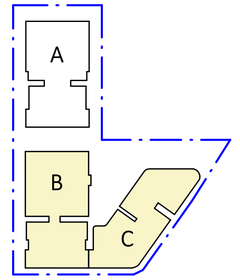

ABBREVIATIONS:

E	ELECTRICAL	S	STORAGE
H	HYDRAULIC	H.W.	HIGH WINDOW
M	MECHANICAL	RSD	ROLLER SHUTTER
G	GAS		DOOR
GC	GARBAGE CHUTE		
R	RECYCLE		

LEGEND:

AC CONDENSER UNIT

LIVABLE HOUSING UNIT (SILVER LEVEL)

ADAPTABLE UNIT

PLANTER

PROJECT

PROPOSED MIXED USE / AFFORDABLE HOUSING DEVELOPMENT

1 VENO STREET, HEATHCOTE, NSW

CLIENT

DK Heathcote Pty Ltd

DRAWING

(S2) BASEMENT 2

DA

PROJECT NO.	DRAWING NO.	REVISION	CURRENT ISSUE DATE
23-049	DA-0-209	[B]	20/06/2024
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As indicated		HS	ND

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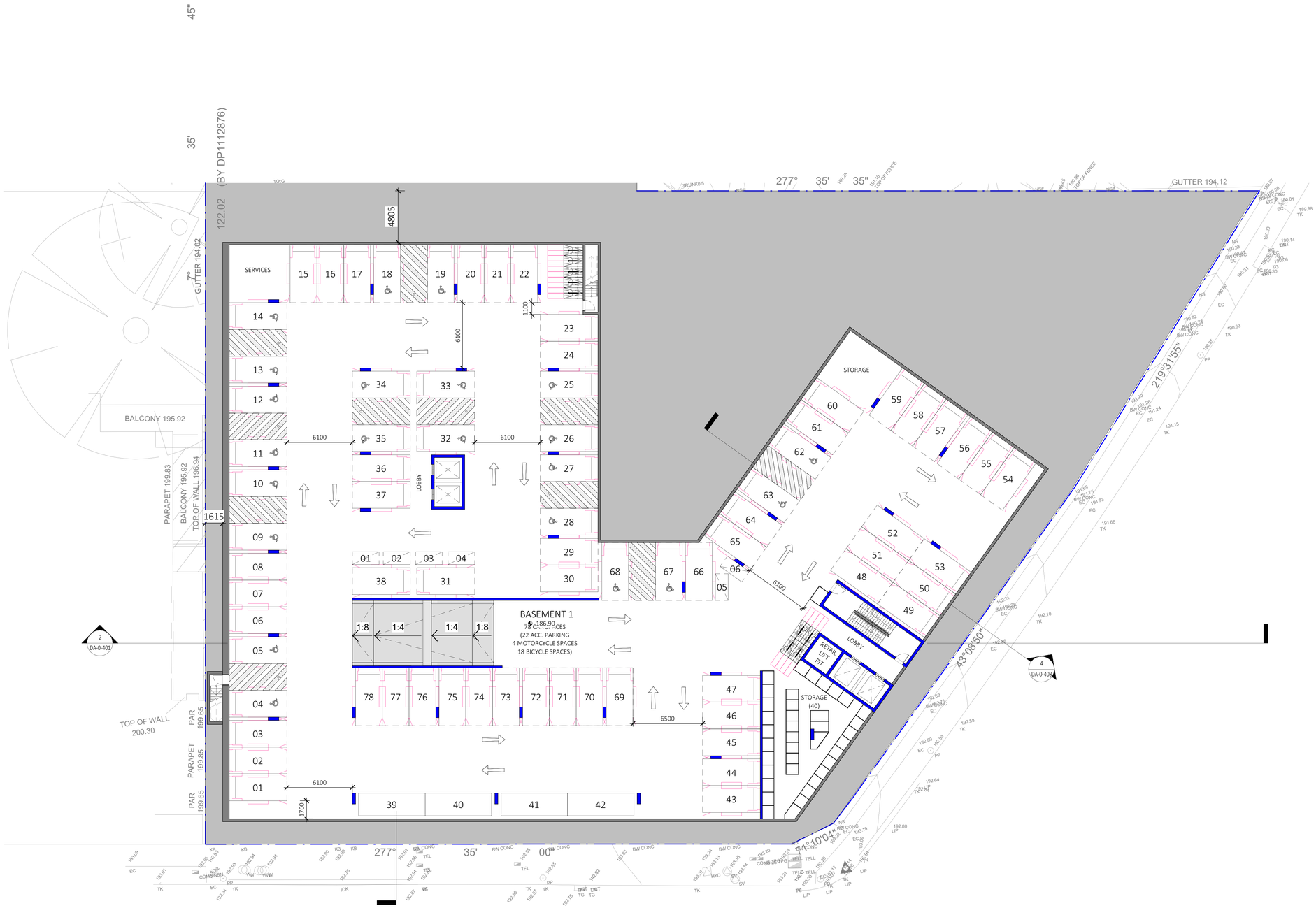

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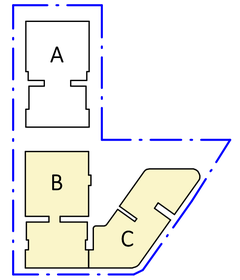

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GC	GARBAGE CHUTE		
R	RECYCLE		

LEGEND:

- AC CONDENSER UNIT
- LIVABLE HOUSING UNIT (SILVER LEVEL)
- ADAPTABLE UNIT
- PLANTER

PROJECT

PROPOSED MIXED USE / AFFORDABLE HOUSING DEVELOPMENT

1 VENO STREET, HEATHCOTE, NSW

CLIENT

DK Heathcote Pty Ltd

DRAWING

(S2) BASEMENT 1

DA

PROJECT NO.	DRAWING NO.	REVISION	CURRENT ISSUE DATE
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REV	DESCRIPTION	DATE	ISS	CHK
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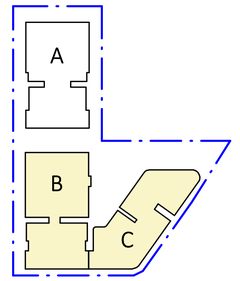

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LEGEND:

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- LIVABLE HOUSING UNIT (SILVER LEVEL)
- ADAPTABLE UNIT
- PLANTER

PROJECT

PROPOSED MIXED USE / AFFORDABLE HOUSING DEVELOPMENT

1 VENO STREET, HEATHCOTE, NSW

CLIENT

DK Heathcote Pty Ltd

DRAWING

(S2) LOWER GROUND

DA

PROJECT NO.	DRAWING NO.	REVISION	CURRENT ISSUE DATE
23-049	DA-0-211	[B]	20/06/2024

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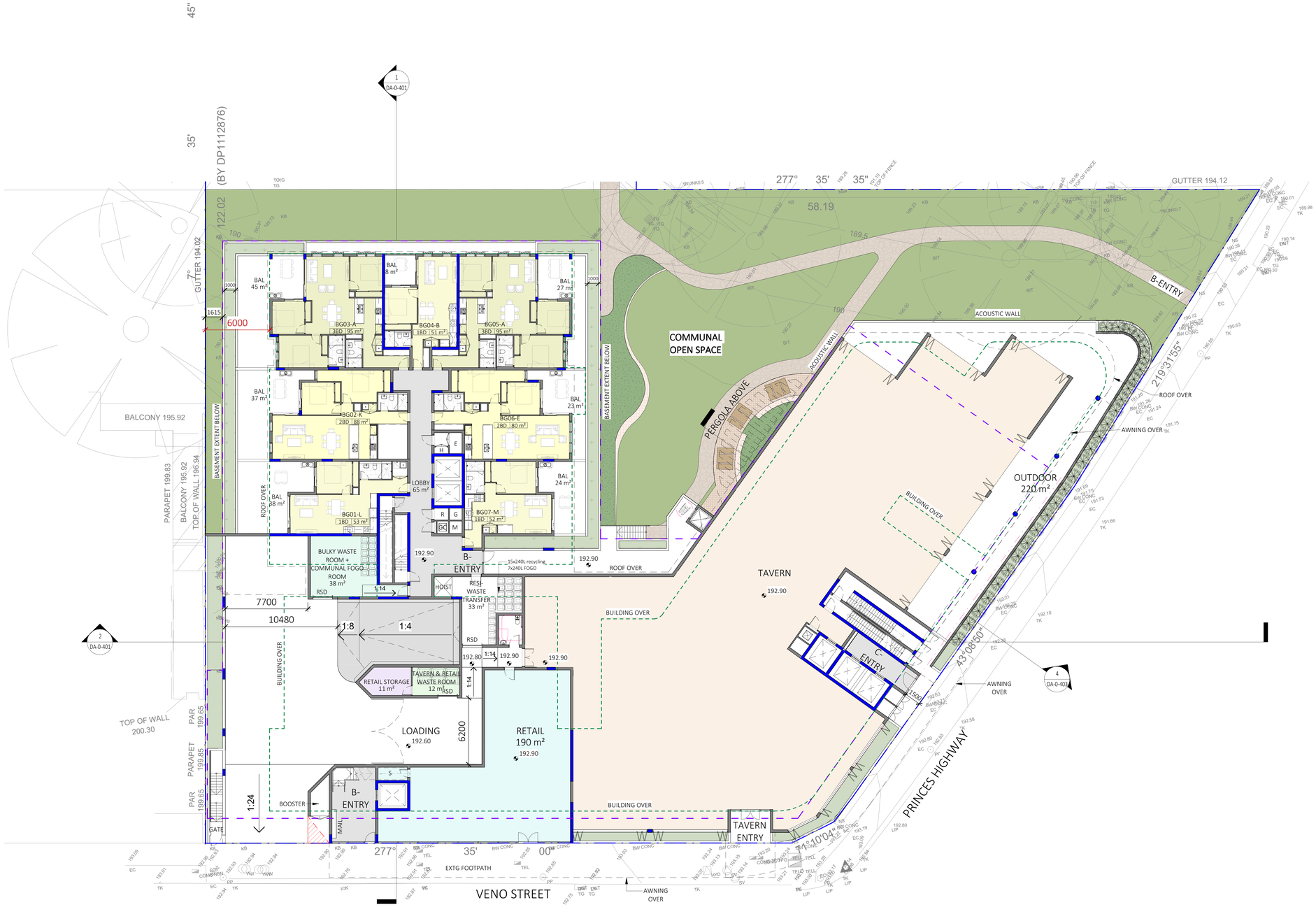

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D	ISSUE FOR REVIEW	27/09/2023	HS	PO
E	ISSUE FOR REVIEW	27/03/2024	HS	PO
F	DRAFT ISSUE FOR REVIEW	16/04/2024	HS	AV
G	DRAFT ISSUE FOR REVIEW	18/04/2024	HS	AV
H	DRAFT ISSUE FOR REVIEW	22/04/2024	HS	AV
J	DRAFT ISSUE FOR COORDINATION	28/05/2024	HS/LF	AV
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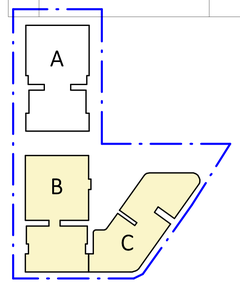

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LEGEND:

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- ADAPTABLE UNIT
- PLANTER

PROJECT

PROPOSED MIXED USE / AFFORDABLE HOUSING DEVELOPMENT

1 VENO STREET, HEATHCOTE, NSW

CLIENT

DK Heathcote Pty Ltd

DRAWING

(S2) GROUND LEVEL BUILDING B&C

DA

PROJECT NO.	DRAWING NO.	REVISION	CURRENT ISSUE DATE
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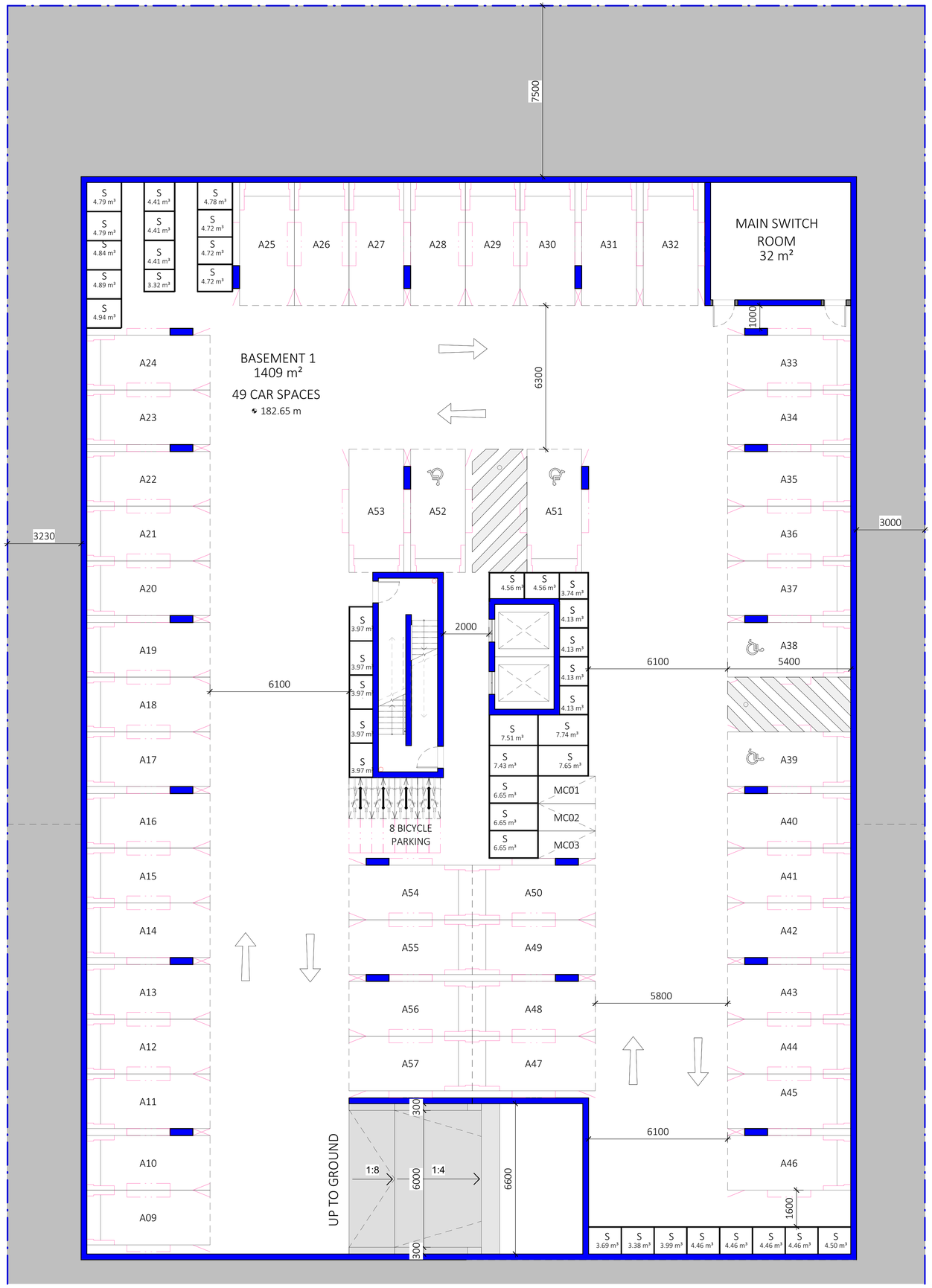
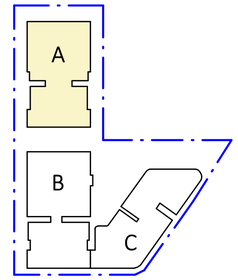
ABN: 35 134 237 540
Phone: +61 2 8540 8720
www.dicksonrothschild.com.au

Nominated Architects:
Robert Nigel Dickson
NSW ARB #5364
Paul Oreshkin
NSW ARB #7774

DRAFT



REV	DESCRIPTION	DATE	ISS	CHK
A	DRAFT ISSUE FOR REVIEW	14/06/2024	HS/ LF	AV
B	DRAFT ISSUE FOR REVIEW	20/06/2024	HS/ LF	AV



ABBREVIATIONS:

E	ELECTRICAL	S	STORAGE
H	HYDRAULIC	H.W.	HIGH WINDOW
M	MECHANICAL	RSD	ROLLER SHUTTER DOOR
G	GAS		
GC	GARBAGE CHUTE		
R	RECYCLE		

LEGEND:

- AC CONDENSER UNIT
- LIVABLE HOUSING UNIT (SILVER LEVEL)
- ADAPTABLE UNIT
- PLANTER

PROJECT

PROPOSED MIXED USE / AFFORDABLE HOUSING DEVELOPMENT

1 VENO STREET, HEATHCOTE, NSW

CLIENT

DK Heathcote Pty Ltd

DRAWING

(A) BASEMENT BUILDING A

DA

PROJECT NO.	DRAWING NO.	REVISION	CURRENT ISSUE DATE
23-049	DA-0-220	[B]	20/06/2024

SCALE @ A1	DRAWN	AUTHORISED
1 : 100	HS	ND

PRINTED 27/06/2024 4:12:10 PM

Dickson Rothschild
D.R. Design (NSW) Pty. Ltd.
Suite 1 & 2, Level 5
Grafton Bond Building
201 Kent St, Sydney NSW 2000
ABN: 35 134 237 540
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Nominated Architects:
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DRAFT

PEDESTRIAN ENTRY

VEHICULAR ENTRY

BOOSTER

GATE

MAIL BOX

LANDSCAPE BUFFER

DEEP SOIL

SUBSTATION

SPLAY

POS 56 m²

POS 37 m²

POS 50 m²

BUILDING ABOVE

ROOF OVER

AG01-A 3BD 95 m²

AG02-B 1BD 51 m²

AG03-A 3BD 95 m²

AG04-D 1BD 53 m²

AG05-C 2BD 82 m²

ENTRY

LOBBY 71 m²

POS 20 m²

POS 61 m²

COMMUNAL FOGO ROOM 7 m²

BASEMENT EXTENT BELOW

FIRE EGRESS ONLY

LOADING BAY

11x660L general waste
31x240L recycling
7x240L FOGO

GARBAGE ROOM 46 m²

BULKY ROOM 9 m²

PANEL LIFT DOOR

ACOUSTIC AND PRIVACY SCREEN

GROUND FLOOR
561 m²
8 ACC. PARKING

A01 A02 A03 A04 A05 A06 A07 A08

RAMP TO BASEMENT 1:4 1:8

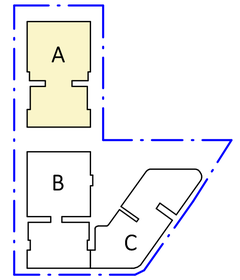
TOP OF HEDGE 191.81

FENCE 2.15 HIGH

WINDOWS NOT SHOWN

RIDGE 193.27 RIDGE 193.78 GUTTER 191.04 GUTTER 191.55 RIDGE 194.57 GUTTER 192.34 AWNING 189.68 RIDGE 195.12 GUTTER 190.08 AWNING 190.08 RIDGE 195.78 GUTTER 193.51 RIDGE 196.29 GUTTER 194.02 RIDGE 196.80 GUTTER 194.68 GUTTER 192.09 TRUNK0.5 GUTTER 191.09 RIDGE 192.36 RIDGE 193.42 GUTTER 191.09

REV	DESCRIPTION	DATE	ISS	CHK
A	DRAFT ISSUE FOR REVIEW	14/06/2024	HS/ LF	AV
B	DRAFT ISSUE FOR REVIEW	20/06/2024	HS/ LF	AV



ABBREVIATIONS:

E	ELECTRICAL	S	STORAGE
H	HYDRAULIC	H.W.	HIGH WINDOW
M	MECHANICAL	RSD	ROLLER SHUTTER DOOR
G	GAS		
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LEGEND:

AC CONDENSER UNIT

LIVABLE HOUSING UNIT (SILVER LEVEL)

ADAPTABLE UNIT

PLANTER

PROJECT

PROPOSED MIXED USE / AFFORDABLE HOUSING DEVELOPMENT

1 VENO STREET, HEATHCOTE, NSW

CLIENT

DK Heathcote Pty Ltd

DRAWING

(A) GROUND LEVEL BUILDING A

DA

PROJECT NO.	DRAWING NO.	REVISION	CURRENT ISSUE DATE
23-049	DA-0-221	[B]	20/06/2024
SCALE @ A1		DRAWN	AUTHORISED
1 : 100		HS	ND

PRINTED 27/06/2024 4:12:15 PM

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ANNEXURE B: TRAFFIC SURVEY DATA
(4 SHEETS)

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY trafficsurvey.com.au

Intersection of Oliver St and Princess Hwy, Heathcote

GPS -34.087781, 151.007466

Date:	Wed 12/06/24
Weather:	Fine
Suburban:	Heathcote
Customer:	McLaren

North:	Princess Hwy
East:	N/A
South:	Princess Hwy
West:	Oliver St

Survey	AM:	7:00 AM-9:30 AM
Period	PM:	2:30 PM-6:00 PM
Traffic	AM:	7:30 AM-8:30 AM
Peak	PM:	4:45 PM-5:45 PM

All Vehicles

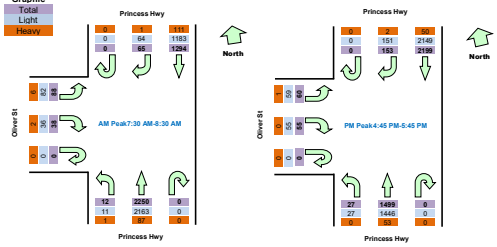
Time		North Approach Princess Hwy			South Approach Princess Hwy			West Approach Oliver St			Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
7:00	7:15	0	14	304	0	585	5	0	8	14	3736	
7:15	7:30	0	10	346	0	525	2	0	12	22	3739	
7:30	7:45	0	18	345	0	584	2	0	11	15	3747	Peak
7:45	8:00	0	20	307	0	553	0	0	11	23	3591	
8:00	8:15	0	6	317	0	578	3	0	7	22	3489	
8:15	8:30	0	21	325	0	535	7	0	9	28	3330	
8:30	8:45	0	16	275	0	484	4	0	14	26	3049	
8:45	9:00	0	25	279	0	466	4	0	5	33		
9:00	9:15	0	20	291	0	433	5	0	6	19		
9:15	9:30	0	21	246	0	339	9	0	8	21		
14:30	14:45	0	18	366	0	314	4	0	5	14	3177	
14:45	15:00	0	35	384	0	323	2	0	10	11	3334	
15:00	15:15	0	26	418	0	308	5	0	17	23	3492	
15:15	15:30	0	42	481	0	339	2	0	16	14	3652	
15:30	15:45	0	36	461	0	338	6	0	18	19	3746	
15:45	16:00	0	28	524	0	345	2	0	10	14	3867	
16:00	16:15	0	25	528	0	373	2	0	15	14	3892	
16:15	16:30	0	38	559	0	365	3	0	8	15	3979	
16:30	16:45	0	34	580	0	345	10	0	11	19	3982	
16:45	17:00	0	34	487	0	394	5	0	15	13	3993	Peak
17:00	17:15	0	40	568	0	399	7	0	14	16	3952	
17:15	17:30	0	44	553	0	355	5	0	16	18		
17:30	17:45	0	35	591	0	351	10	0	10	13		
17:45	18:00	0	37	483	0	354	0	0	18	15		

Peak Time		North Approach Princess Hwy			South Approach Princess Hwy			West Approach Oliver St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
7:30	8:30	0	65	1294	0	2250	12	0	38	88	3747
16:45	17:45	0	153	2199	0	1499	27	0	55	60	3993

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy



Light Vehicles

Time		North Approach Princess Hwy			South Approach Princess Hwy			West Approach Oliver St		
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
7:00	7:15	0	13	283	0	557	4	0	6	11
7:15	7:30	0	8	312	0	503	2	0	10	20
7:30	7:45	0	18	315	0	557	1	0	10	15
7:45	8:00	0	20	283	0	536	0	0	10	20
8:00	8:15	0	6	291	0	553	3	0	7	20
8:15	8:30	0	20	294	0	517	7	0	9	27
8:30	8:45	0	16	249	0	463	3	0	14	24
8:45	9:00	0	25	244	0	438	4	0	5	33
9:00	9:15	0	18	237	0	379	5	0	6	18
9:15	9:30	0	19	219	0	317	8	0	5	19
14:30	14:45	0	18	346	0	293	4	0	5	13
14:45	15:00	0	34	359	0	307	2	0	9	11
15:00	15:15	0	26	402	0	295	5	0	17	22
15:15	15:30	0	41	460	0	315	2	0	16	13
15:30	15:45	0	35	446	0	321	5	0	18	19
15:45	16:00	0	27	505	0	326	2	0	10	14
16:00	16:15	0	25	514	0	353	2	0	14	13
16:15	16:30	0	38	545	0	346	3	0	8	15
16:30	16:45	0	34	564	0	329	10	0	11	19
16:45	17:00	0	32	475	0	378	5	0	15	13
17:00	17:15	0	40	557	0	382	7	0	14	15
17:15	17:30	0	44	540	0	346	5	0	16	18
17:30	17:45	0	35	577	0	340	10	0	10	13
17:45	18:00	0	37	472	0	346	0	0	18	15

Peak Time		North Approach Princess Hwy			South Approach Princess Hwy			West Approach Oliver St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
7:30	8:30	0	64	1183	0	2163	11	0	36	82	3539
16:45	17:45	0	151	2149	0	1446	27	0	55	59	3887

Heavy Vehicles

Time		North Approach Princess Hwy			South Approach Princess Hwy			West Approach Oliver St		
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
7:00	7:15	0	1	21	0	28	1	0	2	3
7:15	7:30	0	2	34	0	22	0	0	2	2
7:30	7:45	0	0	30	0	27	1	0	1	0
7:45	8:00	0	0	24	0	17	0	0	1	3
8:00	8:15	0	0	26	0	25	0	0	0	2
8:15	8:30	0	1	31	0	18	0	0	0	1
8:30	8:45	0	0	26	0	21	1	0	0	2
8:45	9:00	0	0	35	0	28	0	0	0	0
9:00	9:15	0	2	54	0	54	0	0	0	1
9:15	9:30	0	2	27	0	22	1	0	3	2
14:30	14:45	0	0	20	0	21	0	0	0	1
14:45	15:00	0	1	25	0	16	0	0	1	0
15:00	15:15	0	0	16	0	13	0	0	0	1
15:15	15:30	0	1	21	0	24	0	0	0	1
15:30	15:45	0	1	15	0	17	1	0	0	0
15:45	16:00	0	1	19	0	19	0	0	0	0
16:00	16:15	0	0	14	0	20	0	0	1	1
16:15	16:30	0	0	14	0	19	0	0	0	0
16:30	16:45	0	0	16	0	16	0	0	0	0
16:45	17:00	0	2	12	0	16	0	0	0	0
17:00	17:15	0	0	11	0	17	0	0	0	1
17:15	17:30	0	0	13	0	9	0	0	0	0
17:30	17:45	0	0	14	0	11	0	0	0	0
17:45	18:00	0	0	11	0	8	0	0	0	0

Peak Time		North Approach Princess Hwy			South Approach Princess Hwy			West Approach Oliver St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
7:30	8:30	0	1	111	0	87	1	0	2	6	208
16:45	17:45	0	2	50	0	53	0	0	0	1	106

Queue

Time		North				South			West	
Period Start	Period End	Right Lane	West Lane	Middle Lane	East Lane	East Lane	Middle Lane	West Lane	South Lane	North Lane
7:00	7:05	0	0	0	0	17	22	0	3	2
7:05	7:10	0	0	0	0	16	20	0	0	3
7:10	7:15	3	0	0	0	23	28	0	2	3
7:15	7:20	0	0	3	0	22	25	0	2	3
7:20	7:25	0	0	0	0	20	22	0	2	2
7:25	7:30	3	0	0	0	25	28	0	0	5
7:30	7:35	3	0	0	0	16	17	0	4	5
7:35	7:40	0	0	0	0	22	20	0	0	2
7:40	7:45	3	4	3	0	16	17	0	4	3
7:45	7:50	0	0	0	0	25	23	0	5	3
7:50	7:55	6	0	7	0	21	18	0	0	3
7:55	8:00	4	0	0	0	25	27	0	3	3
8:00	8:05	0	0	4	0	20	20	0	0	2
8:05	8:10	0	0	0	0	18	15	0	3	3
8:10	8:15	0	0	0	0	17	15	0	2	6
8:15	8:20	0	0	0	0	20	20	0	2	3
8:20	8:25	5	0	4	0	32	30	0	0	3
8:25	8:30	5	0	0	0	21	20	0	2	4
8:30	8:35	0	0	0	0	15	20	0	3	6
8:35	8:40	0	3	3	0	15	17	0	3	5
8:40	8:45	3	3	4	0	18	18	2	2	3
8:45	8:50	0	0	0	0	15	15	0	0	4
8:50	8:55	0	0	0	0	7	15	0	0	6
8:55	9:00	0	0	0	0	16	15	0	3	5
9:00	9:05	2	2	0	0	9	10	0	0	4
9:05	9:10	2	0	0	0	3	10	0	2	2
9:10	9:15	0	0	3	0	10	10	0	2	3
9:15	9:20	0	3	5	0	7	9	0	3	4
9:20	9:25	0	0	4	0	4	11	0	0	4
9:25	9:30	0	5	7	0	5	10	0	0	2
14:30	14:35	0	4	4	0	8	13	0	0	3
14:35	14:40	0	0	0	0	0	4	0	0	3
14:40	14:45	3	0	6	0	3	10	0	2	3
14:45	14:50	3	2	5	3	11	13	0	4	0
14:50	14:55	8	0	0	0	8	15	0	0	2
14:55	15:00	0	5	7	0	3	10	0	3	0
15:00	15:05	0	4	4	0	4	8	0	3	3
15:05	15:10	0	0	3	0	5	8	0	3	2
15:10	15:15	3	6	6	0	3	8	0	4	7
15:15	15:20	5	10	11	0	5	16	0	2	4
15:20	15:25	7	0	0	0	4	13	0	3	3
15:25	15:30	0	6	6	0	5	9	0	4	2
15:30	15:35	5	9	9	0	2	13	0	3	5
15:35	15:40	3	3	7	4	4	11	0	4	3
15:40	15:45	3	5	3	0	10	15	0	4	3
15:45	15:50	0	0	0	0	5	14	0	4	5
15:50	15:55	3	6	7	0	5	15	0	0	4
15:55	16:00	3	7	9	0	4	9	0	2	0
16:00	16:05	0	6	7	0	4	12	0	4	0
16:05	16:10	3	8	4	0	12	15	2	3	5
16:10	16:15	0	6	7	0	8	9	0	3	3
16:15	16:20	8	5	10	0	5	10	0	2	0
16:20	16:25	3	0	0	0	4	15	0	4	4
16:25	16:30	0	0	0	0	6	12	0	0	4
16:30	16:35	0	4	5	0	3	10	0	2	2
16:35	16:40	0	2	5	0	14	17	0	2	5
16:40	16:45	4	0	2	0	2	6	0	4	2
16:45	16:50	3	3	5	0	9	15	0	4	3
16:50	16:55	3	6	6	0	3	10	0	2	4
16:55	17:00	5	3	6	0	12	13	0	3	2
17:00	17:05	5	9	9	0	9	10	0	0	3
17:05	17:10	2	9	10	0	4	11	0	4	3
17:10	17:15	4	0	0	0	8	12	0	3	6
17:15	17:20	0	5	5	0	7	8	0	4	3
17:20	17:25	4	6	9	0	8	10	0	4	2
17:25	17:30	5	10	10	0	3	10	0	2	2
17:30	17:35	4	4	3	0	10	13	0	4	2
17:35	17:40	4	5	10	0	7	8	0	2	2
17:40	17:45	3	7	11	0	4	10	0	2	5
17:45	17:50	3	7	3	0	4	9	0	3	0
17:50	17:55	2	7	10	0	6	11	0	5	4
17:55	18:00	4	5	7	0	7	10	0	2	3

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Strictland St and Princess Hwy, Heathcot

GPS	-34.085167, 151.010390
Date:	Wed 12/06/24
Weather:	Fine
Suburban:	Heathcote
Customer:	McLaren

North:	Princess Hwy
East:	N/A
South:	Princess Hwy
West:	Strictland St

Survey Period	AM:	7:00 AM-9:30 AM
	PM:	2:30 PM-6:00 PM
Traffic Peak	AM:	7:15 AM-8:15 AM
	PM:	4:45 PM-5:45 PM

All Vehicles

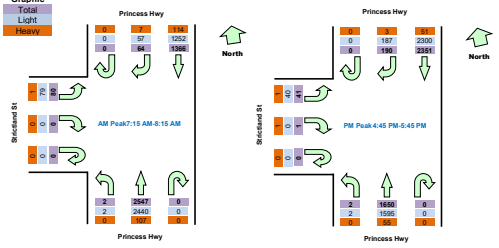
Time		North Approach Princess Hw			South Approach Princess Hw		West Approach Strictland S			Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
7:00	7:15	0	19	317	0	618	0	0	0	9	4005	
7:15	7:30	0	18	356	0	598	0	0	0	16	4059	Peak
7:30	7:45	0	13	361	0	659	1	0	0	22	4037	
7:45	8:00	0	17	326	0	635	1	0	0	19	3868	
8:00	8:15	0	16	323	0	655	0	0	0	23	3767	
8:15	8:30	0	12	344	0	596	1	0	0	13	3573	
8:30	8:45	0	32	291	0	555	0	0	0	9	3267	
8:45	9:00	0	36	304	0	541	1	0	0	15		
9:00	9:15	0	16	311	0	485	0	0	0	11		
9:15	9:30	0	18	267	0	373	1	0	0	1		
14:30	14:45	0	17	384	0	342	1	0	0	11	3329	
14:45	15:00	0	21	417	0	339	3	0	0	5	3512	
15:00	15:15	0	35	444	0	368	0	0	0	8	3688	
15:15	15:30	1	29	521	0	370	1	0	0	12	3828	
15:30	15:45	0	43	497	0	378	1	0	0	19	3943	
15:45	16:00	0	31	552	0	371	3	0	0	4	4051	
16:00	16:15	1	30	553	0	399	0	0	0	12	4105	
16:15	16:30	0	34	596	0	407	1	0	0	11	4204	
16:30	16:45	0	35	614	0	384	0	0	0	13	4199	
16:45	17:00	0	53	521	0	427	1	0	0	13	4235	Peak
17:00	17:15	0	43	608	0	434	0	0	0	9	4193	
17:15	17:30	0	44	596	0	396	1	0	1	6		
17:30	17:45	0	50	626	0	393	0	0	0	13		
17:45	18:00	1	51	520	0	391	2	0	0	8		

Peak Time		North Approach Princess Hw			South Approach Princess Hw		West Approach Strictland S				Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
7:15	8:15	0	64	1366	0	2547	2	0	0	80	4059
16:45	17:45	0	190	2351	0	1650	2	0	1	41	4235

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy



Light Vehicles

Time		North Approach Princess Hw			South Approach Princess Hw		West Approach Strictland S			
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
7:00	7:15	0	16	295	0	587	0	0	0	9
7:15	7:30	0	16	320	0	574	0	0	0	16
7:30	7:45	0	10	333	0	630	1	0	0	22
7:45	8:00	0	15	302	0	613	1	0	0	18
8:00	8:15	0	16	297	0	623	0	0	0	23
8:15	8:30	0	12	312	0	580	0	0	0	12
8:30	8:45	0	29	265	0	532	0	0	0	9
8:45	9:00	0	35	269	0	511	1	0	0	14
9:00	9:15	0	16	255	0	430	0	0	0	11
9:15	9:30	0	18	238	0	348	1	0	0	1
14:30	14:45	0	17	364	0	320	1	0	0	11
14:45	15:00	0	21	391	0	323	3	0	0	5
15:00	15:15	0	35	428	0	353	0	0	0	8
15:15	15:30	1	28	499	0	345	1	0	0	12
15:30	15:45	0	43	481	0	361	1	0	0	18
15:45	16:00	0	30	532	0	352	3	0	0	4
16:00	16:15	1	28	539	0	380	0	0	0	12
16:15	16:30	0	34	582	0	389	1	0	0	11
16:30	16:45	0	35	598	0	368	0	0	0	12
16:45	17:00	0	53	507	0	411	1	0	0	12
17:00	17:15	0	41	597	0	416	0	0	0	9
17:15	17:30	0	43	584	0	387	1	0	0	6
17:30	17:45	0	50	612	0	381	0	0	0	13
17:45	18:00	1	50	509	0	383	2	0	0	8

Peak Time		North Approach Princess Hw			South Approach Princess Hw		West Approach Strictland S				Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
7:15	8:15	0	57	1252	0	2440	2	0	0	79	3830
16:45	17:45	0	187	2300	0	1595	2	0	0	40	4124

Heavy Vehicles

Time		North Approach Princess Hw			South Approach Princess Hw		West Approach Strictland S			
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
7:00	7:15	0	3	22	0	31	0	0	0	0
7:15	7:30	0	2	36	0	24	0	0	0	0
7:30	7:45	0	3	28	0	29	0	0	0	0
7:45	8:00	0	2	24	0	22	0	0	0	1
8:00	8:15	0	0	26	0	32	0	0	0	0
8:15	8:30	0	0	32	0	16	1	0	0	1
8:30	8:45	0	3	26	0	23	0	0	0	0
8:45	9:00	0	1	35	0	30	0	0	0	1
9:00	9:15	0	0	56	0	55	0	0	0	0
9:15	9:30	0	0	29	0	25	0	0	0	0
14:30	14:45	0	0	20	0	22	0	0	0	0
14:45	15:00	0	0	26	0	16	0	0	0	0
15:00	15:15	0	0	16	0	15	0	0	0	0
15:15	15:30	0	1	22	0	25	0	0	0	0
15:30	15:45	0	0	16	0	17	0	0	0	1
15:45	16:00	0	1	20	0	19	0	0	0	0
16:00	16:15	0	2	14	0	19	0	0	0	0
16:15	16:30	0	0	14	0	18	0	0	0	0
16:30	16:45	0	0	16	0	16	0	0	0	1
16:45	17:00	0	0	14	0	16	0	0	0	1
17:00	17:15	0	2	11	0	18	0	0	0	0
17:15	17:30	0	1	12	0	9	0	0	1	0
17:30	17:45	0	0	14	0	12	0	0	0	0
17:45	18:00	0	1	11	0	8	0	0	0	0

Peak Time		North Approach Princess Hw			South Approach Princess Hw		West Approach Strictland S				Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
7:15	8:15	0	7	114	0	107	0	0	0	1	229
16:45	17:45	0	3	51	0	55	0	0	1	1	111

Queue

Time		North	West
Period Start	Period End		
7:00	7:05	5	0
7:05	7:10	3	0
7:10	7:15	0	2
7:15	7:20	2	2
7:20	7:25	5	2
7:25	7:30	4	4
7:30	7:35	0	3
7:35	7:40	4	3
7:40	7:45	3	0
7:45	7:50	4	3
7:50	7:55	2	2
7:55	8:00	3	3
8:00	8:05	3	2
8:05	8:10	3	2
8:10	8:15	3	2
8:15	8:20	3	0
8:20	8:25	2	2
8:25	8:30	2	0
8:30	8:35	4	0
8:35	8:40	4	0
8:40	8:45	4	3
8:45	8:50	3	3
8:50	8:55	6	0
8:55	9:00	3	0
9:00	9:05	0	2
9:05	9:10	2	0
9:10	9:15	2	0
9:15	9:20	0	0
9:20	9:25	3	0
9:25	9:30	0	0
14:30	14:35	0	0
14:35	14:40	0	0
14:40	14:45	0	0
14:45	14:50	3	0
14:50	14:55	0	0
14:55	15:00	5	0
15:00	15:05	3	0
15:05	15:10	0	0
15:10	15:15	0	0
15:15	15:20	0	0
15:20	15:25	2	0
15:25	15:30	5	0
15:30	15:35	2	2
15:35	15:40	6	3
15:40	15:45	3	3
15:45	15:50	3	0
15:50	15:55	2	0
15:55	16:00	3	0
16:00	16:05	2	2
16:05	16:10	2	2
16:10	16:15	2	2
16:15	16:20	0	0
16:20	16:25	2	0
16:25	16:30	4	0
16:30	16:35	3	2
16:35	16:40	0	2
16:40	16:45	0	0
16:45	16:50	4	0
16:50	16:55	0	0
16:55	17:00	4	2
17:00	17:05	2	0
17:05	17:10	2	0
17:10	17:15	4	0
17:15	17:20	5	0
17:20	17:25	3	2
17:25	17:30	2	0
17:30	17:35	4	2
17:35	17:40	4	2
17:40	17:45	5	0
17:45	17:50	3	0
17:50	17:55	0	0
17:55	18:00	3	2

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

trafficsurvey.com.au

Intersection of Veno St and Princess Hwy, Heathcote

GPS	-34.086339, 151.009257
Date:	Wed 12/06/24
Weather:	Fine
Suburban:	Heathcote
Customer:	McLaren

North:	Princess Hwy
East:	N/A
South:	Princess Hwy
West:	Veno St

Survey Period	AM:	7:00 AM-9:30 AM
	PM:	2:30 PM-6:00 PM
Traffic Peak	AM:	7:30 AM-8:30 AM
	PM:	4:45 PM-5:45 PM

All Vehicles

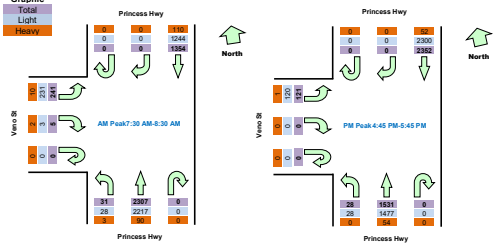
Time		North Approach Princess Hwy			South Approach Princess Hwy			West Approach Veno St			Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
7:00	7:15	0	0	317	0	592	7	0	1	26	3895	
7:15	7:30	0	0	356	0	544	3	0	0	54	3937	
7:30	7:45	0	0	361	0	597	2	0	2	63	3938	Peak
7:45	8:00	0	0	326	0	569	7	0	1	67	3769	
8:00	8:15	0	0	323	0	593	7	0	0	62	3655	
8:15	8:30	0	0	344	0	548	15	0	2	49	3471	
8:30	8:45	0	0	291	0	500	10	0	0	55	3161	
8:45	9:00	0	0	304	0	489	10	0	0	53		
9:00	9:15	0	0	311	0	447	5	0	0	38		
9:15	9:30	0	0	267	0	353	7	0	0	21		
14:30	14:45	0	0	384	0	323	5	0	0	20	3220	
14:45	15:00	0	0	417	1	327	6	0	1	15	3368	
15:00	15:15	0	0	444	0	325	6	0	0	43	3534	
15:15	15:30	0	0	521	1	343	9	0	1	28	3676	
15:30	15:45	0	0	497	0	353	4	0	0	26	3787	
15:45	16:00	0	0	552	0	352	7	0	0	22	3909	
16:00	16:15	0	0	553	0	379	8	0	0	20	3933	
16:15	16:30	0	0	596	0	371	9	0	1	37	4023	
16:30	16:45	0	0	614	0	360	4	0	0	24	4009	
16:45	17:00	0	0	521	0	399	8	0	0	29	4032	Peak
17:00	17:15	0	0	608	0	407	8	0	0	27	3992	
17:15	17:30	0	0	597	0	367	6	0	0	30		
17:30	17:45	0	0	626	0	358	6	0	0	35		
17:45	18:00	0	0	520	0	365	4	0	0	28		

Peak Time		North Approach Princess Hwy			South Approach Princess Hwy			West Approach Veno St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
7:30	8:30	0	0	1354	0	2307	31	0	5	241	3938
16:45	17:45	0	0	2352	0	1531	28	0	0	121	4032

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy



Light Vehicles

Time		North Approach Princess Hwy			South Approach Princess Hwy			West Approach Veno St			Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
7:00	7:15	0	0	295	0	561	7	0	1	26		
7:15	7:30	0	0	320	0	521	2	0	0	53		
7:30	7:45	0	0	333	0	570	2	0	0	61		
7:45	8:00	0	0	302	0	550	6	0	1	64		
8:00	8:15	0	0	297	0	566	7	0	0	57		
8:15	8:30	0	0	312	0	531	13	0	2	49		
8:30	8:45	0	0	265	0	477	10	0	0	55		
8:45	9:00	0	0	269	0	462	9	0	0	50		
9:00	9:15	0	0	255	0	392	5	0	0	38		
9:15	9:30	0	0	238	0	329	7	0	0	20		
14:30	14:45	0	0	364	0	301	5	0	0	20		
14:45	15:00	0	0	391	1	311	6	0	1	15		
15:00	15:15	0	0	428	0	311	6	0	0	42		
15:15	15:30	0	0	499	1	318	9	0	1	28		
15:30	15:45	0	0	481	0	336	4	0	0	26		
15:45	16:00	0	0	532	0	333	7	0	0	22		
16:00	16:15	0	0	539	0	360	6	0	0	20		
16:15	16:30	0	0	582	0	353	8	0	1	37		
16:30	16:45	0	0	598	0	344	4	0	0	24		
16:45	17:00	0	0	507	0	383	8	0	0	29		
17:00	17:15	0	0	597	0	389	8	0	0	27		
17:15	17:30	0	0	584	0	358	6	0	0	30		
17:30	17:45	0	0	612	0	347	6	0	0	34		
17:45	18:00	0	0	509	0	357	4	0	0	28		

Peak Time		North Approach Princess Hwy			South Approach Princess Hwy			West Approach Veno St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
7:30	8:30	0	0	1244	0	2217	28	0	3	231	3723
16:45	17:45	0	0	2300	0	1477	28	0	0	120	3925

Heavy Vehicles

Time		North Approach Princess Hwy			South Approach Princess Hwy			West Approach Veno St			Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
7:00	7:15	0	0	22	0	31	0	0	0	0		
7:15	7:30	0	0	36	0	23	1	0	0	1		
7:30	7:45	0	0	28	0	27	0	0	2	2		
7:45	8:00	0	0	24	0	19	1	0	0	3		
8:00	8:15	0	0	26	0	27	0	0	0	5		
8:15	8:30	0	0	32	0	17	2	0	0	0		
8:30	8:45	0	0	26	0	23	0	0	0	0		
8:45	9:00	0	0	35	0	27	1	0	0	3		
9:00	9:15	0	0	56	0	55	0	0	0	0		
9:15	9:30	0	0	29	0	24	0	0	0	1		
14:30	14:45	0	0	20	0	22	0	0	0	0		
14:45	15:00	0	0	26	0	16	0	0	0	0		
15:00	15:15	0	0	16	0	14	0	0	0	1		
15:15	15:30	0	0	22	0	25	0	0	0	0		
15:30	15:45	0	0	16	0	17	0	0	0	0		
15:45	16:00	0	0	20	0	19	0	0	0	0		
16:00	16:15	0	0	14	0	19	2	0	0	0		
16:15	16:30	0	0	14	0	18	1	0	0	0		
16:30	16:45	0	0	16	0	16	0	0	0	0		
16:45	17:00	0	0	14	0	16	0	0	0	0		
17:00	17:15	0	0	11	0	18	0	0	0	0		
17:15	17:30	0	0	13	0	9	0	0	0	0		
17:30	17:45	0	0	14	0	11	0	0	0	1		
17:45	18:00	0	0	11	0	8	0	0	0	0		

Peak Time		North Approach Princess Hwy			South Approach Princess Hwy			West Approach Veno St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
7:30	8:30	0	0	110	0	90	3	0	2	10	215
16:45	17:45	0	0	52	0	54	0	0	0	1	107

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY trafficsurvey.com.au

Intersection of Veno St and Rosebery St, Heathcote

GPS -34.086052, 151.007218

Date:	Wed 12/06/24
Weather:	Fine
Suburban:	Heathcote
Customer:	McLaren

North:	Rosebery St
East:	Veno St
South:	N/A
West:	Rosebery St

Survey Period	AM:	7:00 AM-9:30 AM
	PM:	2:30 PM-6:00 PM
Traffic Peak	AM:	7:15 AM-8:15 AM
	PM:	2:45 PM-3:45 PM

All Vehicles

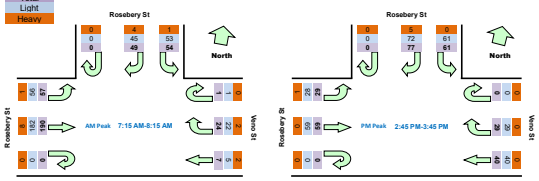
Time		North Approach Rosebery S			East Approach Veno St			West Approach Rosebery S			Hourly Total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	Hour	Peak
7:00	7:15	0	11	7	0	1	2	1	19	5	325	
7:15	7:30	0	7	12	1	3	1	0	37	8	382	Peak
7:30	7:45	0	14	12	0	4	0	0	53	16	372	
7:45	8:00	0	12	20	0	6	3	0	51	19	381	
8:00	8:15	0	16	10	0	11	3	0	49	14	366	
8:15	8:30	0	10	8	0	4	3	0	31	3	326	
8:30	8:45	0	31	18	0	4	13	1	37	4	314	
8:45	9:00	0	34	7	0	10	15	0	25	5		
9:00	9:15	0	9	12	0	4	7	0	27	4		
9:15	9:30	0	9	8	0	2	10	0	15	3		
14:30	14:45	0	9	4	0	1	4	0	10	2	249	
14:45	15:00	0	20	18	0	2	7	0	12	6	295	Peak
15:00	15:15	0	22	20	0	8	23	0	17	8	278	
15:15	15:30	0	14	12	0	6	9	0	7	8	234	
15:30	15:45	0	21	11	0	13	1	0	23	7	255	
15:45	16:00	0	14	7	0	2	8	0	16	1	260	
16:00	16:15	0	20	10	0	4	3	0	15	2	274	
16:15	16:30	0	18	8	0	9	9	0	28	5	287	
16:30	16:45	0	30	11	0	5	5	0	17	13	284	
16:45	17:00	0	14	8	0	7	6	0	23	4	280	
17:00	17:15	0	15	10	0	5	10	0	23	4	275	
17:15	17:30	0	16	18	0	3	8	0	21	8		
17:30	17:45	0	21	13	0	8	6	0	27	2		
17:45	18:00	0	14	10	0	6	6	0	16	5		

Peak Time		North Approach Rosebery S			East Approach Veno St			West Approach Rosebery S			Peak
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	total
7:15	8:15	0	49	54	1	24	7	0	190	57	382
14:45	15:45	0	77	61	0	29	40	0	59	29	295

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy



Light Vehicles

Time		North Approach Rosebery S			East Approach Veno St			West Approach Rosebery S		
Period Start	Period End	U	R	L	U	R	WB	U	EB	L
7:00	7:15	0	11	6	0	1	2	1	19	5
7:15	7:30	0	7	12	1	2	1	0	37	8
7:30	7:45	0	12	11	0	4	0	0	49	16
7:45	8:00	0	10	20	0	5	2	0	48	19
8:00	8:15	0	16	10	0	11	2	0	48	13
8:15	8:30	0	10	8	0	4	3	0	30	3
8:30	8:45	0	30	17	0	4	13	1	36	4
8:45	9:00	0	34	7	0	10	15	0	24	4
9:00	9:15	0	9	12	0	3	7	0	27	4
9:15	9:30	0	9	8	0	2	9	0	14	3
14:30	14:45	0	8	4	0	1	4	0	10	2
14:45	15:00	0	19	18	0	2	7	0	12	5
15:00	15:15	0	20	20	0	8	23	0	17	8
15:15	15:30	0	13	12	0	6	9	0	7	8
15:30	15:45	0	20	11	0	13	1	0	23	7
15:45	16:00	0	14	7	0	2	8	0	16	1
16:00	16:15	0	19	10	0	4	2	0	15	2
16:15	16:30	0	18	8	0	8	9	0	28	5
16:30	16:45	0	30	11	0	5	5	0	17	13
16:45	17:00	0	14	8	0	7	6	0	23	3
17:00	17:15	0	15	10	0	5	10	0	23	4
17:15	17:30	0	16	18	0	3	8	0	21	8
17:30	17:45	0	21	13	0	8	6	0	27	2
17:45	18:00	0	14	10	0	6	6	0	16	5

Peak Time		North Approach Rosebery S			East Approach Veno St			West Approach Rosebery S			Peak
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	total
7:15	8:15	0	45	53	1	22	5	0	182	56	364
14:45	15:45	0	72	61	0	29	40	0	59	28	289

Heavy Vehicles

Time		North Approach Rosebery S			East Approach Veno St			West Approach Rosebery S		
Period Start	Period End	U	R	L	U	R	WB	U	EB	L
7:00	7:15	0	0	1	0	0	0	0	0	0
7:15	7:30	0	0	0	0	1	0	0	0	0
7:30	7:45	0	2	1	0	0	0	0	4	0
7:45	8:00	0	2	0	0	1	1	0	3	0
8:00	8:15	0	0	0	0	0	1	0	1	1
8:15	8:30	0	0	0	0	0	0	0	1	0
8:30	8:45	0	1	1	0	0	0	0	1	0
8:45	9:00	0	0	0	0	0	0	0	1	1
9:00	9:15	0	0	0	0	1	0	0	0	0
9:15	9:30	0	0	0	0	0	1	0	1	0
14:30	14:45	0	1	0	0	0	0	0	0	0
14:45	15:00	0	1	0	0	0	0	0	0	1
15:00	15:15	0	2	0	0	0	0	0	0	0
15:15	15:30	0	1	0	0	0	0	0	0	0
15:30	15:45	0	1	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0	0	0
16:00	16:15	0	1	0	0	0	1	0	0	0
16:15	16:30	0	0	0	0	1	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	1
17:00	17:15	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0

Peak Time		North Approach Rosebery S			East Approach Veno St			West Approach Rosebery S			Peak
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	total
7:15	8:15	0	4	1	0	2	2	0	8	1	18
14:45	15:45	0	5	0	0	0	0	0	0	1	6

ANNEXURE C: SIDRA RESULTS
(16 SHEETS)

MOVEMENT SUMMARY

Site: 01 [EX AM Princes Hwy / Oliver St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Princes Highway / Oliver Street
Existing Conditions
AM Peak Period
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Princes Highway (S)															
1	L2	All MCs	13	8.3	13	8.3	0.530	5.8	LOS A	2.4	17.1	0.05	0.05	0.05	56.6
2	T1	All MCs	2368	3.9	2368	3.9	* 0.530	0.4	LOS A	2.4	17.1	0.05	0.05	0.05	59.5
Approach			2381	3.9	2381	3.9	0.530	0.4	LOS A	2.4	17.1	0.05	0.05	0.05	59.5
North: Princes Highway (N)															
8	T1	All MCs	1362	8.6	1362	8.6	0.280	0.2	LOS A	0.8	6.2	0.03	0.03	0.03	59.7
9	R2	All MCs	68	1.5	68	1.5	* 0.407	9.6	LOS A	1.7	12.4	0.40	0.69	0.40	47.3
Approach			1431	8.2	1431	8.2	0.407	0.6	LOS A	1.7	12.4	0.05	0.06	0.05	59.0
West: Oliver Street (W)															
10	L2	All MCs	93	6.8	93	6.8	0.407	67.3	LOS E	5.9	44.1	0.96	0.78	0.96	23.2
12	R2	All MCs	40	5.3	40	5.3	* 0.521	81.7	LOS F	2.9	21.1	1.00	0.75	1.02	25.2
Approach			133	6.3	133	6.3	0.521	71.7	LOS F	5.9	44.1	0.97	0.77	0.98	23.9
All Vehicles			3944	5.6	3944	5.6	0.530	2.9	LOS A	5.9	44.1	0.08	0.07	0.08	56.2

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

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 01 [EX PM Princes Hwy / Oliver St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Princes Highway / Oliver Street
Existing Conditions
PM Peak Period
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Princes Highway (S)															
1	L2	All MCs	28	0.0	28	0.0	0.390	5.9	LOS A	1.8	13.1	0.06	0.08	0.06	56.5
2	T1	All MCs	1578	3.5	1578	3.5	0.390	0.6	LOS A	1.8	13.1	0.04	0.05	0.04	59.1
Approach			1606	3.5	1606	3.5	0.390	0.7	LOS A	1.8	13.1	0.04	0.05	0.04	59.1
North: Princes Highway (N)															
8	T1	All MCs	2315	2.3	2315	2.3	* 0.472	0.2	LOS A	1.9	13.6	0.04	0.04	0.04	59.7
9	R2	All MCs	161	1.3	161	1.3	0.466	11.2	LOS A	4.9	34.5	0.50	0.73	0.50	45.9
Approach			2476	2.2	2476	2.2	0.472	1.0	LOS A	4.9	34.5	0.07	0.08	0.07	58.5
West: Oliver Street (W)															
10	L2	All MCs	63	1.7	63	1.7	0.178	56.4	LOS D	3.6	25.6	0.87	0.75	0.87	25.8
12	R2	All MCs	58	0.0	58	0.0	* 0.485	77.1	LOS F	4.0	28.1	1.00	0.76	1.00	26.1
Approach			121	0.9	121	0.9	0.485	66.3	LOS E	4.0	28.1	0.93	0.75	0.93	25.9
All Vehicles			4203	2.7	4203	2.7	0.485	2.7	LOS A	4.9	34.5	0.08	0.09	0.08	56.3

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

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 02 [EX AM Princes Hwy / Strickland St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Princes Highway / Strickland Street
Existing Conditions
AM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Princes Highway (S)															
1	L2	All MCs	2	0.0	2	0.0	0.471	6.4	LOS A	0.0	0.0	0.00	0.00	0.00	63.4
2	T1	All MCs	2681	4.2	2681	4.2	0.471	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.6
Approach			2683	4.2	2683	4.2	0.471	0.1	NA	0.0	0.0	0.00	0.00	0.00	69.6
North: Princes Highway (N)															
8	T1	All MCs	1438	8.3	1438	8.3	0.259	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	67	10.9	67	10.9	0.513	47.6	LOS D	1.9	14.7	0.93	1.07	1.30	31.5
Approach			1505	8.5	1505	8.5	0.513	2.2	NA	1.9	14.7	0.04	0.05	0.06	56.5
West: Strickland Street (W)															
10	L2	All MCs	84	1.3	84	1.3	0.368	25.2	LOS B	1.8	13.1	0.76	0.97	1.00	38.5
Approach			84	1.3	84	1.3	0.368	25.2	LOS B	1.8	13.1	0.76	0.97	1.00	38.5
All Vehicles			4273	5.6	4273	5.6	0.513	1.3	NA	1.9	14.7	0.03	0.04	0.04	62.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 02 [EX PM Princes Hwy / Strickland St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Princes Highway / Strickland Street
Existing Conditions
PM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Princes Highway (S)															
1	L2	All MCs	2	0.0	2	0.0	0.304	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	56.1
2	T1	All MCs	1737	3.3	1737	3.3	0.304	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			1739	3.3	1739	3.3	0.304	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
North: Princes Highway (N)															
8	T1	All MCs	2475	2.2	2475	2.2	0.429	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
9	R2	All MCs	200	1.6	200	1.6	0.567	22.5	LOS B	3.3	23.5	0.84	1.09	1.40	40.1
Approach			2675	2.1	2675	2.1	0.567	1.8	NA	3.3	23.5	0.06	0.08	0.11	56.7
West: Strickland Street (W)															
10	L2	All MCs	43	2.4	43	2.4	0.122	12.2	LOS A	0.5	3.5	0.56	0.74	0.56	44.5
Approach			43	2.4	43	2.4	0.122	12.2	LOS A	0.5	3.5	0.56	0.74	0.56	44.5
All Vehicles			4457	2.6	4457	2.6	0.567	1.2	NA	3.3	23.5	0.04	0.06	0.07	57.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 03 [EX AM Princes Hwy / Veno St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Princes Highway / Veno Street
Existing Conditions
AM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Princes Highway (S)															
1	L2	All MCs	33	9.7	33	9.7	0.432	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	55.5
2	T1	All MCs	2428	3.9	2428	3.9	0.432	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.5
Approach			2461	4.0	2461	4.0	0.432	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.4
North: Princes Highway (N)															
8	T1	All MCs	1425	8.1	1425	8.1	0.349	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			1425	8.1	1425	8.1	0.349	0.2	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Veno Street (W)															
10	L2	All MCs	254	4.1	254	4.1	0.551	15.3	LOS B	2.8	20.4	0.80	1.07	1.29	37.4
12	R2	All MCs	5	40.0	5	40.0	1.000	206.3	LOS F	1.8	16.6	1.00	1.00	1.00	10.2
Approach			259	4.9	259	4.9	1.000	19.1	LOS B	2.8	20.4	0.80	1.07	1.28	35.3
All Vehicles			4145	5.5	4145	5.5	1.000	1.4	NA	2.8	20.4	0.05	0.07	0.08	55.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 03 [EX PM Princes Hwy / Veno St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Princes Highway / Veno Street
Existing Conditions
PM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Princes Highway (S)															
1	L2	All MCs	29	0.0	29	0.0	0.287	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	56.1
2	T1	All MCs	1612	3.5	1612	3.5	0.287	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.6
Approach			1641	3.5	1641	3.5	0.287	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.5
North: Princes Highway (N)															
8	T1	All MCs	2476	2.2	2476	2.2	0.585	0.6	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach			2476	2.2	2476	2.2	0.585	0.6	NA	0.0	0.0	0.00	0.00	0.00	59.5
West: Veno Street (W)															
10	L2	All MCs	127	0.8	127	0.8	0.171	8.6	LOS A	0.6	4.4	0.52	0.76	0.52	46.0
Approach			127	0.8	127	0.8	0.171	8.6	LOS A	0.6	4.4	0.52	0.76	0.52	46.0
All Vehicles			4244	2.7	4244	2.7	0.585	0.7	NA	0.6	4.4	0.02	0.03	0.02	58.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 04 [EX AM Roseberry St / Veno St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roseberry Street / Veno Street
Existing Conditions
AM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Veno Street (E)															
5	T1	All MCs	7	28.6	7	28.6	0.023	0.9	LOS A	0.1	0.8	0.35	0.47	0.35	46.8
6	R2	All MCs	25	8.3	25	8.3	0.023	5.6	LOS A	0.1	0.8	0.35	0.47	0.35	45.4
Approach			33	12.9	33	12.9	0.023	4.5	NA	0.1	0.8	0.35	0.47	0.35	45.7
North: Roseberry Street (N)															
7	L2	All MCs	57	1.9	57	1.9	0.096	5.3	LOS A	0.4	2.6	0.31	0.57	0.31	45.2
9	R2	All MCs	52	8.2	52	8.2	0.096	5.8	LOS A	0.4	2.6	0.31	0.57	0.31	44.9
Approach			108	4.9	108	4.9	0.096	5.5	LOS A	0.4	2.6	0.31	0.57	0.31	45.1
West: Roseberry Street (W)															
10	L2	All MCs	60	1.8	60	1.8	0.138	4.6	LOS A	0.0	0.0	0.00	0.13	0.00	48.0
11	T1	All MCs	200	4.2	200	4.2	0.138	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	49.2
Approach			260	3.6	260	3.6	0.138	1.1	NA	0.0	0.0	0.00	0.13	0.00	48.9
All Vehicles			401	4.7	401	4.7	0.138	2.6	NA	0.4	2.6	0.11	0.27	0.11	47.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 04 [EX PM Roseberry St / Veno St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roseberry Street / Veno Street
Existing Conditions
PM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Veno Street (E)															
5	T1	All MCs	42	0.0	42	0.0	0.040	0.2	LOS A	0.2	1.1	0.15	0.25	0.15	48.3
6	R2	All MCs	31	0.0	31	0.0	0.040	4.8	LOS A	0.2	1.1	0.15	0.25	0.15	47.0
Approach			73	0.0	73	0.0	0.040	2.1	NA	0.2	1.1	0.15	0.25	0.15	47.7
North: Roseberry Street (N)															
7	L2	All MCs	64	0.0	64	0.0	0.116	4.8	LOS A	0.4	3.1	0.19	0.53	0.19	45.5
9	R2	All MCs	81	6.5	81	6.5	0.116	5.2	LOS A	0.4	3.1	0.19	0.53	0.19	45.2
Approach			145	3.6	145	3.6	0.116	5.0	LOS A	0.4	3.1	0.19	0.53	0.19	45.4
West: Roseberry Street (W)															
10	L2	All MCs	31	3.4	31	3.4	0.049	4.6	LOS A	0.0	0.0	0.00	0.18	0.00	47.8
11	T1	All MCs	62	0.0	62	0.0	0.049	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	49.0
Approach			93	1.1	93	1.1	0.049	1.5	NA	0.0	0.0	0.00	0.18	0.00	48.6
All Vehicles			311	2.0	311	2.0	0.116	3.3	NA	0.4	3.1	0.12	0.36	0.12	46.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 01 [FU AM Princes Hwy / Oliver St (Site Folder: Future)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Princes Highway / Oliver Street
Future Conditions
AM Peak Period
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Princes Highway (S)															
1	L2	All MCs	13	8.3	13	8.3	0.535	5.8	LOS A	2.4	17.2	0.05	0.06	0.05	56.6
2	T1	All MCs	2368	3.9	2368	3.9	* 0.535	0.4	LOS A	2.4	17.2	0.05	0.05	0.05	59.5
Approach			2381	3.9	2381	3.9	0.535	0.4	LOS A	2.4	17.2	0.05	0.05	0.05	59.4
North: Princes Highway (N)															
8	T1	All MCs	1362	8.6	1362	8.6	0.282	0.2	LOS A	0.8	6.2	0.03	0.03	0.03	59.7
9	R2	All MCs	68	1.5	68	1.5	* 0.409	10.0	LOS A	1.8	13.0	0.42	0.69	0.42	47.0
Approach			1431	8.2	1431	8.2	0.409	0.7	LOS A	1.8	13.0	0.05	0.06	0.05	59.0
West: Oliver Street (W)															
10	L2	All MCs	93	6.8	93	6.8	0.385	66.2	LOS E	5.9	43.6	0.96	0.78	0.96	23.5
12	R2	All MCs	46	4.5	46	4.5	* 0.515	80.1	LOS F	3.3	23.9	1.00	0.75	1.00	25.5
Approach			139	6.1	139	6.1	0.515	70.8	LOS F	5.9	43.6	0.97	0.77	0.97	24.2
All Vehicles			3951	5.5	3951	5.5	0.535	3.0	LOS A	5.9	43.6	0.08	0.08	0.08	56.1

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

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 01 [FU PM Princes Hwy / Oliver St (Site Folder: Future)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Princes Highway / Oliver Street
Future Conditions
PM Peak Period
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Princes Highway (S)															
1	L2	All MCs	28	0.0	28	0.0	0.393	5.9	LOS A	1.8	13.3	0.06	0.08	0.06	56.5
2	T1	All MCs	1578	3.5	1578	3.5	0.393	0.6	LOS A	1.8	13.3	0.04	0.05	0.04	59.1
Approach			1606	3.5	1606	3.5	0.393	0.7	LOS A	1.8	13.3	0.04	0.05	0.04	59.1
North: Princes Highway (N)															
8	T1	All MCs	2315	2.3	2315	2.3	* 0.476	0.3	LOS A	1.9	13.7	0.04	0.04	0.04	59.7
9	R2	All MCs	161	1.3	161	1.3	0.468	11.7	LOS A	5.1	35.9	0.52	0.74	0.52	45.6
Approach			2476	2.2	2476	2.2	0.476	1.0	LOS A	5.1	35.9	0.07	0.08	0.07	58.5
West: Oliver Street (W)															
10	L2	All MCs	63	1.7	63	1.7	0.172	55.5	LOS D	3.6	25.4	0.87	0.75	0.87	26.0
12	R2	All MCs	61	0.0	61	0.0	* 0.460	75.8	LOS F	4.2	29.3	1.00	0.76	1.00	26.3
Approach			124	0.8	124	0.8	0.460	65.5	LOS E	4.2	29.3	0.93	0.75	0.93	26.2
All Vehicles			4206	2.7	4206	2.7	0.476	2.8	LOS A	5.1	35.9	0.09	0.09	0.09	56.3

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

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 02 [FU AM Princes Hwy / Strickland St (Site Folder: Future)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Princes Highway / Strickland Street
Future Conditions
AM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Princes Highway (S)															
1	L2	All MCs	3	0.0	3	0.0	0.475	6.4	LOS A	0.0	0.0	0.00	0.00	0.00	63.3
2	T1	All MCs	2700	4.2	2700	4.2	0.475	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	69.5
Approach			2703	4.2	2703	4.2	0.475	0.1	NA	0.0	0.0	0.00	0.00	0.00	69.5
North: Princes Highway (N)															
8	T1	All MCs	1438	8.3	1438	8.3	0.259	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	76	9.7	76	9.7	0.572	50.4	LOS D	2.3	17.1	0.94	1.09	1.39	30.9
Approach			1514	8.4	1514	8.4	0.572	2.6	NA	2.3	17.1	0.05	0.05	0.07	56.0
West: Strickland Street (W)															
10	L2	All MCs	92	1.1	92	1.1	0.403	26.5	LOS B	2.1	14.9	0.77	0.99	1.06	38.2
Approach			92	1.1	92	1.1	0.403	26.5	LOS B	2.1	14.9	0.77	0.99	1.06	38.2
All Vehicles			4308	5.6	4308	5.6	0.572	1.5	NA	2.3	17.1	0.03	0.04	0.05	62.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 02 [FU PM Princes Hwy / Strickland St (Site Folder: Future)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Princes Highway / Strickland Street
Future Conditions
PM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Princes Highway (S)															
1	L2	All MCs	3	0.0	3	0.0	0.308	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	56.1
2	T1	All MCs	1761	3.3	1761	3.3	0.308	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			1764	3.3	1764	3.3	0.308	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
North: Princes Highway (N)															
8	T1	All MCs	2475	2.2	2475	2.2	0.429	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
9	R2	All MCs	228	1.4	228	1.4	0.658	25.6	LOS B	4.3	30.7	0.88	1.18	1.67	39.1
Approach			2703	2.1	2703	2.1	0.658	2.3	NA	4.3	30.7	0.07	0.10	0.14	56.1
West: Strickland Street (W)															
10	L2	All MCs	44	2.4	44	2.4	0.126	12.4	LOS A	0.5	3.6	0.57	0.75	0.57	44.5
Approach			44	2.4	44	2.4	0.126	12.4	LOS A	0.5	3.6	0.57	0.75	0.57	44.5
All Vehicles			4512	2.6	4512	2.6	0.658	1.5	NA	4.3	30.7	0.05	0.07	0.09	57.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 03 [FU AM Princes Hwy / Veno St (Site Folder: Future)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Princes Highway / Veno Street
Future Conditions
AM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Princes Highway (S)															
1	L2	All MCs	35	9.1	35	9.1	0.432	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
2	T1	All MCs	2428	3.9	2428	3.9	0.432	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.5
Approach			2463	4.0	2463	4.0	0.432	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.4
North: Princes Highway (N)															
8	T1	All MCs	1425	8.1	1425	8.1	0.349	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			1425	8.1	1425	8.1	0.349	0.2	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Veno Street (W)															
10	L2	All MCs	273	3.9	273	3.9	0.588	15.8	LOS B	3.2	22.8	0.81	1.10	1.38	37.4
12	R2	All MCs	5	40.0	5	40.0	1.000	206.3	LOS F	1.8	16.6	1.00	1.00	1.00	10.2
Approach			278	4.5	278	4.5	1.000	19.4	LOS B	3.2	22.8	0.81	1.10	1.37	35.4
All Vehicles			4166	5.4	4166	5.4	1.000	1.5	NA	3.2	22.8	0.05	0.08	0.09	55.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 03 [FU PM Princes Hwy / Veno St (Site Folder: Future)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Princes Highway / Veno Street
Future Conditions
PM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Princes Highway (S)															
1	L2	All MCs	34	0.0	34	0.0	0.288	5.6	LOS A	0.0	0.0	0.00	0.04	0.00	56.1
2	T1	All MCs	1612	3.5	1612	3.5	0.288	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.6
Approach			1645	3.5	1645	3.5	0.288	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.4
North: Princes Highway (N)															
8	T1	All MCs	2476	2.2	2476	2.2	0.585	0.6	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach			2476	2.2	2476	2.2	0.585	0.6	NA	0.0	0.0	0.00	0.00	0.00	59.5
West: Veno Street (W)															
10	L2	All MCs	152	0.7	152	0.7	0.202	8.7	LOS A	0.8	5.3	0.53	0.76	0.53	46.1
Approach			152	0.7	152	0.7	0.202	8.7	LOS A	0.8	5.3	0.53	0.76	0.53	46.1
All Vehicles			4273	2.6	4273	2.6	0.585	0.7	NA	0.8	5.3	0.02	0.03	0.02	58.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 04 [FU AM Roseberry St / Veno St (Site Folder: Future)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roseberry Street / Veno Street
Future Conditions
AM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Veno Street (E)															
5	T1	All MCs	12	18.2	12	18.2	0.026	0.9	LOS A	0.1	0.9	0.35	0.45	0.35	49.1
6	R2	All MCs	26	8.0	26	8.0	0.026	5.6	LOS A	0.1	0.9	0.35	0.45	0.35	46.3
Approach			38	11.1	38	11.1	0.026	4.2	NA	0.1	0.9	0.35	0.45	0.35	47.1
North: Roseberry Street (N)															
7	L2	All MCs	64	1.6	64	1.6	0.104	5.4	LOS A	0.4	2.8	0.32	0.57	0.32	45.9
9	R2	All MCs	54	7.8	54	7.8	0.104	5.9	LOS A	0.4	2.8	0.32	0.57	0.32	45.4
Approach			118	4.5	118	4.5	0.104	5.6	LOS A	0.4	2.8	0.32	0.57	0.32	45.7
West: Roseberry Street (W)															
10	L2	All MCs	60	1.8	60	1.8	0.139	4.6	LOS A	0.0	0.0	0.00	0.12	0.00	48.0
11	T1	All MCs	201	4.2	201	4.2	0.139	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	49.3
Approach			261	3.6	261	3.6	0.139	1.1	NA	0.0	0.0	0.00	0.12	0.00	49.0
All Vehicles			417	4.5	417	4.5	0.139	2.7	NA	0.4	2.8	0.12	0.28	0.12	47.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 04 [FU PM Roseberry St / Veno St (Site Folder: Future)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Roseberry Street / Veno Street
Future Conditions
PM Peak Period
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Veno Street (E)															
5	T1	All MCs	49	0.0	49	0.0	0.046	0.2	LOS A	0.2	1.2	0.15	0.25	0.15	49.6
6	R2	All MCs	34	0.0	34	0.0	0.046	4.9	LOS A	0.2	1.2	0.15	0.25	0.15	47.9
Approach			83	0.0	83	0.0	0.046	2.1	NA	0.2	1.2	0.15	0.25	0.15	48.9
North: Roseberry Street (N)															
7	L2	All MCs	100	0.0	100	0.0	0.141	5.1	LOS A	0.6	4.0	0.19	0.53	0.19	47.5
9	R2	All MCs	82	6.4	82	6.4	0.141	5.3	LOS A	0.6	4.0	0.19	0.53	0.19	46.0
Approach			182	2.9	182	2.9	0.141	5.2	LOS A	0.6	4.0	0.19	0.53	0.19	46.8
West: Roseberry Street (W)															
10	L2	All MCs	31	3.4	31	3.4	0.050	4.6	LOS A	0.0	0.0	0.00	0.17	0.00	48.0
11	T1	All MCs	65	0.0	65	0.0	0.050	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	49.3
Approach			96	1.1	96	1.1	0.050	1.5	NA	0.0	0.0	0.00	0.17	0.00	48.9
All Vehicles			361	1.7	361	1.7	0.141	3.5	NA	0.6	4.0	0.13	0.37	0.13	47.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

ANNEXURE D: TCS PLAN – PRINCES HIGHWAY / OLIVER STREET, HEATHCOTE
(1 SHEET)

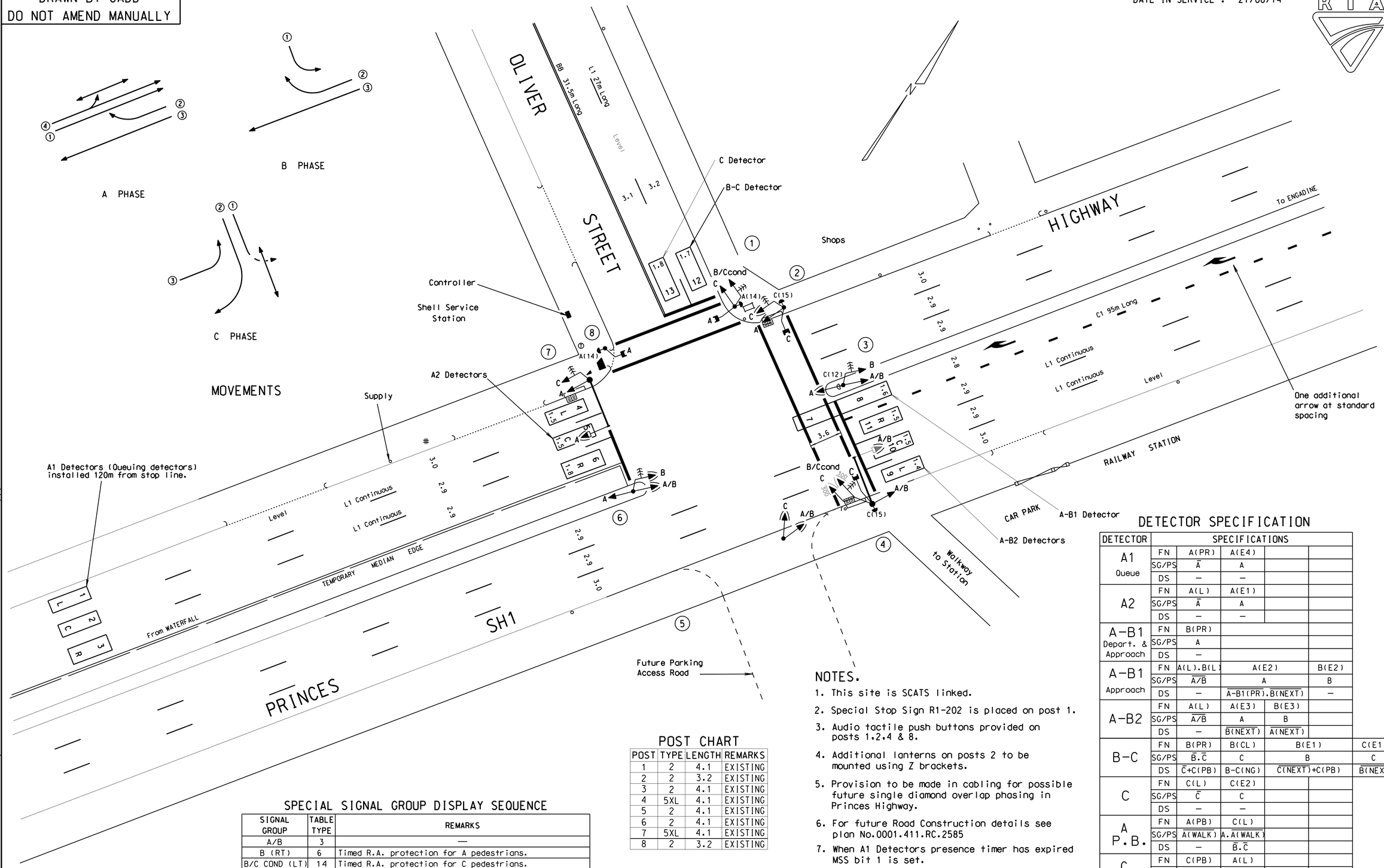
DRAWN BY CADD
DO NOT AMEND MANUALLY

DATE IN SERVICE : 27/08/74

R T A

0001.411.VV.0991

MOVEMENTS



SPECIAL SIGNAL GROUP DISPLAY SEQUENCE

SIGNAL GROUP	TABLE TYPE	REMARKS
A/B	3	—
B (RT)	6	Timed R.A. protection for A pedestrians.
B/C COND (LT)	14	Timed R.A. protection for C pedestrians.
C (LT)	12	Timed R.A. protection for A pedestrians.

POST CHART

POST	TYPE	LENGTH	REMARKS
1	2	4.1	EXISTING
2	2	3.2	EXISTING
3	2	4.1	EXISTING
4	5XL	4.1	EXISTING
5	2	4.1	EXISTING
6	2	4.1	EXISTING
7	5XL	4.1	EXISTING
8	2	3.2	EXISTING

NOTES.

1. This site is SCATS linked.
2. Special Stop Sign R1-202 is placed on post 1.
3. Audio tactile push buttons provided on posts 1.2.4 & 8.
4. Additional lanterns on posts 2 to be mounted using Z brackets.
5. Provision to be made in cabling for possible future single diamond overlap phasing in Princes Highway.
6. For future Road Construction details see plan No.0001.411.RC.2585
7. When A1 Detectors presence timer has expired MSS bit 1 is set.
8. When C Pedestrian demand MSS Bit 2 is set.

DETECTOR SPECIFICATION

DETECTOR		SPECIFICATIONS				
A1 Queue	FN	A(PR)	A(E4)			
	SG/PS	$\bar{A}$	A			
	DS	—	—			
A2	FN	A(L)	A(E1)			
	SG/PS	$\bar{A}$	A			
	DS	—	—			
A-B1 Depart. & Approach	FN	B(PR)				
	SG/PS	A				
	DS	—				
A-B1 Approach	FN	A(L).B(L)	A(E2)		B(E2)	
	SG/PS	$\bar{A}.\bar{B}$	A		B	
	DS	—	$\bar{A}$-B1(PR).$\bar{B}$(NEXT)		—	
A-B2	FN	A(L)	A(E3)	B(E3)		
	SG/PS	$\bar{A}.\bar{B}$	A	B		
	DS	—	$\bar{B}$(NEXT)	$\bar{A}$(NEXT)		
B-C	FN	B(PR)	B(CL)	B(E1)		C(E1)
	SG/PS	$\bar{B}.\bar{C}$	C	B		C
	DS	$\bar{C}$+C(PB)	B-C(NG)	$\bar{C}$(NEXT)+C(PB)		$\bar{B}$(NEXT)
C	FN	C(L)	C(E2)			
	SG/PS	$\bar{C}$	C			
	DS	—	—			
A P.B.	FN	A(PB)	C(L)			
	SG/PS	$\bar{A}$(WALK)	A.$\bar{A}$(WALK)			
	DS	—	$\bar{B}.\bar{C}$			
C P.B.	FN	C(PB)	A(L)			
	SG/PS	$\bar{C}$(WALK)	C.$\bar{C}$(WALK)			
	DS	—	$\bar{A}.\bar{B}$			

A	ORIGINAL ISSUE
'B'	Issue J/04433 23-7-74 Detector 'B' R was type 2 J.G.
'C'	Issue J/04346 19-11-74 W.A.E. (21-8-74) S.K.
'D'	Issue J/1 WE195 13-11-78 Presence Detectors replace Magnetometer Detectors in Oliver St. K.R.N. 16-7-79
E	ISSUE J1.SY4005 14.4.88 Design plan altered to include right turn bay as per 15.4.88 B.L.
F	Issue J1.SD04012 A1 detector phase from Princes Hwy to Oliver St added, A ped. facility and post 8 added. SSGDS. Det Schedule and post chart added. Notes altered.
G	ISSUE J1 SG691 6/11/01 Drawing Converted to Micro-Station Format and updated. Audio tactile push buttons provided on posts 1,2,4 & 8. Additional lanterns on posts 2 to be mounted using Z brackets to civil works removed. 4/7/02 TB
H	ISSUE J1 SC 821 25/09/02 REVISED: POSTS 4 & 7 WITH TYPE 5XL. RELOCATED: POST 5 LANTERNS OF EXISTING POST 5 TO POST 4. ADDED: LANTERNS POSTS 4 & 7. GRL 18/12/02
I	ISSUE:J1SC1408 29/10/07 DETECTORS 1.2 & 3 ADDED. DETECTOR NUMBERS REVISED. NOTE 7 ADDED. NOTES REVISED. K.R.N./R.W.A. 21/10/08
J	ISSUE: J1 SC1408 NOTE 8 ADDED. NOTE 7 REVISED. 10/02/09 F.P./R.W.A.

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABBS.	VD003-6
STOP VALVE	▲	STD POSIT	VD001-5
GAS VALVE	#	DET SCHED EXP	VD018-10
SEWER MANHOLE	Ⓢ	PRES. DETECT	VC005-17
TELECOM PIT	◪	SSG DIS. SEQ.	VD018-8
ELECT LIGHT POLE	☾		
POWER POLE	○		
STAY POLE	⊘		
TELEPHONE BOX	T	SURVEYOR : N/A	
TELECOM PILLAR	◕	DATE : N/A	

U.B.D. Ref. Map 351 G12

I.S.G. CO-ORDS E: 300 577 N: 1 226 631

Refer to Sheet 1 Issue A for original detail

DESIGNED T.K.L.

CHECKED

D.J.T. 21.6.74

SITE CHECKED & RECOMMENDED

APPROVED
Refer to Sheet 1 Issue A for original approval

NAME H. CAMKIN

CHIEF TRAFFIC ENGINEER

DATE 8.7.74

THIS DRAWING IS RECOMMENDED FOR ACCEPTANCE

NETWORK OPERATIONS TEAM LEADER

DATE

ACCEPTED

DATE

Roads and Traffic Authority.N.S.W

SUTHERLAND COUNCIL AREA
TRAFFIC SIGNALS AT
PRINCES HIGHWAY AND OLIVER STREET
HEATHCOTE

DESIGN LAYOUT TCS No 0991

DESIGN OFFICE PARRAMATTA - PROJECT DESIGN SERVICES

CADD FILE: VV0991_1J.dgn

SCALE 5 0 (1:200) 5 10

FILE 411 TS 151

SUPERSEDES SHEET/ISSUE 1/I

ISSUE J

REGN. 0001.411.VV.0991

SHEET 1

$DATE$ $TIME$ $FILEABBREV$

ANNEXURE E: VIDEO FOOTAGE REVIEW
(11 SHEETS)

Intersection	PRINCES HWY / OLIVER ST
Period Start	Period Finish
7:30:00 AM	8:30:00 AM

No. of Cycle Recorded	Mod
25	0

Phase	Min	Max	Average	Occurences
A	111	129	117	100%
B	6	25	11	100%
C	6	18	14	84%

Cycle Time	130	151	140

Cycle 1	TIME START			TIME END			Phase Duration (s)	Cycle Time (s)			
Phase	HR	MIN	SEC	HR	MIN	SEC					
A	7	31	39	7	33	31	112	137		7:31:39 AM	7:33:31 AM
B	7	33	31	7	33	42	11			7:33:31 AM	7:33:42 AM
C	7	33	42	7	33	56	14			7:33:42 AM	7:33:56 AM
A	7	33	56	7	35	55	119	130		7:33:56 AM	7:35:55 AM
B	7	35	55	7	36	6	11			7:35:55 AM	7:36:06 AM
A	7	36	6	7	38	12	126	142		7:36:06 AM	7:38:12 AM
B	7	38	12	7	38	28	16			7:38:12 AM	7:38:28 AM
A	7	38	28	7	40	37	129	151		7:38:28 AM	7:40:37 AM
B	7	40	37	7	40	47	10			7:40:37 AM	7:40:47 AM
C	7	40	47	7	40	59	12			7:40:47 AM	7:40:59 AM
A	7	40	59	7	42	53	114	139		7:40:59 AM	7:42:53 AM
B	7	42	53	7	43	4	11			7:42:53 AM	7:43:04 AM
C	7	43	4	7	43	18	14			7:43:04 AM	7:43:18 AM
A	7	43	18	7	45	12	114	141		7:43:18 AM	7:45:12 AM
B	7	45	12	7	45	25	13			7:45:12 AM	7:45:25 AM
C	7	45	25	7	45	39	14			7:45:25 AM	7:45:39 AM
A	7	45	39	7	47	31	112	138		7:45:39 AM	7:47:31 AM
B	7	47	31	7	47	39	8			7:47:31 AM	7:47:39 AM
C	7	47	39	7	47	57	18			7:47:39 AM	7:47:57 AM
A	7	47	57	7	49	55	118	141		7:47:57 AM	7:49:55 AM
B	7	49	55	7	50	1	6			7:49:55 AM	7:50:01 AM
C	7	50	1	7	50	18	17			7:50:01 AM	7:50:18 AM
A	7	50	18	7	52	15	117	139		7:50:18 AM	7:52:15 AM
B	7	52	15	7	52	37	22			7:52:15 AM	7:52:37 AM
A	7	52	37	7	54	35	118	143		7:52:37 AM	7:54:35 AM
B	7	54	35	7	54	44	9			7:54:35 AM	7:54:44 AM
C	7	54	44	7	55	0	16			7:54:44 AM	7:55:00 AM
A	7	55	0	7	56	51	111	134		7:55:00 AM	7:56:51 AM
B	7	56	51	7	57	2	11			7:56:51 AM	7:57:02 AM
C	7	57	2	7	57	14	12			7:57:02 AM	7:57:14 AM
A	7	57	14	7	59	14	120	145		7:57:14 AM	7:59:14 AM
B	7	59	14	7	59	26	12			7:59:14 AM	7:59:26 AM
C	7	59	26	7	59	39	13			7:59:26 AM	7:59:39 AM
A	7	59	39	8	1	35	116	141		7:59:39 AM	8:01:35 AM
B	8	1	35	8	1	44	9			8:01:35 AM	8:01:44 AM
C	8	1	44	8	2	0	16			8:01:44 AM	8:02:00 AM
A	8	2	0	8	3	55	115	140		8:02:00 AM	8:03:55 AM
B	8	3	55	8	4	4	9			8:03:55 AM	8:04:04 AM
C	8	4	4	8	4	20	16			8:04:04 AM	8:04:20 AM
A	8	4	20	8	6	17	117	138		8:04:20 AM	8:06:17 AM
B	8	6	17	8	6	25	8			8:06:17 AM	8:06:25 AM
C	8	6	25	8	6	38	13			8:06:25 AM	8:06:38 AM
A	8	6	38	8	8	35	117	139		8:06:38 AM	8:08:35 AM
B	8	8	35	8	8	51	16			8:08:35 AM	8:08:51 AM
C	8	8	51	8	8	57	6			8:08:51 AM	8:08:57 AM
A	8	8	57	8	10	54	117	141		8:08:57 AM	8:10:54 AM
B	8	10	54	8	11	1	7			8:10:54 AM	8:11:01 AM
C	8	11	1	8	11	18	17			8:11:01 AM	8:11:18 AM
A	8	11	18	8	13	15	117	141		8:11:18 AM	8:13:15 AM
B	8	13	15	8	13	25	10			8:13:15 AM	8:13:25 AM
C	8	13	25	8	13	39	14			8:13:25 AM	8:13:39 AM
A	8	13	39	8	15	37	118	139		8:13:39 AM	8:15:37 AM
B	8	15	37	8	15	46	9			8:15:37 AM	8:15:46 AM
C	8	15	46	8	15	58	12			8:15:46 AM	8:15:58 AM
A	8	15	58	8	17	59	121	140		8:15:58 AM	8:17:59 AM
B	8	17	59	8	18	6	7			8:17:59 AM	8:18:06 AM
C	8	18	6	8	18	18	12			8:18:06 AM	8:18:18 AM
A	8	18	18	8	20	16	118	141		8:18:18 AM	8:20:16 AM
B	8	20	16	8	20	22	6			8:20:16 AM	8:20:22 AM
C	8	20	22	8	20	39	17			8:20:22 AM	8:20:39 AM
A	8	20	39	8	22	38	119	140		8:20:39 AM	8:22:38 AM
B	8	22	38	8	22	48	10			8:22:38 AM	8:22:48 AM
C	8	22	48	8	22	59	11			8:22:48 AM	8:22:59 AM
A	8	22	59	8	24	55	116	140		8:22:59 AM	8:24:55 AM
B	8	24	55	8	25	4	9			8:24:55 AM	8:25:04 AM
C	8	25	4	8	25	19	15			8:25:04 AM	8:25:19 AM
A	8	25	19	8	27	17	118	143		8:25:19 AM	8:27:17 AM
B	8	27	17	8	27	42	25			8:27:17 AM	8:27:42 AM
A	8	27	42	8	29	33	111	138		8:27:42 AM	8:29:33 AM
B	8	29	33	8	29	47	14			8:29:33 AM	8:29:47 AM
C	8	29	47	8	30	0	13			8:29:47 AM	8:30:00 AM

Intersection	PRINCES HWY / OLIVER ST
Period Start	Period Finish
5:00:00 PM	5:15:00 PM

No. of Cycle Recorded	Mod
6	0

Phase	Min	Max	Average	Occurences
A	110	119	115	100%
B	11	12	11	100%
C	13	14	14	100%

Cycle 1	TIME START			TIME END			Phase Duration (s)	Cycle Time (s)			
Phase	HR	MIN	SEC	HR	MIN	SEC					
A	17	1	37	17	3	34	117	141		5:01:37 PM	5:03:34 PM
B	17	3	34	17	3	45	11			5:03:34 PM	5:03:45 PM
C	17	3	45	17	3	58	13			5:03:45 PM	5:03:58 PM
A	17	3	58	17	5	55	117	143		5:03:58 PM	5:05:55 PM
B	17	5	55	17	6	7	12			5:05:55 PM	5:06:07 PM
C	17	6	7	17	6	21	14			5:06:07 PM	5:06:21 PM
A	17	6	21	17	8	13	112	136		5:06:21 PM	5:08:13 PM
B	17	8	13	17	8	24	11			5:08:13 PM	5:08:24 PM
C	17	8	24	17	8	37	13			5:08:24 PM	5:08:37 PM
A	17	8	37	17	10	34	117	142		5:08:37 PM	5:10:34 PM
B	17	10	34	17	10	46	12			5:10:34 PM	5:10:46 PM
C	17	10	46	17	10	59	13			5:10:46 PM	5:10:59 PM
A	17	10	59	17	12	58	119	144		5:10:59 PM	5:12:58 PM
B	17	12	58	17	13	9	11			5:12:58 PM	5:13:09 PM
C	17	13	9	17	13	23	14			5:13:09 PM	5:13:23 PM
A	17	13	23	17	15	13	110	136		5:13:23 PM	5:15:13 PM
B	17	15	13	17	15	25	12			5:15:13 PM	5:15:25 PM
C	17	15	25	17	15	39	14			5:15:25 PM	5:15:39 PM

Cycle Time	136	144	140

2. Veno Street turning Right onto Princes High (S) (AM) (Worst Case Scenario, only see 1~2 car lengths)

	AM PEAK	7:30:00AM - 8:30:00AM									
	Time Arrived			Time Departed			Delay	Position in Queue	Maximum Queue	Average Delay	47.50
Car	H	M	S	H	M	S				95 percentile Queue	1.00
1	7	39	34	7	40	55	81	1	1	Average Queue	1.00
2	7	52	40	7	52	44	4	1	1		
3	8	21	40	8	22	59	79	1	1		
4	8	26	49	8	27	15	26	1	1		

2. Veno Street turning Right onto Princes High (S) (PM) (Worst Case Scenario, only see 1~2 car lengths)

	PM PEAK	16:45PM - 17:45PM							
	Time Arrived			Time Departed			Delay	Position in Queue	Maximum Queue
Car	H	M	S	H	M	S			

Nothing to Report

1. Veno Street turning LEFT onto Princes High (N) (AM) (Worst Case Scenario, only see 1~2 car lengths)

	AM PEAK	7:30:00AM - 8:30:00AM								Average Delay	19.74
	Time Arrived			Time Departed			Delay	Position in Queue	Maximum Queue	95 percentile Queue	4.70
Car	H	M	S	H	M	S				Average Queue	1.91
1	7	29	52	7	30	12	20	1			
2	7	29	52	7	30	16	24	2			
3	7	29	52	7	30	24	32	3	3		
4	7	30	36	7	31	26	50	1			
5	7	30	36	7	31	32	56	2			
6	7	30	36	7	31	37	61	3			
7	7	30	36	7	31	41	65	4	4		
8	7	32	10	7	32	13	3	1	1		
9	7	32	26	7	32	57	31	1			
10	7	32	26	7	33	0	34	2			
11	7	32	26	7	33	9	43	3	3		
12	7	33	34	7	33	38	4	1			
13	7	33	34	7	33	42	8	2	2		
14	7	33	46	7	33	48	2	1	1		
15	7	33	54	7	33	56	2	1	1		
16	7	34	1	7	34	2	1	1	1		
17	7	34	5	7	34	7	2	1	1		
18	7	34	11	7	34	12	1	1	1		
19	7	34	16	7	34	46	30	1			
20	7	34	16	7	34	52	36	2			
21	7	34	16	7	35	0	44	3	3		
22	7	35	8	7	35	9	1	1			
23	7	35	8	7	35	13	5	2			
24	7	35	8	7	35	16	8	3	3		
25	7	35	39	7	35	41	2	1	1		
26	7	35	48	7	35	52	4	1			
27	7	35	48	7	36	4	16	2			
28	7	35	48	7	36	10	22	3	3		
29	7	36	56	7	37	33	37	1			
30	7	36	56	7	37	37	41	2			
31	7	36	56	7	37	45	49	3			
32	7	36	56	7	37	47	51	4			
33	7	36	56	7	37	51	55	5			
34	7	36	56	7	37	54	58	6	6		
35	7	37	57	7	38	2	5	1	1		
36	7	38	4	7	38	6	2	1	1		
37	7	38	8	7	38	9	1	1	1		
38	7	38	34	7	38	35	1	1	1		
39	7	38	53	7	38	55	2	1	1		
40	7	39	34	7	40	57	83	1			
41	7	39	34	7	40	58	84	2	2		
42	7	41	0	7	41	2	2	1	1		
43	7	41	4	7	41	6	2	1			
44	7	41	4	7	41	10	6	2			
45	7	41	4	7	41	12	8	3	3		
46	7	41	15	7	41	17	2	1	1		
47	7	41	24	7	41	32	8	1	1		
48	7	41	38	7	41	42	4	1	1		
49	7	41	51	7	41	55	4	1			
50	7	41	51	7	41	58	7	2	2		
51	7	42	4	7	42	7	3	1			
52	7	42	4	7	42	18	14	2			
53	7	42	4	7	42	23	19	3	3		
54	7	42	33	7	42	36	3	1			
55	7	42	33	7	42	40	7	2	2		
56	7	42	44	7	42	46	2	1	1		
57	7	43	18	7	43	22	4	1			
58	7	43	18	7	43	25	7	2			
59	7	43	18	7	43	27	9	3	3		
60	7	43	42	7	43	44	2	1	1		
61	7	43	59	7	44	3	4	1	1		
62	7	44	21	7	44	23	2	1	1		
63	7	44	38	7	44	40	2	1	1		
64	7	44	45	7	44	47	2	1			
65	7	44	45	7	44	50	5	2			
66	7	44	45	7	44	58	13	3			
67	7	44	45	7	45	4	19	4	4		
68	7	45	16	7	45	22	6	1	1		
69	7	45	25	7	45	27	2	1			
70	7	45	25	7	45	28	3	2	2		
71	7	45	52	7	45	54	2	1	1		
72	7	45	57	7	45	59	2	1	1		
73	7	46	4	7	46	7	3	1	1		
74	7	46	10	7	46	18	8	1			
75	7	46	10	7	46	21	11	2	2		
76	7	46	28	7	46	38	10	1			
77	7	46	28	7	46	41	13	2	2		

	AM PEAK	16:45:00 PM - 17:45:00 PM								Average Delay	8.34
	Time Arrived			Time Departed			Delay	Position in Queue	Maximum Queue	95 percentile Queue	2.20
Car	H	M	S	H	M	S				Average Queue	1.29
1	16	45	0	16	45	1	1	1	1		
2	16	45	8	16	45	10	2	1	1		
3	16	46	1	16	46	13	12	1	1		
4	16	46	43	16	47	3	20	1	1		
5	16	47	11	16	47	12	1	1	1		
6	16	47	21	16	47	24	3	1	1		
7	16	47	31	16	47	32	1	1	1		
8	16	48	47	16	48	49	2	1	1		
9	16	49	5	16	49	7	2	1	1		
10	16	49	39	16	49	42	3	1	1		
11	16	49	46	16	49	49	3	1	1		
12	16	49	52	16	49	56	4	1	1		
13	16	50	36	16	50	44	8	1	1		
14	16	51	37	16	51	42	5	1	1		
15	16	51	59	16	52	1	2	1	1		
16	16	52	12	16	52	14	2	1	1		
17	16	52	24	16	52	26	2	1	1		
18	16	52	36	16	52	38	2	1	1		
19	16	52	56	16	52	58	2	1	1		
20	16	53	7	16	53	38	31	1	1		
21	16	53	40	16	53	42	2	1	1		
22	16	53	47	16	53	49	2	1	1		
23	16	54	41	16	54	44	3	1	1		
24	16	55	31	16	55	34	3	1	1		
25	16	56	23	16	56	29	6	1	1		
26	16	56	34	16	56	37	3	1	1		
27	16	56	48	16	56	50	2	1	1		
28	16	57	45	16	57	47	2	1	1		
29	16	59	19	16	59	21	2	1	1		
30	17	0	59	17	1	18	19	1			
31	17	0	59	17	1	19	20	2			
32	17	0	59	17	1	21	22	3	3		
33	17	1	26	17	1	31	5	1	1		
34	17	2	14	17	2	18	4	1	1		
35	17	2	22	17	2	29	7	1	1		
36	17	2	57	17	3	5	8	1	1		
37	17	3	33	17	3	34	1	1	1		
38	17	3	53	17	3	54	1	1	1		
39	17	4	6	17	4	7	1	1	1		
40	17	4	12	17	4	13	1	1	1		
41	17	5	7	17	5	8	1	1			
42	17	5	7	17	5	15	8	2	2		
43	17	6	3	17	6	7	4	1	1		
44	17	6	17	17	6	18	1	1			
45	17	6	17	17	6	24	7	2	2		
46	17	7	6	17	7	14	8	1	1		
47	17	7	20	17	7	30	10	1	1		
48	17	7	41	17	7	42	1	1	1		
49	17	9	53	17	9	54	1	1	1		
50	17	11	23	17	11	47	24	1			
51	17	11	23	17	11	58	35	2	2		
52	17	12	29	17	12	34	5	1			
53	17	12	29	17	12	43	14	2			
54	17	12	29	17	12	45	16	3	3		
55	17	13	8	17	13	13	5	1	1		
56	17	13	22	17	13	23	1	1	1		
57	17	16	14	17	16	15	1	1			
58	17	16	14	17	16	20	6	2	2		
59	17	16	25	17	16	26	1	1	1		
60	17	16	49	17	16	50	1	1	1		
61	17	16	55	17	16	56	1	1	1		
62	17	17	10	17	17	12	2	1			
63	17	17	10	17	17	20	10	2	2		
64	17	17	25	17	17	26	1	1	1		
65	17	17	43	17	17	44	1	1	1		
66	17	17	49	17	17	50	1	1	1		
67	17	17	52	17	17	53	1	1	1		
68	17	19	15	17	19	20	5	1			
69	17	19	15	17	19	28	13	2	2		
70	17	19	35	17	19	38	3	1	1		
71	17	20	16	17	20	17	1	1	1		
72	17	21	58	17	22	7	9	1	1		
73	17	22	43	17	22	44	1	1	1		
74	17	23	37	17	23	42	5	1	1		
75	17	23	54	17	23	56	2	1	1		
76	17	24	11	17	24	13	2	1	1		
77	17	24	20	17	24	21	1	1	1		

78	7	47	19	7	47	20	1	1	1
79	7	47	37	7	47	39	2	1	1
80	7	47	44	7	47	46	2	1	1
81	7	48	15	7	48	24	9	1	1
82	7	48	38	7	48	46	8	1	
83	7	48	38	7	48	51	13	2	
84	7	48	38	7	48	58	20	3	
85	7	48	38	7	49	2	24	4	4
86	7	49	30	7	49	38	8	1	
87	7	49	30	7	49	51	21	2	
88	7	49	30	7	49	53	23	3	
89	7	49	30	7	49	56	26	4	
90	7	49	30	7	50	1	31	5	
91	7	49	30	7	50	4	34	6	
92	7	49	30	7	50	11	41	7	
93	7	49	30	7	50	15	45	8	
94	7	49	30	7	50	21	51	9	
95	7	49	30	7	50	33	63	10	
96	7	49	30	7	50	36	66	11	11
97	7	50	48	7	50	51	3	1	1
98	7	51	3	7	51	5	2	1	1
99	7	51	12	7	51	24	12	1	1
100	7	51	31	7	51	33	2	1	1
101	7	51	41	7	51	43	2	1	1
102	7	51	47	7	51	49	2	1	
103	7	51	47	7	51	51	4	2	2
104	7	52	23	7	53	25	62	1	1
105	7	52	31	7	52	33	2	1	1
106	7	53	6	7	53	10	4	1	1
107	7	53	20	7	53	27	7	1	1
108	7	53	39	7	53	53	14	1	
109	7	53	39	7	53	59	20	2	
110	7	53	39	7	54	6	27	3	3
111	7	54	11	7	54	18	7	1	
112	7	54	11	7	54	25	14	2	2
113	7	54	30	7	54	32	2	1	1
114	7	54	39	7	54	43	4	1	1
115	7	54	39	7	54	45	6	2	2
116	7	55	32	7	55	35	3	1	1
117	7	56	4	7	56	7	3	1	1
118	7	56	12	7	56	20	8	1	1
119	7	56	40	7	56	50	10	1	
120	7	56	40	7	56	55	15	2	2
121	7	57	3	7	57	4	1	1	1
122	7	57	21	7	57	24	3	1	1
123	7	57	38	7	57	58	20	1	
124	7	57	38	7	58	10	32	2	
125	7	57	38	7	58	14	36	3	3
126	7	58	27	7	58	31	4	1	1
127	7	58	58	7	59	1	3	1	1
128	7	59	7	7	59	10	3	1	1
129	7	59	14	7	59	19	5	1	
130	7	59	14	7	59	22	8	2	
131	7	59	14	7	59	30	16	3	
132	7	59	14	7	59	33	19	4	4
133	7	59	45	7	59	47	2	1	1
134	7	59	59	8	0	4	5	1	1
135	8	0	10	8	0	46	36	1	
136	8	0	10	8	0	51	41	2	
137	8	0	10	8	1	9	59	3	
138	8	0	10	8	1	14	64	4	
139	8	0	10	8	1	19	69	5	
140	8	0	10	8	1	40	90	6	
141	8	0	10	8	1	45	95	7	
142	8	0	10	8	1	49	99	8	8
143	8	2	13	8	2	15	2	1	1
144	8	2	19	8	2	20	1	1	
145	8	2	19	8	2	24	5	2	
146	8	2	19	8	2	27	8	3	
147	8	2	19	8	2	31	12	4	4
148	8	2	44	8	2	47	3	1	1
149	8	3	20	8	3	34	14	1	1
150	8	3	20	8	3	41	21	2	
151	8	3	20	8	3	50	30	3	
152	8	3	20	8	4	5	45	4	4
153	8	4	12	8	4	14	2	1	1
154	8	4	26	8	4	28	2	1	1
155	8	4	33	8	4	40	7	1	1
156	8	4	55	8	5	6	11	1	
157	8	4	55	8	5	8	13	2	
158	8	4	55	8	5	13	18	3	

78	17	25	17	17	25	33	16	1	
79	17	25	17	17	25	40	23	2	2
80	17	26	12	17	26	15	3	1	1
81	17	27	14	17	27	16	2	1	1
82	17	27	20	17	27	21	1	1	
83	17	27	20	17	27	23	3	2	2
84	17	27	37	17	27	41	4	1	1
85	17	27	53	17	27	58	5	1	1
86	17	28	44	17	28	55	11	1	
87	17	28	44	17	28	58	14	2	2
88	17	29	10	17	29	16	6	1	
89	17	29	10	17	29	19	9	2	2
90	17	30	22	17	30	27	5	1	1
91	17	30	58	17	31	3	5	1	1
92	17	31	53	17	31	57	4	1	
93	17	31	53	17	32	0	7	2	2
94	17	32	22	17	32	55	33	1	1
95	17	33	29	17	33	30	1	1	1
96	17	33	33	17	33	35	2	1	1
97	17	33	50	17	34	0	10	1	1
98	17	34	15	17	34	16	1	1	1
99	17	35	11	17	35	14	3	1	1
100	17	35	21	17	35	25	4	1	
101	17	35	21	17	35	30	9	2	2
102	17	36	14	17	36	24	10	1	
103	17	36	14	17	36	27	13	2	
104	17	36	14	17	36	30	16	3	3
105	17	36	49	17	36	51	2	1	1
106	17	37	35	17	37	45	10	1	1
107	17	38	11	17	38	25	14	1	
108	17	38	11	17	38	29	18	2	
109	17	38	11	17	38	31	20	3	3
110	17	38	42	17	38	43	1	1	1
111	17	39	4	17	39	6	2	1	1
112	17	39	13	17	39	17	4	1	1
113	17	39	32	17	39	49	17	1	
114	17	39	32	17	39	55	23	2	
115	17	39	32	17	40	4	32	3	
116	17	39	32	17	40	6	34	4	
117	17	39	32	17	40	9	37	5	
118	17	39	32	17	40	15	43	6	
119	17	39	32	17	40	17	45	7	
120	17	39	32	17	40	23	51	8	8
121	17	40	42	17	41	3	21	1	1
122	17	41	19	17	41	22	3	1	1
123	17	41	30	17	41	32	2	1	1
124	17	43	12	17	43	15	3	1	
125	17	43	12	17	43	22	10	2	2

159	8	4	55	8	5	19	24	4	
160	8	4	55	8	5	35	40	5	5
161	8	6	1	8	6	6	5	1	
162	8	6	1	8	6	14	13	2	2
163	8	6	25	8	6	27	2	1	
164	8	6	25	8	6	31	6	2	2
165	8	6	46	8	6	51	5	1	
166	8	6	46	8	6	54	8	2	
167	8	6	46	8	6	57	11	3	3
168	8	7	20	8	7	25	5	1	1
169	8	7	30	8	7	43	13	1	1
170	8	8	6	8	8	8	2	1	1
171	8	8	18	8	8	20	2	1	1
172	8	8	44	8	8	46	2	1	
173	8	8	44	8	8	49	5	2	2
174	8	8	53	8	8	55	2	1	1
175	8	9	10	8	9	15	5	1	
176	8	9	10	8	9	33	23	2	
177	8	9	10	8	9	57	47	3	
178	8	9	10	8	10	1	51	4	
179	8	9	10	8	10	13	63	5	
180	8	9	10	8	10	16	66	6	
181	8	9	10	8	10	25	75	7	
182	8	9	10	8	10	28	78	8	
183	8	9	10	8	10	36	86	9	
184	8	9	10	8	10	48	98	10	10
185	8	11	18	8	11	19	1	1	1
186	8	11	42	8	11	45	3	1	1
187	8	11	48	8	11	51	3	1	
188	8	11	48	8	12	44	56	2	
189	8	11	48	8	12	48	60	3	
190	8	11	48	8	13	8	80	4	
191	8	11	48	8	13	12	84	5	
192	8	11	48	8	13	16	88	6	
193	8	11	48	8	13	24	96	7	7
194	8	13	41	8	13	44	3	1	1
195	8	15	13	8	15	48	35	1	
196	8	15	13	8	15	52	39	2	2
197	8	16	20	8	16	54	34	1	
198	8	16	20	8	17	0	40	2	2
199	8	17	22	8	17	25	3	1	1
200	8	18	3	8	18	6	3	1	
201	8	18	3	8	18	10	7	2	2
202	8	18	31	8	19	4	33	1	
203	8	18	31	8	19	9	38	2	2
204	8	19	14	8	19	18	4	1	
205	8	19	14	8	19	23	9	2	2
206	8	19	35	8	19	37	2	1	1
207	8	19	52	8	19	54	2	1	1
208	8	20	20	8	20	23	3	1	
209	8	20	20	8	20	26	6	2	2
210	8	21	58	8	22	27	29	1	1
211	8	22	44	8	22	51	7	1	
212	8	22	44	8	22	54	10	2	2
213	8	23	2	8	23	6	4	1	1
214	8	23	17	8	23	28	11	1	1
215	8	23	38	8	23	49	11	1	1
216	8	23	38	8	23	58	20	2	2
217	8	24	11	8	24	14	3	1	
218	8	24	11	8	24	18	7	2	
219	8	24	11	8	24	44	33	3	
220	8	24	11	8	24	53	42	4	
221	8	24	11	8	24	58	47	5	
222	8	24	11	8	25	1	50	6	6
223	8	25	7	8	25	11	4	1	
224	8	25	21	8	25	24	3	1	1
225	8	25	28	8	25	30	2	1	1
226	8	25	37	8	25	40	3	1	
227	8	25	37	8	25	44	7	2	2
228	8	26	8	8	26	11	3	1	
229	8	26	8	8	26	16	8	2	
230	8	26	8	8	26	20	12	3	3
231	8	27	10	8	27	13	3	1	
232	8	27	10	8	27	17	7	2	2
233	8	27	35	8	27	41	6	1	
234	8	27	35	8	27	44	9	2	
235	8	27	35	8	27	46	11	3	3
236	8	28	0	8	28	3	3	1	
237	8	28	12	8	28	17	5	1	
238	8	28	12	8	28	20	8	2	
239	8	28	12	8	28	32	20	3	3

240	8	28	38	8	28	48	10	1	
241	8	29	18	8	29	20	2	1	1
242	8	29	45	8	29	48	3	1	1
243	8	29	54	8	29	57	3	1	1

3. Strickland Street turning RIGHT onto Princes High (S)

	AM PEAK	7:30:00AM - 8:30:00AM							
	Time Arrived			Time Departed			Delay	Position in Queue	Maximum Queue
Car	H	M	S	H	M	S			

Nothing to Report

3. Strickland Street turning RIGHT onto Princes High (S) (PM)

	PM PEAK	16:45PM - 17:45PM							
	Time Arrived			Time Departed			Delay	Position in Queue	Maximum Queue
Car	H	M	S	H	M	S			
1	17	18	58	17	21	26	148	1	1

2. Strickland Street turning LEFT onto Princes High (N) (AM)

	AM PEAK	7:30:00AM - 8:30:00AM								Average Delay	26.68
	Time Arrived			Time Departed			Delay	Position in Queue	Maximum Queue	95 percentile Queue	3.00
Car	H	M	S	H	M	S				Average Queue	1.64
1	7	18	29	7	19	18	49	1			
2	7	19	1	7	19	21	20	2	2		
3	7	19	24	7	19	26	2	1	1		
4	7	21	6	7	21	28	22	1			
5	7	21	20	7	21	35	15	2	2		
6	7	23	16	7	23	29	13	1	1		
7	7	23	43	7	24	2	19	1	1		
8	7	24	14	7	24	31	17	1	1		
9	7	24	39	7	24	46	7	1	1		
10	7	28	23	7	29	31	68	1			
11	7	28	26	7	29	35	69	2			
12	7	28	52	7	29	41	49	3			
13	7	29	30	7	29	43	13	4	4		
14	7	29	37	7	29	49	12	3	3		
15	7	29	49	7	29	53	4	1	1		
16	7	29	58	7	30	23	25	1	1		
17	7	31	10	7	31	42	32	1			
18	7	31	14	7	31	49	35	2			
19	7	31	24	7	31	55	31	3	3		
20	7	32	0	7	32	5	5	1	1		
21	7	32	35	7	33	3	28	1			
22	7	32	48	7	33	20	32	2	2		
23	7	33	8	7	33	25	17	2	2		
24	7	33	36	7	33	57	21	1			
25	7	33	50	7	34	8	18	2			
26	7	33	54	7	34	10	16	3	3		
27	7	34	15	7	34	17	2	1	1		
28	7	34	54	7	35	46	52	1			
29	7	34	58	7	35	52	54	2			
30	7	35	12	7	36	17	65	3	3		
31	7	35	50	7	36	18	28	3	3		
32	7	37	18	7	37	33	15	1	1		
33	7	39	36	7	39	43	7	1			
34	7	39	42	7	39	45	3	2	2		
35	7	39	47	7	40	21	34	1	1		
36	7	41	14	7	41	18	4	1	1		
37	7	43	31	7	43	33	2	1	1		
38	7	44	41	7	45	35	54	1			
39	7	44	47	7	45	42	55	2			
40	7	45	16	7	45	48	32	3	3		
41	7	45	37	7	45	54	17	2	2		
42	7	46	5	7	47	8	63	1	1		
43	7	47	56	7	47	59	3	1	1		
44	7	49	37	7	50	19	42	1			
45	7	49	41	7	50	31	50	2			
46	7	49	55	7	50	34	39	3	3		
47	7	51	57	7	52	32	35	1			
48	7	51	59	7	52	38	39	2	2		
49	7	52	46	7	52	47	1	1	1		
50	7	55	1	7	55	3	2	1	1		
51	7	55	14	7	55	15	1	1	1		
52	7	55	26	7	57	14	108	1			
53	7	56	44	7	57	18	34	2			
54	7	57	4	7	57	24	20	3	3		
55	7	58	13	7	59	49	96	1			
56	7	58	35	7	59	53	78	2	2		
57	8	0	27	8	0	38	11	1	1		
58	8	0	55	8	0	58	3	1	1		
59	8	1	33	8	2	1	28	1			
60	8	1	41	8	2	4	23	2	2		
61	8	2	23	8	2	29	6	1	1		
62	8	2	32	8	2	54	22	1	1		
63	8	3	57	8	4	16	19	1	1		
64	8	4	23	8	4	30	7	1	1		
65	8	5	4	8	6	11	67	1			
66	8	5	42	8	6	32	50	2	2		
67	8	6	35	8	6	39	4	1	1		
68	8	6	44	8	6	54	10	1	1		
69	8	7	56	8	8	7	11	1			
70	8	8	5	8	8	20	15	2	2		
71	8	8	7	8	8	28	21	2	2		
72	8	8	43	8	8	58	15	1			
73	8	8	55	8	9	15	20	2	2		
74	8	9	2	8	9	26	24	2	2		
75	8	10	48	8	10	56	8	1	1		
76	8	11	17	8	11	19	2	1	1		
77	8	12	8	8	12	32	24	1	1		
78	8	12	35	8	12	49	14	1			
79	8	12	40	8	13	10	30	2	2		

2. Strickland Street turning LEFT onto Princes High (N) (PM)

2. Strickland Street turning LEFT onto Princes High (N) (PM)

	PM PEAK	16:45PM - 17:45PM								Average Delay	17.90
	Time Arrived			Time Departed			Delay	Position in Queue	Maximum Queue	95 percentile Queue	2.00
Car	H	M	S	H	M	S				Average Queue	1.18
1	16	45	24	16	45	36	12	1	1		
2	16	47	31	16	47	41	10	1	1		
3	16	51	26	16	51	28	2	1	1		
4	16	54	10	16	54	16	6	1	1		
5	16	55	2	16	55	5	3	1	1		
6	16	55	18	16	56	31	73	1			
7	16	55	34	16	56	28	54	2			
8	16	56	24	16	56	31	7	3	3		
9	16	56	47	16	56	50	3	1	1		
10	16	58	9	16	58	15	6	1	1		
11	16	59	9	16	59	10	1	1	1		
12	16	59	16	16	59	18	2	1	1		
13	17	0	39	17	0	43	4	1	1		
14	17	3	12	17	3	23	11	1	1		
15	17	4	27	17	4	32	5	1	1		
16	17	5	14	17	5	17	3	1	1		
17	17	5	19	17	5	33	14	1	1		
18	17	5	50	17	5	52	2	1	1		
19	17	8	0	17	8	9	9	1	1		
20	17	12	15	17	12	29	14	1	1		
21	17	14	39	17	14	42	3	1	1		
22	17	18	33	17	18	43	10	1	1		
23	17	19	29	17	20	6	37	1	1		
24	17	20	15	17	21	44	89	1	1		
25	17	23	5	17	24	18	73	1	1		
26	17	26	6	17	26	29	23	1	1		
27	17	29	6	17	29	8	2	1	1		
28	17	32	44	17	33	6	22	1			
29	17	33	3	17	33	30	27	2	2		
30	17	33	26	17	33	45	19	2	2		
31	17	34	53	17	35	3	10	1	1		
32	17	36	8	17	36	18	10	1	1		
33	17	38	16	17	38	45	29	1			
34	17	38	31	17	38	49	18	2	2		
35	17	39	14	17	39	15	1	1	1		
36	17	40	16	17	40	40	24	1			
37	17	40	21	17	40	43	22	2	2		
38	17	41	30	17	41	45	15	1	1		
39	17	44	22	17	44	45	23	1	1		

1. Princes High (N) turning RIGHT onto Strickland Street (AM)

	AM PEAK	7:30:00AM - 8:30:00AM								
	Time Arrived			Time Departed			Delay	Position in Queue	Maximum Queue	Average Delay	39.84
Car	H	M	S	H	M	S				95 percentile Queue	4.00
1	7	19	5	7	19	17	12	1		Average Queue	2.06
2	7	19	12	7	19	20	8	2	2		
3	7	20	5	7	20	52	47	1	1		
4	7	21	49	7	22	29	40	1			
5	7	21	55	7	22	53	58	2	2		
6	7	23	35	7	24	47	72	1			
7	7	24	3	7	24	49	46	2			
8	7	24	37	7	24	57	20	3			
9	7	24	38	7	26	15	97	4			
10	7	24	45	7	26	46	121	5	5		
11	7	26	22	7	27	1	39	2			
12	7	26	29	7	27	2	33	3			
13	7	26	34	7	27	7	33	4	4		
14	7	27	8	7	27	10	2	1	1		
15	7	27	15	7	27	35	20	1	1		
16	7	28	18	7	29	30	72	1	1		
17	7	30	42	7	31	42	60	1			
18	7	31	42	7	31	54	12	2	2		
19	7	35	14	7	35	52	38	1	1		
20	7	37	3	7	38	34	91	1			
21	7	37	54	7	38	38	44	2			
22	7	37	54	7	38	42	48	3			
23	7	38	5	7	38	48	43	4	4		
24	7	39	41	7	39	44	3	1	1		
25	7	40	2	7	40	29	27	1			
26	7	40	2	7	40	56	54	2			
27	7	40	25	7	41	3	38	3	3		
28	7	42	54	7	43	21	27	1	1		
29	7	44	30	7	45	33	63	1			
30	7	45	12	7	45	36	24	2			
31	7	45	23	7	45	44	21	3			
32	7	45	29	7	45	49	20	4	4		
33	7	45	48	7	45	51	3	1	1		
34	7	47	45	7	47	54	9	1			
35	7	47	48	7	48	3	15	2	2		
36	7	49	58	7	50	17	19	1	1		
37	7	51	57	7	52	39	42	1			
38	7	52	0	7	52	42	42	2	2		
39	7	53	24	7	55	0	96	1			
40	7	55	39	7	56	57	78	2	2		
41	7	56	40	7	57	14	34	2	2		
42	7	58	1	7	58	11	10	1	1		
43	7	58	44	7	59	41	57	1			
44	7	58	46	7	59	50	64	2			
45	7	59	36	7	59	53	17	3	3		
46	8	0	43	8	2	1	78	1			
47	8	1	37	8	2	3	26	2			
48	8	1	40	8	2	5	25	3	3		
49	8	5	16	8	6	10	54	1			
50	8	5	54	8	6	39	45	2	2		
51	8	6	35	8	6	47	12	2	2		
52	8	8	26	8	9	3	37	1			
53	8	8	33	8	9	15	42	2			
54	8	8	51	8	9	17	26	3	3		
55	8	10	46	8	11	12	26	1			
56	8	10	49	8	11	14	25	2	2		
57	8	11	24	8	11	27	3	1	1		
58	8	11	46	8	13	39	113	1			
59	8	12	45	8	13	41	56	2			
60	8	13	3	8	13	42	39	3	3		
61	8	14	36	8	14	40	4	1	1		

1. Princes High (N) turning RIGHT onto Strickland Street (PM)

	PM PEAK	16:45PM - 17:45PM								
	Time Arrived			Time Departed			Delay	Position in Queue	Maximum Queue	Average Delay	19.16
Car	H	M	S	H	M	S				95 percentile Queue	4.75
1	16	45	31	16	45	34	3	1		Average Queue	1.97
2	16	45	34	16	45	37	3	2	2		
3	16	45	37	16	45	39	2	1	1		
4	16	45	41	16	46	26	45	1			
5	16	46	12	16	46	41	29	2			
6	16	46	17	16	47	23	66	3			
7	16	46	20	16	47	25	65	4	4		
8	16	46	53	16	47	29	36	4	4		
9	16	47	29	16	47	32	3	4	4		
10	16	47	34	16	47	42	8	1	1		
11	16	47	48	16	47	50	2	1	1		
12	16	47	53	16	47	55	2	1			
13	16	47	54	16	47	56	2	2	2		
14	16	47	58	16	48	0	2	1			
15	16	48	0	16	48	2	2	2	2		
16	16	49	18	16	49	51	33	1			
17	16	49	26	16	49	53	27	2	2		
18	16	50	12	16	50	14	2	1	1		
19	16	50	23	16	50	29	6	1			
20	16	50	28	16	50	36	8	2	2		
21	16	50	36	16	51	15	39	2	2		
22	16	52	15	16	52	18	3	1			
23	16	52	16	16	52	20	4	2	2		
24	16	52	21	16	52	25	4	1	1		
25	16	52	26	16	52	29	3	1	1		
26	16	52	32	16	52	34	2	1	1		
27	16	53	9	16	53	59	50	1	1		
28	16	54	15	16	54	26	11	1	1		
29	16	54	27	16	54	29	2	1	1		
30	16	54	35	16	54	37	2	1			
31	16	54	36	16	54	39	3	2	2		
32	16	54	40	16	54	45	5	1			
33	16	54	45	16	54	47	2	2			
34	16	54	46	16	54	48	2	3	3		
35	16	54	50	16	54	52	2	1	1		
36	16	54	59	16	55	4	5	1	1		
37	16	56	3	16	56	30	27	1	1		
38	16	56	39	16	56	53	14	1	1		
39	16	57	0	16	57	7	7	1	1		
40	16	57	7	16	57	9	2	1			
41	16	57	9	16	57	11	2	2	2		
42	16	57	16	16	57	18	2	1			
43	16	57	17	16	57	19	2	2			
44	16	57	18	16	57	20	2	3	3		
45	16	57	23	16	57	53	30	1			
46	16	57	29	16	58	6	37	2			
47	16	57	30	16	58	23	53	3			
48	16	57	48	16	58	29	41	4	4		
49	16	58	9	16	58	31	22	4	4		
50	16	58	10	16	58	33	23	1	1		
51	16	59	2	16	59	4	2	1	1		
52	16	59	19	16	59	21	2	1			
53	16	59	24	16	59	26	2	2	2		
54	16	59	41	17	0	6	25	1			
55	16	59	43	17	0	17	34	2			
56	17	0	19	17	0	21	2	3	3		
57	17	1	29	17	1	46	17	2			
58	17	1	43	17	1	48	5	3	3		
59	17	1	45	17	1	51	6	1			
60	17	1	51	17	1	53	2	2	2		
61	17	1	52	17	1	55	3	1	1		
62	17	2	11	17	3	2	51	1			
63	17	2	33	17	3	33	60	2	2		
64	17	4	9	17	4	11	2	1	1		
65	17	4	27	17	5	19	52	1			
66	17	4	54	17	5	35	41	2	2		
67	17	6	28	17	6	35	7	1	1		
68	17	6	37	17	6	39	2	1	1		
69	17	6	41	17	6	43	2	1	1		
70	17	6	52	17	6	54	2	1	1		
71	17	7	44	17	7	51	7	1	1		
72	17	7	55	17	8	31	36	1			
73	17	8	20	17	8	33	13	2	2		
74	17	8	45	17	8	47	2	1	1		
75	17	8	49	17	8	51	2	1	1		
76	17	9	11	17	9	49	38	1			
77	17	9	16	17	10	16	60	2			
78	17	9	18	17	10	18	60	3			
79	17	9	20	17	10	28	68	4	4		
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81	17	10	35	17	10	55	20	2			
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83	17	10	56	17	10	59	3	2	2		
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85	17	11	10	17	11	15	5	2	
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89	17	11	28	17	11	41	13	2	2
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91	17	11	43	17	12	10	27	2	2
92	17	11	45	17	12	31	46	3	3
93	17	12	22	17	12	33	11	2	2
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95	17	14	19	17	14	45	26	1	
96	17	14	21	17	14	49	28	2	
97	17	14	34	17	14	51	17	3	3
98	17	15	13	17	15	36	23	1	1
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107	17	16	21	17	16	55	34	4	4
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119	17	20	45	17	20	57	12	1	
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122	17	22	7	17	22	31	24	1	1
123	17	22	34	17	22	44	10	1	1
124	17	23	4	17	24	8	64	1	
125	17	23	20	17	24	21	61	2	2
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127	17	24	51	17	24	53	2	1	1
128	17	24	58	17	25	0	2	1	1
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130	17	25	1	17	25	3	2	2	2
131	17	25	6	17	25	8	2	1	1
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151	17	34	20	17	34	22	2	1	1
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153	17	34	35	17	34	37	2	1	1
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159	17	36	40	17	37	25	45	1	
160	17	36	46	17	37	28	42	2	
161	17	37	3	17	37	30	27	3	
162	17	37	14	17	37	33	19	4	4
163	17	37	31	17	37	34	3	2	2
164	17	37	46	17	38	1	15	1	1
165	17	39	7	17	39	10	3	1	1
166	17	39	10	17	39	12	2	1	1
167	17	39	41	17	39	44	3	1	1
168	17	39	47	17	39	51	4	1	1
169	17	40	44	17	40	47	3	1	
170	17	40	45	17	40	53	8	2	2
171	17	40	50	17	41	14	24	2	2
172	17	41	1	17	41	19	18	2	

173	17	41	2	17	41	21	19	3	3
174	17	41	23	17	41	38	15	1	
175	17	41	28	17	41	40	12	2	
176	17	41	29	17	41	41	12	3	
177	17	41	34	17	41	47	13	4	
178	17	41	36	17	42	12	36	5	5
179	17	41	38	17	42	15	37	5	5
180	17	41	41	17	42	20	39	4	4
181	17	41	46	17	42	23	37	5	5
182	17	41	50	17	42	24	34	5	
183	17	42	2	17	42	26	24	6	
184	17	42	7	17	42	27	20	7	7
185	17	42	15	17	42	30	15	6	6
186	17	43	4	17	43	6	2	1	1
187	17	43	54	17	43	56	2	1	
188	17	43	55	17	43	57	2	2	2
189	17	44	10	17	45	12	62	1	
190	17	44	12	17	45	22	70	2	
191	17	44	15	17	45	24	69	3	
192	17	44	28	17	45	40	72	4	
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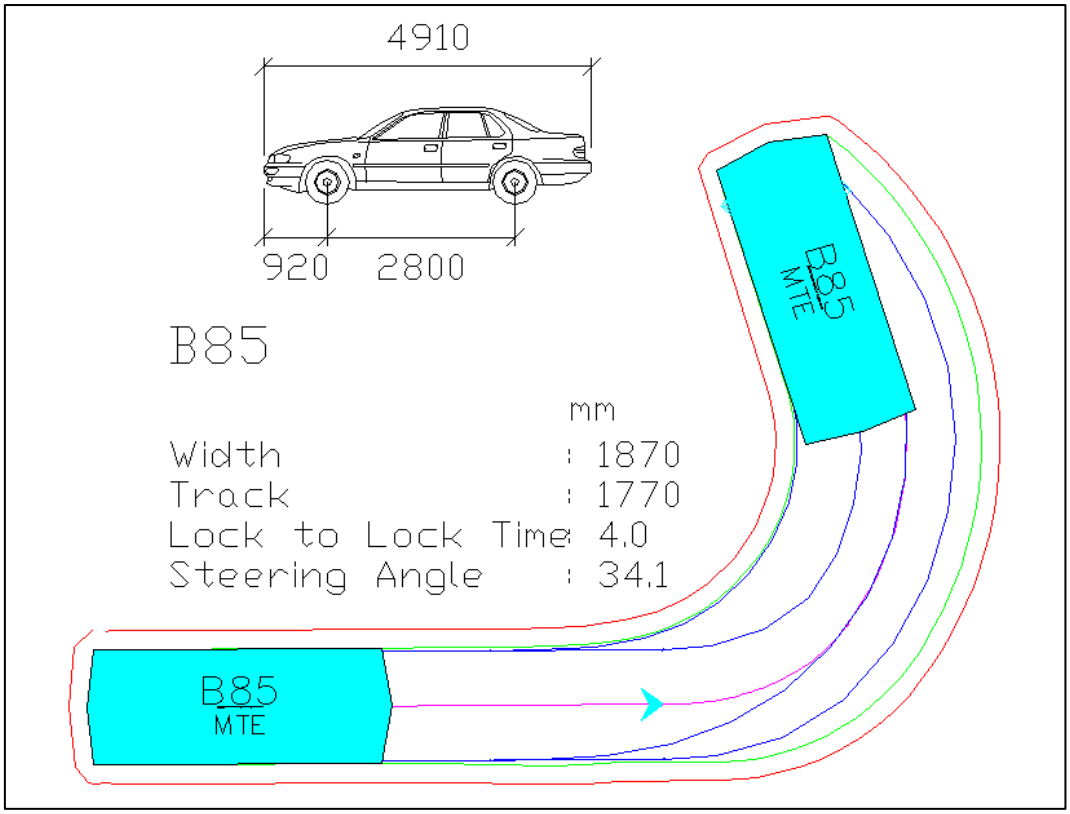
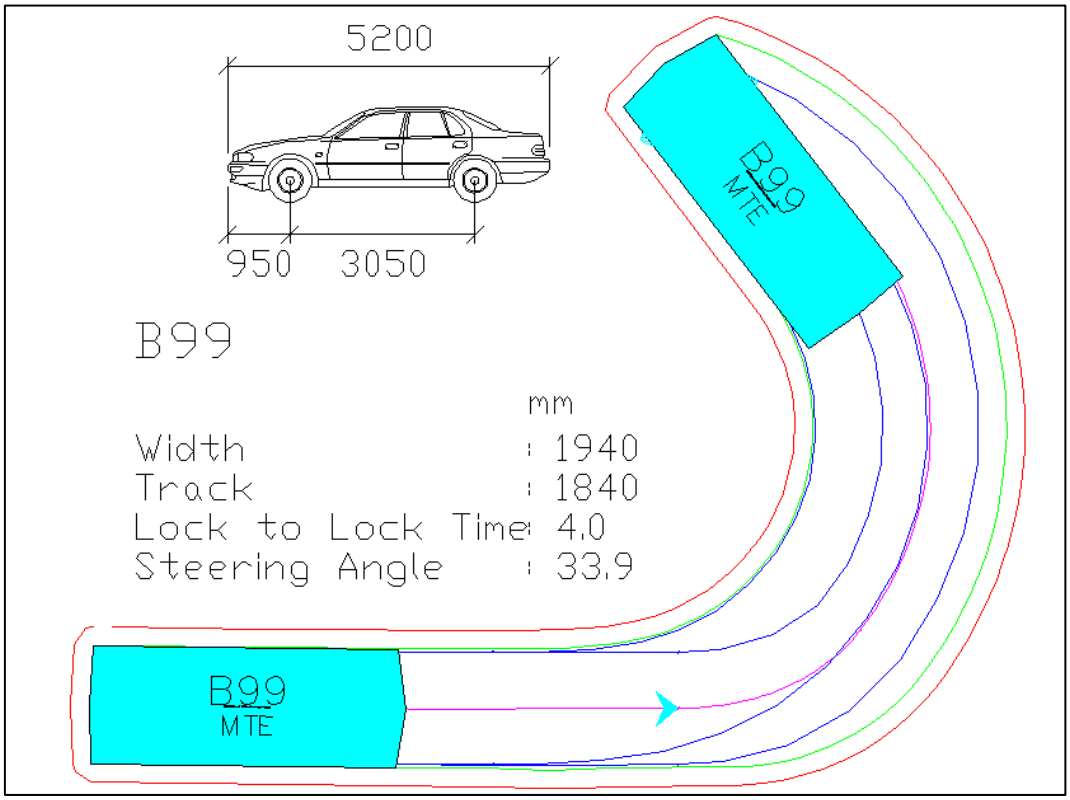
ANNEXURE F: SWEPT PATH TESTING
(6 SHEETS)



AUSTRALIAN STANDARD 85TH PERCENTILE SIZE VEHICLE (B85)

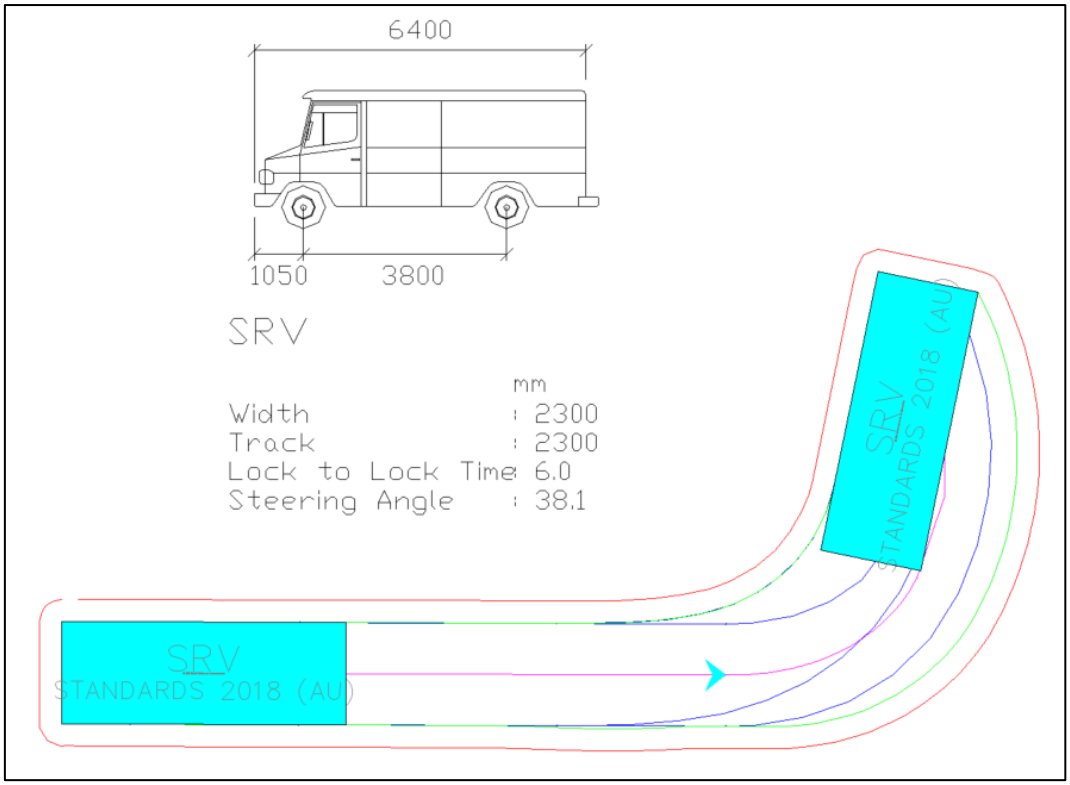


AUSTRALIAN STANDARD 99.8TH PERCENTILE SIZE VEHICLE (B99)

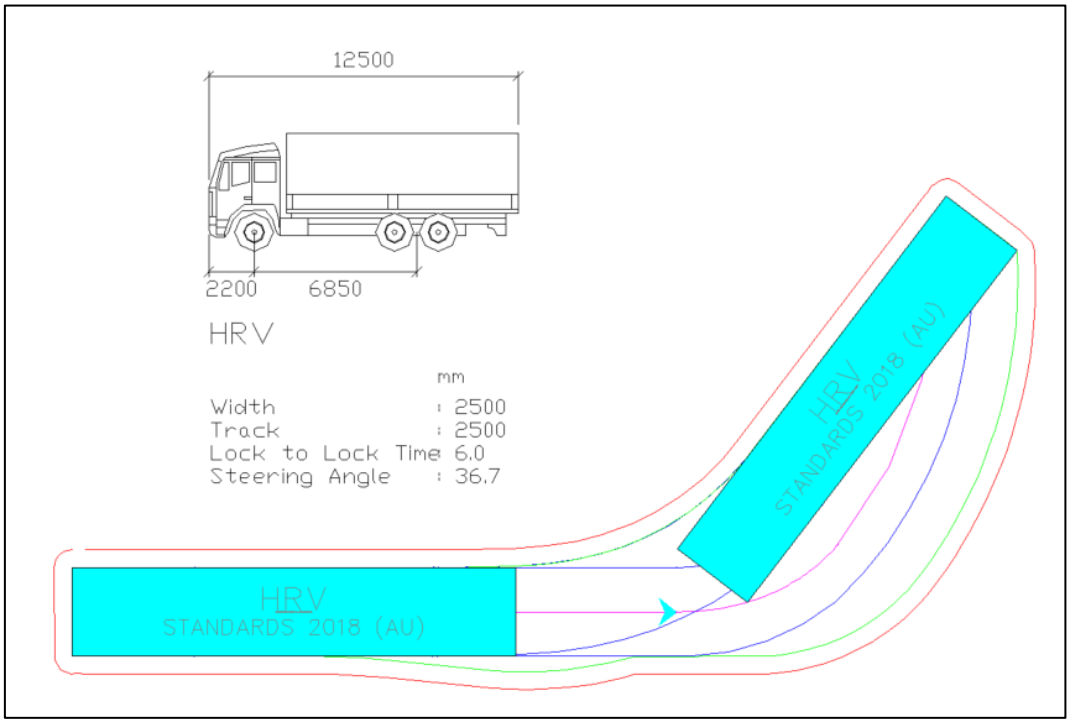
Blue – Tyre Path

Green – Vehicle Body

Red – 300mm Clearance



AUSTRALIAN STANDARD SMALL RIGID VEHICLE (SRV)

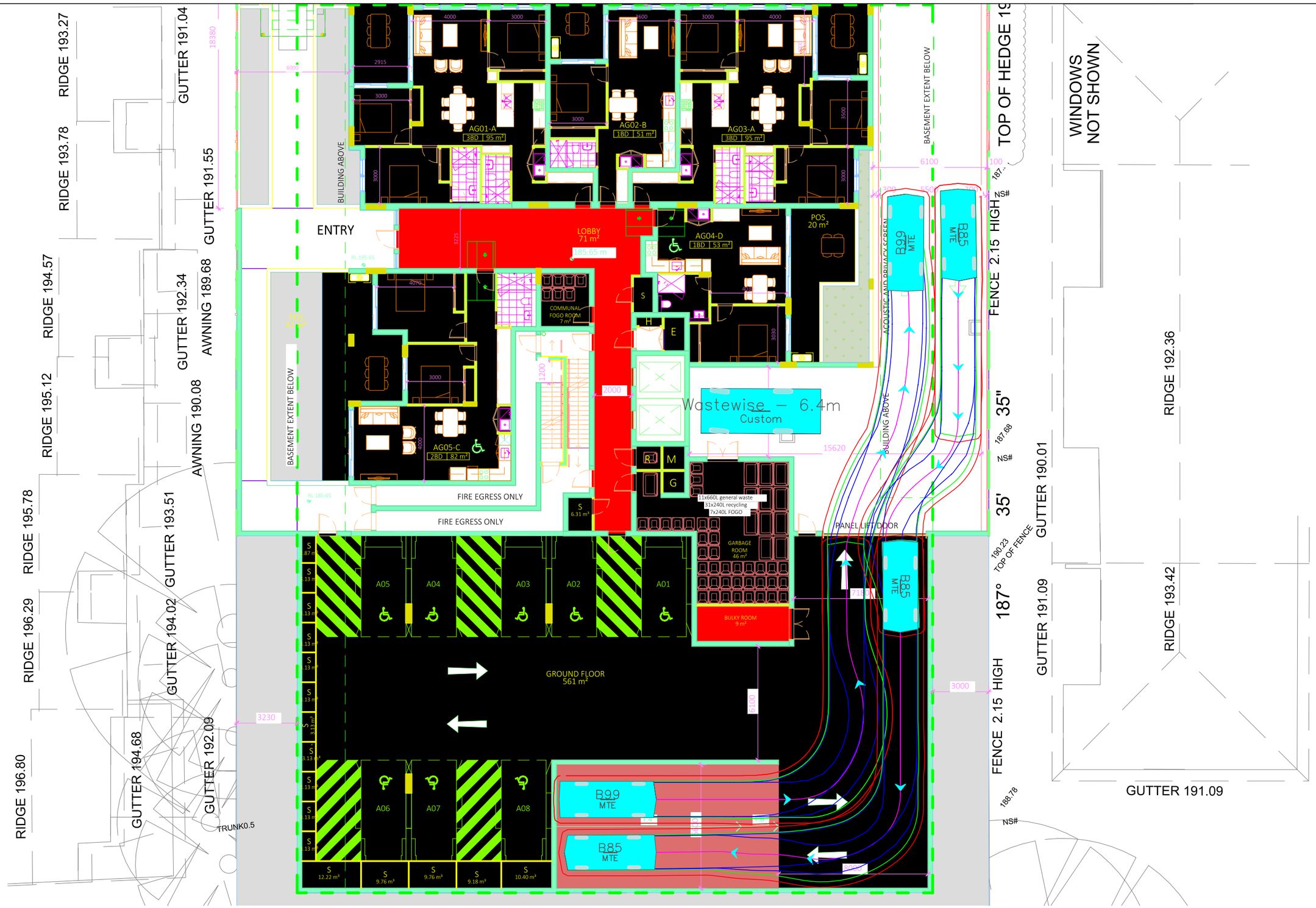


AUSTRALIAN STANDARD HEAVY RIGID VEHICLE (HRV)

Blue – Tyre Path

Green – Vehicle Body

Red – 500mm Clearance



McLaren Traffic Engineering & Road Safety Consultants

MCLAREN TRAFFIC ENGINEERING
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www.mclarentraffic.com.au

Client / Project:
Duffy Kennedy Constructions

Project Address:
1 Veno Street, Heathcote

Notes:
CONCEPT PLAN ONLY.
NOT FOR CONSTRUCTION.

Tested Using:
*AutoTURN 11
*ZWCAD 2019
Scale @ A3 1:200

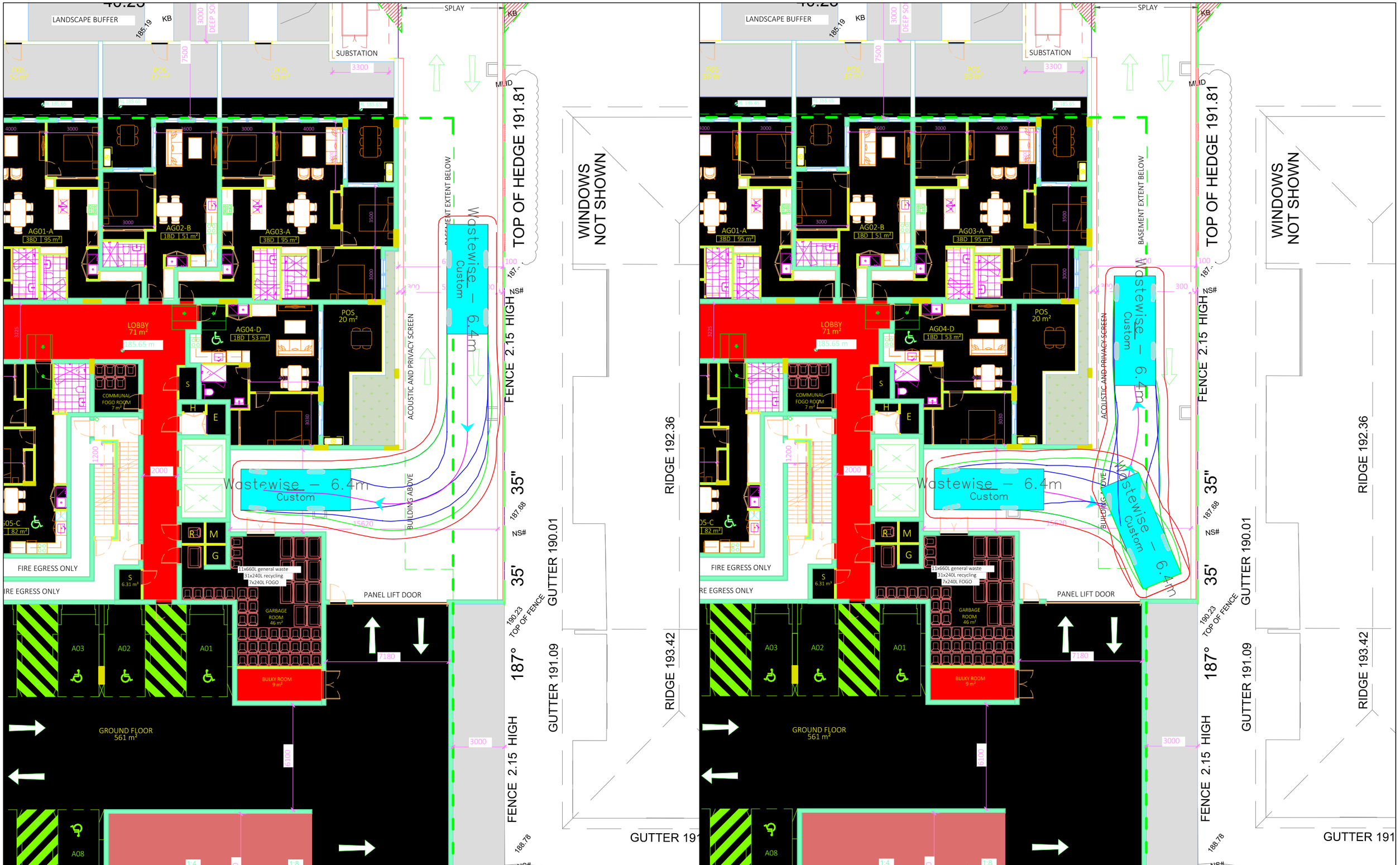
Project No:
240281

Drawing Title:
Building A - Circulation - B85 Passing B99

Revision History

Version	Date	Notes
A	03/07/2024	

Filename: da-0-221_(a) ground level building a.dwg



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Notes:
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NOT FOR CONSTRUCTION.

Tested Using:
*AutoTURN 11
*ZWCAD 2019

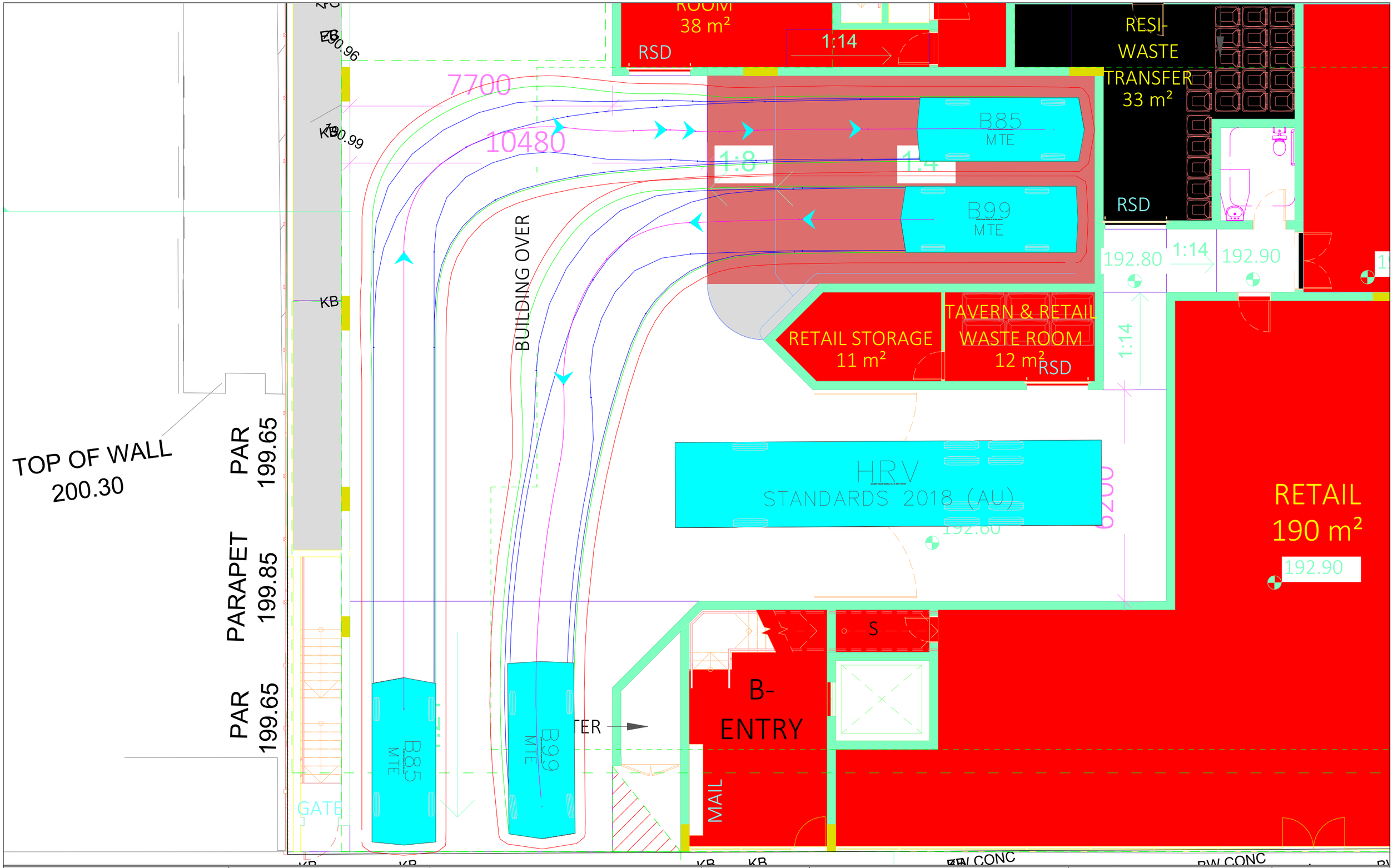
Scale @ A3 1:200

Project No:
240281

Drawing Title:
Building A - Waste Vehicle Entry & Exit

Revision History		
Version	Date	Notes
A	03/07/2024	

Filename: da-0-221_(a) ground level building a.dwg



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Client / Project:
Duffy Kennedy Constructions

Project Address:
1 Veno Street, Heathcote

Notes:
CONCEPT PLAN ONLY.
NOT FOR CONSTRUCTION.

Tested Using:
*AutoTURN 11
*ZWCAD 2019

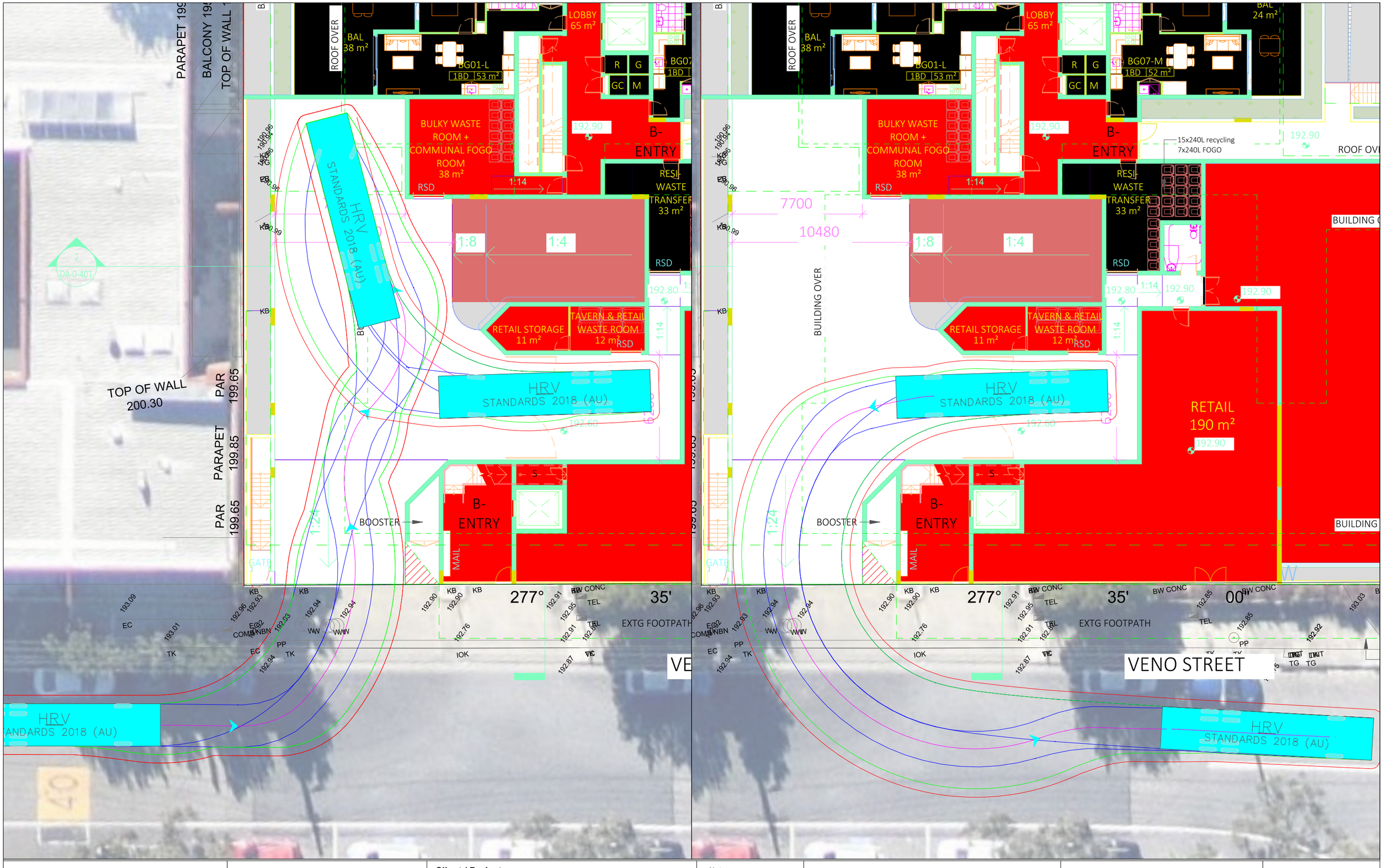
Scale @ A3 1:100

Project No:
240281

Drawing Title:
Building B & C - Circulation - B85 Passing B99

Revision History		
Version	Date	Notes
A	23/06/2024	

Filename: da-0-212_(s2) ground level building b&c.dwg



McLaren Traffic Engineering & Road Safety Consultants	MCLAREN TRAFFIC ENGINEERING A division of RAMTRANS Australia Pty. Ltd. Shop 7, 716-720 Old Princes Hwy, Sutherland NSW 2232 P : (02) 9521 - 7199 E : admin@mclarentraffic.com.au www.mclarentraffic.com.au	**Client / Project:** Duffy Kennedy Constructions **Project Address:** 1 Veno Street, Heathcote	**Notes:** CONCEPT PLAN ONLY. NOT FOR CONSTRUCTION. **Tested Using:** *AutoTURN 11 *ZWCAD 2019 Scale @ A3 1:200	**Project No:** 240281 **Drawing Title:** Building B & C - Waste Vehicle Entry & Exit	**Revision History** Version: A Date: 23/06/2024 Notes:

Filename: da-0-212_(s2) ground level building b&c.dwg