Traffic and Transport Assessment

Dan Murphy's – 150 Rawson Road Guildford

CG140080

Prepared for
ALH Group

3 December 2014

Cardno
Shaping the Future

Document Information

Prepared for	ALH Group
Project Name	Dan Murphy's – 150 Rawson Road Guildford
File Reference	CG140080REP001F01.docx
Job Reference	CG140080
Date	3 December 2014

Contact Information

Cardno Victoria Pty Ltd
Trading as Cardno
ABN 47 106 610 913

Level 4
501 Swanston Street
Melbourne
Victoria 3000 Australia

Telephone: (03) 8415 7777
Facsimile: (03) 8415 7788
International: +61 3 8415 7777

victoria@cardno.com.au
www.cardno.com

Document Control

Version	Date	Author	Author Initials	Reviewer	Reviewer Initials
F01	3/12/14	Eli Goodhardt		Ernie Mensforth	

Table of Contents

Appendices

Tables

Figures

1 Introduction

Cardno was retained by ALH Group to prepare an assessment of the traffic and parking impacts of the Dan Murphy's liquor store proposed at the site of the existing Golf View Hotel, 150 Rawson Road, Guildford.

In the course of preparing this assessment, the subject site and its environs have been inspected, plans of the development have been examined, and all relevant traffic and parking data has been collected and analysed.

2 Background and Existing Conditions

2.1 Location and Land Use

The subject site is located on the south side of Rawson Road, approximately 70 metres east of its intersection with Woodville Road and has a frontage of approximately 85 metres to Rawson Road.

The Golf View Hotel is located on the subject site. It has an existing total floor area of approximately 1,545m^2 which includes bar and lounge areas along with a bistro and TAB.

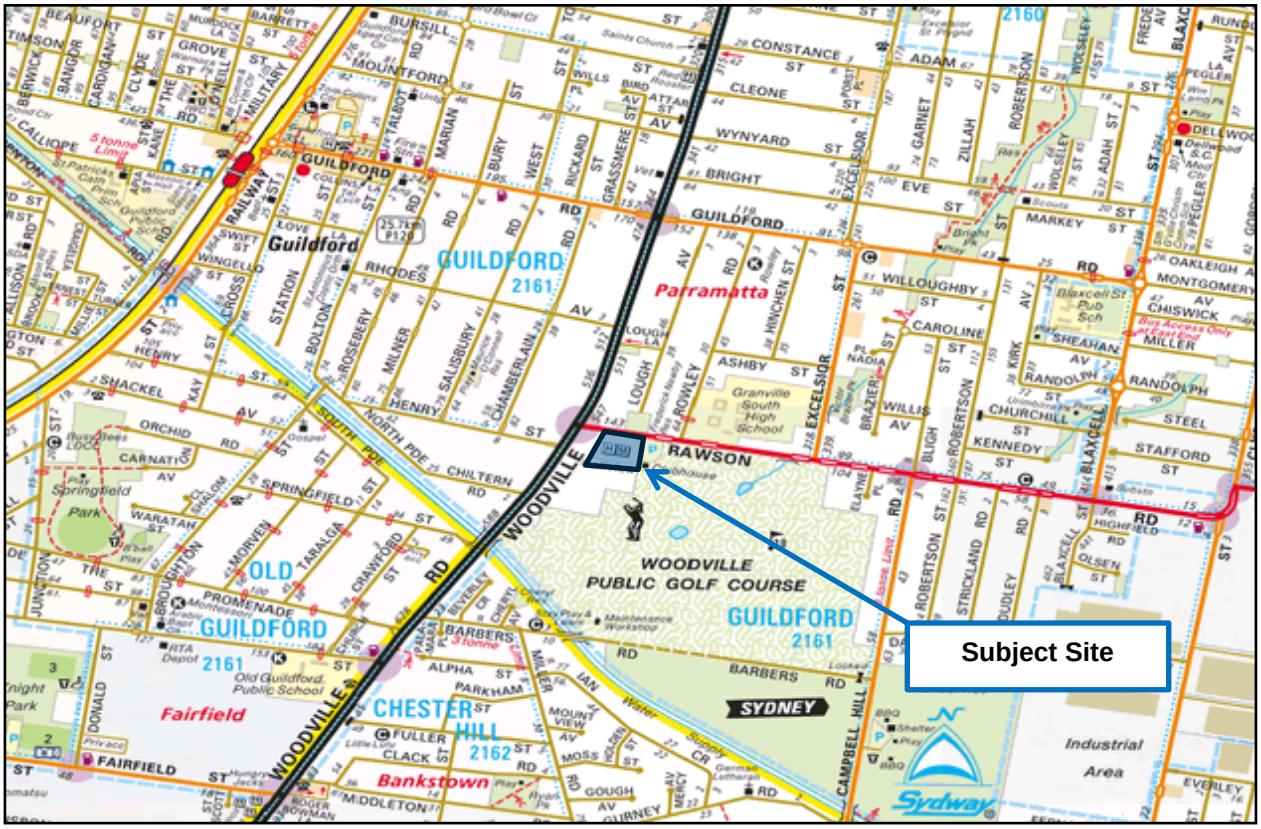
The subject site has existing at-grade car parking with a total supply of 117 car parking spaces. Access to and/or from the site is available via 3 separate vehicular crossovers to Rawson Street and/or a carriageway easement off the southbound carriageway of Woodville Road that also services the adjoining property (Kennards Self Storage) to the south of the subject site. This carriageway easement also extends through the eastern portion of the subject site to Rawson Road. Fully directional access is available via an existing vehicle crossover between Rawson Road and that carriageway easement.

Existing development to the west of the subject site that fronts onto Woodville Road includes a 24-hour fitness centre, a body building equipment and goods warehouse/sales outlet, a Kitchen Kraft showroom and the aforementioned Kennards Self Storage facility. Deliveries to and from several of these businesses are made via an internal driveway across the rear, eastern boundary of each of these properties which is accessed via a crossover to Rawson Road, immediately west of the western boundary of the Golf View Hotel site.

Other land uses in the vicinity of the subject site include the Woodville Public Golf Course which abuts the subject site to the west, while properties on the north side of Rawson Road opposite the site are residential (detached housing).

The location of the subject site is shown Figure 2-1

Figure 2-1 Site Location



2.2 Road Network

2.2.1 Rawson Road

Rawson Road is a secondary arterial road extending from Clyde Street, South Granville in the east to Woodville Road, Guildford approximately 70 metres west of the subject site.

Rawson Road operates with a single two-way carriageway which, across the frontage of the subject site, is delineated to provide separate left and right lanes for westbound flows (on the approach to traffic signals at Woodville Road) and a single eastbound traffic lane plus a wide parking lane adjacent to the northern kerb.

"No Parking" restrictions are applicable to the south side of Rawson Road across the frontage of the subject site

In the vicinity of the site Rawson Road operates with a posted speed limit of 60 km/h.

Figure 2-2 and Figure 2-3 show Rawson Road facing east and west adjacent the frontage of the subject site.

Figure 2-2 Rawson Road, looking east from the subject site to the Woodville Road intersection

Figure 2-3 Rawson Road, looking west from the frontage of the subject site

2.2.2 Woodville Road

Woodville Road is a primary arterial road that extends from Hume Highway, Villawood in the south through to Parramatta Road and the Great Western Highway, Parramatta, in the north.

On both approaches to its intersection with Rawson Road, Woodville Road has dual carriageways each with three (3) traffic lanes. "Clearway 6am-10am & 3pm-7pm" and "No Stopping" restrictions also apply on both carriageways and on both the approach and departure sides of its intersection with Rawson Road.

All 3 southbound lanes of Woodville Road are available for through traffic on both the approach and departure sides of its intersection with Rawson Road whereas a separate right turn lane is delineated on the south approach (for a distance of approximately 380 metres) leaving 2 only lanes for northbound through movements along Woodville Road.

The posted speed limit for Woodville Road either side of Rawson Road is 70 km/h.

Figure 2-4 shows Woodville Road, facing north from a point just south of its intersection with Rawson Road.

Figure 2-4 Woodville Road, looking north to and beyond its intersection with Rawson Road

2.2.3 Carriageway Easement

A carriageway easement exists across the eastern portion of the site from Rawson Road to and through the Kennards Self Storage site that abuts the southern boundary of the subject site.

This carriageway easement links to an access driveway along the eastern and southern boundaries of the Kennards Self Storage site and ultimately to the southbound carriageway of Woodville Road.

2.3 Sustainable Transport

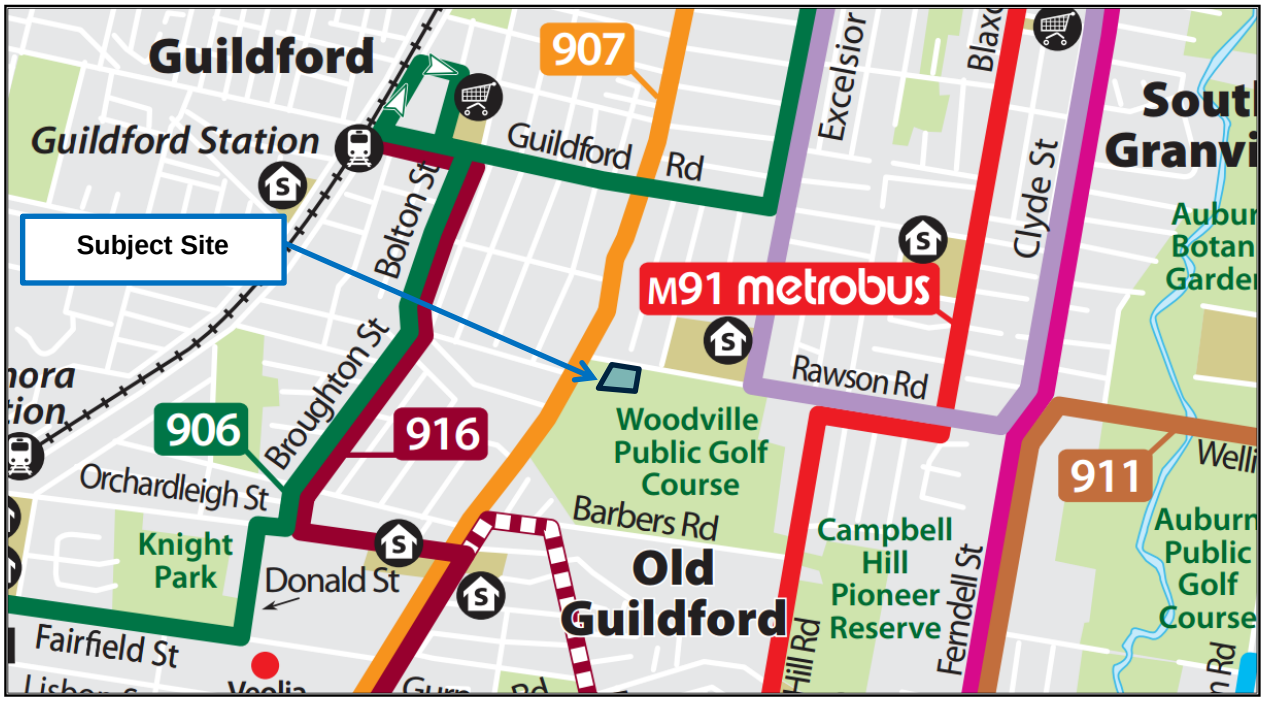
2.3.1 Public Transport

The site has a good level of accessibility to public transport services with a number of existing bus and train services that can used for travel to and from the subject site. In particular, the 907 bus service operates along Woodville Road and the Guildford railway station is located approximately 1.5 km northwest of the site, providing access to the city and beyond. The services immediately available to the site are summarised in Table 2-1 and illustrated in Figure 2-5.

Table 2-1 Public Transport Provision

Service	Route No.	Description	Stop Location
Train	T2	South Line	Guildford Railway Station
	T5	Cumberland Line	Guildford Railway Station
Bus	907	Bankstown to Parramatta via Bass Hill	Woodville Road

Figure 2-5 Public Transport Map

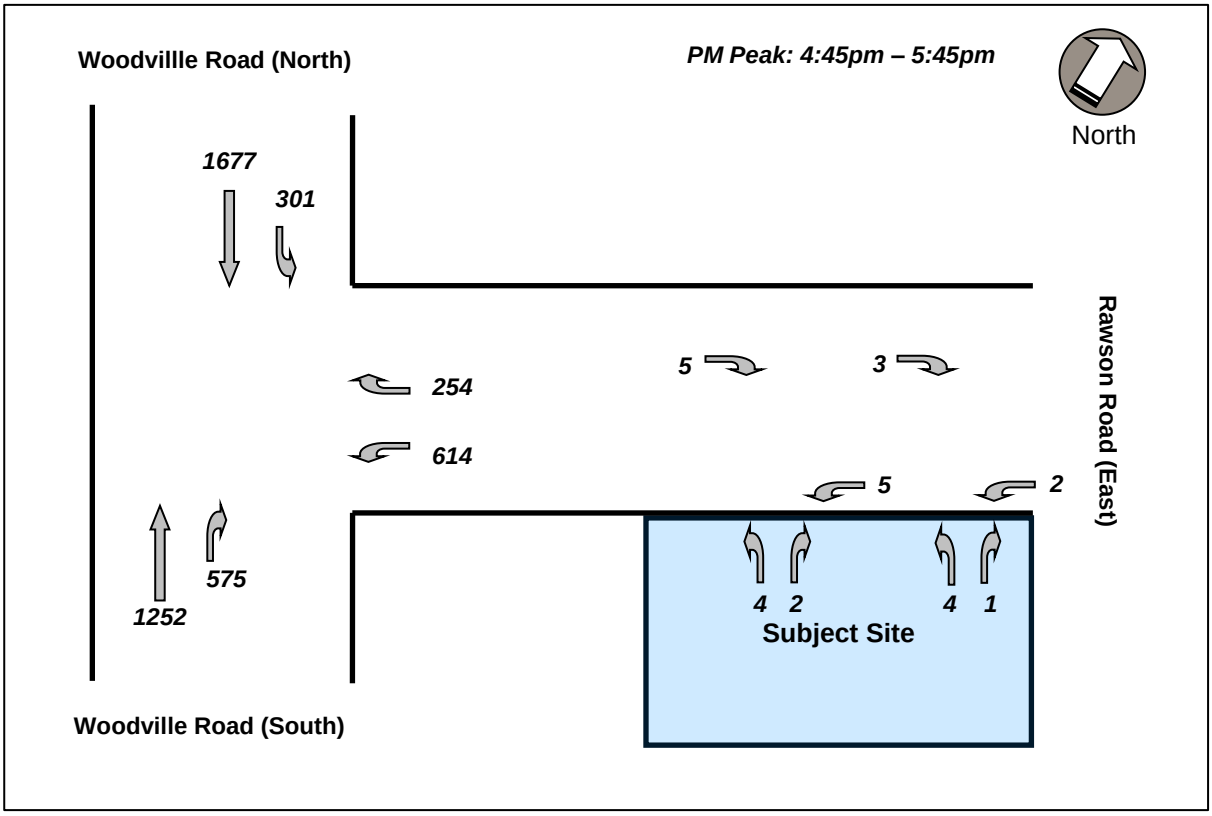


2.4 Traffic Volumes

Traffic turning movement counts were commissioned by Cardno at the intersection of Woodville Road and Rawson Road on Friday 21st February 2014 from 3:00pm – 7:00pm. These surveys were scheduled to quantify the total traffic activity at the intersection during the PM commuter peak period. Friday evening will also be a time of peak or close to peak patronage of any Dan Murphy's outlet established at the subject site.

The evening peak hour for the Woodville Road / Rawson Road intersection was found to occur between 4:45pm – 5:45pm, the results of which are illustrated in Figure 2-6. The entire data set from those traffic counts is provided in Appendix A of this report.

Figure 2-6 Existing Traffic Volumes



Vehicle turning movement counts were also undertaken at the existing site access points to/from Rawson Road between the hours of 10:00am and 7:00pm, on Friday 7th February 2014. Vehicle movements made between the subject site and the adjoining Kennards Self Storage site via the aforementioned carriageway easement were also recorded.

Collectively, these traffic counts recorded the peak hour for site ingress/egress movements (also) between 4:45pm and 5:45pm, at which time 26 vehicles utilised the existing crossovers, comprising 15 entering the site and 11 exiting.

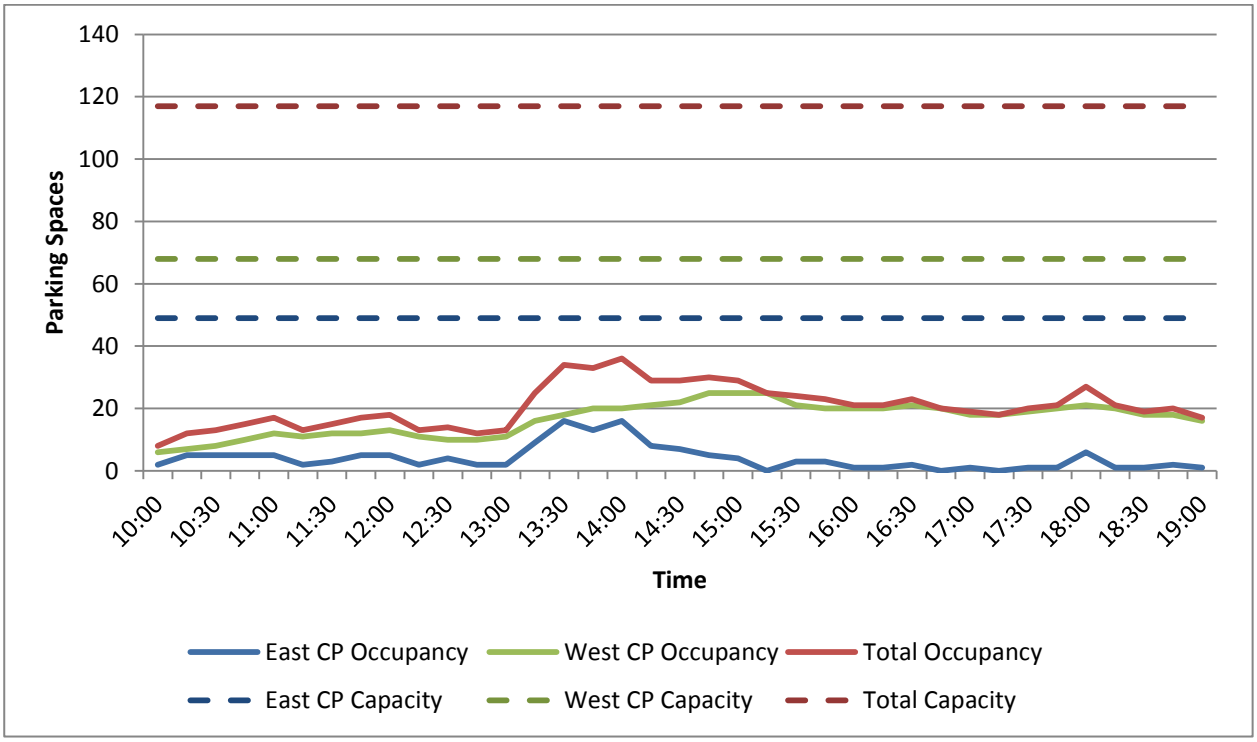
2.5 Existing Parking Utilisation

There are currently a total of 117 car parking spaces marked out within the subject site. The number of cars parked within the existing car park, was recorded just prior to commencement of the aforementioned site access turning movement counts (9:59am) and immediately following the counts at 7:01pm. This enabled the total accumulation of cars within the site to be calculated throughout the day of the traffic counts (Friday 7th February 2014) that recorded movements to and from the site. (N.B. – Conservatively assumes all cars within the site are occupying parking spaces).

The peak parking occupancy was recorded at 1:45pm at which time 36 vehicles were parked within the site, which equates to a peak utilisation ratio of 31% occupancy of the available on-site parking spaces, for a typical Friday.

The parking demand within the site, as it varies with the time of day during the survey, is shown in Figure 2-7.

Figure 2-7 Existing Car Parking Demand (Friday 7th February 2014)



With the peak parking accumulation within the site of just 36 cars, no fewer than 81 on-site car parking spaces were vacant at all times throughout the survey period.

3 Proposed Development

3.1 General

Based on the plans prepared by i2C (Drawing: 2012-156 Nos: SK08.2; Date: 02/12/14), it is proposed to demolish the western half and first floor of the existing Golf View Hotel building retaining 695m^2 of gross floor area. The cleared portion of the site is proposed to be redeveloped for the purposes of a Dan Murphy's liquor store with a gross floor area of 1,350m^2, amounting to a total gross floor area of 2,045m^2.

3.2 Car Parking and Access

The proposed development plans show modifications to the site's car parking layout and access provisions to provide improved on-site circulation and reduce the number of vehicle crossovers to Rawson Road. The existing site access crossover located closest to the site's eastern boundary, which links directly to the aforementioned carriageway easement through the site, is to be retained. The other two existing crossovers to Rawson Road are to be removed and replaced by a single crossover which is proposed to be used for left IN and left OUT vehicle movements only, to and from Rawson Road.

It is further proposed that 'Keep Clear' pavement markings be installed across the westbound lanes of Rawson Road at the site's easternmost site access crossover to improve the accessibility of the site and minimise the potential for congestion of eastbound traffic movements on Rawson Road. The merits of these proposed "Keep Clear" pavement markings are discussed in detail in Section 5.5 of this report.

The proposed modifications to the on-site car park will result in a net loss of 1 space, resulting in a total on-site parking supply of 116 car parking spaces. The dimensions of the car parking spaces within the proposed car park exceed the minimum dimensions specified by the AS2890.1, with spaces typically 5.4 metres long and 2.6 metres wide accessed from 6.6 metre wide aisles.

Three (3) disabled parking bays have also been designed with an adjacent shared area in accordance with the layout requirements of AS2890.6.for 'disabled' parking spaces.

3.3 Loading Arrangements

Loading for the proposed Dan Murphy's store will via a loading dock at the western end of the proposed Dan Murphy's building. Internal driveways will allow delivery vehicles as large as a 19 metre semi-trailer to circulate 360 degrees around the residual Hotel and proposed Dan Murphy's building and to enter and leave the site via the site's eastern, fully directional crossover on Rawson Road.

As the proposed location of the loading dock is well away for the on-site parking areas used by staff and patrons of the site, loading activities will have minimal impacts on either pedestrian movements and/or other traffic operations at the site.

Swept path diagrams have been prepared to verify that a 19 metre semi-trailer can adequately access the loading area, and circulate within the site always travelling in a forwards direction. The swept path diagrams are provided in Appendix B of this report.

It should also be noted that all deliveries to a Dan Murphy's outlet (i.e. all beers, wines and spirits) are made, when required, using a single vehicle. Consequently there is little or no likelihood that delivery vehicles will ever need to queue at the subject site prior to accessing the loading bay.

4 Car Parking Considerations

4.1 Statutory Parking Requirements

The car parking requirements of the proposed Dan Murphy's Liquor Outlet are outlined in the Parramatta DCP 2011 which stipulates a car parking provision for "retail premises" at a rate of one (1) space per 30m^2 of Gross Floor Area, with one (1) 'disabled' parking space to be provided per every 50 car parking spaces or part thereof (Building Code of Australia Part D3).

Application of the above mentioned rates to the proposed 1,350 m^2 yields a statutory requirement for 45 car parking spaces, including 1 'disabled' parking space.

4.2 Empirical Assessment

Cardno has undertaken car parking surveys at a number of existing Dan Murphy's liquor outlets. These surveys indicate peak parking demands ranging from 2.3 to 3.3 with an average of 2.8 spaces per 100m^2. The peak hour was found to occur towards the late afternoon.

The highest of these recorded case study parking generation rates is consistent with the parking supply requirement specified in the Parramatta DCP 2011 and has been adopted for the purposes of this assessment and no reduction or waiver of the requirement of 45 car parking spaces is requested.

That said the total parking demand to be accommodated within the subject site includes the parking demands generated by the components of the existing Golf View Hotel that are to be retained which include a Sports Lounge, Gaming Facilities and outdoor seating areas.

For the purposes of this assessment it is conservatively assumed that all parking recorded within the subject site by the car parking occupancy surveys detailed in Section 2.5 of this report (i.e. a peak of 36 parking spaces) is generated by those components of the existing Golf View Hotel that are to be retained, and only by those components of the Hotel's existing operations.

Therefore, the anticipated, post-development peak aggregate parking demand for the site equates to 81 spaces (i.e. 45 [proposed Dan Murphy's] + 36 [existing Hotel peak parking demand] = 81 spaces).

4.3 Adequacy of Parking Provision

The site plan for the proposed development includes a total on-site car parking supply of 116 spaces, including 3 'disabled' parking spaces. This significantly exceeds the anticipated aggregate parking demands (81 spaces) of the proposed Dan Murphy's store and the existing and on-going operations of the Golf View Hotel.

It is therefore confidently concluded that all parking demands generated by the existing and proposed uses at the subject site can be accommodated within the defined car parking areas of the proposed development.

5 Traffic Considerations

5.1 Traffic Generation

The RTA Guide to Traffic Generating Developments does not stipulate a land use traffic generation rate for liquor stores (Section 3.6.6).

It can however be advised that the aforementioned case studies at existing Dan Murphy's sites included surveys of all traffic activity to and from an existing 1380m^2 outlet in Rowville, Victoria, which is comparable in size to the proposed 1,350m^2 store. These surveys recorded a peak traffic generation rate equivalent to 20.9 traffic movements per 100m^2 coinciding with evening peak periods. The traffic generated by the proposed store during the morning commuter peak period is expected to be very low and not significant in terms of traffic operations.

For the purpose of this analysis a peak traffic generation rate of 21 vehicle movements per hour per 100m^2 of retail floor area is adopted.

Application of this rate to the 1,350m^2 floor area proposed equates to a peak traffic generation rate of 284 vehicle movements per hour which, for the purposes of this assessment, is assumed to occur at times coincident with the PM commuter peak period. This anticipated peak in traffic movements to and from the proposed Dan Murphy's store can be expected to be split equally between movements to and from the site.

Application of the 50/50 split equates to an anticipated peak hour traffic generation of 142 inbound movements and 142 outbound movements.

5.2 Trip Purpose

The Dan Murphy's store proposed at the subject site is well located to maximise the potential of attracting passing trade. Therefore, many of the traffic movements made by Dan Murphy's patrons to and from the site will likely be made by cars already using the 'local' road network that divert into the site as part of a larger trip and therefore will not add to the traffic already using the road network in the vicinity of the site.

For the purpose of this assessment it is assumed that 70% of movements to and from the site will be made up of passing trade. The remaining 30% will be generated as additional trips to the road adjacent to the site as shown in Table 5-1

Table 5-1 Breakdown of Turning Movements – Typical Friday PM peak hour

	Inbound (vph)	Outbound (vph)	Total (vph)
Passing Trade	99	99	198
Generated Trade	43	43	86
Total	**142**	**142**	**284**

5.3 Traffic Distribution

For the purposes of this assessment, the distribution of traffic movements to and from the Dan Murphy's site is assumed to be proportional to the current distribution of traffic on the surrounding road network.

The proposed site access arrangements will also influence the distribution of vehicle movements to and from the site. However, in assessing the adequacy of the proposed site access provisions, it is conservatively assumed that all traffic movements to and from the site will be made via the two crossovers proposed on Rawson Road. It is further expected that traffic movements via the proposed western site access crossover on Rawson Road, will be limited to left turns only, to and from the site. This will require all right turn movements between the site and Rawson Road, to be made using the site's existing crossover that links directly to the carriageway easement through the eastern end of the site.

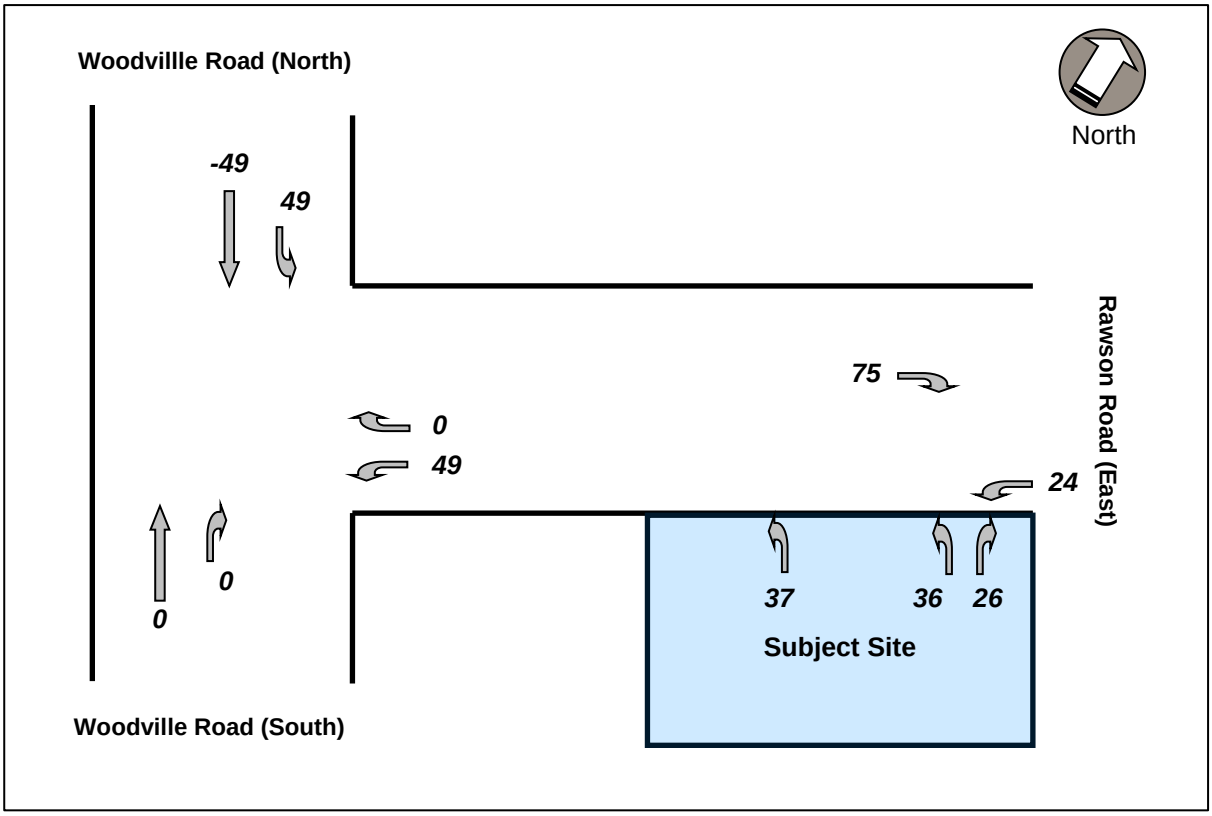
The assumed distribution of additional movements to and from the site also considers the existing turning movement splits for traffic movements currently made through the Woodville Road / Rawson Road intersection.

The resulting assignment of anticipated passing trade, and generated trade, traffic movements, into and out of the site and at the intersection of Woodville Road and Rawson Road, are discussed as follows.

5.3.1 Passing Trade

The current distribution of movements through the Woodville Road / Rawson Road intersection will change slightly as a result of the anticipated 'passing trade' diverting off Woodville Road to visit the proposed Dan Murphy's store. The anticipated redistribution of these vehicle movements and others made to and from the site by passing trade, are shown in Figure 5-1.

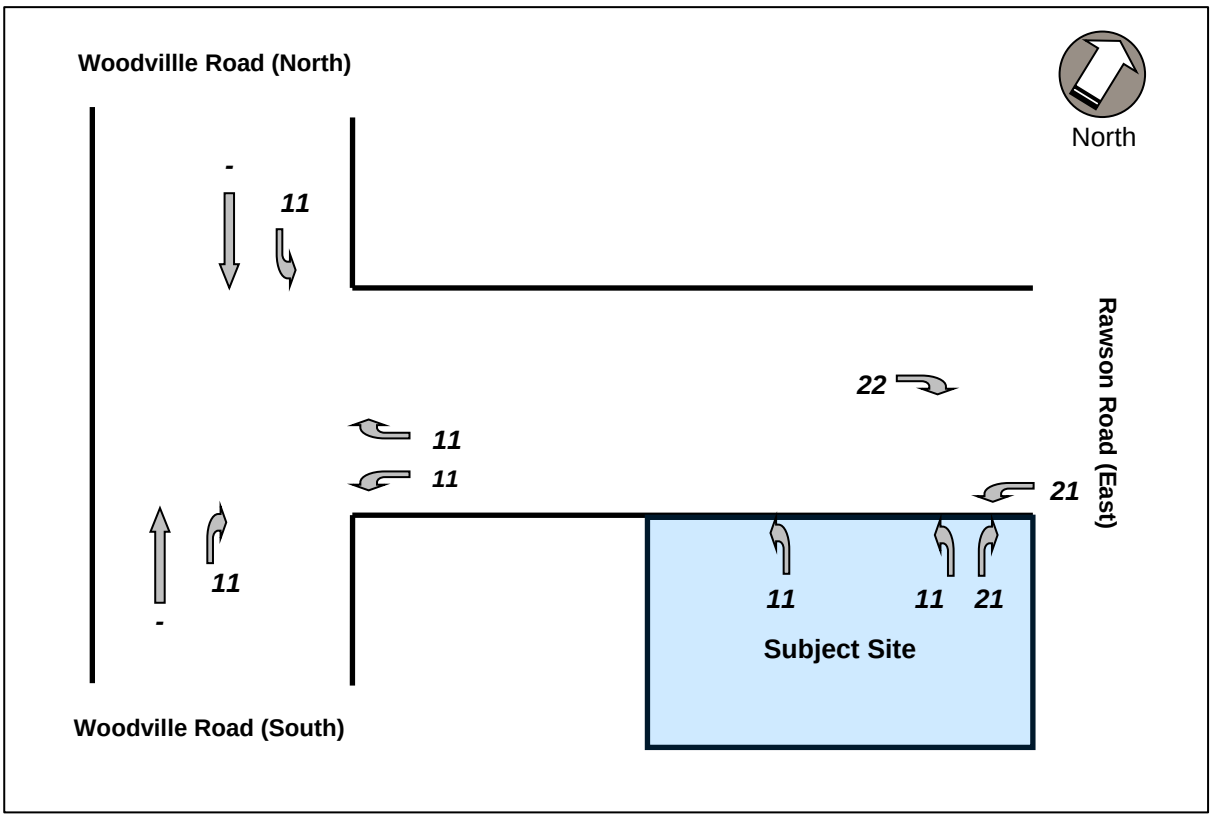
Figure 5-1 Passing Trade Traffic Redistribution



5.3.2 Generated Trade

The additional traffic movements generated in the vicinity of the subject site for the sole or primary trip purpose of visiting the proposed Dan Murphy's store are assumed to be split evenly between movements to and from both directions along Rawson Street. This assumed distribution of 'Generated' trade is shown in Figure 5-2.

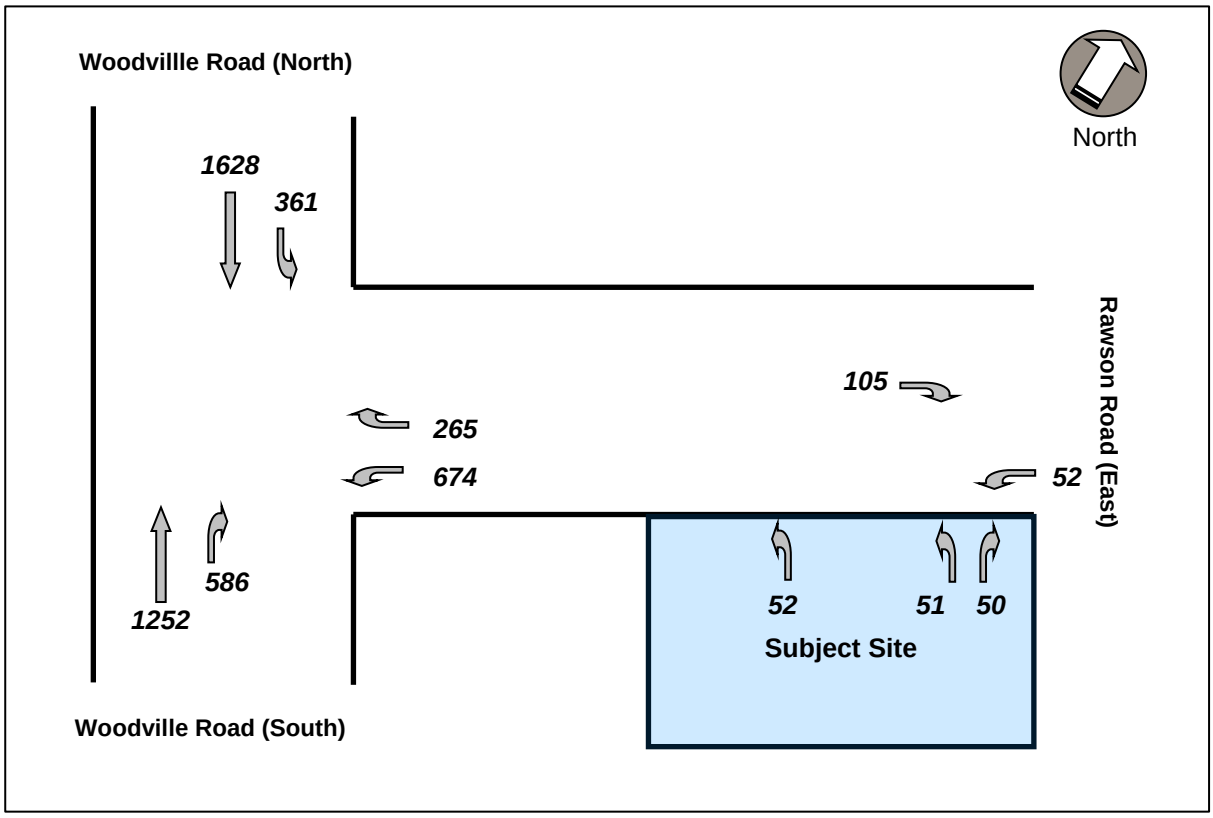
Figure 5-2 Additional / 'Generated' Trade Traffic Distribution



5.3.3 Post-development Network Vehicle Movements

By superimposing the turning movements associated with passing trade and the additional / 'Generated' traffic volumes onto the existing volumes of the road network the anticipated total post-development volumes during the PM peak period, can be determined. These are shown in Figure 5-3.

Figure 5-3 Ultimate Post Development Traffic Volumes / Distribution



5.4 Intersection Analysis

The existing and future operation of the intersection of Woodville Road/Rawson Road was analysed using SIDRA Intersection. This computer package, originally developed by the Australian Road Research Board, provides information about the capacity of an intersection in terms of a range of parameters, as described below:

Level of Service (LoS) is one of the major performance measures calculated by SIDRA which is a comparative measure which provides an indication of the operating performance of an intersection in accordance with the average delay per vehicle as outlined in Figure 5-3.

Table 5-2 Intersection Performance - Level of Service

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

The ***95th Percentile (95%ile) Queue*** represents the maximum queue length, in metres, that can be expected in 95% of observed queue lengths in the peak hour; and

Average Delay is the delay time, in seconds, which can be expected over all vehicles making a particular movement in the peak hour.

The results of the Existing and Post-development SIDRA Intersection analyses for the Woodville Road / Rawson Road intersection are summarised in Table 5-3. Appendix C includes the Movement Summary sheets for the SIDRA analyses.

Table 5-3 SIDRA Intersection Analysis Summary

Approach	Existing Conditions			Post Development Conditions		
	LoS	95th%ile Queue	Average Delay	LoS.	95th%ile Queue	Average Delay
Woodville Road South	C	401 m	41 sec	D	435 m	47 sec
Rawson Road East	E	216 m	61 sec	E	251 m	70 sec
Woodville Road North	E	421 m	60 sec	E	427 m	61 sec
Intersection	**D**	**421 m**	**53 sec**	**E**	**435 m**	**57 sec**

The Table 5-3 results confirm the site observations, made at times coincident with the PM commuter peak period, of lengthy vehicle queues and average delays on all three legs of the Woodville Road / Rawson Road intersection, as should be expected with the average traffic signals cycle length of 160 seconds. The level of service currently provided for each turning manoeuvre at the intersection varies considerably with the northbound through movement along Woodville Road operating with a 'good' LoS A, whereas the right turn

movements from both Woodville Road (south approach) and Rawson Road (east approach), during the PM commuter peak hour, currently operates beyond capacity at LoS F.

The post-development analyses indicate that with the addition of the anticipated increases in traffic activity likely to be generated by the proposed Dan Murphy's store at times of peak patronage, the average delays and queue lengths on all approaches to the Woodville Road / Rawson Road intersection will increase only slightly.

Indeed, detailed review of the Movement Summary sheets (see Appendix C) reveal that the current LoS for all individual turning movements at the Woodville Road / Rawson Road intersection, will be unchanged as a result of the proposed development.

5.5 Site Access Analysis

The existing and future operations of the existing and proposed site crossovers are influenced by the operations of the existing traffic signals at the Woodville Road / Rawson Road intersection and more specifically by the bunching of traffic movements along Rawson Road and the queuing of vehicles on the Rawson Road (east) approach to the signals. Consequently, random arrivals of through traffic movements along Rawson Road across the existing site crossovers should not be assumed for the purposes of an assessment of the future operations of the Rawson Road site access crossovers.

Accordingly, surveys were undertaken at the existing site access, on Friday 19th September 2014 to record the exact time (to $^{1}/_{10}^{th}$ of a second) at which each vehicle passed by the site's access crossovers. This data allowed quantification of the extent of the gaps in the traffic flows in each direction along Rawson Road and the durations for which vehicle queues extended back from the traffic signals, beyond the site's main eastern access crossover.

It should however be noted that the extent and frequency with which vehicle queuing currently occurs back along Rawson Road and across the site's access crossovers from the traffic signals, often blocks the passage of right turns to and from the subject site.

It is therefore proposed that "KEEP CLEAR" pavement markings be installed across the westbound traffic lanes of Rawson Road to discourage vehicles from queuing across and blocking the site's access crossovers.

Gap / capacity analyses have been completed for movements to and from the site assuming such "KEEP CLEAR" markings are installed, and observed by drivers using Rawson Road, yielding the following existing capacities for movements to and from the subject site:

Left turns FROM the site = 266 vehicles# (N_p^+ = *239 vehicles)*
Right turns FROM the site = 135 vehicles (N_p^+ = *121 vehicles)*
Right turns TO the site = 362 vehicles (N_p^+ = *326 vehicles)*

N_p - Practical Absorption Capacity= 0.9 x theoretical capacity.
 # - assumes one left turn vehicle will exit onto the "Keep Clear" each time vehicle queues extend beyond the site access.

These practical absorption capacities far exceed the anticipated post-development turning movements to and from the site, shown in Figure 5-3 and will result in volume:capacity ratios of 0.21 (for left turns from the site), 0.41 (for right turns from the site) and 0.32 (right turns to the site).

(N.B. – These volume:capacity ratios were determined:

- with consideration of the relevant critical headways and follow-up headways specified by AustRoads *"Guide to Road Design Part 4A: Signalised and Unsignalised Intersections*"; and
- assuming random arrivals of the mix of left and right turn egress movements at the site's single- lane, eastern site crossover.)

6 Summary & Conclusions

Based on the preceding analysis it is concluded that:

> It is proposed to demolish the western half and first floor of the existing Golf View Hotel building retaining 695 m^2 of gross floor area and construct a Dan Murphy's liquor store with a gross floor area of 1,350m^2, amounting to a total gross floor area of 2,045 m^2 at 150 Rawson Road, Guildford, NSW.

> It is further proposed that the existing site layout be modified to improve the channelization of vehicle movements within the site and reduce the number of access points to/from Rawson Road.

> The proposed development will include modifications to the on-site car park will result in a net loss of 1 space, resulting in a total on-site parking supply of 116 car parking spaces including 3 'disable' parking spaces. The dimensions of all proposed car parking spaces exceed the minimum dimensions and layout specified in AS2890.1 and AS2890.6.

> Parking surveys were completed at the subject site on Friday 7st February 2014 between the hours of 10:00 am – 7:00 pm. The peak parking accumulation was recorded at 1:45 pm when 36 of the 117 existing spaces were occupied. This left a minimum of 81 spaces vacant and available for use at all times throughout the survey period.

> The proposed Dan Murphy's liquor store can be expected to generate demand for up to 45 car parking spaces at times of peak patronage which if added to the site's existing peak parking demands will increase the maximum parking accumulation within the subject site to approximately 81 spaces.

> The anticipated aggregate post development peak parking accumulation is significantly lower than the proposed supply of on-site parking. Consequently all parking likely to be generated by both those facilities of the Golf View Hotel that are to be retained and the proposed Dan Murphy's store, will be accommodated within the proposed on-site car parking areas.

> Turning movement surveys were undertaken at the intersection of Woodville Road and Rawson Road to record the existing operational performance of that intersection and compare the post-development performance with the addition of the development generated traffic.

> The proposed Dan Murphy's store is expected to generate traffic activity to and from the site at times coincident with the PM peak hour on surrounding roads, to the extent of up to 284 vehicle movements which will be evenly distributed between inbound and outbound movements.

> Of these vehicle movements, it is estimated that the traffic generated will comprise approximately 86 new vehicle movements to the area of the site, specifically to visit the proposed Dan Murphy's store. The remaining 198 vehicle movements to/from the subject site, will be those "passing trade", i.e. those of motorists who divert into the site while passing along Woodville Road and/or Rawson Road as part of a trip made for an unrelated primary purpose.

> Analyses of the Woodville Road and Rawson Road intersection (with the anticipated post-development traffic volumes) show that it will continue to operate under similar conditions, post development and that the proposed development will have no significant impacts on the current level of service for all vehicle movements through the Woodville Road / Rawson Road signalised intersection.

> Similarly, with the installation of "KEEP CLEAR" pavement markings on Rawson Road across the site's eastern access crossover and driver concurrence with those pavement markings, the site's two proposed access crossovers will provide more than sufficient capacity for all anticipated post-development turning movements to and from the site.

Dan Murphy's – 150 Rawson Road
Guildford

APPENDIX

A

WOODVILLE ROAD/RAWSON ROAD TURNING MOVEMENT SURVEYS

Cardno
Shaping the Future

Turning Movement Survey - 6hr (v3.1): 08-Apr-09

Cardno Grogan Richards

Table 1: Project and Intersection Details

Job No:	
Job Name:	Golfview Hotel
Survey Date:	21-Feb-14
North Approach:	Woodville Rd
East Approach:	Rawson Rd
South Approach:	Woodville Rd
West Approach:	
Intersection Name:	Woodville Rd/Rawson Rd/
Weather:	Overcast
Suburb:	Guildforth — ***Melway Ref:*** 88 A8
CGR Staff:	Ernie Mensforth
Counted By:	TRANS TRAFFIC — ***Reference No.***
Comments:	

Peak Hour Select

☑
☑
☑
☑

Table 2: Survey Information

	Survey Start	***Peak Hour Start***	***PFF***
AM:	-	-	
PM:	3:00 PM	4:45 PM	99%
Interval:	0:15		

Peak Flow Factor

PM Peak: 99%

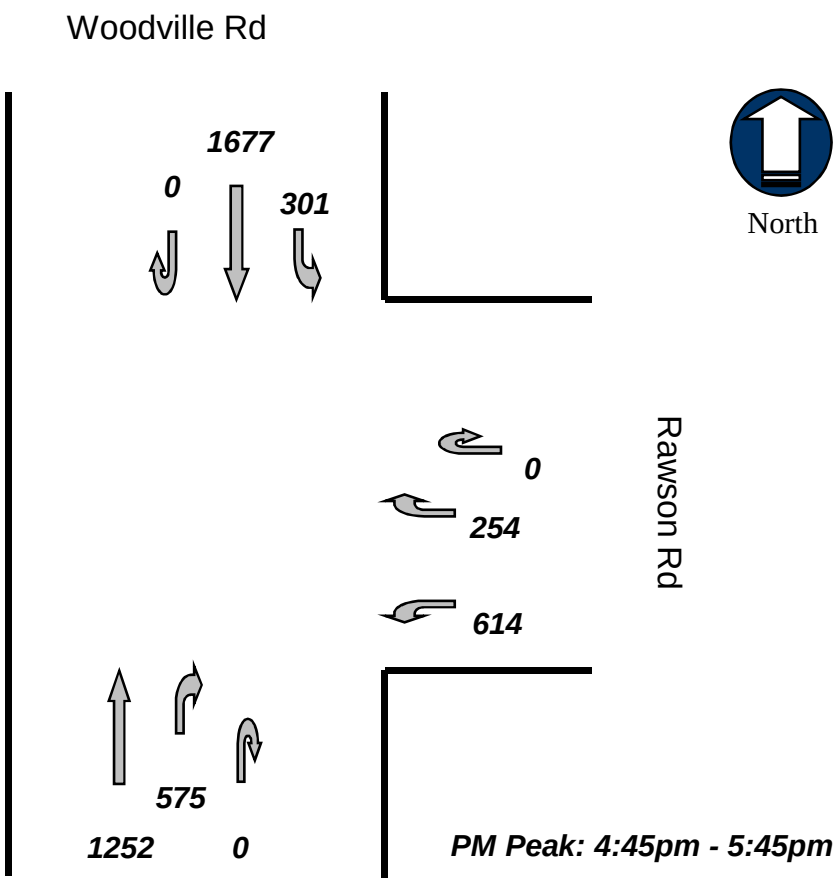


Figure 1: Peak Hour Traffic Volumes

Dan Murphy's – 150 Rawson Road
Guildford

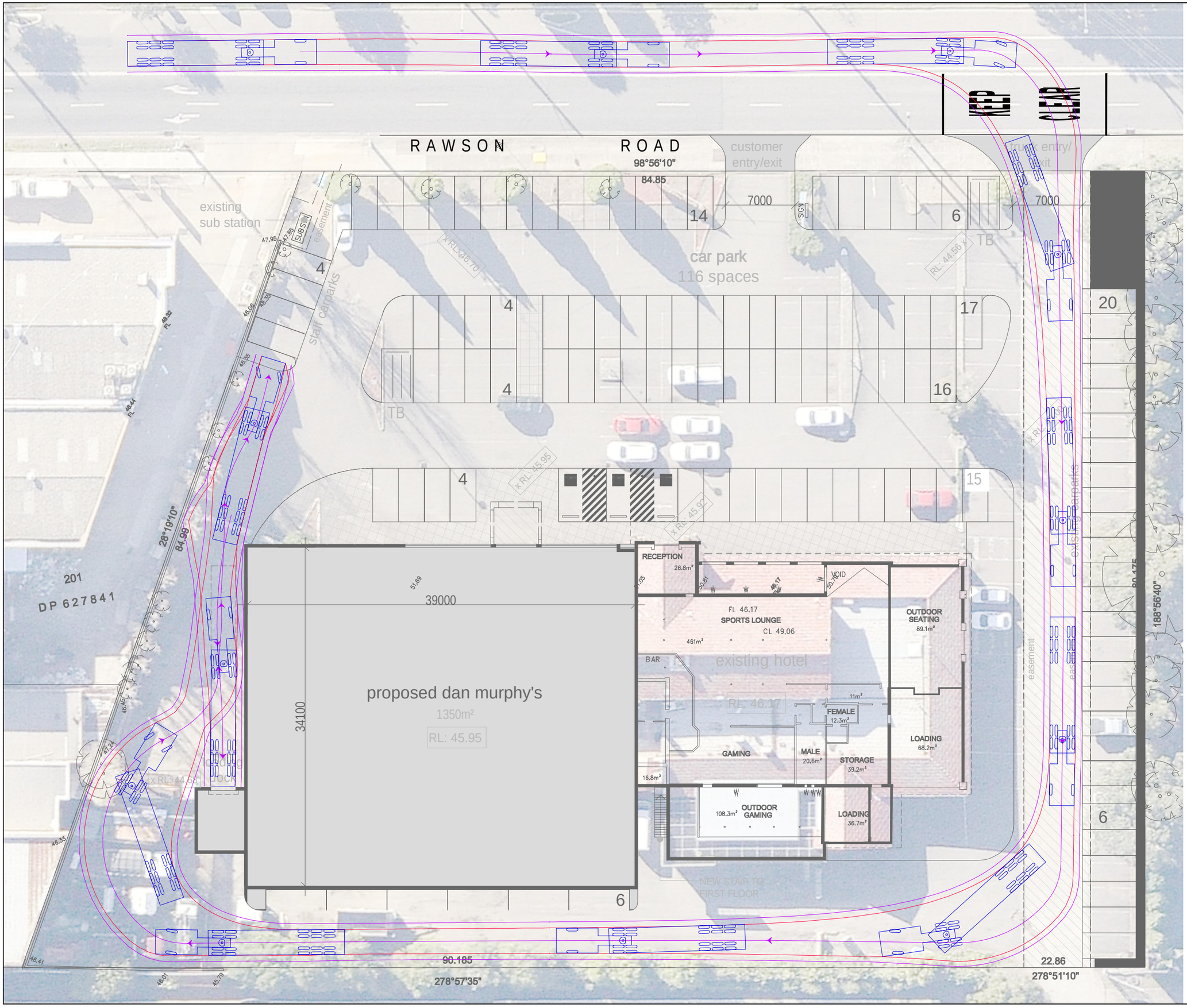
APPENDIX

B

SWEPT PATH DIAGRAMS

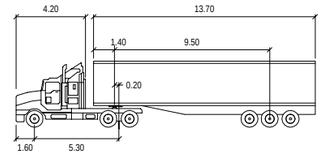
Cardno
Shaping the Future

Cardno



0 5 10m

SCALE 1:250 @A2



S ARTICULATED 19M

meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.7
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

VEHICLE LEGEND

- 19m SEMI 600mm CLEARANCE
- 19m SEMI OVERHANG
- 19m SEMI CENTRELINE

AUSTROADS 19m SEMI

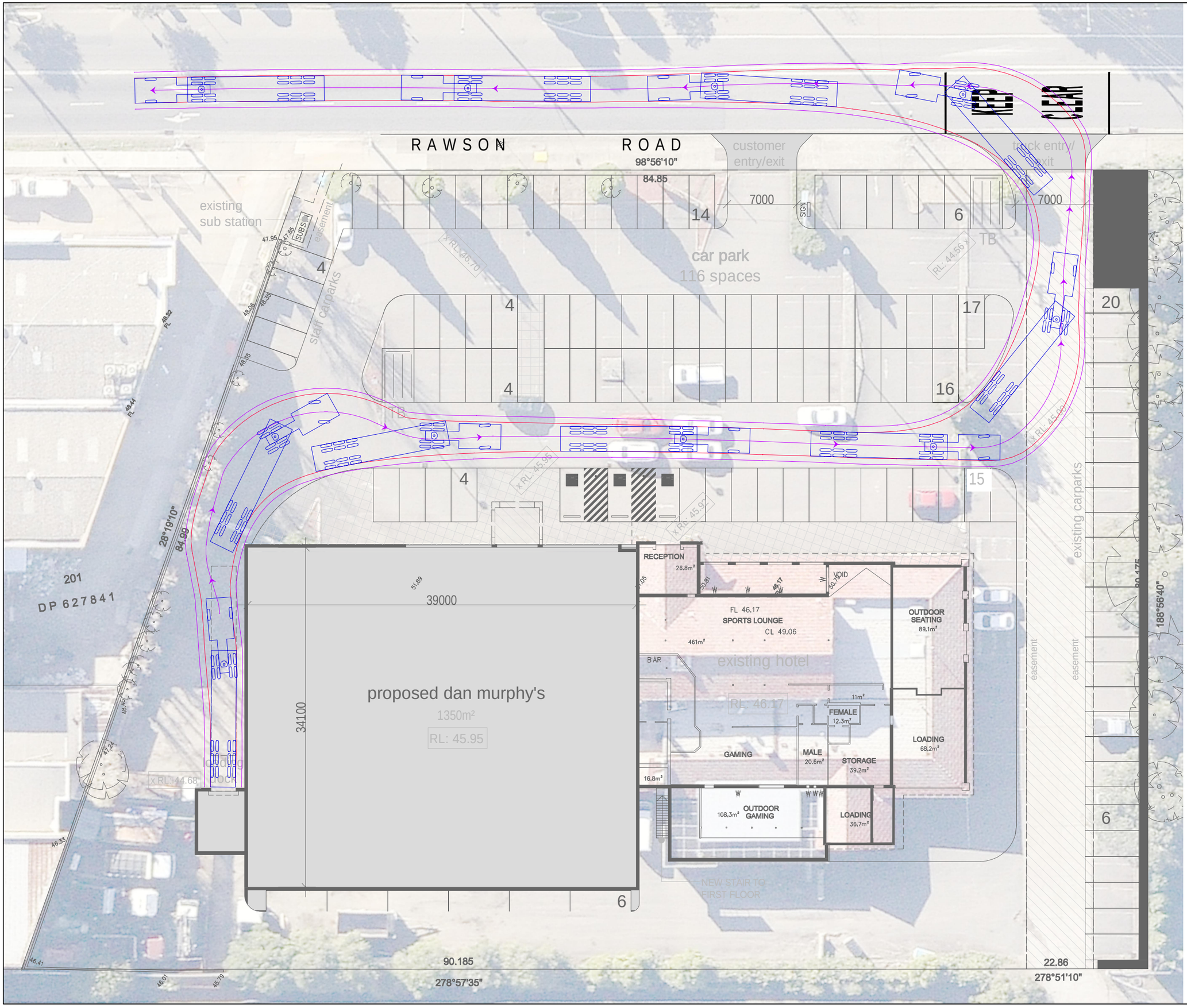
DAN MURPHY, GUILDFORD
CG140080 SK005

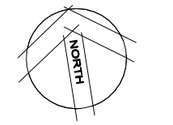
AUSTROADS 19m SEMI
SITE AND LOADING BAY
INGRESS MANOEUVRE
C.I. / E.G. 03.12.2014

NOTE:

DESIGN BASE SUPPLIED BY i2C ARCHITECTS - 03.12.2014
2012-156_-Sheet - SK09-2 - PROPOSED PLAN, ELEVATION AND SECTION.dwg

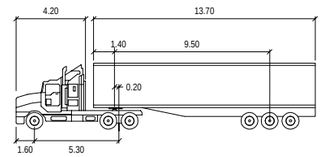
Cardno





0 5 10m

SCALE 1:250 @A2



S ARTICULATED 19M

	meters		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.7
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

VEHICLE LEGEND

- 19m SEMI 600mm CLEARANCE
- 19m SEMI OVERHANG
- 19m SEMI CENTRELINE

DAN MURPHY, GUILDFORD
CG140080 SK006

AUSTROADS 19m SEMI
SITE AND LOADING BAY
EGRESS MANOEUVRE
C.I. / E.G. 03.12.2014

NOTE:

DESIGN BASE SUPPLIED BY i2C ARCHITECTS - 03.12.2014
2012-156_-Sheet - SK09-2 - PROPOSED PLAN, ELEVATION AND SECTION.dwg

Dan Murphy's – 150 Rawson Road
Guildford

APPENDIX

C

SIDRA ANALYSES SUMMARY

Cardno
Shaping the Future

MOVEMENT SUMMARY

Site: Woodville Rd/Rawson Rd Ex

New Site
Signals - Fixed Time Cycle Time = 160 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Woodville Road (south)											
2	T1	1318	5.0	0.447	0.6	LOS A	1.8	13.0	0.04	0.04	69.1
3	R2	605	5.0	1.080	129.3	LOS F	54.9	400.7	1.00	1.13	19.6
Approach		1923	5.0	1.080	41.1	LOS C	54.9	400.7	0.34	0.38	38.4
East: Rawson Road (east)											
4	L2	646	5.0	0.678	26.4	LOS B	27.8	202.9	0.61	0.78	42.0
6	R2	267	5.0	1.037	143.8	LOS F	29.6	216.0	1.00	1.10	17.9
Approach		914	5.0	1.037	60.7	LOS E	29.6	216.0	0.72	0.87	30.1
North: Woodville Road (north)											
7	L2	317	5.0	0.933	63.7	LOS E	56.4	411.4	1.00	1.01	30.8
8	T1	1765	5.0	0.933	59.3	LOS E	57.7	420.9	1.00	1.02	32.6
Approach		2082	5.0	0.933	60.0	LOS E	57.7	420.9	1.00	1.02	32.3
All Vehicles		4919	5.0	1.080	52.7	LOS D	57.7	420.9	0.69	0.74	34.0

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

MOVEMENT SUMMARY

Site: Woodville Rd/Rawson Rd Fu

New Site
Signals - Fixed Time Cycle Time = 160 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Woodville Road (south)											
2	T1	1318	5.0	0.447	0.6	LOS A	1.8	13.0	0.04	0.04	69.1
3	R2	617	5.0	1.101	145.9	LOS F	59.6	434.8	1.00	1.16	18.0
Approach		1935	5.0	1.101	47.0	LOS D	59.6	434.8	0.35	0.39	36.2
East: Rawson Road (east)											
4	L2	709	5.0	0.745	27.6	LOS B	33.6	245.0	0.67	0.80	41.4
6	R2	279	5.0	1.082	177.2	LOS F	34.3	250.7	1.00	1.17	15.4
Approach		988	5.0	1.082	69.8	LOS E	34.3	250.7	0.76	0.91	28.0
North: Woodville Road (north)											
7	L2	380	5.0	0.936	63.4	LOS E	56.9	415.1	1.00	1.01	30.8
8	T1	1714	5.0	0.936	60.1	LOS E	58.4	426.5	1.00	1.02	32.4
Approach		2094	5.0	0.936	60.7	LOS E	58.4	426.5	1.00	1.02	32.1
All Vehicles		5017	5.0	1.101	57.2	LOS E	59.6	434.8	0.70	0.76	32.6

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