STANBURY
TRAFFIC PLANNING
TRAFFIC, PARKING & TRANSPORT CONSULTANTS

UPDATED PARKING & TRAFFIC IMPACT ASSESSMENT

PROPOSED PLACE OF WORSHIP
1 LARAPINTA PLACE
GLENHAVEN

PREPARED FOR HILLS AWQAF PTY. LTD.

OUR REF: 18-043-3

JANUARY 2019

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1. INTRODUCTION

1.1 Scope of Assessment

Stanbury Traffic Planning has been commissioned by Hills Awqaf Pty. Ltd. to prepare a Parking & Traffic Impact Assessment to accompany a development Application to be lodged with The Hills Shire Council with respect to 1 Larapinta Place, Glenhaven (hereafter referred to as the 'subject site').

The Development Application seeks consent for the demolition of an existing residence / outbuilding and the construction of a purpose built place of worship. The site operations are generally expected to accommodate only small numbers of people during weekday business periods. However it is expected that up to 250 people are expected to attend weekly worship services on Fridays around lunchtime in addition to a small number of special event services each year during specific religious periods.

The development is proposed to be serviced by on-site passenger vehicle parking areas containing 103 passenger vehicle parking spaces, two mini-bus parking spaces and a formalised set-down / pick-up area. The on-site parking areas are proposed to be accessed via driveway connecting with Larapinta Place approximately 100m to the north of Glenhaven Road.

This aim of this assessment is to investigate and report upon the potential parking and traffic consequences of the Development Application and to recommend appropriate ameliorative measures where required. This report provides the following scope of assessment:

- Section 1 provides a summary of the site location, details, existing and surrounding land-uses;
- Section 2 describes the proposed development and operational characteristics;
- Section 3 assesses the adequacy of the proposed site access arrangements, internal circulation and servicing arrangements with reference to relevant Council, Roads & Maritime Services and Australian Standard specifications;
- Section 4 assesses the adequacy of the proposed parking provision with respect to established Council requirements and the operational characteristics of the site use;
- Section 5 assesses the existing traffic, parking and transport conditions surrounding and servicing the subject development site including a description of the surrounding road network, traffic demands, operational performance and available public transport infrastructure; and

- Section 6 estimates the projected traffic generating ability of the proposed development and assesses the ability or otherwise of the surrounding road network to be capable of accommodating the altered demand in a safe and efficient manner.

The report has been prepared pursuant to State Environmental Planning Policy (Infrastructure) 2007.

1.2 Reference Documents

Reference is made to the following documents throughout this report:

- The Roads & Maritime Services' *Guide to Traffic Generating Developments*;
- The Hills Shire Council's *The Hills Development Control Plan 2012* (DCP 2012);
- Australian Standard for *Parking Facilities Part 1: Off-Street Car Parking* (AS2890.1:2004);
- Australian Standard for *Parking Facilities Part 2: Off-Street Commercial Vehicle Facilities* (AS2890.2:2002);
- Australian Standard for *Parking Facilities Part 3: Bicycle Parking* (AS2890.3:2015); and
- Australian Standard for *Parking Facilities Part 6: Off-Street Parking for People with Disabilities* (AS2890.6:2009).

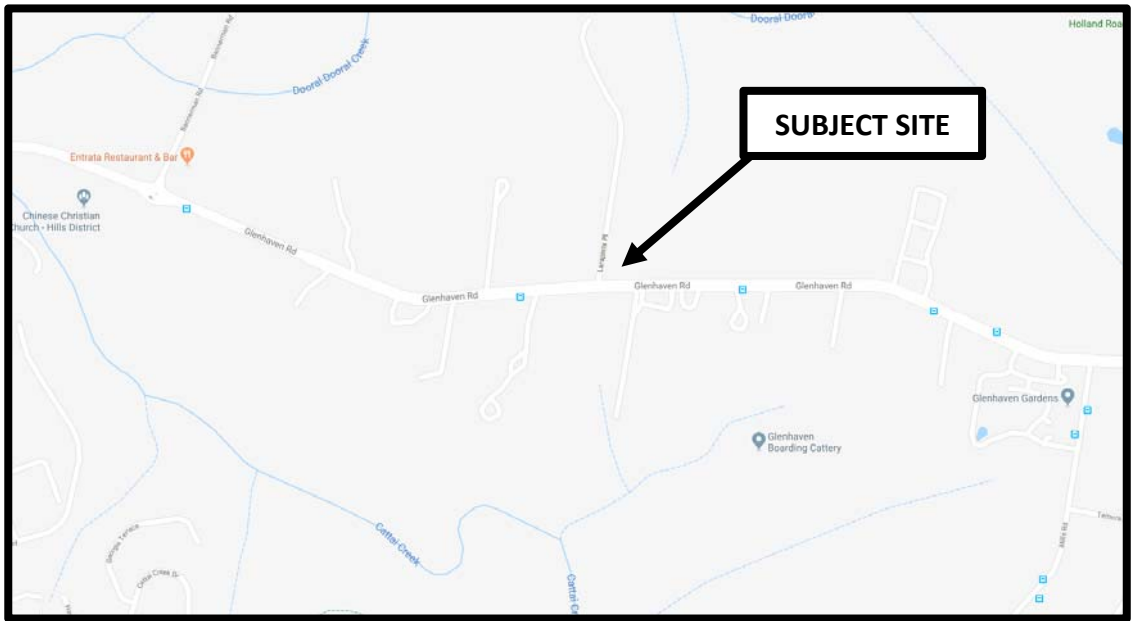
Architectural plans have been prepared by Idraft Architects and should be read in conjunction with this report, reduced scale copies of which are attached as **Appendix 1** (site plan only).

1.3 Site Details

1.3.1 Site Location

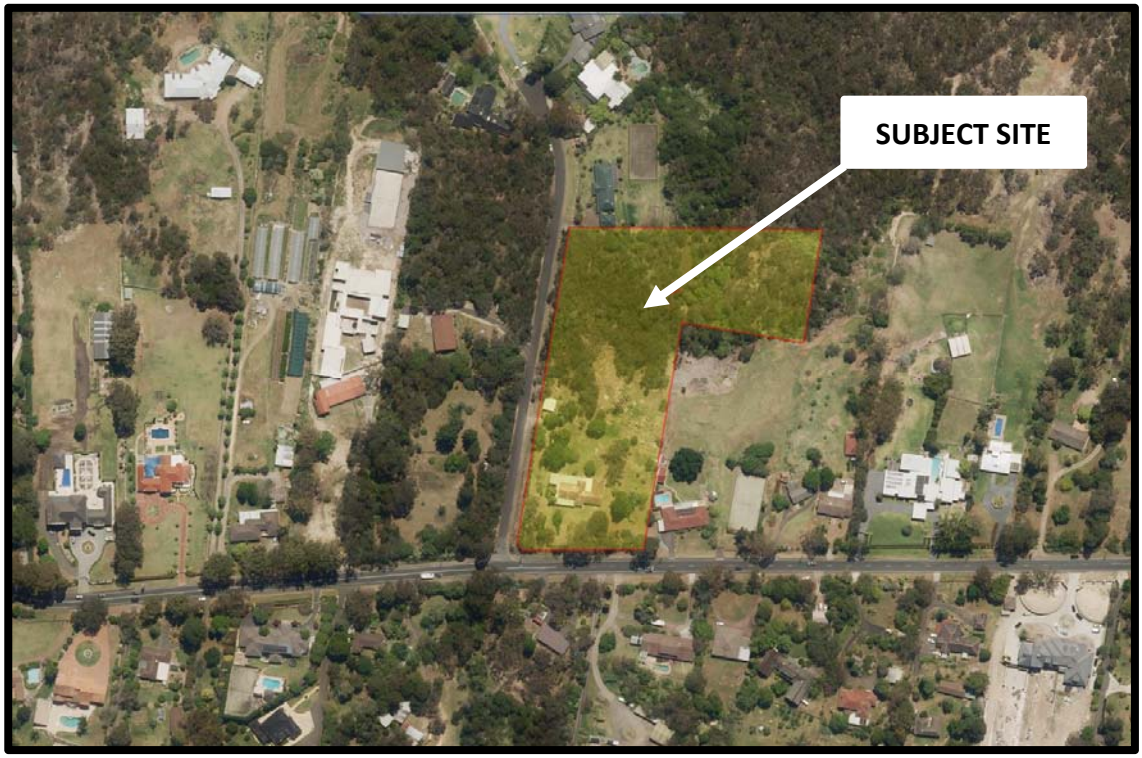
The subject site is situated on the north-eastern corner of the junction of Glenhaven Road and Larapinta Place, Glenhaven. The site location is illustrated overleaf within a local and aerial context by **Figure 1** and **Figure 2**, respectively.

FIGURE 1
SITE LOCATION WITHIN A LOCAL CONTEXT



Source: Google Maps (accessed 11/04/18)

FIGURE 2
SITE LOCATION WITHIN AN AERIAL CONTEXT



Source: Six Maps (accessed 11/04/18)

1.3.2 Site Description

The subject site provides a property description of Lot 7 DP 249716 and a street address of 1 Larapinta Place, Glenhaven. The subject site forms a predominantly "L" shaped parcel of land providing approximate frontages of 74m and 195m to Glenhaven Road and Larapinta Place, respectively. The site provides a total area of 20,510m^2.

1.3.3 Existing Site Use

The site currently contains a single dwelling house situated approximately central to the southern portion of the site. The dwelling is serviced by a single vehicular driveway connecting with Larapinta Place approximately 90m to the north of Glenhaven Road. A double garage separate to the abovementioned dwelling is situated adjoining the western boundary, immediately to the north of the Larapinta Place access driveway.

A further vehicular access driveway connects with Glenhaven Road approximately 40m to the east of Larapinta Place.

The northern portion of the site is heavily vegetated.

1.3.4 Surrounding Uses

The subject site is immediately surrounded by low density residential dwellings within large lots similar to that currently contained within the subject site.

2 PROPOSED DEVELOPMENT

2.1 Built Form

The development involves the construction of a two storey building accommodating the following:

Ground Floor
- Entrance atriums at the northern and southern ends of the building;
- A reception area and adjoining child minding area;
- Separate male and female toilet and washing facilities; and
- A main prayer hall.

First Floor
- Four classrooms;
- An administration and office area;
- Separate male and female toilets; and
- A secondary prayer hall.

The building is to be situated approximately central to the southern portion of the site.

The development is proposed to be serviced by on-site passenger vehicle parking areas, as follows:

- An at-grade parking area containing 25 passenger vehicle parking spaces, two mini-bus parking spaces and a formalised set-down / pick-up area; and

- A basement parking area containing 78 passenger vehicle parking spaces.

The development is accordingly proposed to be serviced by a total of 103 passenger vehicle parking space, two mini-bus parking spaces and a formalised set-down / pick-up area.

A formalised servicing bay is also proposed to be provided at-grade associated with refuse collection and minor deliveries as required, being capable of accommodating vehicles up to and including Medium Rigid Vehicles (MRVs).

Further, 10 bicycle parking spaces are proposed to service the development, being situated within the at-grade parking area.

Vehicular access to the abovementioned on-site parking and servicing areas is proposed via a driveway connecting with Larapinta Place, situated approximately 100m to the north of Glenhaven Road.

No vehicular access to Glenhaven Road is proposed.

Pedestrian connectivity between the building and the northern and eastern Glenhaven Road and Larapinta Place verges respectively is proposed via access gates separate to the abovementioned vehicular access driveway.

2.2 Proposed Use

2.2.1 Regular Activities and Attendances

The development is designed to be a purpose built worship facility to accommodate the following regular activities associated with Islamic faith:

- Daily morning, midday, afternoon, sunset and evening prayer services;
- Weekly midday prayer services on Fridays;
- Youth services and counselling; and
- General administration activities.

The above activities are generally expected to generate a maximum of 50 people each, with the exception of the weekly midday prayer service on Friday, which is expected to accommodate a maximum attendance of 250 people.

All prayer services, with the exception of the Friday midday service, do not exceed 30 minutes in length. The Friday midday service extends between 60 – 120 minutes.

Table 1 below provides a summary of the envisaged regular activities and maximum attendances per activity.

TABLE 1
SUMMARY OF REGULAR WEEKLY ACTIVITIES AND POPULATION

Day	Time	Activity	Maximum No. of People
Monday - Thursday	5:30am – 6:30am	Morning Prayer Service	25
	9:00am – 6:00pm	Administration	10
	9:00am – 11:00am	Youth Services / Counselling	15
	12.00pm – 2:00pm	Midday Prayer Service	50
	3:00pm – 6:00pm	Youth Services / Counselling	15
	3:30pm – 5:00pm	Afternoon Prayer Service	25
	5:30pm – 8:30pm	Sunset Prayer Service	25
	7:00pm – 9:00pm	Evening Prayer Service	25
Friday	5:30am – 6:30am	Morning Prayer Service	25
	9:00am – 6:00pm	Administration	10
	9:00am – 11:00am	Youth Services / Counselling	15
	12.00pm – 2:00pm	Midday Prayer Service	250
	3:00pm – 6:00pm	Youth Services / Counselling	15
	3:30pm – 5:00pm	Afternoon Prayer Service	25
	5:30pm – 8:30pm	Sunset Prayer Service	25
	7:00pm – 9:00pm	Evening Prayer Service	25
Saturday - Sunday	5:30am – 6:30am	Morning Prayer Service	25
	9:00am – 11:00am	Youth Services / Counselling	15
	12.00pm – 2:00pm	Midday Prayer Service	50
	3:00pm – 6:00pm	Youth Services / Counselling	15
	3:30pm – 5:00pm	Afternoon Prayer Service	25
	5:30pm – 8:30pm	Sunset Prayer Service	25
	7:00pm – 9:00pm	Evening Prayer Service	25

It is to be noted that the number of people on-site associated with staff and youth / counselling are contained within the maximum prayer service attendees. In this regard, during prayer periods, all other activities on-site cease and all people on-site attend the prayer service. In this regard, **Table 2** provides a summary of the maximum total number of people on-site at any one time during the normal operational periods based on the information provided within **Table 1**.

TABLE 2 MAXIMUM INSTANTANEOUS NUMBER OF PEOPLE ON-SITE			
Time Period	**Monday - Thursday**	**Friday**	**Saturday - Sunday**
5:30am – 6:30am	25	25	25
6:30am – 9:00am	0	0	0
9:00am – 11:00am	25	25	15
11:00am – 12:00pm	10	10	0
12:00pm – 2:00pm	50	250	50
2:00pm – 3:00pm	10	10	0
3:00pm – 3:30pm	25	25	15
3:30pm – 5:00pm	50	50	40
5:00pm – 5:30pm	25	25	15
5:30pm – 6:00pm	50	50	40
6:00pm – 7:00pm	25	25	25
7:00pm – 8:30pm	50	50	50
8:30pm – 9:00pm	25	25	25

Table 2 indicates that the site is only proposed to generally accommodate small numbers of people (a maximum of 50) during regular operations, with the exception of Friday midday prayer services, during which up to 250 people are anticipated to be on-site.

2.2.2 Special Event Activities and Attendances

Further to regular services, a small number of special event activities are proposed to be accommodated each year, as follows:

- Special event (Eid) morning prayer services are to be held twice per year in addition to the regular morning prayer service;
- A special midday prayer service is to be held on Easter Friday in place of the midday service; and
- Special evening prayer services are to be held during the month of Ramadan in place of the regular evening prayer service.

Table 3 overleaf provides a summary of the envisaged special event activities and maximum site attendances.

TABLE 3 SUMMARY OF SPECIAL EVENT ACTIVITIES AND POPULATION			
Day	**Time**	**Activity**	**Maximum No. of People**
Monday – Sunday	7:00am – 9:00am	Eid Morning Prayer Service	250
Easter Friday	12:00pm – 2:00pm	Weekly Midday Prayer Service	250
Monday - Sunday	7:00pm – 9:00pm	Ramadan Evening Prayer Service	200

Notes:

1. The Eid morning service is only provided twice per year, the days of which vary year to year.
2. The Easter Friday midday service is only provided once per year on Easter Friday.
3. The Ramadan evening prayer service is provided on a daily basis for the month of Ramadan, the month of which varies year to year.

Table 3 indicates that the maximum site population during special events is 250 people.

All special event services extend between 60 – 120 minutes.

2.2.3 Weddings / Funerals

Special prayer services are occasionally conducted associated with weddings and funerals. These are short services (less than 30 minutes) which are most commonly conducted immediately following midday services and accommodate up to 50 worshippers (men only) whereby worshippers remain following regular prayer service. In this regard, the maximum number of people for the regular prayer service will remain for the following wedding / funeral service. These worshippers have been incorporated in the maximum regular operation attendees contained within **Tables 1** and **2**.

The wedding / funeral services are prayer services only. Associated functions including receptions, dinners and other celebrations are held off-site at reception venues, hotels or private homes.

2.2.4 Summary

The following provides a summary of the proposed operational activities and attendances:

- The site is proposed to generally accommodate small numbers of people (a maximum of 50) during regular operations, between 5:30am and 9:00pm, seven days;

- Regular Friday midday prayer services are however expected to generate up to 250 people between 12:00pm and 2:00pm;

- Special evening prayer services during the month of Ramadan are expected to generate up to 200 people between 7:00pm and 9:00pm; and

- A total of three special event prayer services per year are expected to generate up to 250 people, two occurring between 7:00am and 9:00am and one occurring on a Friday between 12:00pm and 2:00pm.

3 SITE ACCESS & INTERNAL CIRCULATION

3.3 Access Arrangements

3.1.1 Passenger Vehicular Access

Vehicular access between the subject site and Larapinta Place is proposed to be provided by an 11m wide gutter crossing approximately 100m to the north of Glenhaven Road, connecting with a 6m wide ingress lane separated from a 4m wide egress lane by a 1m wide painted median.

AS2890.1:2004 provides driveway design specifications based on the proposed primary land use, the functional order of the access road and the number of spaces the driveway is to serve. Tables 3.1 and 3.2 of AS2890.1:2004 specify that a Category 3 type driveway is required, providing a minimum 6m wide ingress laneway separated from a 4m wide egress laneway by a 1m wide median based on the local (non-arterial) nature of Larapinta Place, the place of worship land-use and the on-site passenger vehicle parking provision of between 100 and 300 spaces. The proposed 11m wide gutter crossing connecting with a 6m wide ingress lane separated from a 4m wide egress lane by a 1m wide painted median, therefore accords with the minimum Standard requirements.

The safety and efficiency of access / egress movements are also proposed to be assisted by the provision of a relatively level grade (maximum of 1:20) within the internal access roadway within the first 6m of the property boundary.

The consistency of the horizontal and vertical alignment of Larapinta Place in the vicinity of the subject site results in a good level of sight distance prevailing between the site and the frontage road. Sight distance between vehicles exiting the site and pedestrians within the eastern Larapinta Place verge is also assisted by no obstructions to visibility located adjacent to the internal access road on approach to the property boundary, in accordance with AS2890.1:2004.

3.1.2 Pedestrian Access

Pedestrian access is proposed separate to the abovementioned vehicular access driveway, as follows:

- An access gate is proposed to provide connectivity to the northern Glenhaven Road verge approximately located approximately 50m to the east of Larapinta Place; and

- An access gate is proposed to provide connectivity to the eastern Larapinta Place verge approximately 5m to the south of the vehicular access driveway.

3.2 Internal Circulation and Manoeuvrability

3.2.1 Passenger Vehicle Circulation

Passenger vehicles, upon entry to the site, will travel in a forward direction to connect with an internal roadway extending in an easterly direction into the site. This roadway continues to form a parking aisle servicing adjoining rows of 90 degree passenger vehicle parking spaces prior to curving to the south to thence connect with a basement parking area containing a series of similar parking aisles servicing 90 degree angled parking rows.

The passenger, motorcycle and bicycle parking spaces and access ramp grades have generally been designed to accord with the relevant requirements of AS2890.1:2004, AS2890.3:2015 and AS2890.6:2009, providing the following minimum dimensions:

- Standard parking space width = 2.5m;
- Disabled vehicular parking space width = 2.4m (with adjoining 2.4m wide shared area);
- Headroom above disabled parking spaces and adjoining shared areas = 2.5m;
- Motorcycle parking space width = 1.2m;
- Bicycle parking space width = 0.5m;
- Mini-bus parking space width = 3.5m;
- Standard and disabled vehicular parking space length = 5.4m;
- Additional vehicular space width where parking spaces adjoins an obstruction = 0.3m;
- Mini-bus parking space length = 7m;
- Motorcycle parking space length = 2.5m;
- Bicycle parking space length = 1.8m;
- Vehicular parking aisle width adjoining parking spaces = 5.8m;
- Two-way straight roadway / ramp width = 5.8m;
- One-way straight roadway / ramp width = 4m;
- Maximum parking module grade = 1 in 20;
- Maximum ramp grade = 1 in 8.9;

- Maximum change in grade = 1 in 20;
- Minimum clearance throughout manoeuvring and parking areas = 2.2m; and
- Minimum clearance above disabled parking spaces = 2.5m.

Safe and efficient internal manoeuvring and parking space accessibility is anticipated to result, taking into consideration the compliance with the relevant AS2890.1:2004, AS2890.3:2015 and AS2890.6:2009 specifications.

3.3.2 Heavy Vehicle Circulation

It is expected that the subject development will generate the requirement for weekly refuse collection and occasional deliveries associated with the intended use of the building. It is expected that the deliveries will primarily be undertaken by vans and utilities although vehicles up to Medium Rigid Vehicles (MRVs) have also been catered for in the site design. Refuse collection is proposed to be undertaken by private contractors by vehicles up to and including Medium Rigid Vehicles (MRVs).

A single formalised delivery bay is proposed to be provided adjacent to the north-eastern corner of the building, accessed via the primary internal site access roadway / parking aisle. The delivery bay has been designed to comply with the relevant requirements of AS2890.2:2002 to accommodate vehicles up to and including MRVs, providing the following minimum dimensions being capable of accommodating MRVs with additional clearance for bin loading / manoeuvring:

- Internal loading bay width = 8.8m;
- Internal loading bay length = 10.5m;
- Minimum clearance over servicing bay = unrestricted.

A desktop swept path assessment of the architectural plans has indicated that vehicles up to and including MRVs can access the site in a forward direction, reverse into the delivery bay and thence exit the site in a forward direction, without any unreasonable encroachment on external and internal driveway / roadway kerbs and internal parking areas. Copies of swept paths in this regard are contained within **Appendix 2** for reference. In consideration of this and the above discussion, the subject development design is considered to be capable of accommodating vehicles up to and including MRVs in a safe and efficient manner.

4 PARKING PROVISION

4.1 Passenger Vehicle Parking Requirements

4.1.1 Council Parking Requirements

The Hills Shire Council provides locally sensitive parking requirements within DCP 2012 for a range of land-uses. Part C Section 1 of this Plan provides the following requirements relevant to the proposed development:

Place of Public Worship
1 space per 5 seats

The proposed place of worship is not proposed to provide seats as provided within Council's relevant DCP 2012 parking requirement. It is however considered that the equivalent measure to seats is the number of people expected to be accommodated on-site associated with the various activities held.

It has previously been presented that the subject development is expected to generate a peak of up to 250 worshippers on-site during regular operational periods and during the holding of special events (three times per year). The architectural plans demonstrate such a maximum capacity by illustrating prayer space allocations within both prayer halls, whereby the spatial allowance for each attendee is 0.8m wide by 1.2m long.

The following calculation is therefore made on the basis of a maximum of 250 people being in attendance during both regular and special event operation:

(250 / 5) = 50 spaces

The proposed development is therefore required to provide 50 off-street spaces during regular and special operations, in accordance with DCP 2012.

The proposed parking provision of 103 spaces is therefore considered to be satisfactory.

4.1.2 Alternate Method of Calculation

This Practice understands that Council officers have raised concerns with respect to the application of the DCP 2012 parking rate to the subject proposal as no seats are proposed. Further concerns are understood to have been raised with respect to the potential for development attendees to drive to the development in smaller groups than that which would normally attend other places of worship as normal peak operational services occur during weekday business periods, rather than weekends.

In order to accurately ascertain the travel characteristics of prospective service attendees, this Practice supervised the undertaking of travel surveys of existing Friday services held by the proponent at Wrights Road Community Centre, Kellyville.

Upon entering the place of worship, parishioners were queried as to their method of transportation to the venue. The surveys were undertaken during a total of eight separate normal Friday lunchtime services held between the 16th of November 2018 and the 4th of January 2019, inclusive.

Table 4 provides a summary of the results of the surveys

TABLE 4
SUMMARY OF EXISTING FRIDAY SERVICE ATTENDEE METHOD OF TRAVEL
WRIGHTS ROAD COMMUNITY CENTRE, KELLYVILLE

Date of Service	Car Driver	Car Passenger	Dropped Off	Public Transport	Walk	Total
16/11/18	71	114	13	9	6	213
23/11/18	75	106	8	4	7	200
30/11/18	65	108	6	2	5	186
7/12/18	76	101	9	6	6	198
14/12/18	68	115	11	3	5	202
21/12/18	78	133	10	5	7	213
28/12/18	69	120	5	8	4	206
4/1/19	63	98	6	7	5	179
Total	565	895	68	44	45	1617
% of Total	**35%**	**55%**	**4%**	**3%**	**3%**	**100%**

Table 4 indicates the following:

- The surveyed Friday services attracted attendances of between 179 and 213 people, with an average attendance of 202 people;

- A maximum of 78 people drove themselves to the services, thereby generating demand for parking (whilst additional parking demand was observed during the periods of service, this demand was observed to be associated with other surrounding uses such as Centenary of ANZAC Reserve and / or Kellyville Shopping Village);

- An average of 35% of service attendees were surveyed to drive themselves to services, with the remaining 65% primarily being driven or utilising other forms of transport thereby not actually generating any demand for parking; and

- The average vehicle occupancy has therefore been extrapolated to be approximately 2.9 service attendee per parked vehicle.

Application of the above average vehicle occupancy of 2.9 people per vehicle to the maximum capacity of 250 people of the proposed development results in a projected peak parking demand of 87 spaces.

The proposed passenger vehicle parking provision of 103 spaces is therefore projected to be readily capable of accommodating the projected peak operational demands of the development, providing additional flexibility for some variability with respect to service attendee and staff method of travel.

It should further be noted that development is proposed to provide two mini-bus parking spaces, six motorcycle parking spaces and 10 bicycle parking spaces, thereby providing additional capacity to accommodate alternate methods of travel if so required. In consideration of this and the abovementioned discussion, the proposed passenger vehicle parking provision of 103 spaces is anticipated to readily accommodate the peak operational parking demands of the development.

4.2 Disabled Parking Provision

DCP 2012 specifies that 3% of the total passenger vehicle parking provision should comprise disabled parking provision.

On the basis of a total parking provision of 105 spaces, DCP 2012 accordingly requires a minimum of four disabled parking spaces.

The development proposes a total of six disabled parking spaces, thereby exceeding the minimum DCP 2012 requirements.

4.3 Motorcycle Parking Provision

Part C Section 1 of DCP 2012 specifies that motorcycle parking should be provided at a rate of 1 space per 50 car spaces. The subject development is therefore required to provide three motorcycle parking spaces. The development involves the provision of six motorcycle parking spaces, thereby exceeding the minimum requirements of DCP 2012.

4.4 Bicycle Parking Provision

DCP 2012 does not provide minimum bicycle parking requirements for places of worship. Notwithstanding this, a total of 10 bicycle parking spaces are provided to service the development. Such a provision is considered to be satisfactory.

5 EXISTING TRAFFIC CONDITIONS

5.1 Surrounding Road Network

Glenhaven Road forms an important east-west collector road function under the care and control of The Hills Shire Council, linking with Old Northern Road in the east and Samantha Riley Drive / Green Road in the west.

The Glenhaven Road corridor, in the vicinity of the site, primarily incorporates a 9m wide pavement providing a single travel lane in each direction being defined by centre and edge line marking between unformed shoulders, reflecting the primarily rural / national park form of abutting land.

Traffic flow within Glenhaven Road is governed by a sign posted speed limit of 60km/h in the vicinity of the site, however a 40km/h school zone speed limit applies during prescribed school start and finish periods associated with Glenhaven Primary School to the east of the site (between Hyde Avenue and Evans Road). Glenhaven Road traffic flow is also governed by a signed 8 tonne load limit.

Glenhaven Road forms a T-junction with Larapinta Place immediately adjacent to the site, operating under major / minor priority control, with Glenhaven Road forming the priority route. Larapinta Place performs a local road function to abutting rural residential properties (seven in total including the subject site). It extends approximately 300m north of Glenhaven Road prior to forming a terminating cul-de-sac. Larapinta Place provides a 6m wide pavement providing one through lane of traffic in each direction between unformed shoulders.

To the west of the site, Glenhaven Road forms a T-junction with Bannerman Road under single lane circulating roundabout control. Further to the west, Glenhaven Road intersects with Samantha Riley Drive / Green Road to the west under two lane circulating roundabout control. Pavement widening is provided within Samantha Riley to facilitate the provision of two lanes on approach to the roundabout controlled intersection.

To the east of the site, Glenhaven Road forms a T-junction with Mills Road, operating under major / minor priority control with Glenhaven Road forming the priority route. The Glenhaven Road corridor, between Mills Road and Old Northern Road, reflects the more urban nature of the abutting environment, providing one through lane of traffic in each directional in conjunction with formalised marked kerb-side parallel parking lanes.

At its western extremity, Glenhaven Road intersects with Old Northern Road to the east under Given Way priority control with Old Northern Road performing the priority route. Kerb-side parking restrictions apply within Glenhaven Road to facilitate the provision of two lanes on approach to Old Northern Road. An exclusive right turn lane is also provided within Old Northern Road assisting Glenhaven Road access movements.

All remaining intersections of the Glenhaven Road corridor are priority controlled with Glenhaven Road performing the priority route, with the exception of Hyde Avenue, which is governed by a single lane roundabout. The other notable traffic control measure provided along Glenhaven Road is a raised marked pedestrian crossing provided adjacent to Glenhaven Primary School.

5.2 Existing Traffic Volumes

Seven day automatic tube traffic surveys of Glenhaven Road traffic flow immediately adjacent to the subject site were commissioned in order to accurately obtain existing traffic flow characteristics. The surveys were undertaken between the 5th and 11th of April 2018, inclusive. The following sub-sections provide a summary of the results of the traffic volume information surveyed, whilst more detailed summaries are contained within **Appendix 3**.

5.2.1 Weekday Commuter Peak Hours

Table 5 provides a summary of the average directional and total Glenhaven Road traffic volume surveyed.

TABLE 5
EXISTING AVERAGE WEEKDAY COMMUTER PEAK HOUR (8:00AM – 9:00AM & 5:00PM – 6:00PM) TRAFFIC VOLUMES GLENHAVEN ROAD ADJACENT TO SUBJECT SITE

	Westbound	Eastbound	Total
AM Peak	517	800	1317
PM Peak	922	515	1437

Existing weekday commuter peak hour traffic volumes at the junction of Glenhaven Road and Larapinta Place have been estimated based on the above survey data and on the basis of Larapinta Place servicing a total of seven residential lots. **Figure 3** overleaf provides a summary of the estimated commuter peak hour traffic flows at the junction of Glenhaven Road and Larapinta Place.

FIGURE 3
EXISTING WEEKDAY COMMUTER PEAK HOUR
(8:00AM – 9:00AM & 5:00PM – 6:00PM) TRAFFIC VOLUMES
JUNCTION OF GLENHAVEN ROAD & LARAPINTA PLACE

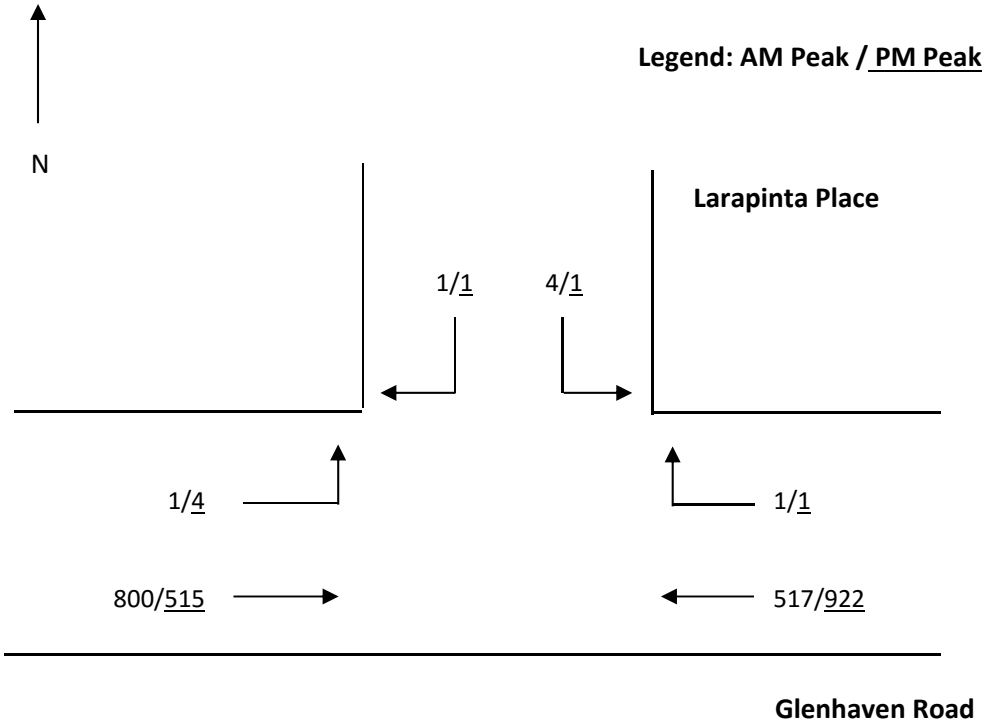


Figure 3 indicates the following:

- Glenhaven Road accommodates tidal directional traffic flows during peak periods with eastbound traffic dominating during the morning peak and westbound traffic dominating during the evening peak;
- Glenhaven Road directional traffic flow is between approximately 515 – 920 vehicles per hour during weekday commuter peak periods;
- Traffic flow within Larapinta Place is very low, being less than 10 vehicles per hour during weekday commuter peak.

5.2.2 Hourly Traffic Volumes

The subject development is expected to generate traffic between 5:00am and 9:00pm on a daily basis, within peak inbound and outbound trip periods prior to and following worship services. It is accordingly prudent to asses the average weekday hourly traffic demands within Glenhaven Road during these operational and projected traffic generation periods. **Table 6** overleaf provides a summary of the average weekday hour by hour directional and total traffic demands within Glenhaven Road between 5:00am and 9:00pm.

TABLE 6 EXISTING AVERAGE WEEKDAY HOURLY TRAFFIC VOLUMES BETWEEN 5:00AM AND 9:00PM GLENHAVEN ROAD ADJACENT TO SUBJECT SITE			
	Westbound	**Eastbound**	**Total**
5:00am-6:00am	98	240	338
6:00am-7:00am	276	681	957
7:00am-8:00am	417	845	1262
8:00am-9:00am	517	800	1317
9:00am-10:00am	425	535	960
10:00am-11:00am	346	369	715
11:00am-12:00pm	350	345	695
12:00pm-1:00pm	359	314	673
1:00pm-2:00pm	363	306	669
2:00pm-3:00pm	462	546	1008
3:00pm-4:00pm	691	474	1165
4:00pm-5:00pm	839	469	1308
5:00pm-6:00pm	922	515	1437
6:00pm-7:00pm	727	443	1170
7:00pm-8:00pm	442	287	729
8:00pm-9:00pm	287	183	470
9:00pm-10:00pm	256	141	397

Table 6 demonstrates that Glenhaven Road accommodates notable but reduced directional traffic demands outside of weekday commuter peak periods.

5.3 Existing Road Network Operation

5.3.1 Junction of Glenhaven Road & Larapinta Place

The junction of Glenhaven Road and Larapinta Place has been analysed utilising the SIDRA computer intersection analysis program in order to objectively assess the operation of the nearby public road intersection. SIDRA is a computerised traffic arrangement program which, when volume and geometrical configurations of an intersection are imputed, provides an objective assessment of the operation efficiency under varying types of control (i.e. signs, signal and roundabouts). Key indicators of SIDRA include level of service where results are placed on a continuum from A to F, with A providing the greatest intersection efficiency and therefore being the most desirable by the Roads and Maritime Services.

SIDRA uses detailed analytical traffic models coupled with an iterative approximation method to provide estimates of the abovementioned key indicators of capacity and performance statistics. Other key indicators provided by SIDRA are average vehicle delay, the number of stops per hour and the degree of saturation. Degree of saturation is the ratio of the arrival rate of vehicles to the capacity of the approach. Degree of saturation is a useful and professionally accepted measure of intersection performance.

SIDRA provides analysis of the operating conditions that can be compared to the performance criteria set out in **Table 7** overleaf (being the RMS NSW method of calculation of Level of Service).

TABLE 7 LEVEL OF SERVICE CRITERIA FOR INTERSECTIONS PRIORITY CONTROL		
Level of Service	**Average Delay per Vehicle (secs/veh)**	**Expected Delay**
A	Less than 14	Good
B	15 to 28	Acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Near capacity
E	57 to 70	At capacity and requires other control mode
F	> 70	Unsatisfactory and requires other control mode

The existing conditions have been modelled utilising the peak hour traffic volumes presented within **Figure 3**. **Table 8** below provides a summary of the SIDRA output data whilst more detailed summaries are contained within **Appendix 4**.

TABLE 8 SIDRA OUTPUT – EXISTING WEEKDAY COMMUTER PEAK HOUR PERFORMANCE (8:00AM – 9:00AM & 5:00PM – 6:00PM) GLENHAVEN ROAD & LARAPINTA PLACE		
	AM	**PM**
Glenhaven Road East Approach		
Average Vehicle Delay (sec / veh)	12.4	10.2
Degree of Saturation	0.28	0.49
Level of Service	A	A
Larapinta Place Approach		
Average Vehicle Delay (sec / veh)	19.6	24.6
Degree of Saturation	0.01	0.01
Level of Service	B	B
Glenhaven Road West Approach		
Average Vehicle Delay (sec / veh)	5.7	5.6
Degree of Saturation	0.42	0.28
Level of Service	A	A
Total Intersection		
Average Vehicle Delay (sec / veh)	0.1	0.1
Degree of Saturation	0.42	0.49
Level of Service	A	A

Table 8 indicates that the junction of Glenhaven Road and Larapinta Place operates with an overall level of service 'A' during the weekday commuter peak periods representing good operation. Right turn egress movements from Larapinta Place however experience moderate delays, providing a level of service 'B' still representing acceptable delays with spare capacity.

5.3.2 Route Level of Service

Reference is made to the Roads & Maritime Services' *Guide to Traffic Generating Developments* in order to undertake an assessment of the operational performance of both Larapinta Place and Glenhaven Road immediately servicing the subject site.

Larapinta Place (accommodating directional traffic demands less than 10 vehicles per hour during weekday commuter peak periods) provides a level of service 'A', representing free flow where drivers are largely unaffected by others in the traffic stream.

Glenhaven Road (accommodating directional traffic demands between 515 – 920 vehicles per hour during weekday commuter peak periods) provides a level of service 'C' to 'D', still being within the zone of stable flow but whereby drivers are restricted in their freedom to select their desired speed and manoeuvre within the traffic stream.

5.4 Public Transport

Hillsbus operates Route 603 between Route Hill and Parramatta. This route operates along Glenhaven Road with the closest stops being located approximately 150m walking distance from the site.

Route 603 provides a 30 minute frequency during weekday commuter peaks extending to approximately 60 minutes during other weekday and weekend periods.

6. PROJECTED TRAFFIC CONDITIONS

6.1 Traffic Generation

The traffic generation of the proposed regular daily prayer services, with the exception of the Friday midday service, are anticipated to be closely related to parking generation whereby as a worst case scenario, it is assumed that the previously calculated maximum parking demand is generated as an ingress trip and an egress trip within a single hourly period for the total duration of the service.

The extended length of the Friday midday services are such that ingress and egress trips are expected to occur in different hourly periods, at the start and the completion of the services.

Similarly, the extended length of the special event services are such that ingress and egress trips are expected to occur in different hourly periods, prior to the start and following the completion of the services.

For the purposes of simplicity of assessment, the traffic generation of the administration and youth services / counselling is expected also expected to align with the parking demand, whereby ingress and egress trips are expected to occur in the hourly period prior to the start and following the finish of activities, respectively.

6.1.1 Regular Operation

Table 9 provides a summary of the traffic generating ability of the various development activities during regular operational periods.

TABLE 9
SUMMARY OF DAILY TRAFFIC GENERATING CHARACTERISTICS
REGULAR SITE OPERATION

Activity	Period of Traffic Generation		Hourly Traffic Generation	
	Inbound	Outbound	Inbound Trips	Outbound Trips
Morning Prayer Service	5:30am – 6:30am	5:30am – 6:30am	9	9
Administration	8:00am – 9:00am	6:00pm – 7:00pm	4	4
Youth Services / Counselling	8:00am – 10:00am 2:00pm – 5:00pm	10:00pm – 12:00pm 4:00pm – 7:00pm	6 6	6 6
Midday Prayer Service	12:00pm – 1:00pm	1:00pm – 2:00pm	87	87
Afternoon Prayer Service	3:30pm – 5:00pm	3:30pm – 5:00pm	9	9
Sunset Prayer Service	5:30pm – 8:30pm	5:30pm – 8:30pm	9	9
Evening Prayer Service	7:00pm – 9:00pm	7:00pm – 9:00pm	9	9

Table 10 overleaf provides a summary of the instantaneous traffic generating ability throughout a day during regular operational periods.

TABLE 10
SUMMARY OF HOURLY TRAFFIC GENERATION OVER A TYPICAL DAY DURING REGULAR SITE OPERATION

Time Period	Operational Activities	Hourly Traffic Generation		
		Inbound Trips	Outbound Trips	Total Trips
5:00am – 6:00am	Morning Prayer Service	9	9	18
	Total	**9**	**9**	**18**
6:00am – 7:00am	Morning Prayer Service	9	9	18
	Total	**9**	**9**	**18**
7:00am – 8:00am	-	-	-	-
8:00am – 9:00am	Administration	4	-	4
	Youth Services / Counselling	6	-	6
	Total	**10**	**-**	**10**
9:00am – 10:00am	Youth Services / Counselling	6	-	6
	Total	**6**	-	**6**
10:00am – 11:00am	Youth Services / Counselling	-	6	6
	Total	**-**	**6**	**6**
11:00am – 12:00pm	Youth Services / Counselling	-	6	6
	Total	**-**	**6**	**6**
12:00pm – 1:00pm	Midday Prayer Service	87	-	87
	Total	**87**	**-**	**87**
1:00pm – 2:00pm	Midday Prayer Service	-	87	87
	Total	**-**	**87**	**87**
2:00pm – 3:00pm	Youth Services / Counselling	6	-	6
	Total	**6**	-	**6**
3:00pm – 4:00pm	Youth Services / Counselling	6	-	6
	Afternoon Prayer Service	9	**9**	18
	Total	**15**	**9**	**24**
4:00pm – 5:00pm	Youth Services / Counselling	6	6	12
	Afternoon Prayer Service	9	9	18
	Total	**15**	**15**	**30**
5:00pm – 6:00pm	Youth Services / Counselling	-	6	6
	Sunset Prayer Service	9	9	18
	Total	**9**	**15**	**24**
6:00pm – 7:00pm	Youth Services / Counselling	-	6	6
	Administration	-	4	4
	Sunset Prayer Service	9	9	18
	Total	**9**	**19**	**28**
7:00pm – 8:00pm	Sunset Prayer Service	9	9	18
	Evening Prayer Service	9	9	18
	Total	**18**	**18**	**36**
8:00pm – 9:00pm	Sunset Prayer Service	9	9	18
	Evening Prayer Service	9	9	18
	Total	**18**	**18**	**36**

Table 10 indicates the following during regular operational periods:

- The maximum hourly traffic generation during weekday commuter peak hours (7:00am – 9:00am and 4:00pm – 6:00pm) is expected to be 30 trips occurring between 4:00pm and 5:00pm associated with youth services / counselling and afternoon prayer service; and

- The maximum hourly traffic generation is expected to be 87 trips occurring between 12:00pm and 1:00pm and 1:00pm – 2:00pm associated with midday prayer services.

6.1.2 Special Event Operation

Table 11 provides a summary of the traffic generating ability of the various development activities during special event periods.

TABLE 11
SUMMARY OF DAILY TRAFFIC GENERATING CHARACTERISTICS
SPECIAL EVENT OPERATION

Activity	Period of Traffic Generation		Hourly Traffic Generation	
	Inbound	Outbound	Inbound Trips	Outbound Trips
Morning Prayer Service	5:30am – 6:30am	5:30am – 6:30am	9	9
Eid Prayer Service	6:00am – 7:00am	9:00am – 10:00am	87	87
Administration	8:00am – 9:00am	6:00pm – 7:00pm	4	4
Youth Services / Counselling	8:00am – 10:00am 2:00pm – 5:00pm	10:00pm – 12:00pm 4:00pm – 7:00pm	6 6	6 6
Easter Midday Prayer Service	11:00am – 12:00pm	2:00pm – 3:00pm	87	87
Afternoon Prayer Service	3:30pm – 5:00pm	3:30pm – 5:00pm	9	9
Sunset Prayer Service	5:30pm – 8:30pm	5:30pm – 8:30pm	9	9
Ramadan Evening Prayer Service	6:00pm – 7:00pm	9:00pm – 10:00pm	69	69

Table 12 overleaf provides a summary of the instantaneous traffic generating ability throughout a day during regular operational periods.

TABLE 12 SUMMARY OF HOURLY TRAFFIC GENERATION OVER A TYPICAL DAY DURING SPECIAL EVENT OPERATION				
Time Period	**Operational Activities**	**Hourly Traffic Generation**		
		Inbound Trips	**Outbound Trips**	**Total Trips**
5:00am – 6:00am	Morning Prayer Service	9	9	18
	Total	**9**	**9**	**18**
6:00am – 7:00am	Morning Prayer Service	9	9	18
	Eid Prayer Service	87	-	87
	Total	**96**	**9**	**105**
7:00am – 8:00am	-	-	-	-
8:00am – 9:00am	Administration	4	-	4
	Youth Services / Counselling	6	-	6
	Total	**10**	**-**	**10**
9:00am – 10:00am	Youth Services / Counselling	6	-	6
	Eid Prayer Service	-	87	87
	Total	**6**	**87**	**93**
10:00am – 11:00am	Youth Services / Counselling	-	6	6
	Total	**-**	**6**	**6**
11:00am – 12:00pm	Youth Services / Counselling	-	6	6
	Easter Midday Service	87	-	87
	Total	**87**	**6**	**93**
12:00pm – 2:00pm	-	-	-	-
2:00pm – 3:00pm	Easter Midday Service	-	87	87
	Youth Services / Counselling	6	-	6
	Total	**6**	**87**	**93**
3:00pm – 4:00pm	Youth Services / Counselling	6	-	6
	Afternoon Prayer Service	9	9	18
	Total	**15**	**9**	**24**
4:00pm – 5:00pm	Youth Services / Counselling	6	6	12
	Afternoon Prayer Service	9	9	18
	Total	**15**	**15**	**30**
5:00pm – 6:00pm	Youth Services / Counselling	-	6	6
	Sunset Prayer Service	9	9	18
	Total	**9**	**15**	**24**
6:00pm – 7:00pm	Youth Services / Counselling	-	6	6
	Administration	-	4	4
	Sunset Prayer Service	9	9	18
	Ramadan Prayer Service	69	-	69
	Total	**78**	**19**	**97**
7:00pm – 8:00pm	Sunset Prayer Service	9	9	18
	Total	**9**	**9**	**18**
8:00pm – 9:00pm	Sunset Prayer Service	9	9	18
	Total	**9**	**9**	**18**
9:00pm – 10:00pm	Ramadan Prayer Service	-	69	69
	Total	-	**69**	**69**

Table 12 indicates the following during special event operational periods:

- The maximum hourly traffic generation during weekday commuter peak hours (7:00am – 9:00am and 4:00pm – 6:00pm) is expected to be 30 trips occurring between 4:00pm and 5:00pm associated with youth services / counselling and afternoon prayer service;

- The maximum hourly traffic generation is expected to be 105 trips occurring between 6:00am and 7:00am associated with morning and Eid prayer services; and

- Further notable periods of generation occur between 9:00am – 10:00am, 11:00am – 12:00pm, 2:00pm – 3:00pm, 6:00pm – 7:00pm and 9:00pm – 10:00pm when maximum hourly traffic generation is expected to range between 69 – 97 trips.

6.2 Traffic Impacts

6.2.1 Junction of Glenhaven Road & Larapinta Place

The development has been projected to generate varying volumes of vehicle movements to and from the site throughout the operational periods between 5:00am and 10:00pm associated with regular and special event periods. In this regard, the development has been projected to generate up to 30 vehicle trips to or from the site during weekday commuter peak hours (4:00pm – 5:00pm), during both regular and special event operation.

The junction of Glenhaven Road and Larapinta Place has been previously assessed to provide motorists with an acceptable level of service with spare capacity during weekday commuter peaks, despite notable demands within Glenhaven Road. The abovementioned level of additional traffic, representing approximately one additional vehicle movement every two minutes, is not projected to in itself result in any unreasonable impacts on the existing operational performance of the surrounding road network.

Notwithstanding the above, the maximum hourly traffic generation of the development during regular operation is expected to be 87 vehicle trips to or from the site, occurring between 12:00pm and 1:00pm and 1:00pm and 2:00pm on Fridays.

Special events will result in hourly peak hour traffic generations of between 69 and 105 vehicle movements between 6:00am and 7:00am, 9:00am and 10:00am, 11:00am – 12:00pm, 2:00pm – 3:00pm, 6:00pm – 7:00pm and 9:00pm – 10:00pm.

In order to undertake an assessment of the ability of the adjoining public road intersection of Glenhaven Road and Larapinta Place to accommodate the abovementioned extent of additional traffic during worst case scenario special event operation, a series of hourly traffic volume analyses during the following periods to capture projected operational performance:

- 5:00am – 6:00am during which 9 inbound and 9 outbound trips are projected;
- 6:00am – 7:00am during which 98 inbound and 9 outbound trips are projected;
- 8:00am – 9:00am during which 10 inbound trips are projected;
- 9:00am – 10:00am during which 6 inbound and 87 outbound trips are projected;
- 10:00am – 11:00am during which 6 outbound trips are projected;
- 11:00am – 12:00pm during which 87 inbound and 6 outbound trips are projected;
- 2:00pm – 3:00pm during which 6 inbound and 87 outbound trips are projected;
- 3:00pm – 4:00pm during which 15 inbound and 9 outbound trips are projected;
- 4:00pm – 5:00pm during which 15 inbound and 15 outbound trips are projected;
- 5:00pm – 6:00pm during which 9 inbound and 15 outbound trips are projected;
- 6:00pm – 7:00pm during which 78 inbound and 19 outbound trips are projected;
- 7:00pm – 8:00pm during which 9 inbound and 9 outbound trips are projected;
- 8:00pm – 9:00pm during which 9 inbound and 9 outbound trips are projected;
- 9:00pm – 10:00pm during which 69 outbound trips are projected.

For the purposes of this assessment, inbound and outbound trips associated with the development have been evenly split to / from the east and west along Glenhaven Road. **Table 13** overleaf provides a summary of the projected hourly traffic volumes at the junction of Glenhaven Road and Larapinta Place during the abovementioned periods.

TABLE 13 PROJECTED HOURLY TRAFFIC VOLUMES INCORPORATING THE DEVELOPMENT WORST CASE (SPECIAL EVENT) OPERATION JUNCTION OF GLENHAVEN ROAD & LARAPINTA PLACE						
Hour	**Glenhaven Rd West**		**Larapinta Pl**		**Glenhaven Rd East**	
	Through	**Left**	**Right**	**Left**	**Right**	**Through**
5-6am	240	6	5	6	5	98
6-7am	681	5	5	6	50	276
8-9am	800	6	1	4	6	517
9-10am	535	4	45	48	4	425
10-11am	369	1	4	4	1	346
11am-12pm	345	45	4	4	44	350
2-3pm	546	4	44	45	4	462
3-4pm	474	9	5	6	8	691
4-5pm	469	12	8	9	8	839
5-6pm	515	9	8	9	5	922
6-7pm	443	40	10	11	40	727
7-8pm	287	6	5	6	5	442
8-9pm	183	6	5	6	5	287
9-10pm	141	1	35	36	1	256

Notes:

1. Weekday commuter peak hour (7-9am and 4-6pm) traffic generation has been added to the based traffic demands illustrated within Figure 3.
2. All base turning movements to and from Larapinta Place during other periods have been assumed to be one vehicle movement.

In order to estimate the operational performance of the junction of Glenhaven Road and Larapinta Place during the various hourly periods, a series of SIDRA analysis have been undertaken. **Table 14** overleaf provides a summary of the projected operational performance of the adjoining public road intersection, whilst full details are contained within **Appendix 5**.

TABLE 14 SIDRA INTERSECTION ANALYSIS – PROJECTED CONDITIONS INCORPORATING WORST CASE (SPECIAL EVENT) OPERATION JUNCTION OF GLENHAVEN ROAD & LARAPINTA PLACE			
Hour	**Worst Movement Delay**	**Degree of Saturation**	**Level of Service**
5-6am	6.9	0.13	A
6-7am	13.1	0.36	A
8-9am	19.8	0.43	B
9-10am	12.8	0.29	A
10-11am	9.2	0.20	A
11am-12pm	9.6	0.22	A
2-3pm	13.5	0.29	A
3-4pm	15.9	0.37	B
4-5pm	20.7	0.45	B
5-6pm	25.9	0.49	B
6-7pm	17.7	0.42	B
7-8pm	9.5	0.24	A
8-9pm	7.6	0.16	A
9-10pm	7.3	0.14	A

Table 14 indicates that the adjoining public road junction of Glenhaven Road and Larapinta Place is projected to continue to operate with a good level of service during the various operational periods incorporating the worst case (special event) additional traffic projected to be generated by the subject development. In this regard, the reduced traffic demands accommodated by the surrounding road network during the peak site operation provides additional capacity to cater for the additional traffic generated by the development.

6.2.2 Larapinta Place

It has previously been presented that Larapinta Place accommodates particularly low volumes of traffic commensurate with the abutting large lot residential land uses. The subject development has been projected to be generate a peak hourly traffic generation of 105 vehicle movements during regular and peak operation. Whilst such an extent of additional traffic is significant in terms of percentage increase, two-way traffic demands within Larapinta Place are still projected to be less than 100 vehicles per hour, thereby ensuring that the existing good level of service is projected to remain and environmental capacity is not expected to be exceeded.

The impact of the development is therefore most reasonably assessed with respect to the ability of vehicles to enter and exit the site in a safe and efficient manner. In this regard, sight distance provisions between the driveway and Larapinta Place have been assessed to be acceptable. Further, the low prevailing traffic demands within Larapinta Place are such that it is expected that motorists will be able to enter and exit the site with minimal delay or impedance on trailing through traffic flow. In consideration of this and the above assessment, development traffic is therefore projected to be capable of entering and exiting the site in a safe and efficient manner.

6.3 Transport Impacts

The subject site is located within the immediate proximity to bus services operating along Glenhaven Road. It is accordingly expected that a portion of the future site users could utilise the surrounding public transport infrastructure to travel to and from the site. The capacity of the existing public transport system is however not envisaged to be measurably affected by any additional demand associated with the development, given its limited scale.

7. CONCLUSION

This report assesses the potential parking and traffic implications associated with a development application seeking consent for the construction of a purpose built worship at 1 Larapinta Place, Glenhaven. Based on this assessment, the following conclusions are now made:

- Small numbers of people (a maximum of 50) are generally proposed to be accommodated during regular operations, between 5:30am and 9:00pm, seven days;

- Regular Friday midday prayer services are however expected to generate up to 250 people between 12:00pm and 2:00pm;

- Special evening prayer services during the month of Ramadan are expected to generate up to 200 people between 7:00pm and 9:00pm;

- A total of three special event prayer services per year are expected to generate up to 250 people, two occurring between 7:00am and 9:00am and one occurring on a Friday between 12:00pm and 2:00pm;

- The proposed site access arrangements are compliant with relevant AS2890.1:2004 specifications and are capable of accommodating the largest vehicles expected to service the site;

- The proposed off-street passenger vehicle parking provision significantly exceeds the relevant requirements of DCP 2012 applicable to a place of worship and readily exceeds the expected peak operational parking demands based upon detailed surveys of existing services held at Wrights Road Community Centre;

- The vehicle circulation and servicing arrangements are capable of providing for safe and efficient internal manoeuvring, incorporating the recommendations provided within this report;

- The surrounding road network operates with a reasonable of level of service during peak periods;

- The maximum hourly traffic generation during weekday commuter peak hours (7:00am – 9:00am and 4:00pm – 6:00pm) is expected to be 30 trips occurring between 4:00pm and 5:00pm associated with youth services / counselling and afternoon prayer service;

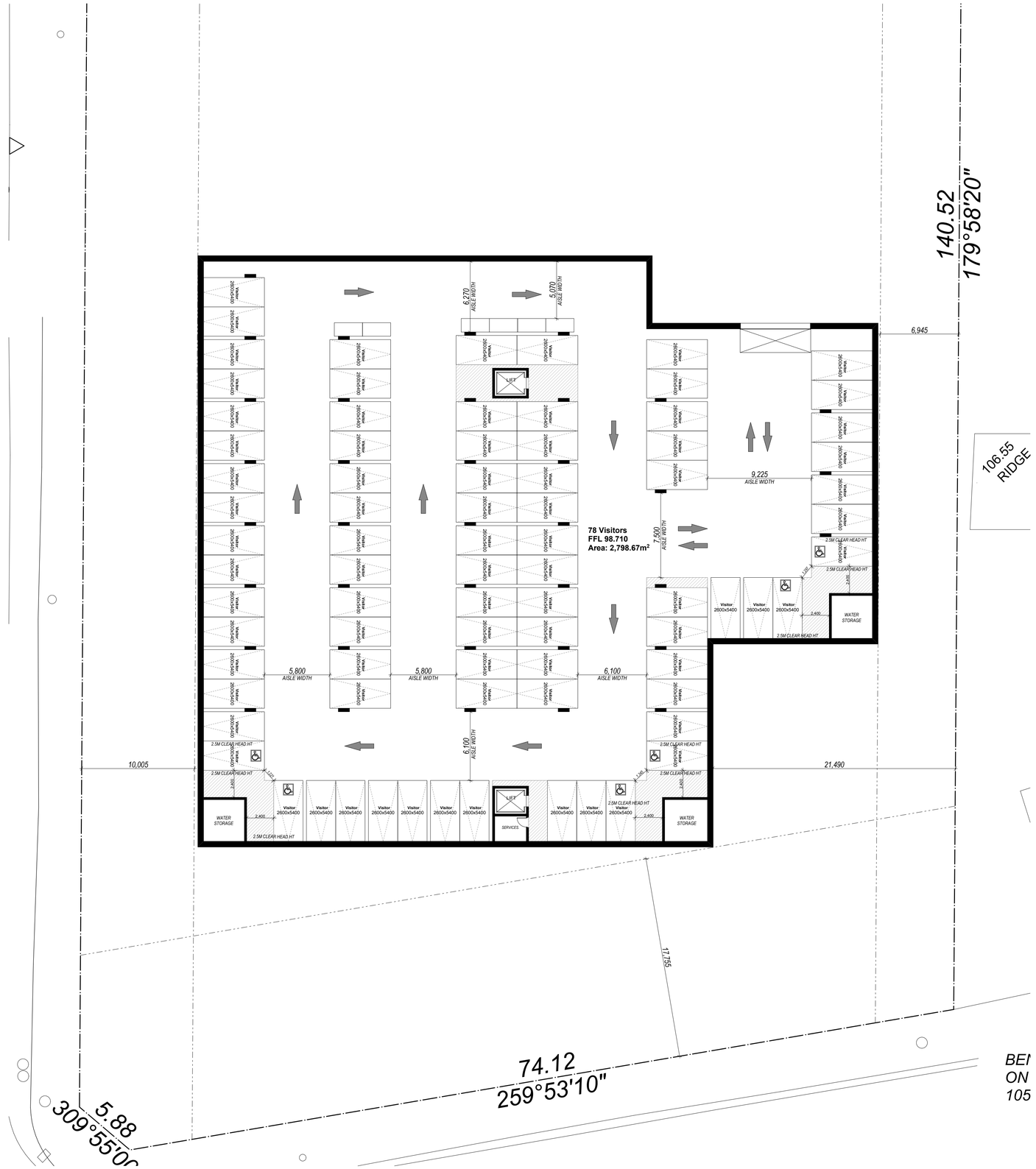
- The maximum hourly traffic generation is expected to be 105 trips occurring between 6:00am and 7:00am associated with morning and special event Eid prayer services;

- Further notable periods of generation during special event periods occur between 9:00am – 10:00am, 11:00am – 12:00pm, 2:00pm – 3:00pm, 6:00pm – 7:00pm and 9:00pm – 10:00pm when maximum hourly traffic generation is expected to range between 69 – 97 trips;

- Detailed SIDRA modelling indicates that the adjoining road network is capable of accommodating the additional traffic projected to be generated by the subject development.

It is considered, based on the contents of this report and the conclusions contained herein, there are no parking or traffic related issues that should prevent approval of the subject application. This action is therefore recommended to Council.

APPENDIX 1



1 Basement 1:200

All work to be carried out in accordance with BCA, AS & Council conditions.

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Energy Smart Design: AAA rated water conservation devices include rainwater tanks shower heads, water tap flow regulators, dual flush toilets & cisterns & compliant hot water systems with minimum green house score of 3.5 stars are to be used in this development. All occupants are encouraged to use AAA rated dish washing machines with front loading where possible.

NORTH POINT

notes:

CALCULATIONS:

GROUND FLOOR:916.18m2
FIRST FLOOR:673.40m2
TOTAL: 1,589.58m2

HARD SURFACE:
3,843.86m2

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NSW Architects Registration Board No: 6347
Nominated registered architect: Adrian Winters
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m: PO Box 457, Merrylands NSW 2160

project:
PROPOSED MOSQUE

Client:
xxxxxxxx

council:
HILLS SHIRE COUNCIL

drawing title:
Basement

issue/Stage:
PRELIMINARY

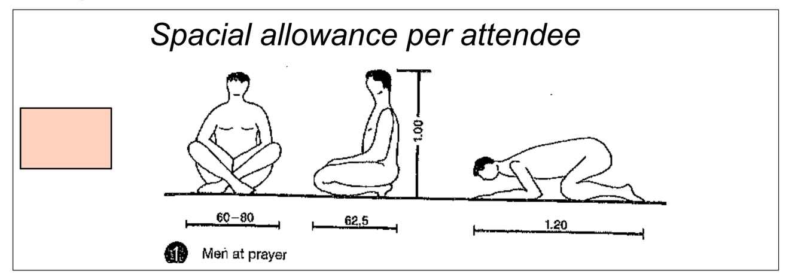
paper/scale:
A1/1:500

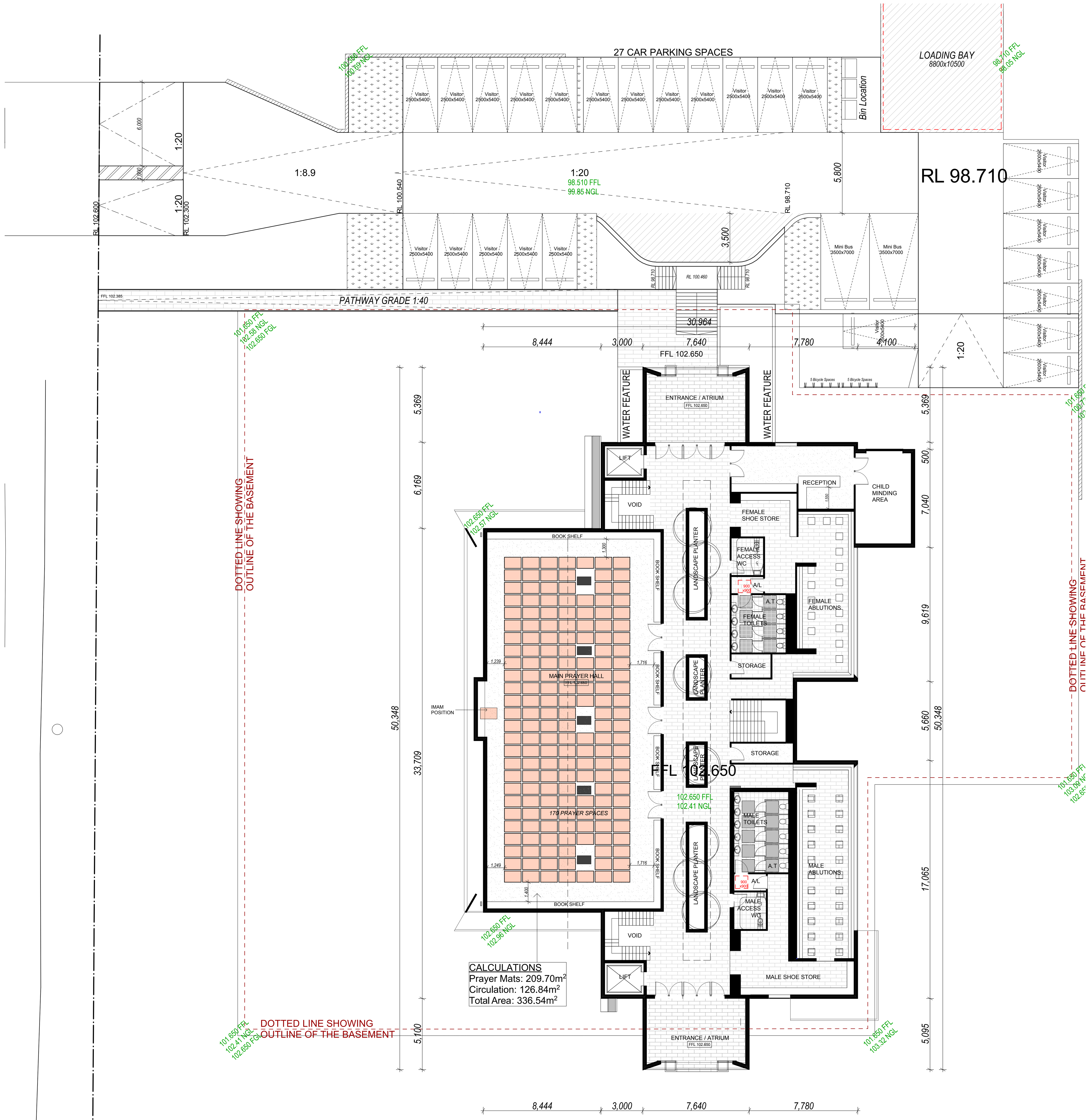
date:
29/01/2019

job #: **28569**
dwg #: **1010**

1 Larapinta Place Glenhaven

Legend





1 Ground Floor 1:200

NORTH POINT

notes:

CALCULATIONS:

GROUND FLOOR:916.18m2
FIRST FLOOR:673.40m2
TOTAL: 1,589.58m2

HARD SURFACE:
3,843.86m2

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1 Larapinta Place Glenhaven

project: PROPOSED MOSQUE

Client: xxxxxxxx

council: HILLS SHIRE COUNCIL

drawing title: **Ground Floor**

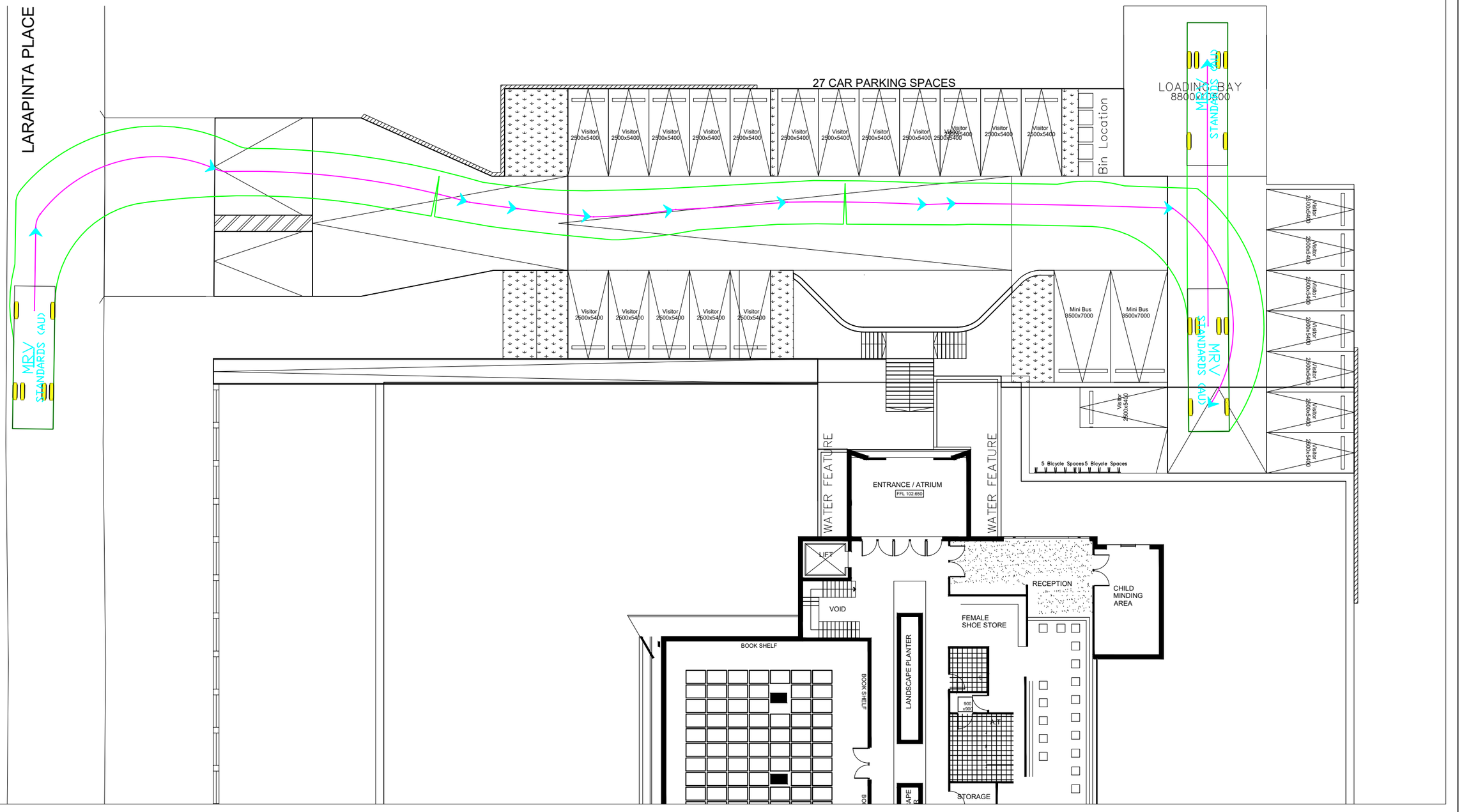
Issue/Stage: PRELIMINARY

paper/scale: A1/1:500

date: 29/01/2019

job #: **28569** dwg #: **1011**

APPENDIX 2



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NOTES:

1. THIS PLAN IS BASED ON ARCHITECTURAL PLANS PREPARED BY IDRAFT ARCHITECTS.

2. THE SWEPT PATHS PROVIDED ON THIS PLAN HAVE BEEN GENERATED UTILISING AUTOTURN PRO VERSION 10 IN CONJUNCTION WITH MRV COMMERICAL TRUCK MANOEUVRING SPECIFICATIONS IN ACCORDANCE WITH THE AUSTRALIAN STANDARD FOR PARKING FACILITIES PART 1: OFF-STREET CAR PARKING (AS2890.1:2004).

STANBURY TRAFFIC PLANNING

COMMERCIAL TRUCK SWEPT PATHS - SITE ACCESS

PROPOSED PLACE OF WORSHIP

1 LARAPINTA PLACE

GLENHAVEN

SCALE: 1:250 AT A3

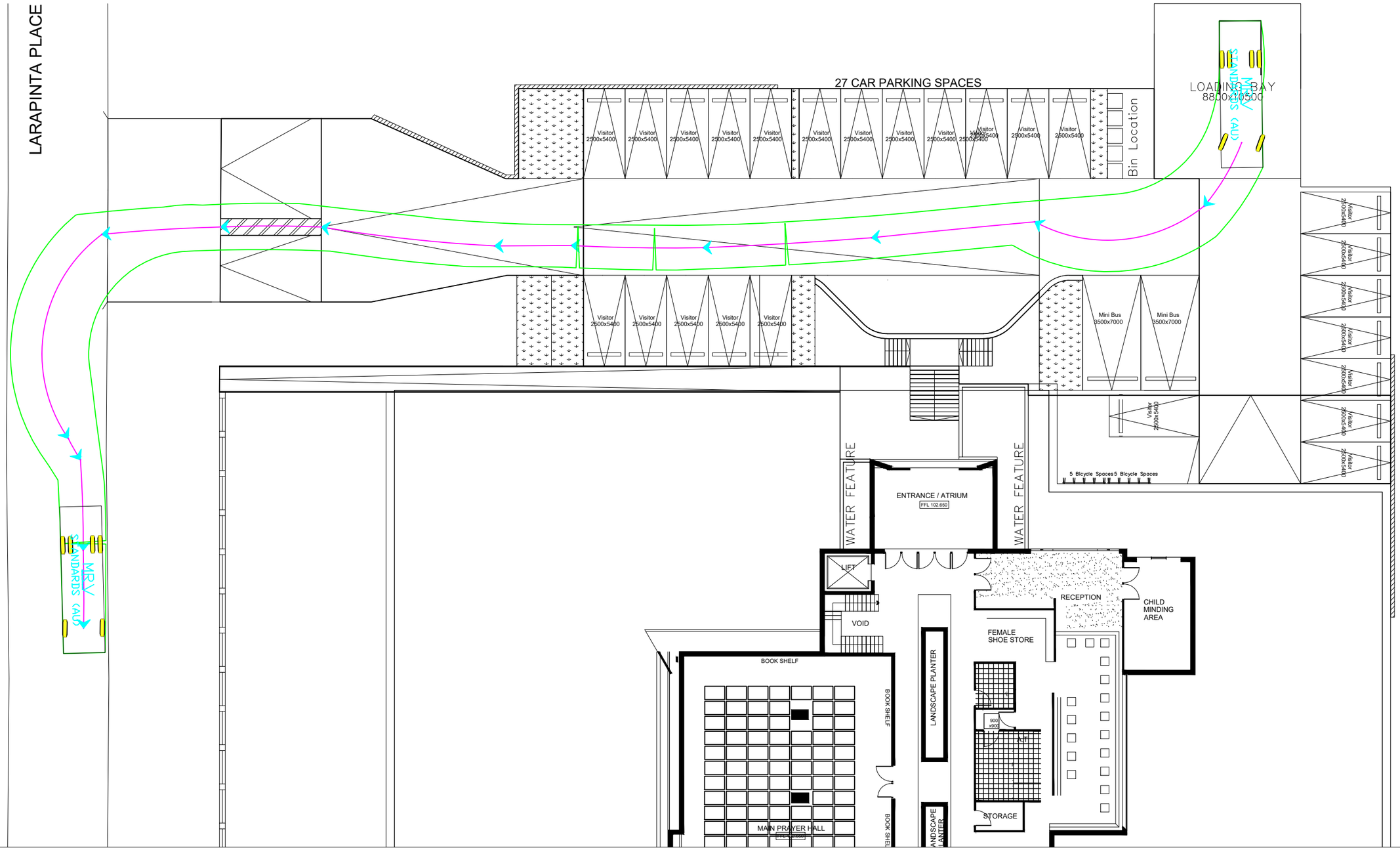
FILE: 18-043

SUPERSEDES SHEET/ISSUE -

DATE: 30/01/2019

ISSUE A

SHEET 1



STANBURY TRAFFIC PLANNING
TRAFFIC, PARKING & TRANSPORT CONSULTANTS

STANBURY TRAFFIC PLANNING
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NOTES:

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STANBURY TRAFFIC PLANNING

COMMERCIAL TRUCK SWEPT PATHS - SITE EGRESS

PROPOSED PLACE OF WORSHIP

1 LARAPINTA PLACE

GLENHAVEN

SCALE: 1:250 AT A3

FILE: 18-043

SUPERSEDES SHEET/ISSUE -

DATE: 30/01/2019

ISSUE A

SHEET 2

APPENDIX 3

Job No	N4054 - Glenhaven Rd
Client	Stanbury Traffic Planning
Site	Glenhaven Road - immediate vicinity of Larapinta Place
Location	Glenhaven
Site No	1
Start Date	5-Apr-18
Description	Volume Summary
Direction	Combined

MATRIX Traffic and Transport Data

Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	9-Apr	10-Apr	11-Apr	5-Apr	6-Apr	7-Apr	8-Apr		
AM Peak	1298	1388	1268	1317	1314	1267	1029		
PM Peak	1390	1407	1444	1466	1479	1241	997	15850	15161
0:00	44	35	41	47	61	159	166	46	79
1:00	17	13	23	17	31	66	99	20	38
2:00	10	17	14	14	21	42	59	15	25
3:00	21	22	18	13	26	39	32	20	24
4:00	85	88	89	97	94	63	35	91	79
5:00	334	346	359	330	325	145	69	339	273
6:00	964	937	949	1013	920	355	184	957	760
7:00	1254	1286	1268	1307	1194	607	280	1262	1028
8:00	1298	1388	1266	1317	1314	890	523	1317	1142
9:00	776	1191	886	1016	930	1074	841	960	959
10:00	646	751	709	725	744	1205	913	715	813
11:00	638	694	683	692	766	1267	1029	695	824
12:00	673	629	673	681	710	1241	997	673	801
13:00	600	697	666	695	684	1053	912	668	758
14:00	991	999	941	1036	1075	1103	903	1008	1007
15:00	1026	1160	1121	1258	1259	1076	851	1165	1107
16:00	1278	1310	1309	1324	1316	952	866	1307	1194
17:00	1390	1407	1444	1466	1479	1050	811	1437	1292
18:00	1009	1147	1189	1240	1265	867	658	1170	1054
19:00	594	753	735	798	763	551	404	729	657
20:00	374	495	469	585	428	385	347	470	440
21:00	297	423	430	430	406	400	254	397	377
22:00	190	223	226	271	390	466	201	260	281
23:00	82	83	106	117	261	313	77	130	148
Total	14591	16094	15614	16489	16462	15369	11511	15850	15161

7-19	11579	12659	12155	12757	12736	12385	9584	12377	11979
6-22	13808	15267	14738	15583	15253	14076	10773	14930	14214
6-24	14080	15573	15070	15971	15904	14855	11051	15320	14643
0-24	14591	16094	15614	16489	16462	15369	11511	15850	15161

Job No	N4054 - Glenhaven Rd
Client	Stanbury Traffic Planning
Site	Glenhaven Road - immediate vicinity of Larapinta Place
Location	Glenhaven
Site No	1
Start Date	5-Apr-18
Description	Volume Summary
Direction	NB

MATRIX Traffic and Transport Data

Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	9-Apr	10-Apr	11-Apr	5-Apr	6-Apr	7-Apr	8-Apr		
AM Peak	528	477	511	544	523	622	495		
PM Peak	911	937	940	943	880	611	520	8114	7783
0:00	20	24	28	33	36	92	96	28	47
1:00	12	9	15	13	22	42	57	14	24
2:00	6	10	11	6	10	27	38	9	15
3:00	5	6	5	5	12	13	17	7	9
4:00	19	22	29	25	24	26	16	24	23
5:00	98	101	102	94	97	61	21	98	82
6:00	296	236	269	300	278	131	66	276	225
7:00	420	433	402	431	400	259	131	417	354
8:00	528	477	511	544	523	350	247	517	454
9:00	362	412	399	494	458	531	383	425	434
10:00	296	360	363	354	355	555	447	346	390
11:00	326	380	330	316	397	622	495	350	409
12:00	384	322	340	352	398	611	520	359	418
13:00	319	381	352	387	374	538	478	363	404
14:00	433	454	441	492	492	579	463	462	479
15:00	622	703	674	736	721	607	478	691	649
16:00	808	871	841	842	831	537	473	839	743
17:00	911	937	940	943	880	604	478	922	813
18:00	645	687	746	779	780	473	381	727	642
19:00	374	440	450	488	456	296	238	442	392
20:00	229	327	282	356	241	225	188	287	264
21:00	181	292	266	293	250	214	143	256	234
22:00	123	156	139	180	241	310	129	168	183
23:00	53	64	69	79	175	182	41	88	95
Total	7470	8104	8004	8542	8451	7885	6024	8114	7783

7-19	6054	6417	6339	6670	6609	6266	4974	6418	6190
6-22	7134	7712	7606	8107	7834	7132	5609	7679	7305
6-24	7310	7932	7814	8366	8250	7624	5779	7934	7582
0-24	7470	8104	8004	8542	8451	7885	6024	8114	7783

Job No	N4054 - Glenhaven Rd
Client	Stanbury Traffic Planning
Site	Glenhaven Road - immediate vicinity of Larapinta Place
Location	Glenhaven
Site No	1
Start Date	5-Apr-18
Description	Volume Summary
Direction	SB

MATRIX Traffic and Transport Data

Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	9-Apr	10-Apr	11-Apr	5-Apr	6-Apr	7-Apr	8-Apr		
AM Peak	834	911	866	876	794	650	534		
PM Peak	558	545	504	544	599	630	477	7736	7379
0:00	24	11	13	14	25	67	70	17	32
1:00	5	4	8	4	9	24	42	6	14
2:00	4	7	3	8	11	15	21	7	10
3:00	16	16	13	8	14	26	15	13	15
4:00	66	66	60	72	70	37	19	67	56
5:00	236	245	257	236	228	84	48	240	191
6:00	668	701	680	713	642	224	118	681	535
7:00	834	853	866	876	794	348	149	845	674
8:00	770	911	755	773	791	540	276	800	688
9:00	414	779	487	522	472	543	458	535	525
10:00	350	391	346	371	389	650	466	369	423
11:00	312	314	353	376	369	645	534	345	415
12:00	289	307	333	329	312	630	477	314	382
13:00	281	316	314	308	310	515	434	306	354
14:00	558	545	500	544	583	524	440	546	528
15:00	404	457	447	522	538	469	373	474	459
16:00	470	439	468	482	485	415	393	469	450
17:00	479	470	504	523	599	446	333	515	479
18:00	364	460	443	461	485	394	277	443	412
19:00	220	313	285	310	307	255	166	287	265
20:00	145	168	187	229	187	160	159	183	176
21:00	116	131	164	137	156	186	111	141	143
22:00	67	67	87	91	149	156	72	92	98
23:00	29	19	37	38	86	131	36	42	54
Total	7121	7990	7610	7947	8011	7484	5487	7736	7379

7-19	5525	6242	5816	6087	6127	6119	4610	5959	5789
6-22	6674	7555	7132	7476	7419	6944	5164	7251	6909
6-24	6770	7641	7256	7605	7654	7231	5272	7385	7061
0-24	7121	7990	7610	7947	8011	7484	5487	7736	7379

APPENDIX 4

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Existing AM Peak
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	517	5.0	0.275	0.0	LOS A	0.0	0.2	0.01	0.00	59.9
6	R2	1	5.0	0.275	12.4	LOS A	0.0	0.2	0.01	0.00	57.4
Approach		518	5.0	0.275	0.1	NA	0.0	0.2	0.01	0.00	59.9
North: Larapinta Place											
7	L2	4	5.0	0.011	10.1	LOS A	0.0	0.3	0.69	0.78	48.8
9	R2	1	5.0	0.011	19.6	LOS B	0.0	0.3	0.69	0.78	48.4
Approach		5	5.0	0.011	12.0	LOS A	0.0	0.3	0.69	0.78	48.8
West: Glenhaven Road West											
10	L2	1	5.0	0.424	5.7	LOS A	0.0	0.0	0.00	0.00	58.0
11	T1	800	5.0	0.424	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		801	5.0	0.424	0.1	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		1324	5.0	0.424	0.1	NA	0.0	0.3	0.00	0.00	59.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Existing PM Peak
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	922	5.0	0.489	0.0	LOS A	0.0	0.2	0.00	0.00	60.0
6	R2	1	5.0	0.489	10.2	LOS A	0.0	0.2	0.00	0.00	57.4
Approach		923	5.0	0.489	0.0	NA	0.0	0.2	0.00	0.00	60.0
North: Larapinta Place											
7	L2	1	5.0	0.007	7.6	LOS A	0.0	0.2	0.73	0.76	46.3
9	R2	1	5.0	0.007	24.6	LOS B	0.0	0.2	0.73	0.76	45.9
Approach		2	5.0	0.007	16.1	LOS B	0.0	0.2	0.73	0.76	46.1
West: Glenhaven Road West											
10	L2	4	5.0	0.275	5.6	LOS A	0.0	0.0	0.00	0.00	58.0
11	T1	515	5.0	0.275	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		519	5.0	0.275	0.1	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		1444	5.0	0.489	0.1	NA	0.0	0.2	0.00	0.00	59.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX 5

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 5-6am Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	98	5.0	0.056	0.1	LOS A	0.0	0.3	0.04	0.03	59.6
6	R2	5	5.0	0.056	6.4	LOS A	0.0	0.3	0.04	0.03	57.1
Approach		103	5.0	0.056	0.4	NA	0.0	0.3	0.04	0.03	59.4
North: Larapinta Place											
7	L2	6	5.0	0.010	6.4	LOS A	0.0	0.3	0.33	0.58	52.5
9	R2	5	5.0	0.010	6.9	LOS A	0.0	0.3	0.33	0.58	51.9
Approach		11	5.0	0.010	6.6	LOS A	0.0	0.3	0.33	0.58	52.2
West: Glenhaven Road West											
10	L2	6	5.0	0.130	5.6	LOS A	0.0	0.0	0.00	0.01	58.0
11	T1	240	5.0	0.130	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		246	5.0	0.130	0.1	NA	0.0	0.0	0.00	0.01	59.8
All Vehicles		360	5.0	0.130	0.4	NA	0.0	0.3	0.02	0.04	59.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 6-7am Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	276	5.0	0.211	1.4	LOS A	0.8	5.7	0.28	0.11	57.5
6	R2	50	5.0	0.211	9.9	LOS A	0.8	5.7	0.28	0.11	55.1
Approach		326	5.0	0.211	2.7	NA	0.8	5.7	0.28	0.11	57.1
North: Larapinta Place											
7	L2	6	5.0	0.022	8.9	LOS A	0.1	0.5	0.63	0.78	49.6
9	R2	5	5.0	0.022	13.1	LOS A	0.1	0.5	0.63	0.78	49.1
Approach		11	5.0	0.022	10.8	LOS A	0.1	0.5	0.63	0.78	49.4
West: Glenhaven Road West											
10	L2	5	5.0	0.363	5.6	LOS A	0.0	0.0	0.00	0.00	58.0
11	T1	681	5.0	0.363	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		686	5.0	0.363	0.1	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		1023	5.0	0.363	1.0	NA	0.8	5.7	0.10	0.05	58.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 8-9am Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	517	5.0	0.283	0.2	LOS A	0.2	1.2	0.03	0.01	59.7
6	R2	6	5.0	0.283	12.6	LOS A	0.2	1.2	0.03	0.01	57.2
Approach		523	5.0	0.283	0.3	NA	0.2	1.2	0.03	0.01	59.6
North: Larapinta Place											
7	L2	4	5.0	0.011	10.1	LOS A	0.0	0.3	0.69	0.78	48.8
9	R2	1	5.0	0.011	19.8	LOS B	0.0	0.3	0.69	0.78	48.4
Approach		5	5.0	0.011	12.0	LOS A	0.0	0.3	0.69	0.78	48.7
West: Glenhaven Road West											
10	L2	6	5.0	0.427	5.7	LOS A	0.0	0.0	0.00	0.00	58.0
11	T1	800	5.0	0.427	0.1	LOS A	0.0	0.0	0.00	0.00	59.8
Approach		806	5.0	0.427	0.1	NA	0.0	0.0	0.00	0.00	59.8
All Vehicles		1334	5.0	0.427	0.2	NA	0.2	1.2	0.02	0.01	59.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 9-10am Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	425	5.0	0.229	0.1	LOS A	0.1	0.4	0.02	0.01	59.9
6	R2	4	5.0	0.229	8.7	LOS A	0.1	0.4	0.02	0.01	57.3
Approach		429	5.0	0.229	0.1	NA	0.1	0.4	0.02	0.01	59.8
North: Larapinta Place											
7	L2	48	5.0	0.162	8.1	LOS A	0.5	4.0	0.60	0.81	49.9
9	R2	45	5.0	0.162	12.8	LOS A	0.5	4.0	0.60	0.81	49.4
Approach		93	5.0	0.162	10.4	LOS A	0.5	4.0	0.60	0.81	49.7
West: Glenhaven Road West											
10	L2	4	5.0	0.286	5.6	LOS A	0.0	0.0	0.00	0.00	58.0
11	T1	535	5.0	0.286	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		539	5.0	0.286	0.1	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		1061	5.0	0.286	1.0	NA	0.5	4.0	0.06	0.08	58.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 10-11am Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	345	5.0	0.184	0.0	LOS A	0.0	0.1	0.00	0.00	60.0
6	R2	1	5.0	0.184	7.2	LOS A	0.0	0.1	0.00	0.00	57.4
Approach		346	5.0	0.184	0.0	NA	0.0	0.1	0.00	0.00	60.0
North: Larapinta Place											
7	L2	4	5.0	0.010	6.9	LOS A	0.0	0.2	0.46	0.64	51.5
9	R2	4	5.0	0.010	9.2	LOS A	0.0	0.2	0.46	0.64	51.0
Approach		8	5.0	0.010	8.1	LOS A	0.0	0.2	0.46	0.64	51.3
West: Glenhaven Road West											
10	L2	1	5.0	0.196	5.6	LOS A	0.0	0.0	0.00	0.00	58.1
11	T1	369	5.0	0.196	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		370	5.0	0.196	0.0	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		724	5.0	0.196	0.1	NA	0.0	0.2	0.01	0.01	59.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 11-12pm Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	350	5.0	0.224	0.4	LOS A	0.5	3.4	0.15	0.07	58.8
6	R2	44	5.0	0.224	7.5	LOS A	0.5	3.4	0.15	0.07	56.4
Approach		394	5.0	0.224	1.2	NA	0.5	3.4	0.15	0.07	58.5
North: Larapinta Place											
7	L2	4	5.0	0.011	6.8	LOS A	0.0	0.3	0.45	0.64	51.4
9	R2	4	5.0	0.011	9.6	LOS A	0.0	0.3	0.45	0.64	50.9
Approach		8	5.0	0.011	8.2	LOS A	0.0	0.3	0.45	0.64	51.2
West: Glenhaven Road West											
10	L2	45	5.0	0.208	5.6	LOS A	0.0	0.0	0.00	0.07	57.5
11	T1	345	5.0	0.208	0.0	LOS A	0.0	0.0	0.00	0.07	59.3
Approach		390	5.0	0.208	0.7	NA	0.0	0.0	0.00	0.07	59.1
All Vehicles		792	5.0	0.224	1.0	NA	0.5	3.4	0.08	0.08	58.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 2-3pm Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	462	5.0	0.249	0.1	LOS A	0.1	0.4	0.02	0.01	59.9
6	R2	4	5.0	0.249	8.9	LOS A	0.1	0.4	0.02	0.01	57.3
Approach		466	5.0	0.249	0.1	NA	0.1	0.4	0.02	0.01	59.9
North: Larapinta Place											
7	L2	45	5.0	0.164	8.2	LOS A	0.5	4.0	0.62	0.82	49.6
9	R2	44	5.0	0.164	13.5	LOS A	0.5	4.0	0.62	0.82	49.2
Approach		89	5.0	0.164	10.8	LOS A	0.5	4.0	0.62	0.82	49.4
West: Glenhaven Road West											
10	L2	4	5.0	0.291	5.6	LOS A	0.0	0.0	0.00	0.00	58.0
11	T1	546	5.0	0.291	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		550	5.0	0.291	0.1	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		1105	5.0	0.291	1.0	NA	0.5	4.0	0.06	0.07	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 3-4pm Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	691	5.0	0.374	0.1	LOS A	0.1	1.1	0.02	0.01	59.8
6	R2	8	5.0	0.374	8.9	LOS A	0.1	1.1	0.02	0.01	57.3
Approach		699	5.0	0.374	0.2	NA	0.1	1.1	0.02	0.01	59.8
North: Larapinta Place											
7	L2	6	5.0	0.024	7.5	LOS A	0.1	0.5	0.60	0.74	49.3
9	R2	5	5.0	0.024	15.9	LOS B	0.1	0.5	0.60	0.74	48.8
Approach		11	5.0	0.024	11.3	LOS A	0.1	0.5	0.60	0.74	49.1
West: Glenhaven Road West											
10	L2	9	5.0	0.256	5.6	LOS A	0.0	0.0	0.00	0.01	58.0
11	T1	474	5.0	0.256	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		483	5.0	0.256	0.1	NA	0.0	0.0	0.00	0.01	59.8
All Vehicles		1193	5.0	0.374	0.3	NA	0.1	1.1	0.02	0.02	59.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 4-5pm Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	839	5.0	0.452	0.1	LOS A	0.2	1.3	0.02	0.01	59.8
6	R2	8	5.0	0.452	9.4	LOS A	0.2	1.3	0.02	0.01	57.3
Approach		847	5.0	0.452	0.2	NA	0.2	1.3	0.02	0.01	59.8
North: Larapinta Place											
7	L2	9	5.0	0.048	7.5	LOS A	0.1	1.0	0.66	0.78	47.8
9	R2	8	5.0	0.048	20.7	LOS B	0.1	1.0	0.66	0.78	47.3
Approach		17	5.0	0.048	13.7	LOS A	0.1	1.0	0.66	0.78	47.6
West: Glenhaven Road West											
10	L2	12	5.0	0.255	5.6	LOS A	0.0	0.0	0.00	0.01	57.9
11	T1	469	5.0	0.255	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		481	5.0	0.255	0.2	NA	0.0	0.0	0.00	0.01	59.8
All Vehicles		1345	5.0	0.452	0.3	NA	0.2	1.3	0.02	0.02	59.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 5-6pm Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	922	5.0	0.493	0.1	LOS A	0.1	0.9	0.01	0.00	59.9
6	R2	5	5.0	0.493	10.3	LOS A	0.1	0.9	0.01	0.00	57.4
Approach		927	5.0	0.493	0.1	NA	0.1	0.9	0.01	0.00	59.9
North: Larapinta Place											
7	L2	9	5.0	0.060	7.7	LOS A	0.2	1.3	0.72	0.82	46.2
9	R2	8	5.0	0.060	25.9	LOS B	0.2	1.3	0.72	0.82	45.8
Approach		17	5.0	0.060	16.3	LOS B	0.2	1.3	0.72	0.82	46.0
West: Glenhaven Road West											
10	L2	9	5.0	0.278	5.6	LOS A	0.0	0.0	0.00	0.01	58.0
11	T1	515	5.0	0.278	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		524	5.0	0.278	0.1	NA	0.0	0.0	0.00	0.01	59.8
All Vehicles		1468	5.0	0.493	0.3	NA	0.2	1.3	0.02	0.02	59.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 6-7pm Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	727	5.0	0.424	0.4	LOS A	0.8	5.8	0.10	0.03	59.2
6	R2	40	5.0	0.424	9.2	LOS A	0.8	5.8	0.10	0.03	56.7
Approach		767	5.0	0.424	0.9	NA	0.8	5.8	0.10	0.03	59.0
North: Larapinta Place											
7	L2	11	5.0	0.050	7.3	LOS A	0.2	1.1	0.62	0.76	48.6
9	R2	10	5.0	0.050	17.7	LOS B	0.2	1.1	0.62	0.76	48.2
Approach		21	5.0	0.050	12.3	LOS A	0.2	1.1	0.62	0.76	48.4
West: Glenhaven Road West											
10	L2	40	5.0	0.257	5.6	LOS A	0.0	0.0	0.00	0.05	57.6
11	T1	443	5.0	0.257	0.0	LOS A	0.0	0.0	0.00	0.05	59.5
Approach		483	5.0	0.257	0.5	NA	0.0	0.0	0.00	0.05	59.3
All Vehicles		1271	5.0	0.424	0.9	NA	0.8	5.8	0.07	0.05	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 7-8pm Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	442	5.0	0.238	0.0	LOS A	0.1	0.4	0.01	0.01	59.9
6	R2	5	5.0	0.238	6.9	LOS A	0.1	0.4	0.01	0.01	57.4
Approach		447	5.0	0.238	0.1	NA	0.1	0.4	0.01	0.01	59.9
North: Larapinta Place											
7	L2	6	5.0	0.014	6.6	LOS A	0.0	0.3	0.41	0.63	51.7
9	R2	5	5.0	0.014	9.5	LOS A	0.0	0.3	0.41	0.63	51.2
Approach		11	5.0	0.014	7.9	LOS A	0.0	0.3	0.41	0.63	51.4
West: Glenhaven Road West											
10	L2	6	5.0	0.155	5.6	LOS A	0.0	0.0	0.00	0.01	58.0
11	T1	287	5.0	0.155	0.0	LOS A	0.0	0.0	0.00	0.01	59.9
Approach		293	5.0	0.155	0.1	NA	0.0	0.0	0.00	0.01	59.8
All Vehicles		751	5.0	0.238	0.2	NA	0.1	0.4	0.01	0.02	59.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 8-9pm Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	287	5.0	0.156	0.0	LOS A	0.0	0.3	0.01	0.01	59.8
6	R2	5	5.0	0.156	6.2	LOS A	0.0	0.3	0.01	0.01	57.3
Approach		292	5.0	0.156	0.1	NA	0.0	0.3	0.01	0.01	59.8
North: Larapinta Place											
7	L2	6	5.0	0.011	6.2	LOS A	0.0	0.3	0.31	0.58	52.5
9	R2	5	5.0	0.011	7.6	LOS A	0.0	0.3	0.31	0.58	51.9
Approach		11	5.0	0.011	6.8	LOS A	0.0	0.3	0.31	0.58	52.2
West: Glenhaven Road West											
10	L2	6	5.0	0.100	5.6	LOS A	0.0	0.0	0.00	0.02	57.9
11	T1	183	5.0	0.100	0.0	LOS A	0.0	0.0	0.00	0.02	59.8
Approach		189	5.0	0.100	0.2	NA	0.0	0.0	0.00	0.02	59.7
All Vehicles		492	5.0	0.156	0.3	NA	0.0	0.3	0.02	0.03	59.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Glenhaven Road & Larapinta Place]

Projected 9-10pm Special
Giveway / Yield (Two-Way)

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	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Glenhaven Road East											
5	T1	256	5.0	0.136	0.0	LOS A	0.0	0.1	0.00	0.00	60.0
6	R2	1	5.0	0.136	6.0	LOS A	0.0	0.1	0.00	0.00	57.4
Approach		257	5.0	0.136	0.0	NA	0.0	0.1	0.00	0.00	60.0
North: Larapinta Place											
7	L2	36	5.0	0.067	6.1	LOS A	0.2	1.7	0.28	0.60	52.6
9	R2	35	5.0	0.067	7.3	LOS A	0.2	1.7	0.28	0.60	52.0
Approach		71	5.0	0.067	6.7	LOS A	0.2	1.7	0.28	0.60	52.3
West: Glenhaven Road West											
10	L2	1	5.0	0.075	5.6	LOS A	0.0	0.0	0.00	0.00	58.1
11	T1	141	5.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		142	5.0	0.075	0.0	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		470	5.0	0.136	1.0	NA	0.2	1.7	0.04	0.09	58.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.