Traffic Impact Assessment

Proposed Commercial Development
Bankstown RSL Club

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Contents

1. Introduction

TRAFFIX has been engaged by MMD Construction Consultants to undertake a traffic impact assessment in support of a development application (DA) relating to Bankstown RSL Club and Hotel at the corner of Marion and Meredith Street, Bankstown. The DA is for a commercial development consisting of 2,358m^2 of publicly accessible club floor space, a restaurant of 1379m^2 and 258 hotel rooms. The development is located within the Bankstown City Council LGA and has been assessed under that council's controls.

This report documents the findings of our investigations and should be read in the context of the Statement of Environmental Effects (SEE) prepared separately. The development is a major development and will require referral to the RMS under the provisions of SEPP (Infrastructure) 2007.

The report is structured as follows:

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

2. Location and Site

The site is situated on the northern side of Marion Street and lies within the sector bounded by Meredith Street to the west, Marion Street to the south, the existing Bankstown RSL Community Club to the north and retail development to the east. It is located approximately 270 metres northwest of Bankstown railway station, approximately 17 kilometres southwest of the Sydney CBD.

The site has an irregular configuration accommodating two separate car parks which are currently in use, an unsealed car park currently not in use as well as existing commercial development with a combined site area of 5,200m^2. It has a northern frontage of approximately 45 metres to the existing Bankstown RSL Community Club, a southern site boundary of approximately 50 metres to Marion Street, a western boundary of approximately 87 metres to Meredith Street and an irregularly shaped eastern boundary of approximately 80 metres to neighbouring commercial properties as well as Cole Lane.

The existing site currently has four site accesses, described as follows:

- An 11 metre wide driveway crossing to Meredith Street which provides access to the existing vacant car park in the westernmost part of the site;
- A shared 4.5 metre wide right of way providing access to Cole Lane from the easternmost part of the site as well as servicing neighbouring commercial properties; and
- Two access driveways on Marion Street of width 4m and 6m respectively

A Location Plan is presented in **Figure 1**, with a Site Plan presented in **Figure 2**. Reference should also be made to the Photographic Record presented in **Appendix A**, which provides an appreciation of the general character of roads and other key attributes in proximity to the site.

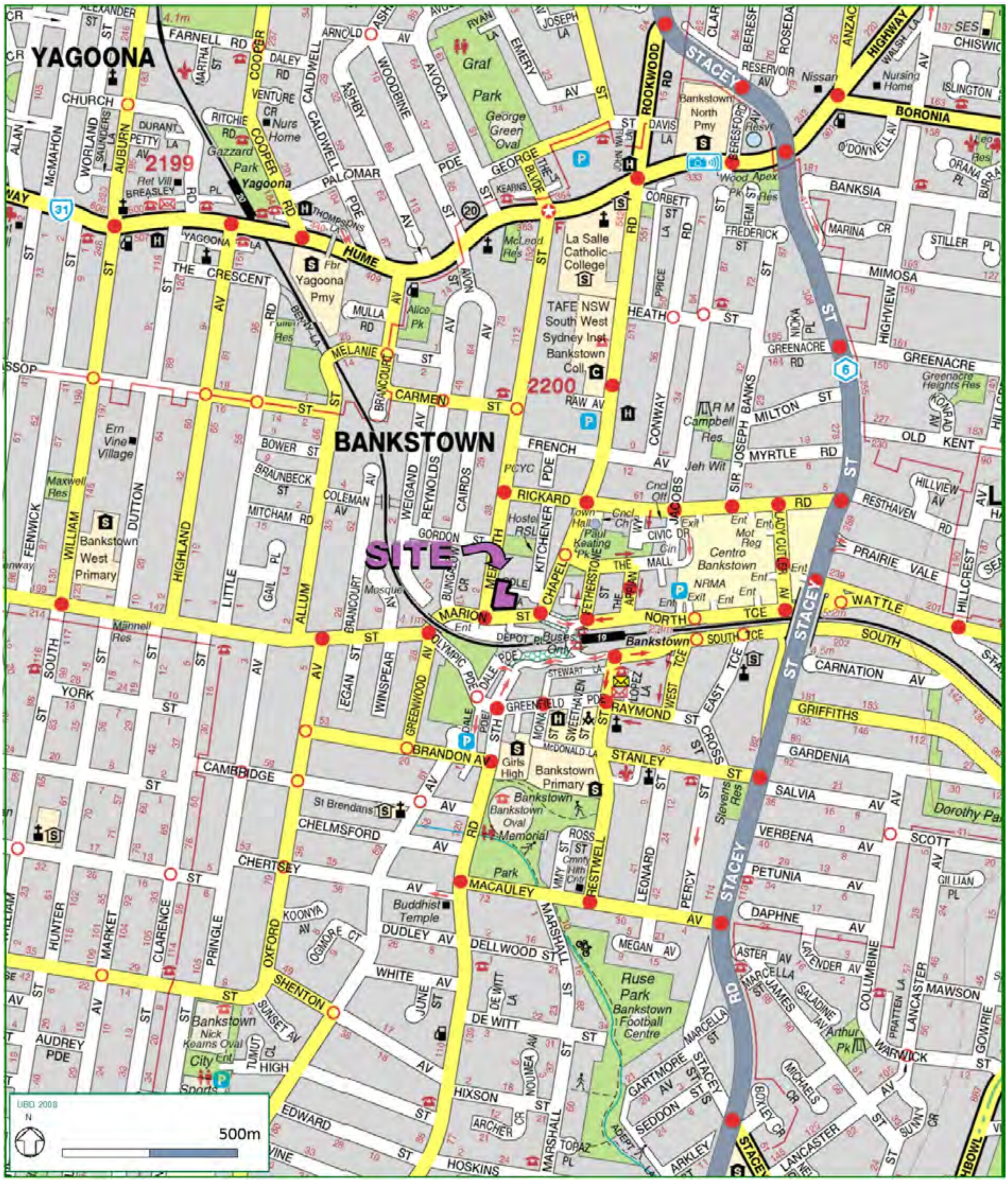


Figure 1: Location Plan

Figure 2: site plan

3. Existing Traffic Conditions

3.1 Road Network

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

- Hume Highway: An RMS State Road (MR 2) and major arterial road that generally runs in an east-west direction providing the main link between Melbourne in the southwest and Sydney CBD in the northeast via the M5 Motorway. The Hume Highway carries approximately 63,000 vpd (2002) in the vicinity of the site and forms a signalised controlled intersection with Meredith Street. It is constructed with a 23 metre wide divided carriageway with three lanes of traffic in both directions and No Parking/No Stopping restrictions apply along either side. The Hume Highway is generally subject to 70km/h speed zoning in the vicinity of the site with 40km/h speed zoning applied on school days in applicable locations (8:00-9:30am and 2:30-4:00pm).

- Marion Street: A local council road in vicinity of site that runs in an east-west direction from Chapel Road in the east and a cul-de-sac which is formed in the west. Marion Street becomes an RMS Regional Road (RR 7121) west of its intersection with Meredith Street and east of its intersection with Owen Street. Marion Street is subject to a 40km/h speed zoning in the vicinity of the site and generally carries a single lane of traffic in each direction within an undivided carriageway of length 12 metres. Marion Street provides some restricted on-street parking (15 minutes between 8am-6pm, Mon-Fri and 8:30am-12:30pm on Saturdays) on its southern kerbside and No Stopping restrictions generally apply along its northern kerbside within the vicinity of the site. Bus stops are in place on both sides of Marion Street (refer to **Figure 5).** A public car park station forms a signalised intersection with its driveway access to Marion Street and Meredith Street.

- Meredith Street: An RMS Regional Road (RR 7122) that runs in a north-south direction between the Hume Highway in the north and Marion Street in the south. Meredith Street is generally constructed with a 12 metre wide undivided carriageway carrying a single lane of traffic in each direction although it becomes a divided road from the site's access driveway to Meredith Street (approximately 46 metres south of the sites northern boundary) to its intersection with Marion Street in the south. No Stopping restrictions are generally in place along both sides of Meredith Street and a bus stop is located on the western side immediately adjacent to the sites northern boundary.

- Cole Lane: a local road that runs in an east-west direction between Chapel Road in the east and a cul-de-sac which is formed in the west. Cole Lane is constructed with a 12.5 metre undivided road carrying a single lane of traffic in each direction. No stopping restrictions are in place along its northern kerbside although restricted parking is available on its southern kerbside (1 hour parking 8am-6pm Monday-Friday and 8:00am-12:00pm Saturday). The site provides an access driveway to Cole Lane which is also a shared driveway with neighbouring businesses.

It can be seen from **Figure 3** that the site is conveniently located with respect to the arterial and local road systems serving the region. It is therefore able to effectively distribute traffic onto the wider road network, minimising traffic impacts.

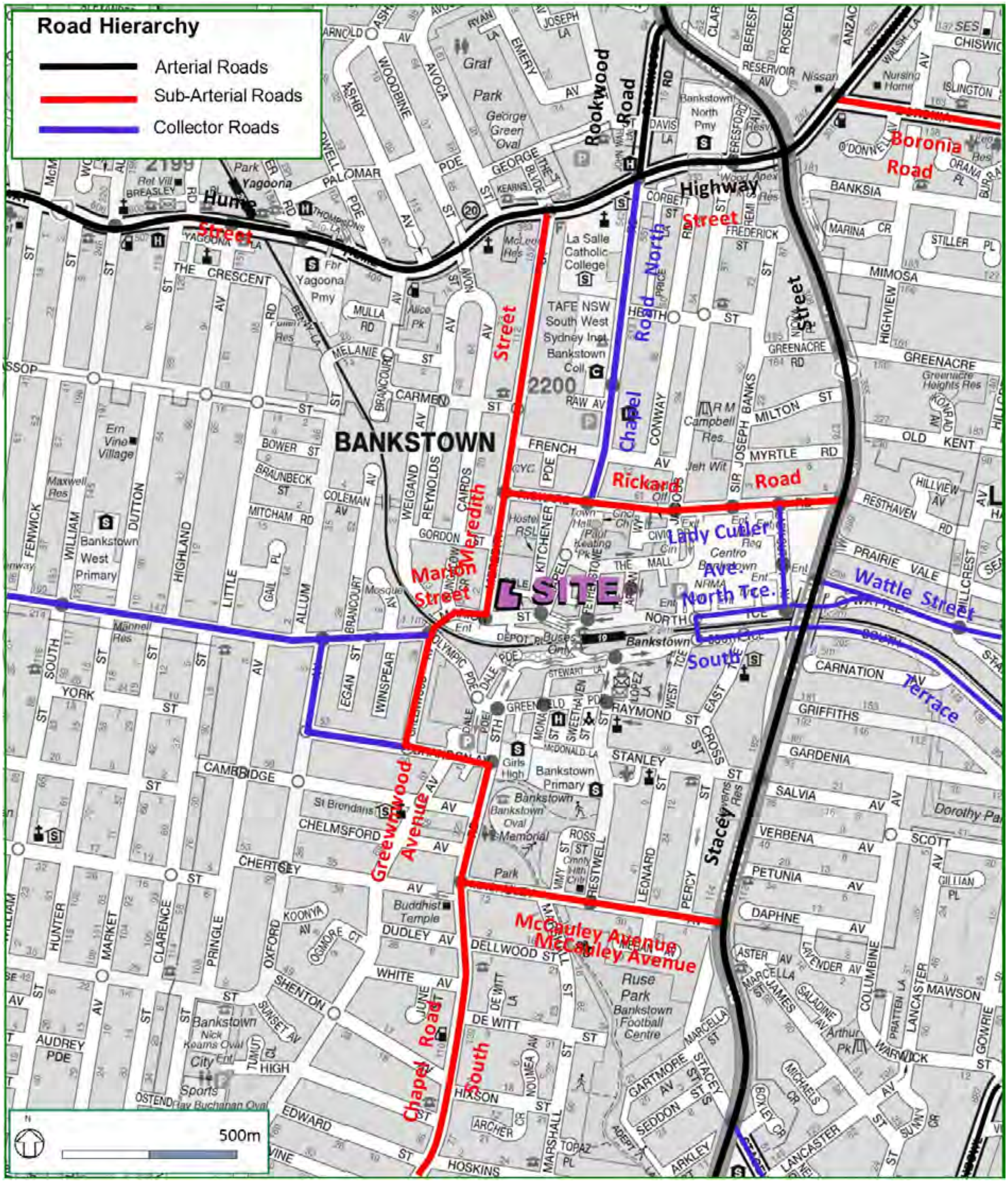


Figure 3: Road Hierarchy

3.2 Key Intersections

The key intersection in the vicinity of the site is shown below and provides an understanding of the existing road geometry and alignment:

Source: Near Map

Figure 4: intersection of Marion Street and Meredith Street

It can be seen from **Figure 4** that Marion Street forms a signalised controlled intersection with Meredith Street to the north and the driveway access to the public car parking station to the south, which is shown in the bottom of **Figure 4**. The southwest sector of the proposed site is shown in the top right.

3.3 Public Transport

The existing bus and train services that operate in the locality are shown in **Figure 5**. It is evident that the site is only 320 metres northwest west of Bankstown Station which provides services along the T3 Bankstown Line including connections to Lidcombe and Liverpool to Sydney CBD. In addition to frequent train services numerous bus services operate in the vicinity of the site as also indicated on Figure 5.

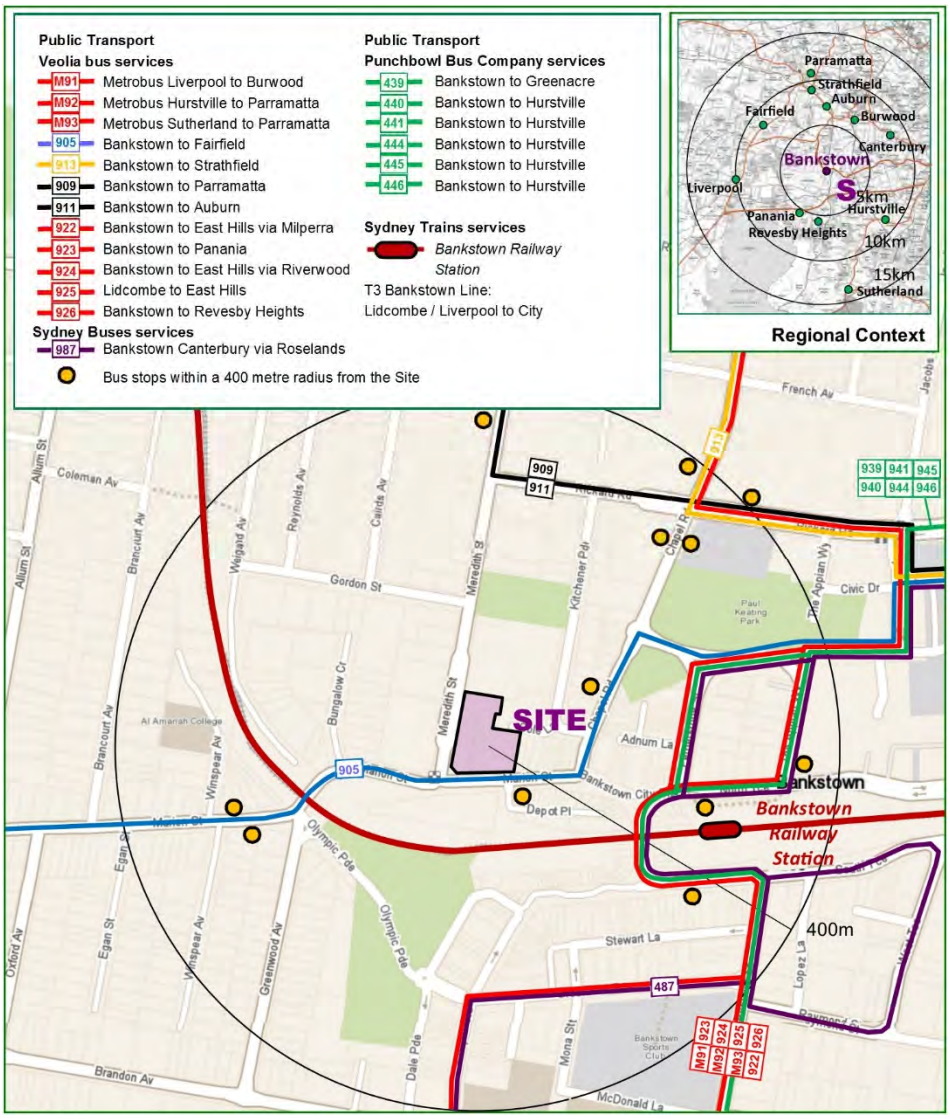


Figure 5: public transport

3.4 Existing Site Generation

The existing building located at 27-29 Marion Street lies within the proposed site area. The ground floor level is occupied by a commercial business and the first floor is occupied by a martial arts centre. It is estimated that each level has a GFA of approximately 300m^2

The RMS have published a Guide to Traffic Generating Developments (2002), this gives estimated traffic generation rates for land use types based on traffic surveys of similar sites. For a gym in a metropolitan centre the guide predicts a traffic generation rate of 3 vehicle trips per 100m^2. The application of this rate to the martial arts centre predicts a traffic generation in the critical PM peak period of 9 trips (3 in and 6 out applying a 70:30 split). For the commercial component the guide lists a generation rate of 2 trips per 100m^2, giving an estimated generation of 6 trips per hour in the AM and PM peaks.

The existing building located at 23 Marion Street also lies within the proposed site area and consists of 2 levels each with a GFA of approximately 800m^2. This building is currently occupied and used for commercial use. Consulting the RMS guide, the site is expected to generate approximately 32 vehicle trips per hour during the AM and PM peak hour periods with the following 70:30 split; 22 in, 10 out in the AM peak and 10 in, 22 out in the PM peak.

Therefore the existing site is currently expected to be generating the following trip rates in the critical PM peak hour:

- 47 vehicle trips per hour (14 in and 33 out);

The journey to work data from the Bureau of Transport Statistics estimates these vehicles arrive/depart site in a roughly 50:50 split between the south west approach via Marion Street and a north east approach via Chapel Road and Kitchener Parade.

3.5 Existing Intersection Performance

For the purposes of the assessment of traffic impacts of the proposed development, surveys were undertaken of the most critical intersection, being the intersection of Marion Street with Meredith Street

immediately adjacent to the site. These were undertaken on a Thursday between the peak periods of 7-9AM and 4.30-6.30PM to assess the development impact on the weekday peak.

The results of these surveys were analysed using the SIDRA computer program to determine their performance characteristics under existing traffic conditions. The SIDRA model produces a range of outputs, the most useful of which are the Degree of Saturation (DOS) and Average Vehicle Delay per vehicle (AVD). The AVD is in turn related to a level of service (LOS) criteria. These performance measures can be interpreted using the following explanations:

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

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

LOS - this is a comparative measure which provides an indication of the operating performance of an intersection as shown below:

Table 1: Intersection Performance Indicators

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory but accident study required

D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

A summary of the modelled results are provided below. Reference should also be made to the SIDRA outputs provided in **Appendix C** which provide detailed results for individual lanes and approaches.

Table 2: Existing Intersection Performance: AM and PM Peak Hour

Intersection Description	Control Type	Period	Degree of Saturation	Intersection Delay	Level of Service
Meredith Street / Marion Street	Signals	AM	0.860	21.2	B
	Signals	PM	0.861	25.8	B

It can be seen from **Table 2** that the key intersection operates satisfactorily under the existing 'base case' scenario, with moderate delays and Level of Service B, during the weekday AM and PM peak periods. Nevertheless, it is stressed that the most relevant use of this analysis is to compare the relative change in the performance parameters as a result of the proposed development. This is discussed further in Section 6.

4. Description of Proposed Development

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

- Demolition of all existing structures;
- Construction of a new mixed use building including 1 level of licenced club, 1 podium level and 5 levels of hotel rooms. In particular:
    - The club area consists of the following public areas: 1,713m^2 dining/lounge area, 556m^2 gaming and a 89m^2 café;
    - 13 hotel rooms and ancillary hotel facilities, consisting of a restaurant of 1379m^2, are to be located on the podium level;
    - 5 levels of hotel consisting of an additional 245 hotel rooms;
- The provision of basement level car parking consisting of 121 spaces for the development for 'VIP' hotel and club guests; and
- The provision of 3 levels of upper level parking consisting of an additional 374 parking spaces for hotel and club patrons, providing a total of 495 spaces for the site.

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

5. Parking Requirements

5.1 Council Controls

The Bankstown City Council DCP 2015 Part B5 Parking, does not provide a specific parking rate for Registered Clubs. Rather, Council's DCP prefers that the parking requirement be determined via a parking assessment in accordance with Part B5 Section 2.2 of the DCP, which includes surveys of existing developments etc. In this regard, we note that detailed parking surveys have been undertaken of the existing development which will form the basis of the parking assessment. The results of these surveys are discussed separately below.

Regarding the hotel component, the council DCP requires a rate of 1 space per room and one space per two employees. With 258 rooms and an estimated 40 hotel employees the hotel component will attract a requirement for 280 spaces under the DCP.

5.2 RSL Parking Surveys

In order to estimate a reasonable assessment of the parking requirement for the RSL Club component of the development a parking assessment of the existing RSL Club, situated next door, was undertaken.

With the public area of the club containing an existing public floor area of approximately 4000m^2 the site provides for a total of 260 off street parking spaces.

On site surveys of the parking was undertaken with a maximum daytime and night time count recorded over a 7 day period.

The results showed an average maximum daytime attendance of 105 vehicles, with the peak daytime attendance of 130 vehicles occurring on a Friday. The average maximum night time attendance was recorded as 120 vehicles with a peak night time attendance of 215 vehicles occurring on the Saturday. The full results are summarised in Table 3.

Table 3: Parking Survey of Existing RSL

Day of Week	Daytime Vehicles (Peak Volume)	Evening Vehicles (Peak Volume)
Monday	80	90
Tuesday	95	130
Wednesday	60	130
Thursday	110	180
Friday	130	110
Saturday	135	215
Sunday	80	110

5.3 RSL Parking Requirement

When considering the public floor area of the existing club represents approximately 4,000m^2, the above Saturday demand equates to a parking rate of 1 space / 18.6m^2 of public floor area, which is within the typical range of large clubs based on other studies. Application of this rate to the public floor area of 3,764m^2 (including the podium level restaurant) within the new club results in a demand for 202 spaces.

5.4 Proposed Parking Provision

As discussed in Section 4, the development proposes a total of 495 parking spaces. It therefore satisfies the minimum requirement for the club of 202 spaces as assessed above, and the 280 spaces for the hotel in accordance with the DCP rates. This provision also includes a surplus of 12 spaces. This surplus provision is considered supportable for the following reasons:

- It will ensure that normal peak demands are wholly contained within the site, protecting the amenity of residential precincts,
- It will enable any 'non-design' peaks such as concerts / functions, sporting events, Anzac Day etc, to be accommodated. That is, the proposed parking provides more flexibility, and

- This additional parking can facilitate further (incremental) changes to the club to be made over time, as will occur as the club responds to changing circumstances over time.

In addition, it is noted that the site is located adjacent to the Marion Street council carpark. This carpark contains 502 spaces and is prominently used by commuters. As such the peak demand of this carpark falls outside the expected peak demand of a community RSL club, being Thursday to Saturday evenings. If required, this facility could be relied upon for 'spill over' parking during periods of exceptional demand.

5.5 Disabled Parking

Disabled parking is provided on each of the car park levels, with spaces located adjacent to the lift accesses. In total 11 disabled spaces have been provided, representing 2.2% of the total parking provision. This provision meets the council requirement for 1% of parking to be reserved as accessible parking.

The disabled spaces have been provided with a width of 2.4 metres and a length of 5.8m with a 2.4 metre wide shared area adjacent, meeting the requirements of AS 2890.6 (2009).

In this regard the disabled parking provision is considered acceptable.

5.6 Servicing

All servicing, including garbage collection, of the site will be undertaken from the loading area provided at grade and located at 'back of house'. The loading area shall be accessed from Marion Street with egress to Cole Lane at the rear of site. As such, Service vehicle circulation shall operate as a one way system, ensuring all access and egress is undertaken in a forward direction. Swept path analysis demonstrates the satisfactory operation of this access arrangement by the largest design vehicle to enter the site, being an 8.8m Medium Rigid Vehicle (MRV).

Council's DCP does not provide a rate for the provision of loading bays and hence, the requirement has been based on the RMS *Guide to Traffic Generating Developments* (RMS Guide) which requires 1 bay / 1,000m^2 of public area set aside for bar, tavern, lounge and restaurants, for Hotels / Motels, with these

uses considered comparable to the Club. Application of this rate to the proposed public area of 3,764m^2 GFA, including the podium restaurant, results in a nominal requirement of 3.7 loading bays.

In response the development proposes a loading dock with two service bays of 3.5m by 8.8m and a clear headroom of 4.5m, capable of accommodating up to two MRVs. In addition, on-site queuing has been provided for up to a further two MRVs.

In order to ensure satisfactory operation of the servicing area and prevent excessive queuing the proposal shall include the preparation and operation of a Loading Dock Management Plan (LDMP). The LDMP will have a number of objectives, including distributing deliveries evenly throughout identified servicing periods to avoid congestion at the loading dock.

Relevant details of the LDMP will be provided at the appropriate post-approval stage once future tenants/owners/operators are known. As such, Council is invited to make the provision of an LDMP a condition of any future DA approval.

In summary, the proposed loading dock managed by an LDMP, would satisfactorily cater for the servicing demands generated by the proposed development and is considered supportable.

6. Traffic Impacts

6.1 Trip Generation

6.1.1 RSL Trip Generation

No traffic generation rates are specified in the RMS Guide for this type of development and in any event, such a rate would not be as reliable as a survey based assessment, which is the preferred methodology in the RMS Guideline. Therefore an estimate of the traffic generation rate is produced using the relationship between existing traffic generation and the public floor area of the existing club. For a club of this nature the PM peak period is considered to be the critical peak.

Surveys of the intersection between Marion Street and Meredith Street showed the network PM peak period occurs between 4.30pm and 5.30pm. Traffic generation surveys of the existing RSL club were undertaken during a typical Friday evening period.

The survey results of the existing club show the peak traffic generation for a club such as this occurs outside the network commuter peak period, as would be expected for an establishment of this nature. The results show a peak traffic generation of 62 vehicles per hour (35 in and 27 out) at the Meredith Street entry and 194 vehicles per hour (143 in and 51 out) at the Kitchener Parade entry. This peak generation rate occurred between 5.30pm and 6.30pm, outside the local network peak.

The survey results show the traffic generation of the site recorded during the network peak hour was as follows:

- 78 vehicle trips (47 in and 31 out) at the Kitchener Parade access
- 29 vehicle trips (14 in and 15 out) at the Meredith Street access

With the existing club having a public floor area of approximately 4000m^2 and the proposed club having a public floor area of 3764m^2 it would be expected that the traffic generation of the proposed RSL component would represent approximately 95% of the existing recorded vehicle trips. Nevertheless, in

order to undertake a conservative assessment and account for seasonal variations the full generation rate of the existing club has been adopted for this assessment.

6.1.2 Hotel Trip Generation

The development falls within the definition of a traditional hotel development under the RMS Guideline which found a large variance in the trip generation rates of this use. However, for the purpose of this assessment, the RMS rate for a motel has been adapted.

The RMS *Guide to Traffic Generating Developments* considers the PM peak to be the critical period for assessment and provides the following trip rates for motel uses:

- 0.4 per unit for evening peak hour vehicle trips;

It is noted the rates assume 100% occupancy of units. When comparison is drawn between existing similar developments and unit occupancy where data is available, the guide considers rates based on 85% occupancy on the peak day of the week to be appropriate.

Application of 85% occupancy to the 100% occupancy rates above provides the following trip rates:

- 0.34 per unit for evening peak hour vehicle trips;

Application of these rates to the proposed hotel component of 258 rooms would result in the following increase in traffic generation, split 70:30 between arrivals and departures in the PM peak:

- 88 trips per hour during the PM peak hour (62 in and 26 out);

With regard to the evening peak hour trips, it is noteworthy that the 88 trips for the hotel component shall also be split between the two access driveways.

6.1.3 Combined Trip Generation

Having consideration for the above rates the traffic generation of the combined site is expected to be 195 trips per hour in the network PM peak hour with approximately 20% utilising the basement carpark and 80% utilising the podium parking. As such, each site access is expected to generate the following in the network PM peak hour:

- 39 trips (24 in 15 out) at the Meredith Street access; and
- 156 trips (99 in and 57 out) at the Marion Street access

6.2 Peak Period Intersection Performance

When assessing the intersection performance of the local network the following aspects must be considered:

- The existing RSL club, located adjacent to the subject site, will cease to operate once the new RSL club is completed. As such, the traffic generation of the proposed club is considered to be accounted for in the existing network surveys;
- The traffic generation of the proposed hotel component, estimated above, is required to be included in the net traffic generation assessment;
- Traffic from the existing commercial developments located on site, as identified in Section 3.4, will no longer be generated and should be subtracted when assessing the **net** impact of the development; and
- The proposed left in, left out access on Marion Street will result in vehicles that had previously accessed the existing club from the north being required to access the new club via the Marion Street / Meredith Street intersection, resulting in an intensification of this particular left turn movement. Vehicles exiting site and wishing to travel to the south-west can make use of the Chapel Road roundabout to reverse direction if required.

The recent survey data reported upon in Section 3 showed an approximate 54:46 split in the direction of travel to/from the existing club with 54% approaching from the north and 46% approaching via the south-west. As such, the RSL traffic currently approaching from the north shall be added to the existing traffic flows recorded at the Marion Street / Meredith Street intersection to account for the restricted left in access on Meredith Street.

This directional split has been assumed for the net additional traffic generated by the hotel and for the traffic currently generated by the existing commercial developments on the site.

This results in an overall **net** change of +46 veh/hr travelling to the subject site and -5 veh/hr travelling away from site in the critical PM peak. A negligible change is expected in the AM peak.

At the key intersection of Meredith St / Marion St this results in a **net** additional 23 vehicles approaching site from the south west, 6 using the Meredith St access and 18 using the Marion St access. It will also result in an additional 20 vehicles approaching site from the north to use the Marion Street access and an intensification of the left-turn movement from Marion to Meridith Street of 27 vehicles, resulting in an additional 47 left turn vehicle movements as shown in Figure 6. In addition this intersection is expected to show a reduction of 3 vehicles travelling from site to the south west in the PM peak.

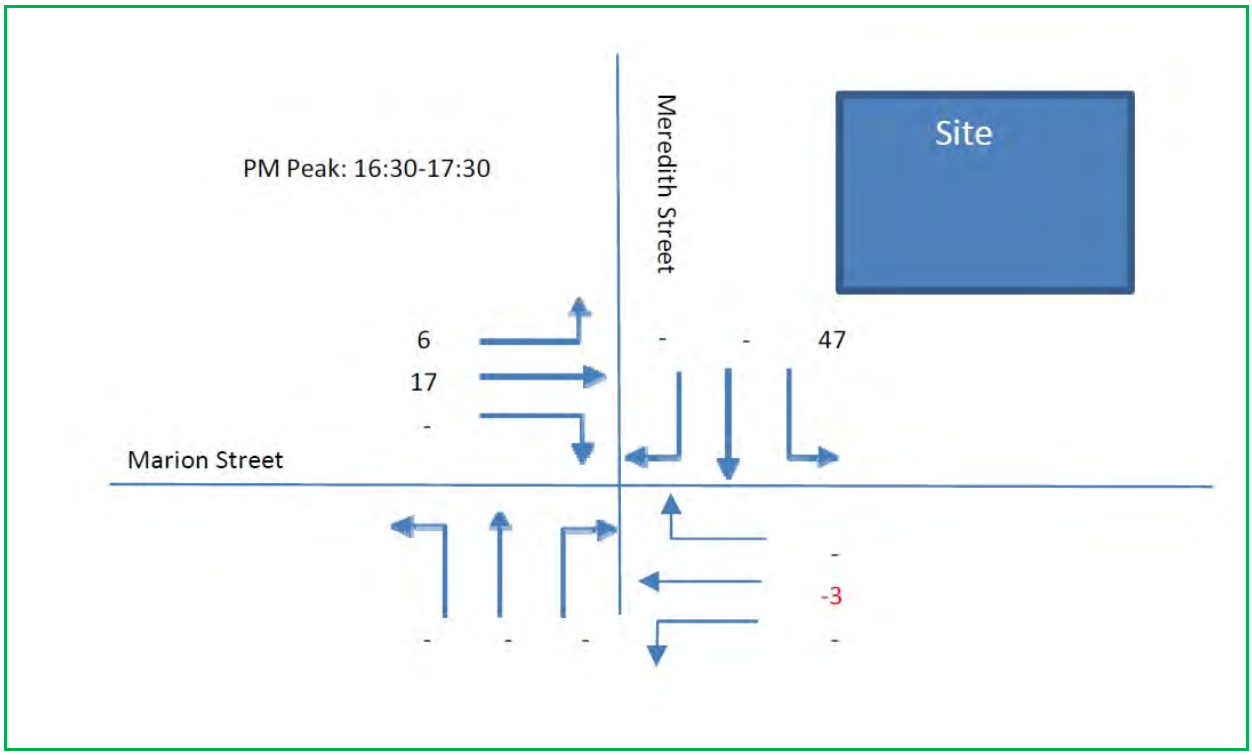


Figure 6: Marion St / Meredith St net traffic distribution

The impact of these additional trips and the intensification of the southbound left turn movement on the operation of the critical intersection in the vicinity of the site was then analysed using SIDRA, with a summary of the results provided below in Table 2. Table 2 also provides a comparison against the existing intersection performances, with these results extracted from Table 1.

Table 2: Existing & Future Intersection Performance: PM Peak Hour

Intersection	Scenario	Period	Control Type	Degree of Saturation	Intersection Delay	Level of Service
Marion Street / Meredith Street	without dev.	PM	signals	0.861	25.8	B
	with dev.	PM	signals	0.894	28.4	B

It is evident that the proposed development will have moderate impacts on the operation of critical intersections in the vicinity of the site, with only minor increases in intersection delays and the Degree of Saturation, with the development scenario recording an acceptable level of service of B. As such, the critical intersection of Marion Street / Meredith Street will continue to operate satisfactorily with a Level of Service B and with moderate delays in the PM peak hour.

The traffic impact of the development is therefore moderate and can be readily accommodated by the existing road network, with no external improvements required. The traffic impacts of the development are therefore considered acceptable.

7. Access & Internal Design Aspects

7.1 Access

Separate access are proposed for the two carpark components. A 13m wide access is proposed on Marion Street for the podium parking. This access is to be restricted to left in and left out movements only. In addition, a 7m wide access is proposed on Meredith Street for the basement car park, with this access to permit the full range of access movements.

Under AS 2890.1 (2004) the proposed development requires a Category 4 Driveway for the access on Marion Street, this being separate entry-exit driveways each of width 6.0 to 8.0 metres, separated by a median of 1-3m. In response, the development proposes separate entry-exit driveways to Marion Street each of width 3.4 metres, separated by a median of 1.2m. This provision is considered acceptable as the access movements are restricted to left in left out, preventing internal weaving and overcoming the need for vehicles to give way. This driveway has also been modelled and works very satisfactorily, with minimal delays on Marion Street.

The Meredith Street driveway requires a Category 3 driveway being separate entry-exit driveways of entry width 6 metres and exit width 4 to 6 metres, separated by a median of 1-3m. In response the development provides separate entry exit driveways of 3m each, separated by a median kerb of 400mm.

Swept path analysis has been undertaken of the site access, as is permissible under AS 2890.1 (2004), demonstrating satisfactory operation and this is included in **Appendix D**. As such, the design complies with the requirements of AS 2890.1 (2004) and will ensure satisfactory operation.

7.2 Internal Design

The internal basement car park generally complies with the requirements of AS 2890.1 (2004) and the following characteristics are noteworthy:

7.2.1 Parking Modules

- All parking spaces have been designed in accordance with a Class 2 user (entertainment centre, hotel and motel parking) and are provided with a minimum space length of 5.4m a minimum width of 2.5m and a minimum aisle width of 6.0m.
- All spaces located adjacent to obstructions of greater than 150mm in height are provided with an additional width of 300mm.
- Dead-end aisles are provided with the required 1.0m aisle extension in accordance with Figure 2.3 of AS2890.1.
- All disabled parking spaces are designed in accordance with AS2890.6. Spaces are provided with a clear width of 2.4m and located adjacent to a minimum shared area of 2.4m.

7.2.2 Ramps

- All ramps accessing the basement and podium car parks have a maximum gradient of 20% (1 in 5) with transitions of 12.5% (1 in 8) and a maximum gradient of 5% (1 in 20) for the 6m over the property boundary, satisfying the requirements of AS 2890.1 (2004) for all car park levels;

7.2.3 Clear Head heights

- A minimum clear head height of 2.2m is provided for all areas within the basement car park as required by AS2890.1. A clear head height of 2.5m is provided above all disabled spaces as required by AS2890.6.

7.2.4 Other Considerations

- All columns are required to be located outside of the parking space design envelope shown in Figure 5.2 of AS 2890.1 (2004).
- Appropriate visual splays have been provided in accordance with the requirements of Figure 3.3 of AS2890.1 at all accesses.
- The internal design complies with the Section 3.4 of AS2890.1 with a queuing area provided for 2 vehicles at the lower ground barrier gates. Satisfying the requirements of a 98th percentile queue Furthermore the max gradient of 1:10 for not less than 80% of the queuing length has also been achieved.

- The podium parking permits free flowing entry traffic preventing potential queuing in accordance with section 3.4 of AS2890.1.

- A swept path analysis of all critical movements has been undertaken to confirm geometry and compliance with the relevant standards. The swept path assessment is included in **Appendix C**.

7.2.5 Service Area Design

- The internal design of the service area has been undertaken in accordance with the requirements of AS28090.2 for the maximum length vehicle permissible on-site being a 8.8m HRV

- A minimum clear head height of 4.5m is provided within the service area

- A minimum bay width of 3.5m is provided for all service bays.

- A swept path analysis has been undertaken as permissible under AS2890.2 and confirms the internal design. The swept path assessment is included in **Appendix D**.

In summary the internal configuration of the basement car park and loading areas have been designed in accordance with the both AS2890.1 and AS2890.2. It is however envisaged that a condition of consent would be imposed requiring compliance with these standards and as such any minor amendments considered necessary (if any) can be dealt with prior to the release of a Construction Certificate.

8. Conclusions

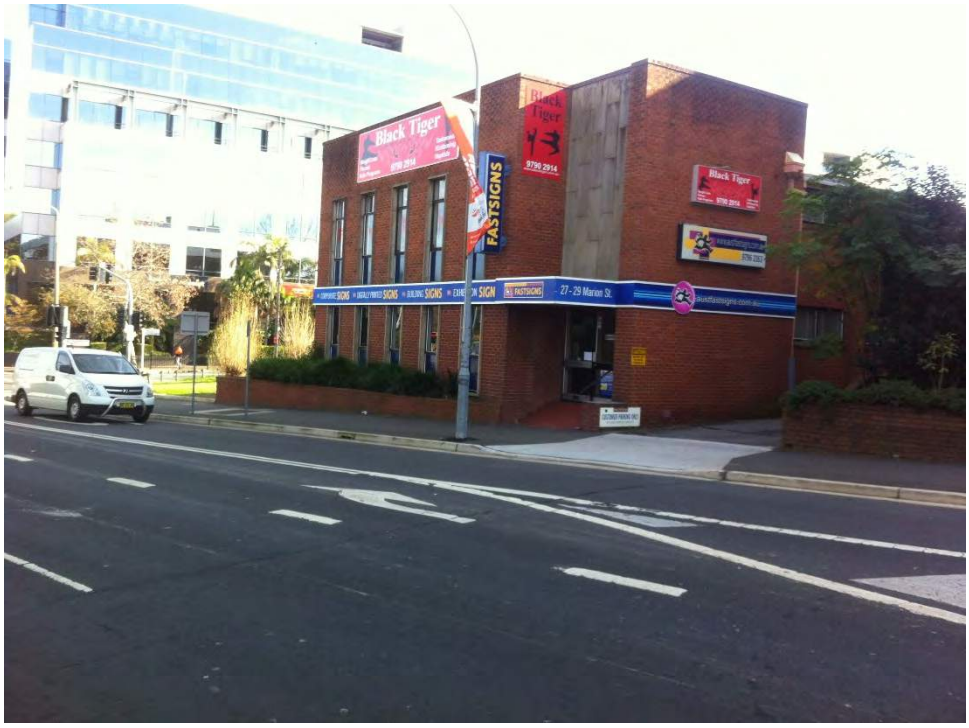
In summary:

- The development proposes relocating the existing Bankstown RSL Club from the current site to an adjacent site at the corner of Marion Street and Meredith Street in addition to providing hotel accommodation with a total of 258 rooms.
- The traffic generation arising from the proposed development has been assessed as a **net** increase over and above existing traffic conditions. The increase is 41 veh/hr for the PM peak period with a negligible change in the AM peak. The additional trips can be readily accommodated, with minimal impacts on the surrounding road system;
- With 495 off-street parking spaces, the development will contain all parking demands within the site and in particular, it complies with the hotel parking requirement under the Bankstown Development Control Plan and the expected peak parking requirement for the club. Provision of this parking within the basement and podium levels will ensure that visitors have convenient and safe access to the site.
- The proposed car park complies with the requirements of AS 2890.1 (2004). The car park has also been assessed using the computer program Auto Track, as permitted by AS 2890.1 (2004) and operates safely and efficiently;

It is therefore concluded that the proposed development is supportable on traffic planning grounds and will operate satisfactorily.

Appendix A

Photographic Record



Marion Street Site frontage

Marion Street existing access

Meredith Street Site frontage

Cole Lane existing site access

Meredith Street looking north.

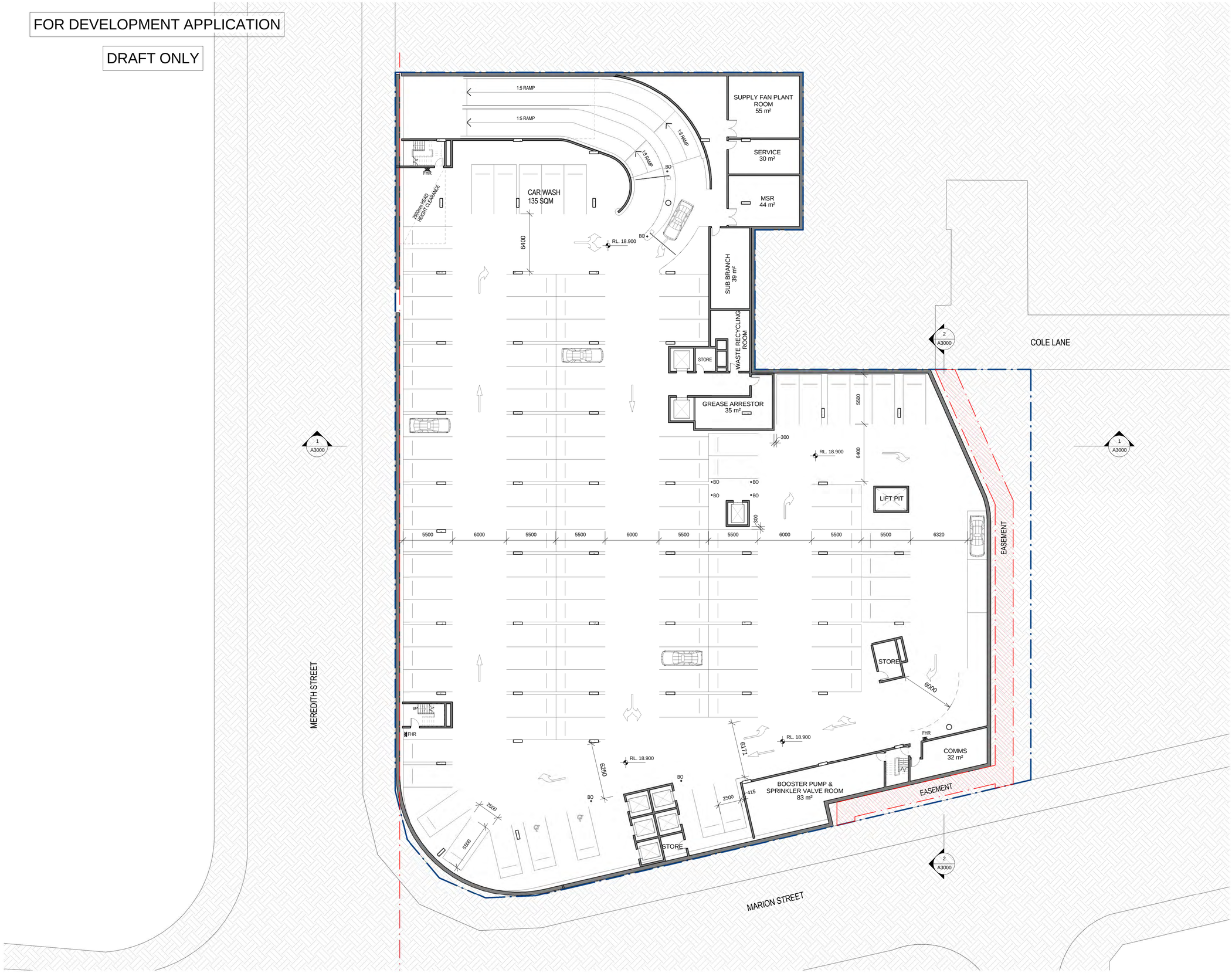
Marion Street looking west.

Appendix B

Reduced Plans

FOR DEVELOPMENT APPLICATION

DRAFT ONLY



ISSUE	DATE	DESCRIPTION
A	15-09-2015	ISSUED FOR INFORMATION
B	18-09-2015	ISSUED FOR INFORMATION
C	25-09-2015	DA CO-ORDINATION SET FOR CONSULTANT

CLIENT:

RSL BANKSTOWN

PROJECT:

BANKSTOWN RSL - PROPOSED NEW CLUB BUILDING & HOTEL

23-27 MARION STREET, BANKSTOWN NSW

ARCHITECT:

ALTIS architecture

p 61 2 9364 9000 f 61 2 9571 7930 lower deck jones bay wharf

suite 123 / 26 - 32 pirrama road pyrmont nsw 2009 australia

DRAWING TITLE:

BASEMENT 1 CARPARK PLAN

NOTES:

Nominated architect: Rolfe Latimer : 5535

Use only figured dimensions.

All discrepancies to be referred to Altis Architecture Pty Ltd prior to construction.

Ensure compliance with the Building Code of Australia and all relevant Australian Standards and Authority requirements.

NORTH:

SCALE: 1 : 200 @ A1

DATE: 25-09-2015

DRAWN BY: EC | CHECKED BY: | PROJECT NO: 2240.04

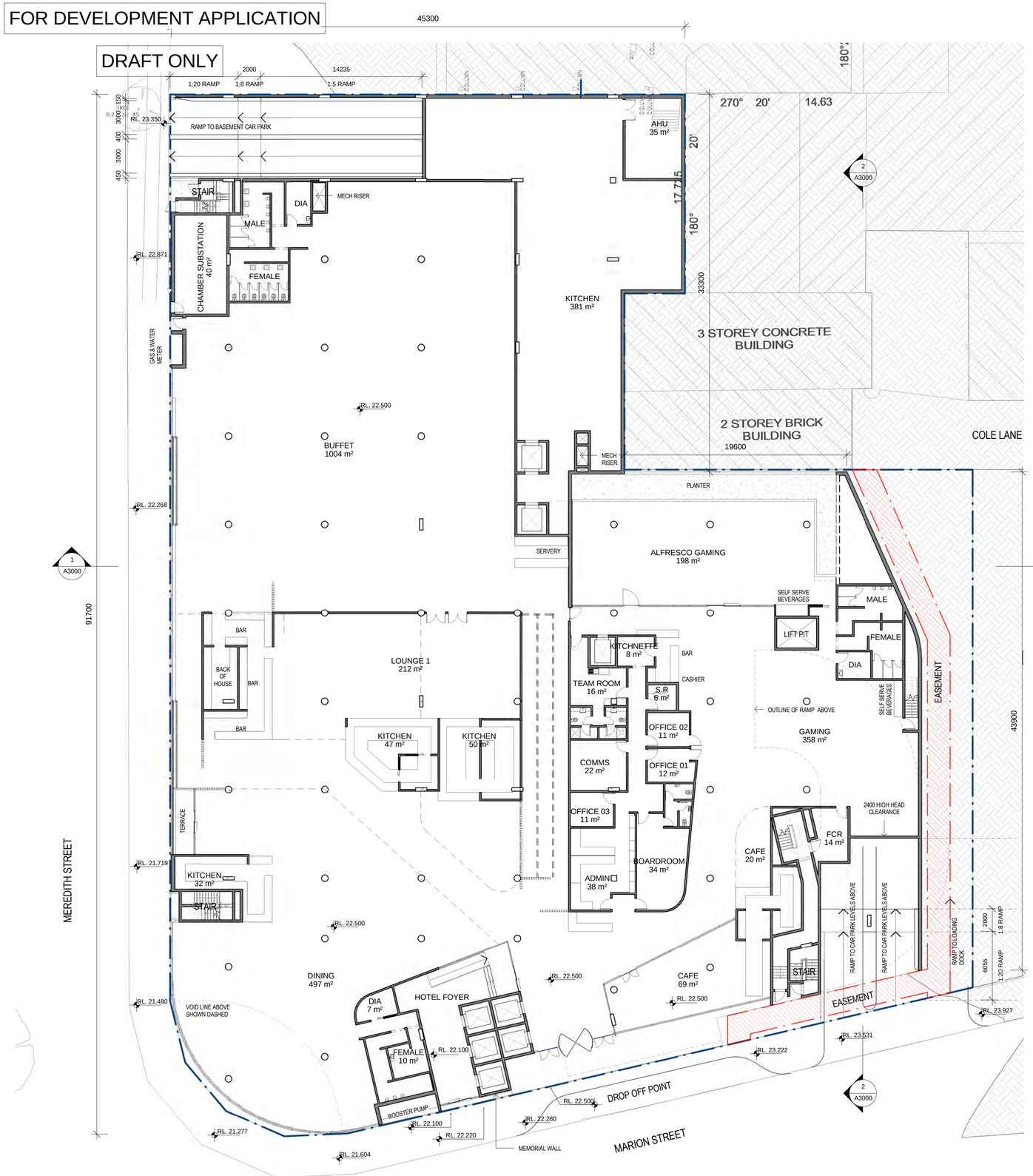
DRAWING NO: A1100 | ISSUE: C

CAD FILE:

25/09/2015 6:18:30 PM

FOR DEVELOPMENT APPLICATION

DRAFT ONLY



1 – **GROUND FLOOR PLAN - CLUB LAYOUT PLAN**
Scale: 1 : 200

2 – **LOADING DOCK PLAN**
Scale: 1 : 200

ISSUE	DATE	DESCRIPTION
A	15-09-2015	ISSUED FOR INFORMATION
B	18-09-2015	ISSUED FOR INFORMATION
C	23-09-2015	ISSUED FOR INFORMATION
D	25-09-2015	DA CO-ORDINATION SET FOR CONSULTANT
E	29-09-2015	DA CO-ORDINATION SET FOR CONSULTANT

CLIENT:

RSL BANKSTOWN

PROJECT:

BANKSTOWN RSL - PROPOSED NEW CLUB BUILDING & HOTEL

23-27 MARION STREET, BANKSTOWN NSW

ARCHITECT:

ALTIS architecture

p 61 2 9364 9000 f 61 2 9571 7930 lower deck jones bay wharf
suite 123 / 26 - 32 pirrama road pyrmont nsw 2009 australia

DRAWING TITLE:

GROUND FLOOR PLAN

NOTES:

Nominated architect: Rolfe Latimer : 5535

Use only figured dimensions.

All discrepancies to be referred to Altis Architecture Pty Ltd prior to construction.

Ensure compliance with the Building Code of Australia and all relevant Australian Standards and Authority requirements.

NORTH:

SCALE: 1 : 200 @ A1

DATE: 25-09-2015

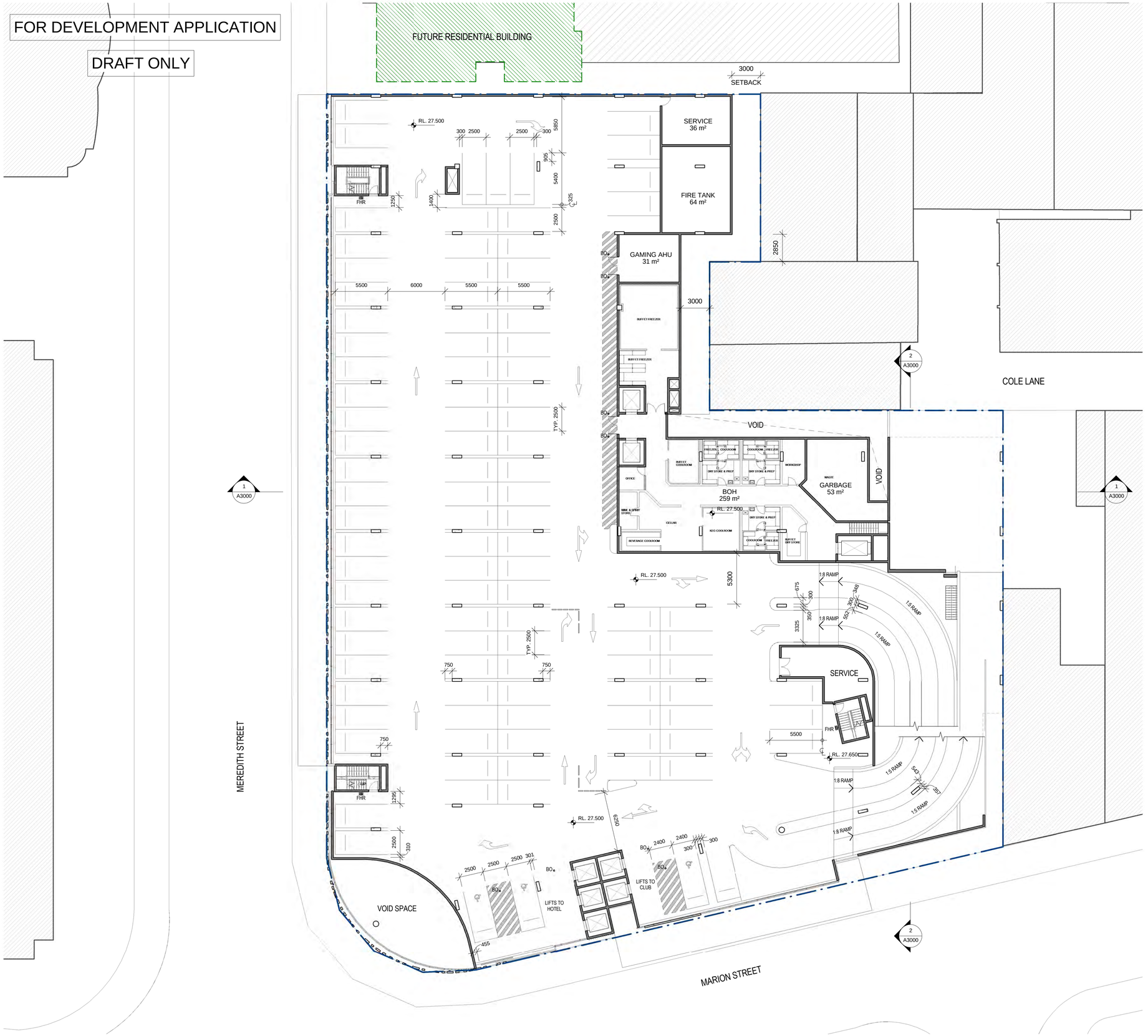
DRAWN BY:	CHECKED BY:	PROJECT NO:	DRAWING NO:	ISSUE:
EC		2240.04	A1101	E

CAD FILE:

29/09/2015 4:49:09 PM

FOR DEVELOPMENT APPLICATION

DRAFT ONLY



ISSUE	DATE	DESCRIPTION
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C	25-09-2015	DA CO-ORDINATION SET FOR CONSULTANT
D	29-09-2015	DA CO-ORDINATION SET FOR CONSULTANT

CLIENT:

RSL BANKSTOWN

PROJECT:

BANKSTOWN RSL - PROPOSED NEW CLUB BUILDING & HOTEL

23-27 MARION STREET, BANKSTOWN NSW

ARCHITECT:

ALTIS
architecture
p 61 2 9364 9000 f 61 2 9571 7930 lower deck jones bay wharf
suite 123 / 26 - 32 pirrama road pyrmont nsw 2009 australia

DRAWING TITLE:

LEVEL 1 CARPARK PLAN

NOTES:

Nominated architect: Rolfe Latimer : 5535

Use only figured dimensions.

All discrepancies to be referred to Altis Architecture Pty Ltd prior to construction.

Ensure compliance with the Building Code of Australia and all relevant Australian Standards and Authority requirements.

NORTH:

NORTH

SCALE:		DATE:	
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EC		2240.04	A1102 / D
CAD FILE:			

29/09/2015 11:32:07 AM

FOR DEVELOPMENT APPLICATION

DRAFT ONLY

ISSUE	DATE	DESCRIPTION
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B	18-09-2015	ISSUED FOR INFORMATION
C	25-09-2015	DA CO-ORDINATION SET FOR CONSULTANT
D	29-09-2015	DA CO-ORDINATION SET FOR CONSULTANT

CLIENT:

RSL BANKSTOWN

PROJECT:

BANKSTOWN RSL - PROPOSED NEW CLUB BUILDING & HOTEL

23-27 MARION STREET, BANKSTOWN NSW

ARCHITECT:

ALTIS

architecture

p 61 2 9364 9000 f 61 2 9571 7930 lower deck jones bay wharf

suite 123 / 26 - 32 pirrama road pyrmont nsw 2009 australia

DRAWING TITLE:

LEVEL 2 CARPARK PLAN

NOTES:

Nominated architect: Rolfe Latimer : 5535

Use only figured dimensions.

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Ensure compliance with the Building Code of Australia and all relevant Australian Standards and Authority requirements.

NORTH:

SCALE: 1 : 200 @ A1

DATE: 25-09-2015

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CAD FILE:

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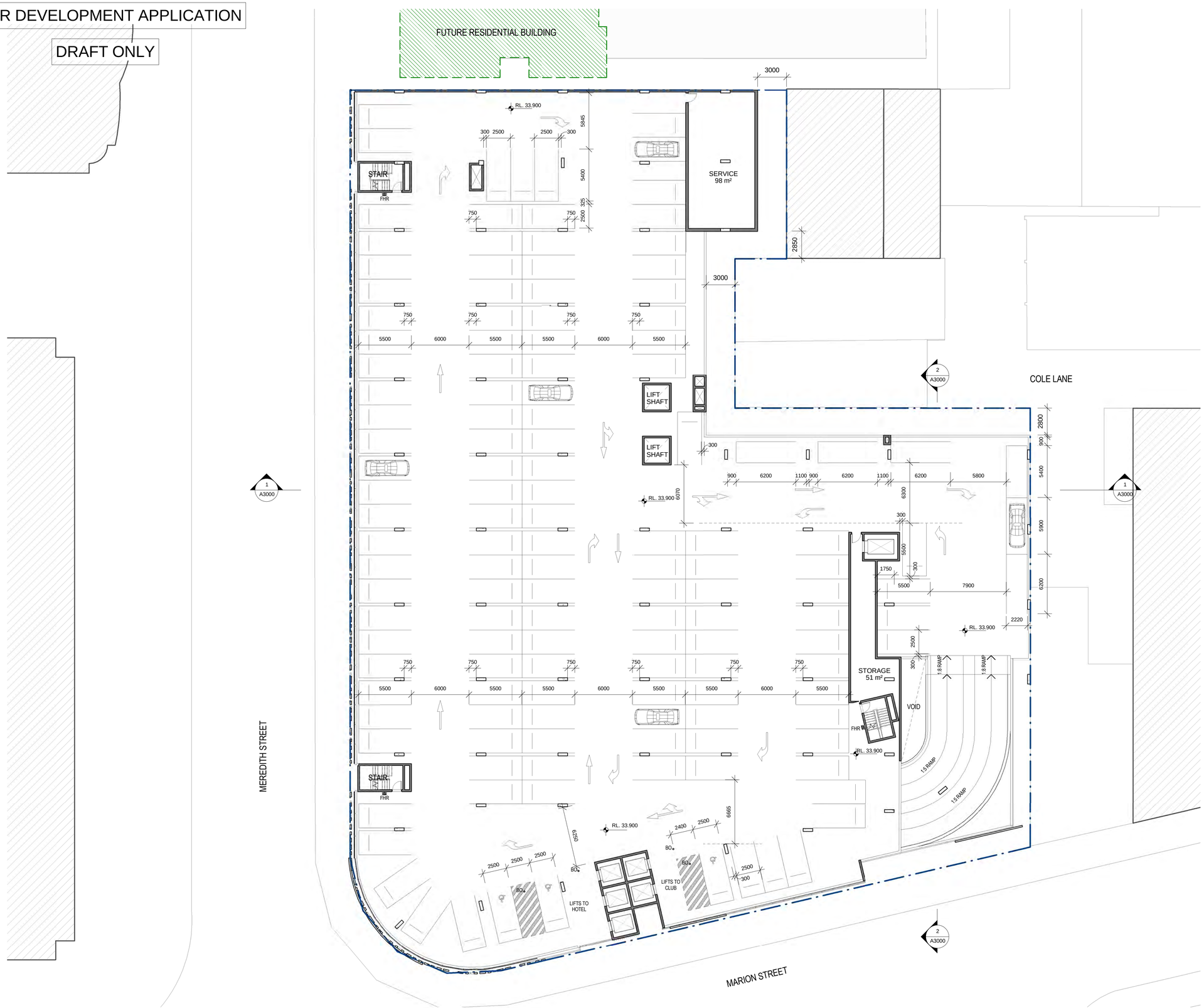
FOR DEVELOPMENT APPLICATION

DRAFT ONLY



ISSUE	DATE	DESCRIPTION
A	15-09-2015	ISSUED FOR INFORMATION
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CLIENT:

RSL BANKSTOWN

PROJECT:

BANKSTOWN RSL - PROPOSED NEW CLUB BUILDING & HOTEL

23-27 MARION STREET, BANKSTOWN NSW

ARCHITECT:

ALTIS
architecture
p 61 2 9364 9000 f 61 2 9571 7930 lower deck jones bay wharf
suite 123 / 26 - 32 pirrama road pyrmont nsw 2009 australia

DRAWING TITLE:

LEVEL 3 CARPARK PLAN

NOTES:

Nominated architect: Rolfe Latimer : 5535

Use only figured dimensions.

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NORTH

SCALE: 1 : 200 @ A1

DATE: 25-09-2015

DRAWN BY:	CHECKED BY:	PROJECT NO:	DRAWING NO:	ISSUE:
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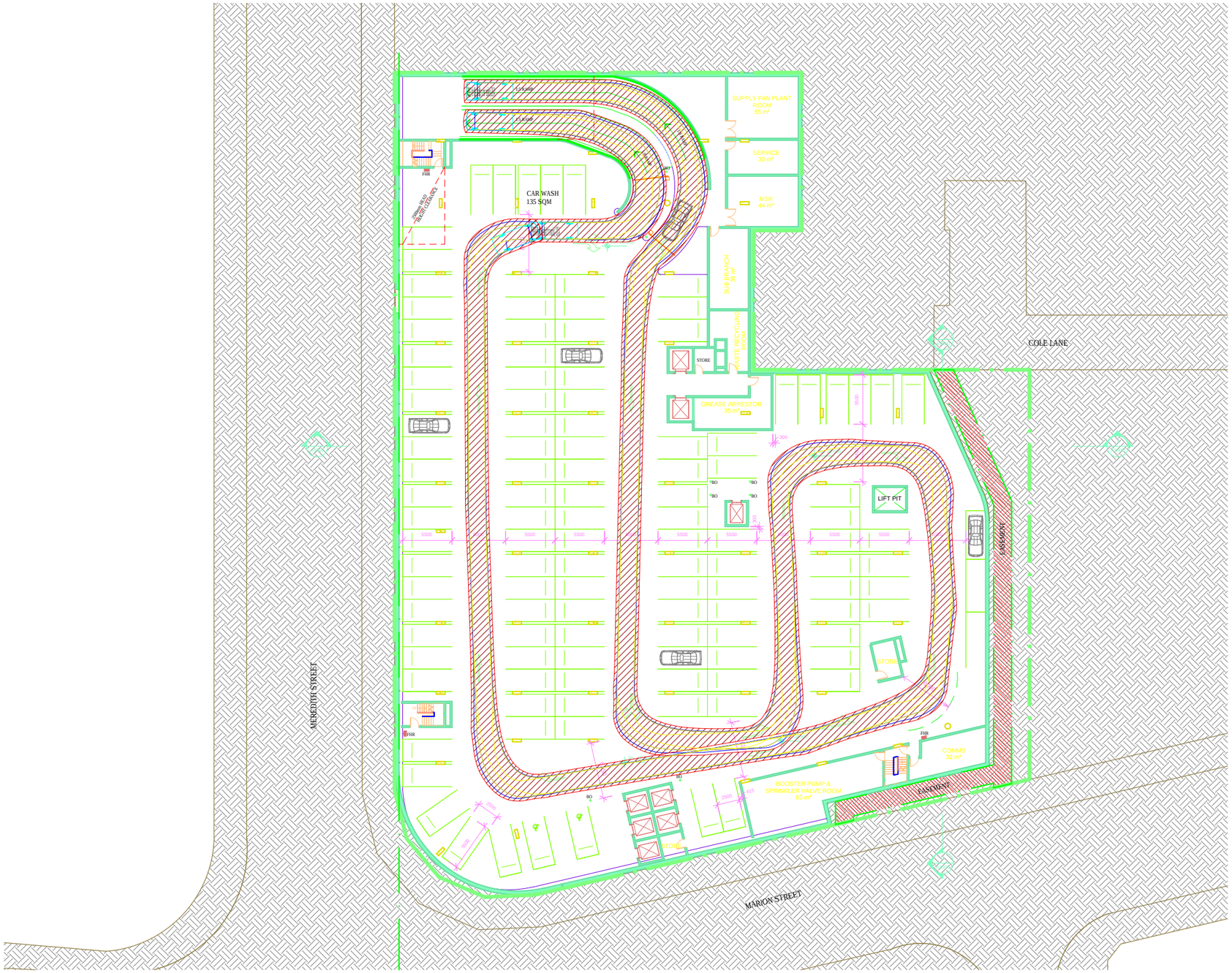
CAD FILE:

25/09/2015 6:00:58 PM

Appendix C

Swept Path Assessment



Notes

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

Vehicle swept path diagrams prepared using computer generated turning path software and associated CAD drawing platforms. Vehicle data based upon relevant Australian Standards (*AS/NZS 2890.1-2004 Parking facilities - Off-street car parking*, and/or *AS 2890.2-2002 Parking facilities - Off-street commercial vehicle facilities*). These standards embody a degree of tolerance, however the vehicle characteristics in these standards represent a suitable design vehicle and do not account for all variations in vehicle dimensions / specifications and/or driver ability or behaviour.

no.	revision note	by.	date

Swept Path Legend:

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

architect

Altis Architecture

client

Bankstown RSL Club Pty Ltd

scale

1:500 @ A3

0m 5 10 15 20

project

Bankstown RSL Club

drawing prepared by

TRAFFIX
traffic and transport planners

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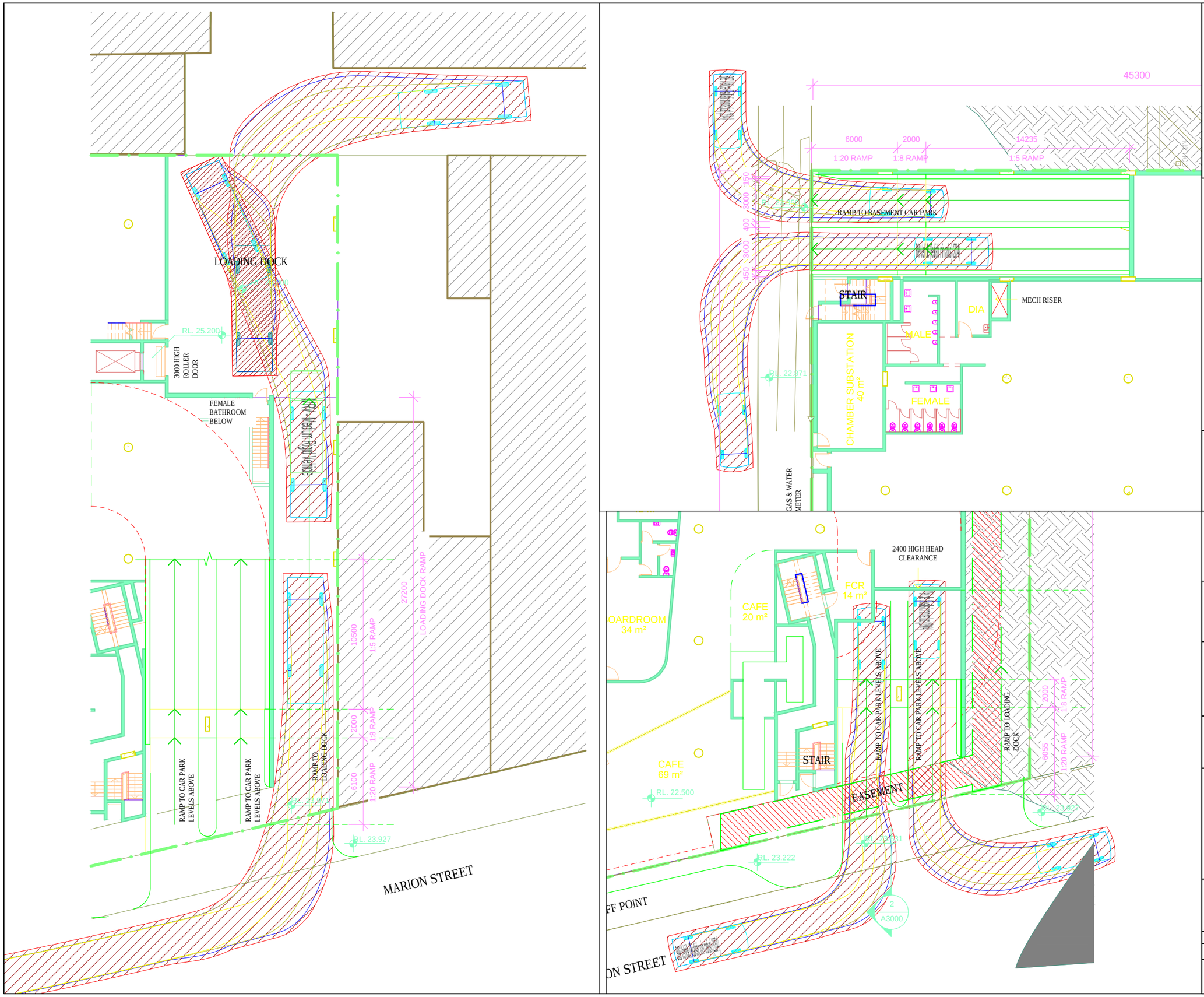
traffix
traffic & transport planners

drawing title

Basement Level
Swept Path - B99 Vehicle

drawn:	checked:	date:
KB	GH	29-Sep-15

project no.	drawing phase.	drawing no.	rev
15.302	DA	TX.01	A



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no.	revision note	by.	date

Swept Path Legend:

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

architect
Altis Architecture

client
Bankstown RSL Club Pty Ltd

scale
1:250 @ A3
0m 2 4 6 8

project
Bankstown RSL Club

drawing prepared by

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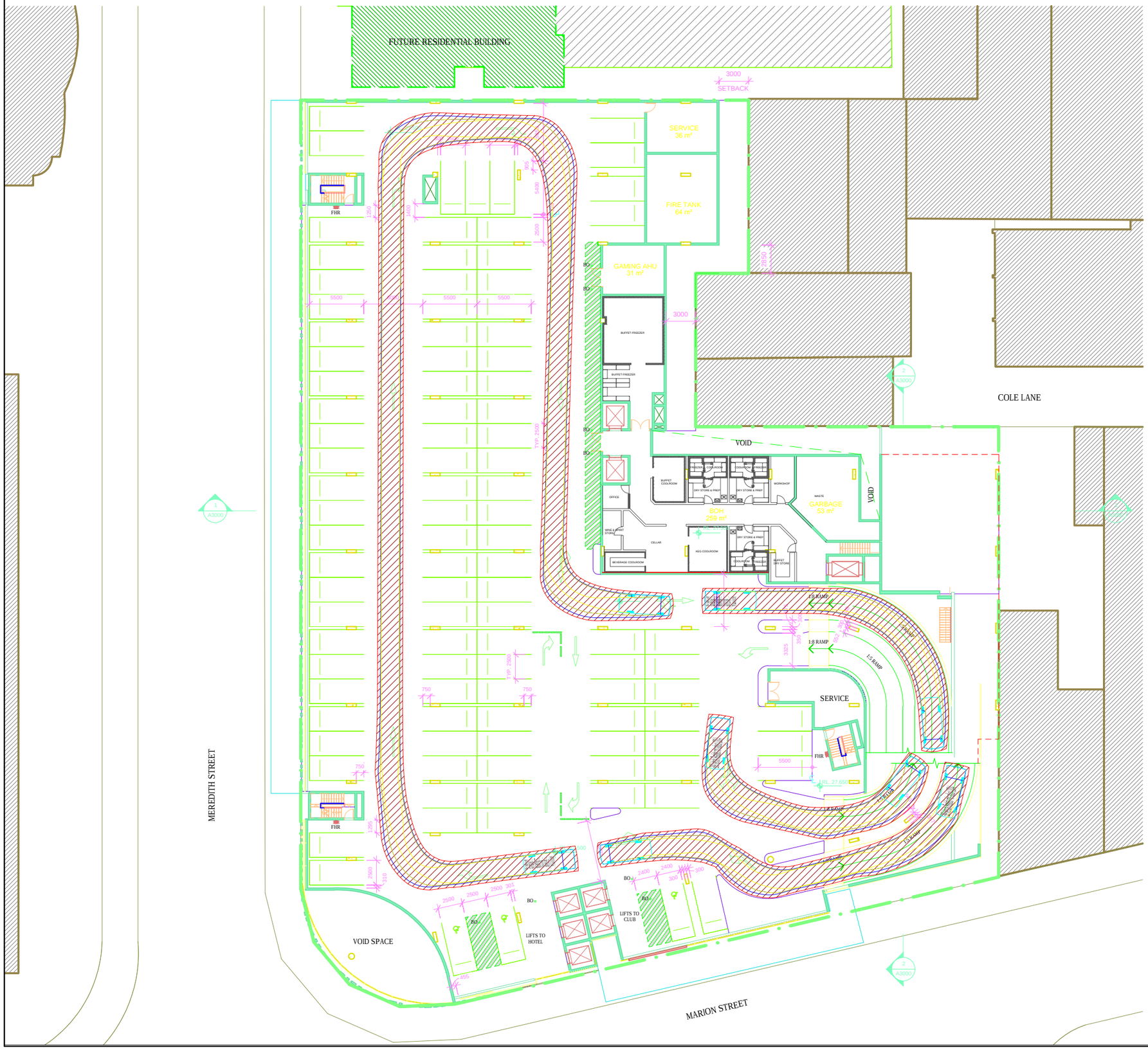
drawing title
Ground Level Accesses
B99 Vehicle & MRV

drawn:	checked:	date:
KB	GH	29-Sep-15

project no.	drawing phase.	drawing no.	rev
15.302	DA	TX.02	A



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no.	revision note	by.	date

Swept Path Legend:

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

architect

Altis Architecture

client

Bankstown RSL Club Pty Ltd

scale

1:500 @ A3

0m 5 10 15 20

project

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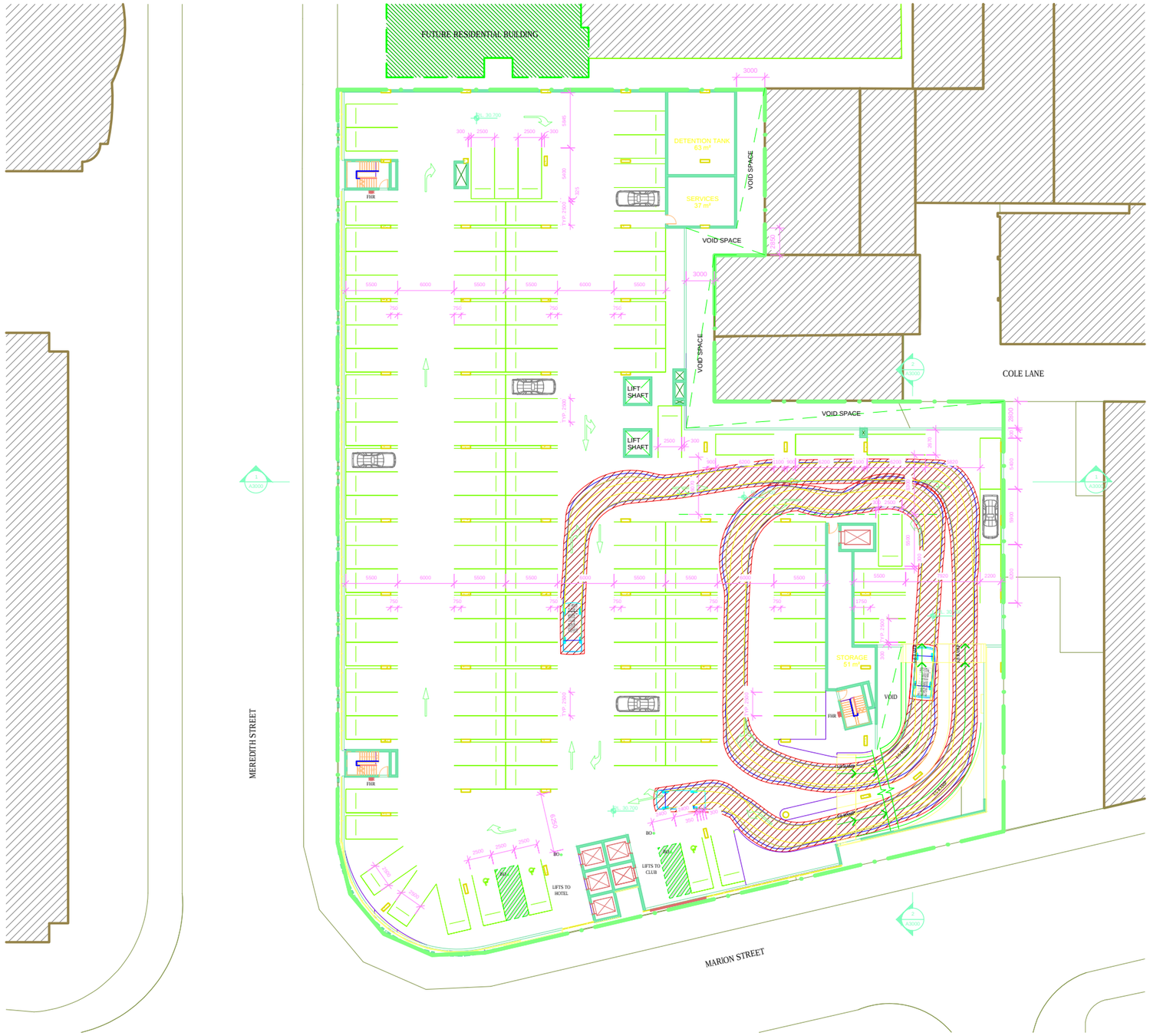
drawing title

Level 1
Swept Path - B99 Vehicle

drawn:	checked:	date:
KB	GH	29-Sep-15

project no.	drawing phase.	drawing no.	rev
15.302	DA	TX.03	A



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no.	revision note	by.	date

Swept Path Legend:

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

architect

Altis Architecture

client

Bankstown RSL Club Pty Ltd

scale

1:500 @ A3

0m 5 10 15 20

project

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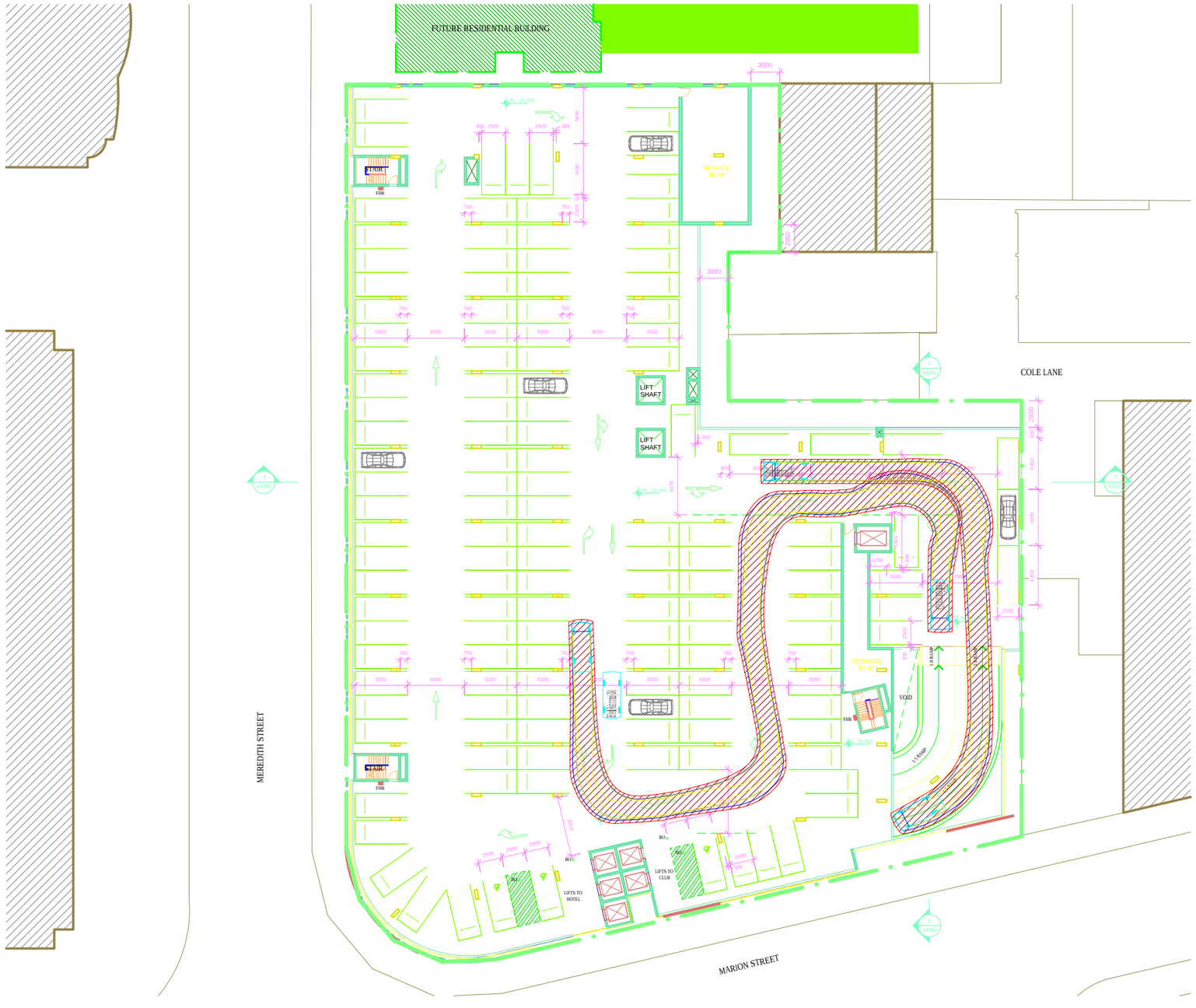
Level 2
Swept Path - B99 Vehicle

drawn:	checked:	date:
KB	GH	29-Sep-15

project no.	drawing phase.	drawing no.	rev
15.302	DA	TX.04	A



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no.	revision note	by.	date

Swept Path Legend:

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

architect
Altis Architecture

client
Bankstown RSL Club Pty Ltd

scale
1:500 @ A3
0m 5 10 15 20

project
Bankstown RSL Club

drawing prepared by
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traffic and transport planners
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Strawberry Hills NSW 2012
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f: +61 2 9380 4481
e: info@traffix.com.au
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traffic & transport planners

drawing title
Level 3
Swept Path - B99 Vehicle

drawn:	checked:	date:
KB	GH	29-Sep-15

project no.	drawing phase.	drawing no.	rev
15.302	DA	TX.05	A

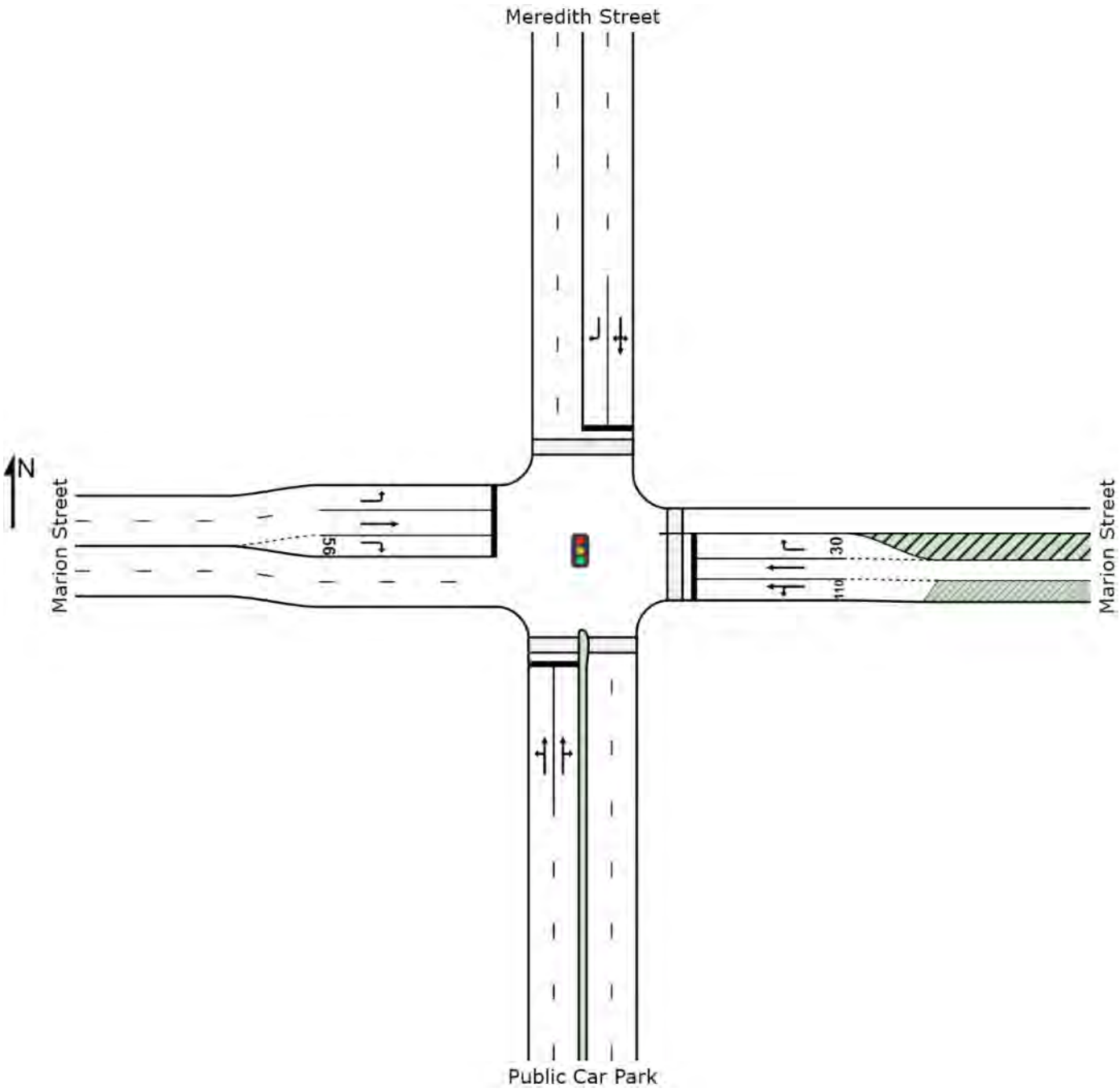
Appendix D

Sidra Intersection Analysis

SITE LAYOUT

Site: Meredith St / Marion St_Existing AM Peak

Meredith St / Marion St
Scenario: Existing
Movement: AM Peak
Signals - Fixed Time Isolated



MOVEMENT SUMMARY

Site: Meredith St / Marion St_Existing AM Peak

Meredith St / Marion St
Scenario: Existing
Movement: AM Peak
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

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
South: Public Car Park											
1	L2	16	0.0	0.103	28.1	LOS B	0.5	3.8	0.94	0.66	14.8
2	T1	16	0.0	0.103	28.0	LOS B	0.6	3.9	0.94	0.66	23.2
3	R2	7	0.0	0.103	28.0	LOS B	0.6	3.9	0.94	0.66	13.6
Approach		39	0.0	0.103	28.1	LOS B	0.6	3.9	0.94	0.66	18.4
East: Marion Street											
4	L2	29	2.0	0.236	13.9	LOS A	3.5	25.2	0.63	0.55	22.2
5	T1	368	2.0	0.236	10.7	LOS A	3.6	25.6	0.64	0.55	32.5
6	R2	32	2.0	0.210	29.9	LOS C	0.9	6.3	0.91	0.72	26.2
Approach		429	2.0	0.236	12.4	LOS A	3.6	25.6	0.66	0.56	31.1
North: Meredith Street											
7	L2	28	2.0	0.848	39.7	LOS C	8.0	57.1	1.00	1.00	23.8
8	T1	29	2.0	0.848	40.2	LOS C	8.0	57.1	1.00	1.00	20.2
9	R2	409	2.0	0.848	39.7	LOS C	8.0	57.1	1.00	1.01	24.9
Approach		467	2.0	0.848	39.8	LOS C	8.0	57.1	1.00	1.01	24.5
West: Marion Street											
10	L2	831	2.0	0.648	10.9	LOS A	13.4	95.4	0.59	0.78	41.8
11	T1	700	2.0	0.860	26.4	LOS B	22.4	159.8	0.93	1.02	22.5
12	R2	95	2.0	0.207	18.7	LOS B	1.9	13.4	0.69	0.74	20.7
Approach		1625	2.0	0.860	18.0	LOS B	22.4	159.8	0.74	0.88	31.7
All Vehicles		2561	2.0	0.860	21.2	LOS B	22.4	159.8	0.78	0.85	29.5

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 Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	16.2	LOS B	0.1	0.1	0.73	0.73
P2	East Full Crossing	53	24.4	LOS C	0.1	0.1	0.90	0.90
P3	North Full Crossing	53	15.4	LOS B	0.1	0.1	0.72	0.72
All Pedestrians		158	18.7	LOS B			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Meredith St / Marion St_Existing PM Peak

Meredith St / Marion St
Scenario: Existing
Movement: PM Peak
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

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
South: Public Car Park											
1	L2	97	0.0	0.521	30.0	LOS C	2.9	20.5	0.99	0.78	14.2
2	T1	56	0.0	0.399	29.4	LOS C	2.3	15.9	0.98	0.74	22.6
3	R2	21	0.0	0.399	29.4	LOS C	2.3	15.9	0.98	0.74	13.3
Approach		174	0.0	0.521	29.8	LOS C	2.9	20.5	0.98	0.76	17.1
East: Marion Street											
4	L2	29	2.0	0.571	23.2	LOS B	7.8	55.6	0.90	0.76	16.8
5	T1	574	2.0	0.571	20.1	LOS B	7.8	55.6	0.90	0.76	25.5
6	R2	43	2.0	0.327	35.1	LOS C	1.3	9.4	0.99	0.72	24.3
Approach		646	2.0	0.571	21.2	LOS B	7.8	55.6	0.91	0.76	25.1
North: Meredith Street											
7	L2	44	2.0	0.851	34.1	LOS C	16.6	118.2	1.00	0.99	25.8
8	T1	20	2.0	0.851	34.5	LOS C	16.6	118.2	1.00	0.99	22.2
9	R2	924	2.0	0.851	34.1	LOS C	16.6	118.2	1.00	0.99	27.0
Approach		988	2.0	0.851	34.1	LOS C	16.6	118.2	1.00	0.99	26.9
West: Marion Street											
10	L2	580	2.0	0.453	9.8	LOS A	7.5	53.1	0.47	0.73	42.9
11	T1	469	2.0	0.861	32.7	LOS C	16.0	114.1	1.00	1.06	20.0
12	R2	36	2.0	0.177	31.2	LOS C	1.0	7.0	0.91	0.73	14.9
Approach		1085	2.0	0.861	20.4	LOS B	16.0	114.1	0.71	0.87	30.4
All Vehicles		2894	1.9	0.861	25.8	LOS B	16.6	118.2	0.87	0.88	27.2

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 Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	24.4	LOS C	0.1	0.1	0.90	0.90
P2	East Full Crossing	53	20.9	LOS C	0.1	0.1	0.84	0.84
P3	North Full Crossing	53	23.5	LOS C	0.1	0.1	0.89	0.89
All Pedestrians		158	22.9	LOS C			0.87	0.87

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Meredith St / Marion St_Existing + Dev PM Peak

Meredith St / Marion St
Scenario: Existing
Movement: PM Peak
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

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
South: Public Car Park											
1	L2	97	0.0	0.521	30.0	LOS C	2.9	20.5	0.99	0.78	14.2
2	T1	56	0.0	0.399	29.4	LOS C	2.3	15.9	0.98	0.74	22.6
3	R2	21	0.0	0.399	29.4	LOS C	2.3	15.9	0.98	0.74	13.3
Approach		174	0.0	0.521	29.8	LOS C	2.9	20.5	0.98	0.76	17.1
East: Marion Street											
4	L2	29	2.0	0.570	23.2	LOS B	7.8	55.5	0.90	0.76	16.8
5	T1	571	2.0	0.570	20.1	LOS B	7.8	55.5	0.90	0.76	25.5
6	R2	43	2.0	0.341	36.1	LOS C	1.3	9.6	1.00	0.72	23.9
Approach		643	2.0	0.570	21.3	LOS B	7.8	55.5	0.91	0.76	25.0
North: Meredith Street											
7	L2	94	2.0	0.894	39.1	LOS C	19.2	136.6	1.00	1.05	24.0
8	T1	20	2.0	0.894	39.6	LOS C	19.2	136.6	1.00	1.05	20.4
9	R2	924	2.0	0.894	39.1	LOS C	19.2	136.6	1.00	1.05	25.1
Approach		1038	2.0	0.894	39.1	LOS C	19.2	136.6	1.00	1.05	24.9
West: Marion Street											
10	L2	586	2.0	0.457	9.8	LOS A	7.6	54.0	0.47	0.73	42.9
11	T1	487	2.0	0.894	36.5	LOS C	17.9	127.1	1.00	1.12	18.7
12	R2	36	2.0	0.176	31.2	LOS C	1.0	7.0	0.91	0.73	14.9
Approach		1109	2.0	0.894	22.2	LOS B	17.9	127.1	0.72	0.90	29.2
All Vehicles		2964	1.9	0.894	28.4	LOS B	19.2	136.6	0.87	0.91	25.9

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 Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
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All Pedestrians		158	22.9	LOS C			0.87	0.87

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.