
TOP RYDE SHOPPING CENTRE REDEVELOPMENT

Bovis Lend Lease

Residential Apartments
Traffic Impact Statement

August 2008

FINAL



BETTER TRANSPORT FUTURES

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1. Introduction

Mark Waugh Pty Ltd was commissioned by Bovis Lend Lease to prepare a Traffic Impact Assessment for the proposed high density residential component of the Top Ryde development in Precinct Two of the Ryde Town Centre, NSW. The residential development is a component of the overall redevelopment of the shopping centre site which was approved for development by Ryde City Council in May 2007. The overall site redevelopment has been the subject of extensive traffic investigations that recommended an Integrated Traffic Solution in accordance with the requirements of Council's LEP143. This study is required to support a development application for a component of the residential units on the site, to be lodged for approval with Ryde City Council.

The report summarises the findings of the overall traffic investigations in terms of the residential units and assesses the subject proposal. It is based on the overall studies of the Top Ryde site and replicates analysis from the work that supported the approved development. It is structured as follows:

- **Chapter 2** outlines the existing situation in the vicinity of the subject site, including discussion on the Integrated Traffic Management Solution and its implications for the residents.
- **Chapter 3** describes the traffic and parking features of the proposal, access arrangements and how these meet Council's and road authority guidelines.
- **Chapter 4** details the assessment of traffic operations related to the proposal
- **Chapter 5** summarises the findings of this investigation, outlining conclusions and recommendations for the traffic operations of the site to support the development application for the proposal.

2. Existing Situation

2.1 Background and Site Location

The site is located in the Top Ryde Shopping Centre bounded by Devlin St, Blaxland Rd, Tucker St, and Pope St. The site has frontage to all 4 streets, and is part of LEP 143 which has a requirement for development applications to be consistent with the following planning principles relating to transport and access:

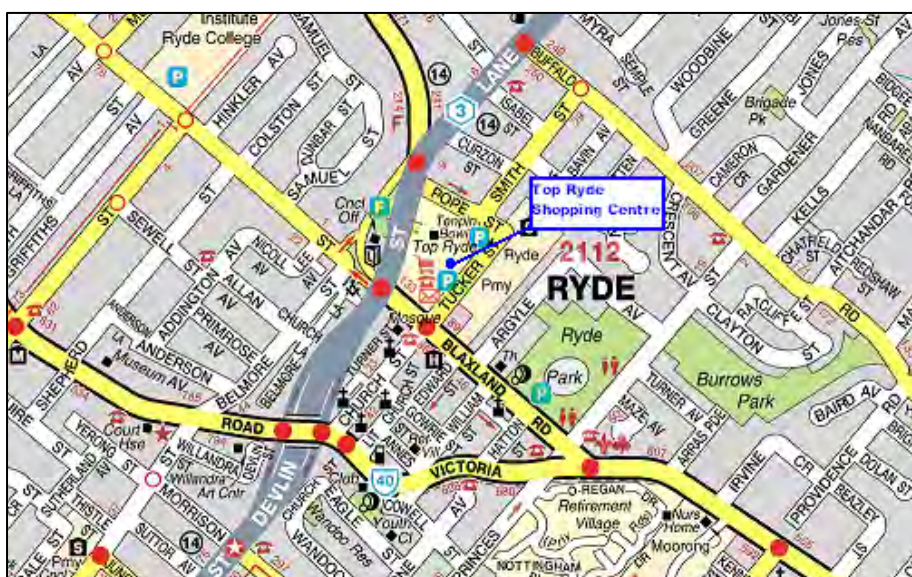
1. Development is to promote a compact working and living environment to maximise the efficient use of resources and infrastructure provisions.
2. The safety, amenity and convenience of pedestrians and cyclists are to be considered in all development.
3. Public transport use will be promoted by the provision of facilities for users.

Top Ryde Shopping Centre site is located on the northern part of general Ryde Town Centre retail precinct. The former centre was some 22,000 m² in size and included some 1100 parking spaces on site. The site has frontage to Devlin Street, Blaxland Road, Pope Street and Tucker Street. In the past vehicular access was available only via Pope Street and Tucker Street. Surrounding land use is a mix of commercial/retail to the south, a school to the east, residential units to the north and Council offices to the west. A high number of bus services run past the site, with bus stops on the Devlin Street and Blaxland Road frontages of the site.

Council's Administration Centre dominates the land parcel immediately west of Devlin Street, and is known as Precinct One in the Top Ryde LEP143. It currently has access from Parkes Street and also to Blaxland Road north.

The area of consideration of the overall traffic assessment is bounded by Blaxland Road in the south, Buffalo Road in the north and Bowden Street in the west. The main focus of the study is on the Ryde Town Centre area as defined by LEP143. The Ryde Town Centre is located around the junction of Devlin Street and Blaxland Road.

The location of the site is shown below in **Figure 2.1**.



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Figure 2.1 – Site Location

2.2 Existing Local Road System

2.2.1 Road Characteristics

Devlin Street

Devlin Street is an arterial road and forms part of a major north/south road corridor in Sydney, Metroad 3. It links to Lane Cove Road at its junction with Blaxland Road in the north, and to Concord Road and the Parramatta River crossing that extends past Sydney Olympic Park and beyond to Sydney's southern suburbs. In the vicinity of the Ryde Town Centre it is a dual carriageway with 3 to 4 travel lanes, and significant weaving movements between the junctions of Victoria Road to the south and the Blaxland Road / Lane Cove Road junction to the north.



Blaxland Road

Blaxland Road is an important arterial road connecting the north-west areas of Sydney via Epping through to Top Ryde and beyond to Victoria Road. It has two distinct parts in the vicinity of the Ryde Town Centre:

- North of Devlin Street/ Lane Cove Road – four lane undivided carriageway with peak period parking bans to assist in traffic movement.
- East of Devlin Street to Victoria Road it is an undivided carriageway sufficient for 4 traffic lanes, passing through the commercial/retail precinct of the Ryde Town Centre and linking to Victoria Road. It allows vehicles to access Victoria Road travelling to and from the east without having to negotiate the Victoria Road / Devlin Street intersection.



View from Devlin Street looking east at Blaxland Road intersection

Tucker Street

Tucker Street is a local collector road and currently the principal access for the Top Ryde Shopping Centre (Precinct Two). It is an undivided carriageway flared on its approach to Blaxland Road. The intersection is controlled by traffic signals.



Tucker Street looking north towards existing shopping centre car park

Parkes Street

Parkes Street is a two lane two way local road that forms the fourth leg of the intersection with Devlin Street and Blaxland Road. It provides access to the Council administration centre and the local residential area of West Ryde. Its eastbound connection is indirect as part of local traffic calming measures in an attempt to reduce through traffic in West Ryde.



Pope Street

Pope Street is a local street, one way eastbound from Devlin Street that provides access to the existing shopping centre and to adjacent commercial and residential development. One of the shopping centre car park exits is situated on Pope Street at Smith Street to allow exit for people travelling to the north.



Pope Street looking east



Pope / Devlin intersection

2.2.2 Traffic Surveys

Work for the overall traffic investigations included a review of RTA and Council traffic data. This data indicated that in 1999 and 2002, roads in the area carried the following traffic volumes:

- Devlin St, north of Victoria Rd, 75,500 vpd in 1999 (two way), 73,000 vpd in 2002;
- Victoria Rd, east of Devlin St, 49,000 vpd in 1999 (two way), 49,100 in 2002;
- Victoria Rd, west of Devlin St, 57,000 vehicles per day (two way) in 2002;
- Blaxland Rd, north west of Devlin St, 20,900 in 1999, vpd (two way), 21,300 vpd in 2002
- Blaxland Road, west of Victoria Road, 16,000 vpd in 1999 (two way), 16,800 vpd in 2002.

This historic data indicates quite low growth in flows on the main road network reflecting the already congested peak road conditions, and in the critical Devlin Street case a flow reduction over the year period.

2.3 Intersection Controls

Traffic conditions reported in 2003 by Sinclair Knight Merz in investigations for the NSW RTA indicated that intersections were generally operating within their technical capacity limits with the following exceptions:

- Devlin St / Blaxland Rd / Parkes St (PM peak)
- Victoria Rd / Blaxland Rd (AM peak)

These intersections are, however, operating at congested levels in the peak hours.

2.4 Road Network Improvements

There are a number of road improvements proposed as part of the overall development of the approved Top Ryde Shopping Centre Redevelopment, and as part of the Integrated Traffic Solution for the Ryde Town Centre under the requirements set out in LEP143. These have been confirmed and approved as resulting in improvements to the levels of service on the adjacent roads. The traffic investigations indicated that the site's frontage roads and intersections have the potential to operate under less congested conditions than if the development does not take place.

The approved road network improvements include:

- Provision of an integrated ramp access system off Devlin St which will facilitate the removal of some right turning traffic, improving capacity.
- New pedestrian overbridges will remove at grade pedestrian crossing which again improve the traffic capacity and significantly improve pedestrian safety and convenience. Other
- Intersection improvements associated with the new integrated ramp and access provisions for the redevelopment.
- A new signalised site access from Smith and Pope Street which will form the key point of access for the residential component of the overall development.

The full range of improvements for these intersections, pedestrians, cyclists and public transport provisions were documented in the previous Top Ryde Shopping Centre Redevelopment Traffic Study, Nov 2006, which accompanied the overall Top Ryde Shopping Centre Redevelopment Development Application.

The current construction program of the approved development which is well underway incorporates the above network improvements.

2.5 Public Transport, Pedestrians and Cyclists

Top Ryde is well serviced by public transport provided by an extensive bus service. It is a focal point for services, with a number of services terminating at Top Ryde. From Top Ryde, buses provide regional connections (with a number of express services operating at peak times) to the City, North Sydney, Burwood, Parramatta, Chatswood and Macquarie Park. Local services provide access to the surrounding area and to West Ryde train station. The main bus stops are located in Devlin Street and Blaxland Road, adjacent to Top Ryde Shopping Centre (Precinct Two) with a further bus stop located on Devlin Street to the south of Blaxland Road. Services operate 7 days a week with more frequent services during the commuter peak period.

Pedestrian foot paths are considered adequate and will be enhanced under the approved Top Ryde Shopping Centre Redevelopment, with additional signal controlled crossings at a number of new locations around the site. The existing facilities and the new improvements will be used regularly during business hours to access the Top Ryde Shopping Centre site and the surrounding facilities of the town centre.

No specific cycle facilities were observed in the vicinity of the town centre as part of the initial traffic investigations however it is understood that cycling facilities have been subsequently investigated and improvements agreed with Council to be incorporated into the site redevelopment.

3. Proposed Development

3.1 Development and Parking Arrangements

The proposed development being considered as part of this current Development Application is for high density residential development, providing 185 apartments. Allowance has been made within the overall approved parking allocation of approximately 3900 for the redevelopment site for the requisite parking for the residential component of the site. The combined allocation for the proposed commercial and residential elements of the development is 845 spaces, of which up to 237 spaces will be associated with the residential component of the development.

Access to the residential parking is planned via the new ramp system off Pope St via the new traffic signal controlled intersection with Smith Street. It is proposed to cater for all resident and visitor parking on site.

Pedestrian access will be available within the centre to allow residents to make use of the wide variety of facilities at their doorstep.

The apartments being part of a major mixed use development will have excellent access to all the services available in Ryde Town Centre for shopping, employment, public transport, entertainment and recreation.

3.2 Traffic Generation

The level of traffic generation from the development proposal was been assessed using the rates available from the standard RTA guidelines for Traffic Generating Developments but adapted to reflect the inner city location close to many services, employment and public transport.

The rate for high density residential development is in the order of 0.24 movements per unit during the morning and evening peak hour per unit. For the proposed 185 unit development, this would give:

- Peak hour flows in the order of 50 vehicle trips; and
- Daily flows in the order of up to a maximum of approximately 380 vehicle trips.

During the morning peak, typically 85% of trips are outbound with 15% inbound. The reverse occurs during the afternoon peak period. The daily traffic flows are generally split 50/50 between inbound and outbound. Thus the flows associated with the residential development are forecast to be:

- AM peak, 40 vehicle trips outbound and 10 vehicle trips inbound.
- PM peak, 10 vehicle outbound and 40 vehicle inbound
- Daily, up to 190 vehicle trips outbound and 190 vehicle trips inbound.

It is noted that the traffic generation for the residential units was considered as part of the overall traffic generation and impact statement documented in the November 2006 report for the shopping centre redevelopment traffic study which was approved in May 2007.

3.3 Traffic Distribution

The traffic generated by the residential units has been distributed onto the road network in accordance with the modelling undertaken in the 2006 traffic studies as shown below.

Direction	Proportion of Total	Route Inbound	Route Outbound
North	13.5%	Lane Cove Road, Devlin Street ramp	Devlin Street ramp, Lane Cove Road
	13.5%	Blaxland Road, Devlin Street ramp	Devlin Street ramp, Blaxland Road
	3%	Buffalo Road (east), Smith Street, Pope Street, Tucker Street	Tucker Street, Pope Street, Smith Street, Buffalo Road (east)
South	25%	Church Street, Devlin Street ramp	Tucker Street, Blaxland Road, Devlin Street, Church Street
East	20%	Victoria Road, Blaxland Road, Tucker Street	Tucker Street, Blaxland Road, Victoria Road
West	25%	Victoria Road, Devlin Street ramp	Tucker Street, Blaxland Road, Devlin Street, Victoria Road

■ **Table 3-1 Distribution of Shopping Centre (Precinct Two) Traffic**

This results in a maximum of approximately 20 additional vehicles using the south and west approaches in the peak hours as a result of the residential element of the development.

3.4 Pedestrian and Cyclist Access

Pedestrians will have full access to all the pedestrian facilities proposed for the overall site, with the main entry and exit located on Pope and Tucker Sts. Residents will be able to use the overall pedestrian ramp and overbridge system proposed for the two precincts. This will offer them safe and convenient access to all areas, services and public transport facilities,

3.5 Site Operations and Access Arrangements

Vehicle access to the street network is planned to be via the integrated ramp system to Pope St at the approved traffic signal controlled junction with Smith Street.

3.6 Proposed Parking Allocation

The parking provision for the residential component of the site has been considered with reference to the approved allocation of parking to the residential units in Stage 1, to Council’s requirements and taking into consideration the size (number of bedrooms) of apartments. The proposed allocation is as indicated in Table 3.3 below. The parking for each unit will be dedicated security parking with all visitors parking being provided as part of the overall parking on the site approved in the Stage 1 Development Application.

The nature of the overall development as a mixed land use precinct allows significant opportunity for reciprocal use of facilities such as parking spaces, and this has been taken into account in the overall investigations for the shopping centre redevelopment.

It should be noted Table 3.3 includes the parking allocation for buildings C,D, and E, approved as part of the Stage 1 Development Application. A separate DA application will be required for Buildings C, D and E as this investigation covers Buildings B and F only

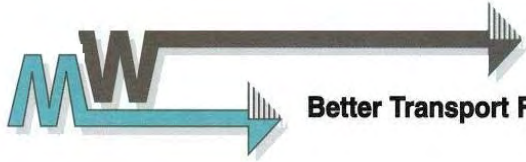


TABLE 3.3 Proposed Parking Allocations

	GRAND TOTAL
Units in Buildings B &F	185
Proposed Parking Allocation	up to 233
Visitor Spaces	Included in overall parking provision for site

4. Assessment of Transport Operations

The residential proposal forms an integral part of the original overall traffic analysis and has therefore been included in the assessment of the Integrated Traffic Management Solution developed for the site.

The low level of traffic generated by the residential units constitutes only a minor part of the overall traffic generated, less than approximately 2%.

4.1 Site Access Operations

The proposed access via Pope St will provide residents with good options for approach and departure without unnecessary travel on the surrounding road network. The car park access will work well due to the low levels of traffic generated by the residential units.

4.2 Road Network Performance

The overall study details the individual intersection performance and as the residential units would not be proposed without the commercial and retail proposals which also rely on the network improvements proposed the overall results are also valid for this assessment. The table below is extracted from the previous report.

Table 4-1 – Forecast Intersection Performance PM Peak Conditions

LOCATION	SCENARIO	N/B		S/B		E/B		W/B	
		AVE DELAY	LoS	AVE DELAY	LoS	AVE DELAY	LoS	AVE DELAY	LoS
Devlin / Blaxland/ Parkes	Existing	216.78	F	38.05	C	63.34	E	51.12	D
	Future Do Nothing	325.11	F	38.17	C	57.08	E	65.34	E
	Future plus P2	197.69	F	60.86	E	74.35	F	69.14	E
	Future plus ITMS	237.76	F	46.38	D	38.26	C	80.29	F
Devlin / Blaxland/ Lane Cove	Existing	12.36	A	64.74	E	51.86	E	-	-
	Future Do Nothing	23.89	B	75.95	F	38.37	C	-	-
	Future plus P2	15.96	B	130.41	F	49.45	D	-	-
	Future plus ITMS	11.69	A	151.32	F	53.79	D	-	-
Blaxland / Tucker	Existing	30.26	C	40.52	D	22.96	B	19.16	B
	Future Do Nothing	36.11	C	41.24	C	9.76	A	20.88	B
	Future plus P2	39.76	C	20.31	B	20.45	B	19.20	B
	Future plus ITMS	57.94	E	189.23	F	26.85	B	94.66	F
Lane Cove / Buffalo	Existing	7.02	A	35.61	C	-	-	51.34	D
	Future Do Nothing	7.43	A	94.39	F	-	-	64.44	E
	Future plus P2	4.63	A	230.24	F	-	-	74.43	F
	Future plus ITMS	7.41	A	259.78	F	-	-	57.67	E

Notes: 1. Average delay and intersection level of service from Paramics RTA plug-ins
 2. Level of Service not reported from Base Traffic Modelling

This table clearly shows there will be some improvements to the traffic conditions in the area in the future as a result of the road improvements proposed as part of the overall redevelopment.

Of note in the consideration of the residential component of the redevelopment is that traffic generation from the residences will for the large part not coincide with peak retail traffic generation, with movements being generally in the opposite direction, and not always at the same time of day.

4.3 Site Layout and Design Issues

4.3.1 Car Park Design

The internal layouts proposed for the Top Ryde Shopping Centre redevelopment have been reviewed and assessed in terms of the basic design parameters of the Australian Standard AS NZS 2890.1-2004 Parking facilities - Off-street car parking, and also Councils Ryde DCP 2006.

It should be noted that the development constitutes a major contribution to the facilities of the Ryde Town Centre, in terms of retail, residential, commercial and community facilities, and as such is considered as a Class 3 Town Centre Car parking facility.

Some features of the overall design include:

1. Grade separated access to the basement parking
2. A total of 5 entry and 5 exit lanes for the car park
3. car park aisles and overall dimensions to suit a class 3a short terms high turnover car park typical of shopping centres This is in excess of the requirements for standard residential (tenant or long stay car parking)
4. full opening all doors
5. aisle widths to standard
6. provision for disabled parking, both in terms of access and space requirements
7. automated ticketing system
8. multiple booth entry and exit plazas

The design as presented on the architectural drawings and detailed engineering plans has been reviewed separately and was considered to generally comply with the requirements of the Australian Standard for a Class 3 off street parking facility. This is also understood to be consistent with the design requirements of the Council DCP 2006.

4.3.2 Parking Provision

The level of overall parking provision proposed for The Top Ryde Shopping Centre Redevelopment project was reviewed against the requirements of the Ryde DCP 2006 and the overall transport principles put forward and approved as part of the development of the Integrated Traffic Management Solution. Of note in the supporting investigations was the parking requirement nominated for the Macquarie Park Employment Area in Ryde DCP 2006 which is a result of a number of factors that presently impact on that area. They include increased congestion on the surrounding road network, increased rate of development in the area, recent improvements in bus services in and through the area and the impending arrival of the Parramatta / Chatswood Rail Link.

It was considered the same factors are applicable to the Ryde Town Centre, with the congested road network surrounding the site, improved bus services arising from the redevelopment proposals and the recent expansion of services by the STA, and the increased mixed use development occurring in the area. The same factors have been assumed to influence the

requirement for residential parking, with visitor parking assumed to be catered for by the general centre parking, accepted and approved at Stage 1, and a lower overall parking supply provided for each individual unit in the centre.

It should be noted that the levels of traffic generation were based on the RTA rates and linked trip factors described in the Top Ryde Shopping Centre Traffic Impact Statement (Better Transport Futures, November 2006), and not directly linked to the level of parking supply.

It was recommended and approved that the modified calculation of parking supply apply for the development as a reflection of the desired outcome of a reduction in car dependency for the centre and as part achieving the desired transport outcomes as outlined in Council's strategic planning for the area.

4.3.3 Service Vehicles

Service Vehicles supporting the residential component of the development are not expected to impact on peak on street operating conditions, with most deliveries occurring outside of peak movement periods. The location of the residential service docks is internal to the site with access to Level 3 from Pope Street.

Allowance has been made for service delivery manoeuvring space to meet the requirements of the centre. The provisions for vehicle manoeuvring space within loading areas was analysed using vehicle turning movement software and the overall Top Ryde Shopping Centre development plans. Results of this analysis are presented in the site plans for Level3a in Appendix A. The results indicate that service vehicles will be able to enter and exit the requisite loading area in a forward direction as required by the standards and development control plans.

4.4 Impacts on Public Transport

Top Ryde will continue to be well serviced by Public Transport provided by an extensive bus service. It is anticipated that any redevelopment of The City of Ryde Administration Centre site, Precinct One, would have to continue to provide comparable (or improved) facilities for bus transport on the site. It would remain a focal point for services. From Top Ryde, buses provide regional connections (with a number of express services operating at peak times) to the City, North Sydney, Burwood, Parramatta, Chatswood and Macquarie Park. Local services provide access to the surrounding area and to West Ryde train station. The main bus stops are to be located on Devlin Street adjacent to the shopping centre and also as exists on Blaxland Road. Services would continue to operate 7 days a week with more frequent services during the peak commuter periods.

It is understood that there is also a possibility of introduction of a regular shuttle service from West Ryde Railway station to Top Ryde town centre to improve access to the wider regional public transport system.

There are a number of impacts on existing bus operations that were considered and approved in the assessment of the overall Top Ryde Shopping Centre redevelopment. These include:

1. Altered bus operations resulting from the closure of the connection to Devlin Street adjacent to Council Administration building (By Council.) This will affect bus routes during the construction period as well as ongoing operations. An approved replacement route for services has subsequently been discussed and agreed with STA and Council officers.
2. Improved lane allocation in Blaxland Road east of Devlin Street

3. Improved bus set down and pick up zone in Devlin Street
4. Placement of a bus lay over area in Tucker Street for after hours use to replace the facility that will be removed from Precinct One.
5. New facilities for bus drivers as a replacement for the existing facilities contained within the Top Ryde Shopping Centre site.

These improvements to public transport facilities form part of the approved Top Ryde Shopping Centre Redevelopment contribution to the ITMS package of improvements and will assist in improving bus operations to and through Ryde Town Centre.

5. Conclusions

The following conclusions are drawn from the investigations into the proposed high density residential development as part of the overall redevelopment of the Top Ryde site in Ryde Town Centre:

1. The development allows for the proposed construction of 185 residential apartments, plus a future 240 residential apartments
2. The proposed parking allocation for the 185 apartments in Buildings Band F is 237 spaces. These bays, plus the allowance for the future 240 apartments will be provided in a secure controlled portion of the centre's upper car park facility.
3. Vehicle access will be provided via the Pope Street entrance to the centre.
4. The residential apartments in Buildings B and F can be expected to generate up to a maximum of 380 vehicle trips per day, or around 50 vehicle trips in each of the peak hours. This constitutes less than 2% of the trips generated in the peak hour by the overall approved development.
5. The residential component was considered as part of the traffic investigations for the approved Top Ryde Shopping Centre redevelopment and as such the traffic impacts were considered in detail as part of the assessment and subsequent approval in May 2007 of that development application.
6. The network improvements proposed for the overall development will result in significant improvements in both vehicle and pedestrian operation, plus improvements to public transport facilities and also the introduction of improved cyclist facilities. Service vehicles have dedicated access provided for the residential part of the development, which will assist in eliminating potential on street conflicts with these vehicles.

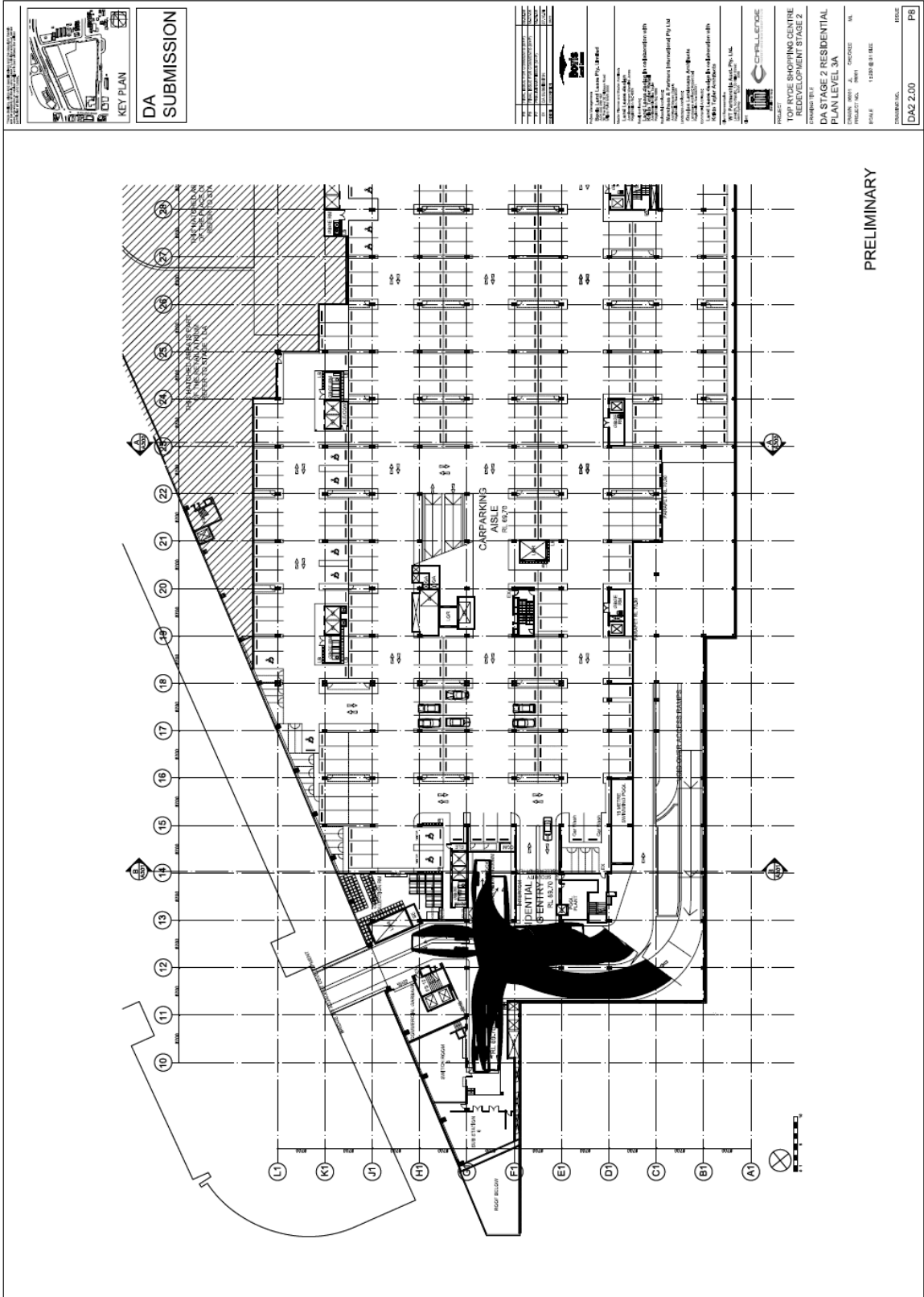
The overall conclusion from the traffic investigations of the Top Ryde Shopping Centre Redevelopment, which included the residential apartments as an integral component of the site, is that the traffic and parking arrangements for the site have made satisfactory provision for access, traffic movement and parking as considered in the overall redevelopment plans. It has been concluded that the proposed Integrated Traffic Management Solution as required by LEP 143 will improve the travel environment in the area for all road users.

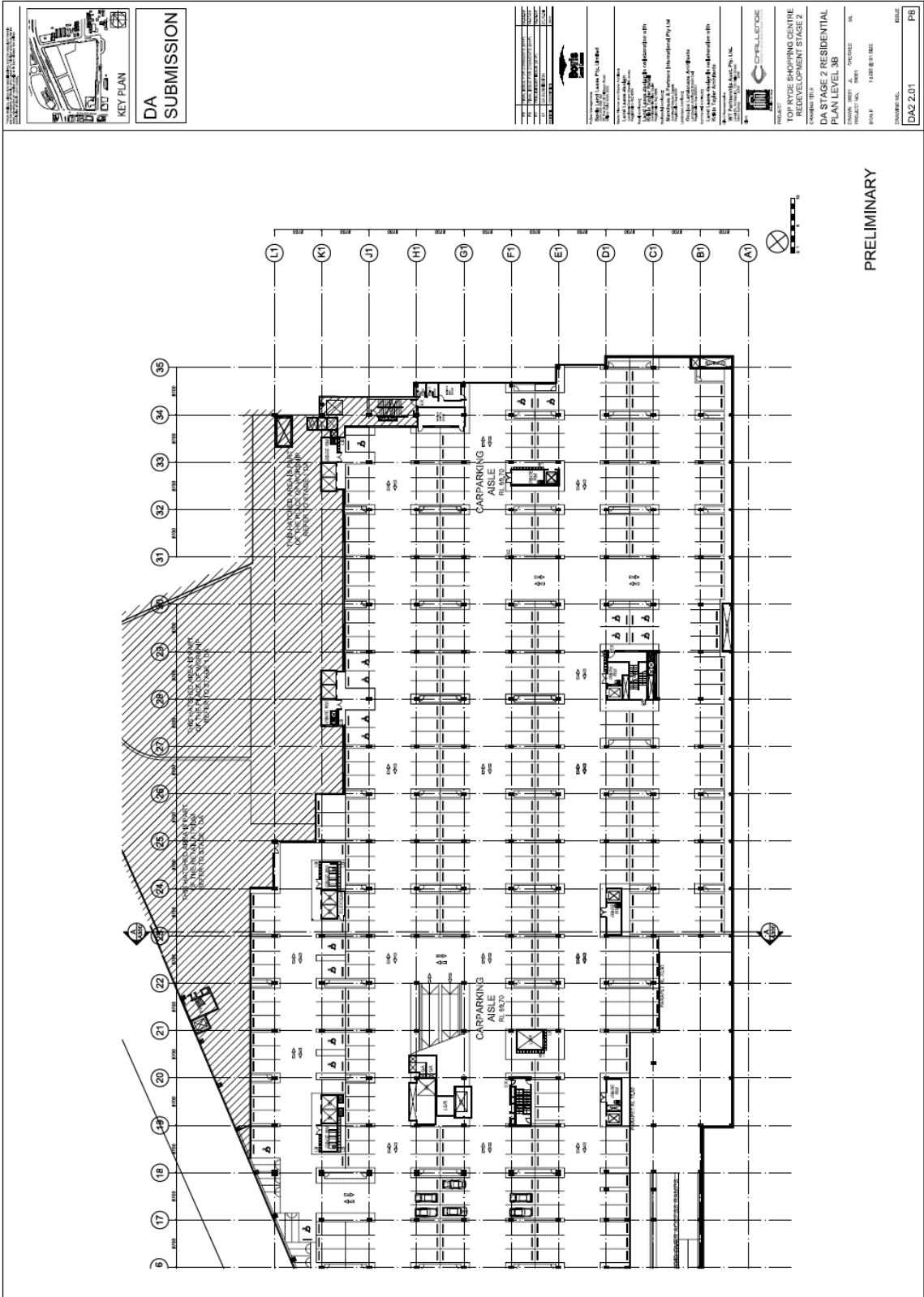
It is recommended that the development application for residential apartments be approved as part of the overall Top Ryde Shopping centre redevelopment project.

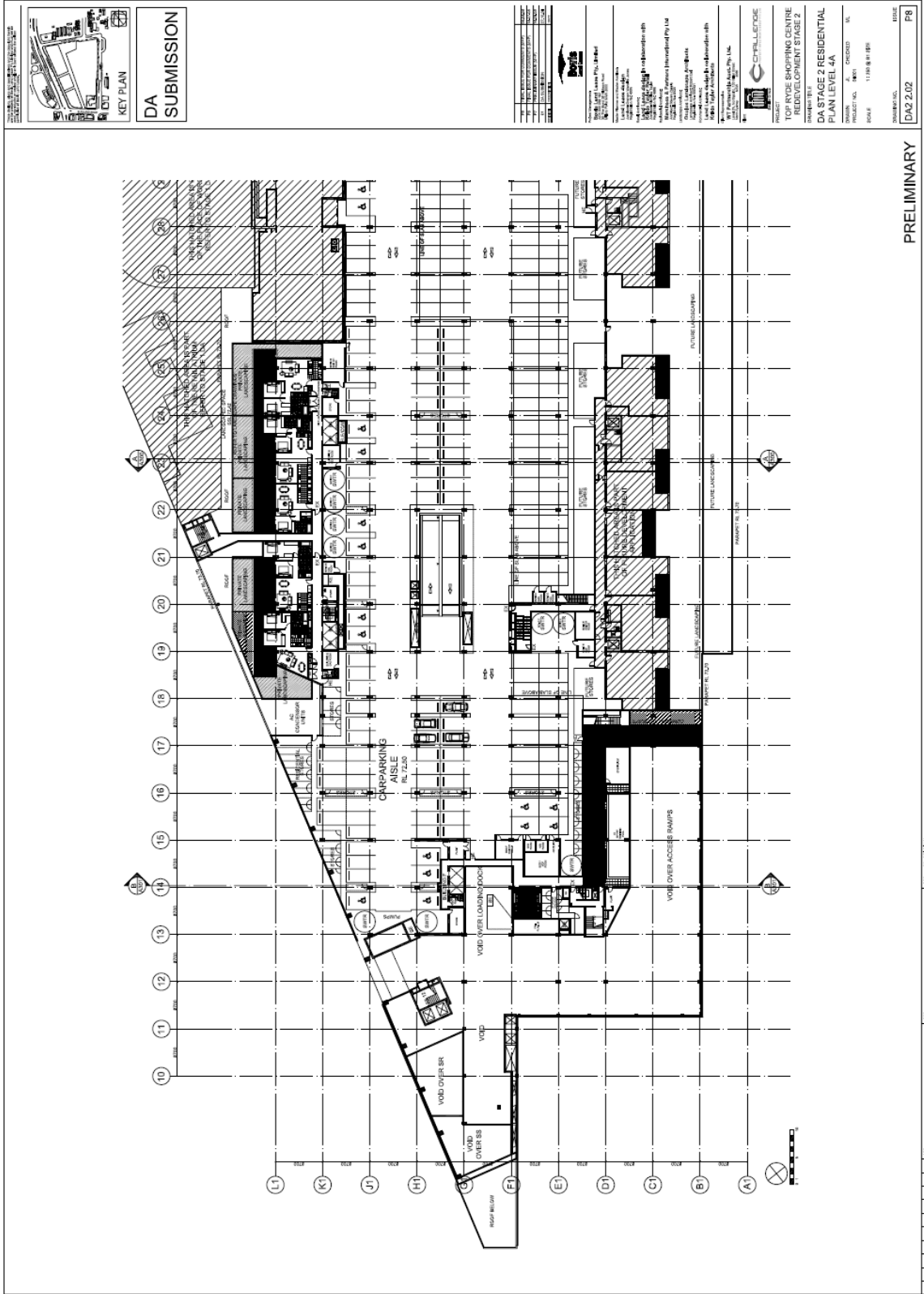
6. References

1. Top Ryde Traffic and Pedestrian Study for the RTA (SKM June 2003)
2. RTA Guide to Traffic Generating Developments, (RTA October 2002)
3. Home Interview Surveys (HIS) conducted by the Transport Data Centre.
4. Rosenkrantz, 1996
5. Mark Waugh Pty Ltd Top Ryde Traffic Investigations, 2004, 2005
6. Top Ryde draft LEP123 Traffic Investigations Report, November 2005
7. Top Ryde Shopping Centre Precinct Two Traffic Impact Statement, November 2006

Appendix A Site Plans



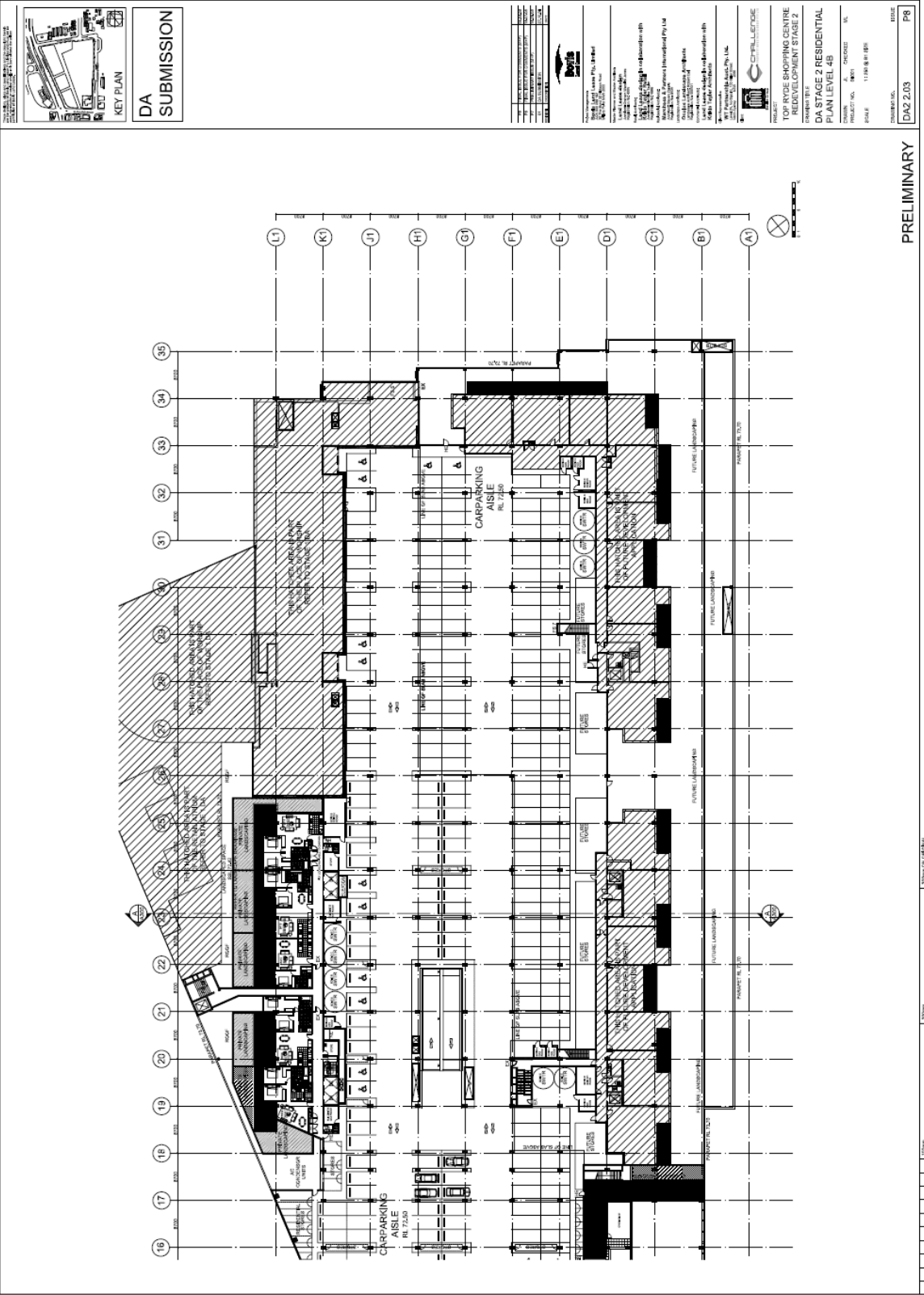




DA SUBMISSION

PROJECT NO.	11/10/18/11/18/1
PROJECT NAME	TOP RYDE SHOPPING CENTRE REDEVELOPMENT STAGE 2
PROJECT LOCATION	DA STAGE 2 RESIDENTIAL PLAN LEVEL 4A
DATE	11/10/18/11/18/1
PROJECT NO.	11/10/18/11/18/1
PROJECT NAME	TOP RYDE SHOPPING CENTRE REDEVELOPMENT STAGE 2
PROJECT LOCATION	DA STAGE 2 RESIDENTIAL PLAN LEVEL 4A
DATE	11/10/18/11/18/1
PROJECT NO.	11/10/18/11/18/1
PROJECT NAME	TOP RYDE SHOPPING CENTRE REDEVELOPMENT STAGE 2
PROJECT LOCATION	DA STAGE 2 RESIDENTIAL PLAN LEVEL 4A
DATE	11/10/18/11/18/1

PRELIMINARY



DA SUBMISSION

DATE: 11/08/2015	PROJECT: TOP RYDE SHOPPING CENTRE REDEVELOPMENT STAGE 2
DRAWN: [Name]	CHECKED: [Name]
SCALE: 1:100 @ B1 (BS)	
PROJECT NO. DA2 2.03	SHEET NO. P8

PRELIMINARY