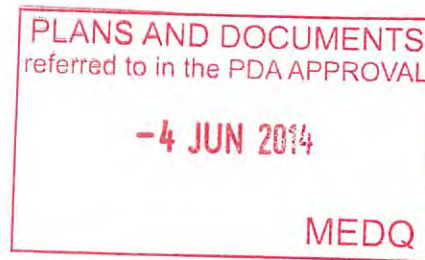


8 April 2014

Our Ref: 14BRT0127let-140408
Your Ref:



Attention: Steve O'Leary

Arden Group Holdings Pty Ltd
C/- Planning Initiatives
PO Box 1774
NEW FARM QLD 4005

Dear Steve,

**RE: Proposed Mixed Use (Residential and Commercial) Development
37 Mayne Road, Bowen Hills
Traffic Engineering Assessment of Amended Development Scheme**

1. Introduction

TTM Consulting Pty Ltd (TTM) has been engaged by Arden Group Holdings Pty Ltd to undertake an assessment of the traffic and parking aspects of a proposed Mixed Use Development located at 37 Mayne Road in Bowen Hills.

An approval was previously issued over this site by the former Urban Land Development Authority, now Economic Development Queensland (EDQ) in June 2011. The original approval reference was DEV2010/106. It is understood that a Request to Change the Approval has recently been made by the applicant, and this assessment letter will be used to evaluate the acceptability of the proposed traffic and parking aspects of the revised development scheme with respect to the previously approved provisions.

A copy of the previously approved Traffic Engineering Report prepared by TTM (TTM Ref 27073 Rep1, Dated 17th December 2010) is included in Attachment 2 for reference.

2. Development Scheme

A summary of the proposed modifications to development and parking supply is shown in Table 1 on the following page.

A copy of the revised development plans prepared by Arqus Design architects is included in Attachment 1 for reference. The car park plans referred to in this assessment include A1-200 (Issue K), A1-201 (Issue L), A1-202 (Issue K), A1-203 (Issue J), A1-204 (Issue J) and A1-205 (Issue I).

TTM Consulting Pty Ltd

ABN 65 010 868 621
Brisbane | Gold Coast | Sunshine Coast
Melbourne | Sydney

PO Box 1310
Coorparoo BC, QLD 4151
1/129 Logan Road
Woolloongabba, QLD 4102

t (07) 3327 9500
f (07) 3327 9501
ttmbris@ttmgroup.com.au
www.ttmgroup.com.au

Table 1: Modified Development Proposal Characteristics

Characteristic	Approved Scheme*	Modified Scheme*	Difference
Development Yield: - Commercial Space - Residential units – 1 bedroom – 2 bedroom	475m ² GFA 242 units (total) 156 units 86 units	437m ² GFA 256 units (total) 169 units 87 units	-38m ² GFA +14 units (total) +13 units +1 units
Parking Supply: - Car Parking Spaces – Resident Parking – Visitor Parking - Motorcycle/Scooter Spaces - TOTAL PARKING	180 spaces (total) 167 spaces 13 spaces, incl. 1 PWD 7 spaces 187 spaces	182 spaces (total) 169 spaces 13 spaces, incl. 1 PWD 24 spaces 206 spaces	+2 spaces (total) +2 spaces - +17 spaces +19 spaces
Servicing Provisions: - MRV/SRV bay - VAN bay - Car Wash bay	2 bays 1 bay 1 bay	2 bays 1 bay 1 bay	- - -
Bicycle Parking Provisions	100 spaces	305 spaces	+205 spaces

*Development Summary as per Arqus Design Drawing A1-600 (Issue D).

As can be seen in Table 1, the revised development scheme proposes to increase the residential yield by 14 units and a slight decrease to commercial space. To accommodate the increased unit yield, additional car, motorcycle and bicycle parking has been provided.

Commentary in relation to the revised traffic engineering provisions is detailed in the following sections.

3. Parking Supply

The previously approved development scheme provided a total of 187 car parking spaces and 7 motorcycle parking spaces for 242 units. As detailed in the original TTM Traffic Engineering Report, this parking supply was based on the provisions of the Brisbane City Council (BCC) City Centre Neighbourhood Plan, and principals of a Transit Orientated Development (TOD), for a parking supply equal to 0.5 spaces per bedroom for residents and 1 space per 20 units for residential visitors.

On the same basis a revised yield of 256 units (and 345 bedrooms total), would require 173 resident parking spaces and 13 visitor parking spaces. The revised development scheme provides 169 resident car parking spaces and 13 visitor spaces. Although the proposed resident parking provision is 4 spaces below the requirement in line with the existing approved parking rates, this is only considered a minor deviation. In addition, it is highlighted that the revised scheme proposes to provide an additional 17 motorcycle spaces for residential parking. Given the high ownership rates of motorcycle/mopeds in inner city areas (in lieu of cars) due to the ease of use in this urban environment, this increased motorcycle parking provision is a comparable alternative to boost the parking supply for the development to accommodate the increased residential yield.

Inclusive of motorcycle spaces, the revised scheme provides an equivalent parking supply of 0.56 spaces per bedroom, compared to the previous approved provision of 0.53 spaces per bedroom.

As such, the parking supply of the revised development scheme is considered acceptable.

4. Car Park Layout and Design

The car park layout of the revised scheme is generally consistent with the previously approved layout; with 1 basement level and 4 podium parking levels provided. The car parking layout meets all the requirements of the *Australian Standard for Parking Facilities - Part 1: Off-Street Car Parking* (AS2890.1).

Notably the only major changes between the previously approved parking layout and revised parking layout are as follows:

- The original scheme provided a combination of 2.5m wide parking spaces and 6.2m wide parking aisles. The revised scheme generally provides a combination of 2.4m wide parking spaces and 6.2m wide parking aisles. The provision in the revised scheme still meets the requirements of a Class 1 car park facility under AS2890.1, which is acceptable for low-turnover car parks typical of residential developments.
- The development plans generally provide ramps with maximum grades of 1:5 (20%) throughout consistent with the previously approved scheme, however, it is noted that the grade on one of the ramps (from ground level up to first podium parking level) is slightly greater at 1:4.6 (21.7%). This slightly increased ramp grade is considered necessary to achieve adequate height clearance in the ground level under the podium level which is utilised as manoeuvring and loading provisions for service vehicles which requires a minimum height clearance of 4.5m. Regardless, the proposed ramp grade of 1:4.6 is still below the maximum allowance of 1:4 (25%) for residential car parking areas where ramps are less than 20m long. As such, this slight deviation from the approved scheme is acceptable and fit for purpose.

Based on the above information, the car park design provisions in the revised development scheme are considered acceptable.

5. Development Traffic Impacts

In the previously approved Traffic Engineering Report a traffic impact assessment was carried out based on an assumed development yield of 242 units and application of a traffic generation rate of 0.25vph/unit in peak hour periods. The additional 14 units as part of this proposed revised scheme will therefore only represent an increase of 4vph in the peak hour periods, or one extra vehicle every 15 minutes.

As such, the impact of the proposed modified development scheme compared to that previously approved will be negligible.

6. Site Access

The proposed site access arrangements do not differ from the current approved scheme. Although the number of parking spaces contained within the site has slightly increased (total of 19 spaces, inclusive of motorcycle parking) the access arrangements are still acceptable given the site is low-turnover in nature and the development does not trigger any warrants for wider/larger access provisions under AS2890 (with the site still only requiring a 6.0-9.0m wide Category 2 access).

7. Servicing Provisions

The revised development scheme provides a total of 3 loading bays, in the form of two SRV/MRV loading bays on the ground floor area and a dedicated VAN Bay in the podium visitor parking area. A separate Car Wash Bay is also provided in the visitor parking area.

Overall the loading bay provisions for the site are considered acceptable based on the guidance given in the BCC City Plan. For commercial/retail/shop uses up to 600m² it is recommended that 1 VAN bay and 1MRV loading bay are provided. There are no specific requirements for residential service demands. As such, the proposed provision for 2 MRV/SRV bays and 1 VAN bay exceed the minimum recommended provisions of BCC (with the additional MRV/SRV bay to therefore accommodate residential service demands).

In addition, it is highlighted that these loading bay provisions are consistent with the original approved scheme. Considering that the revised scheme only provides an additional 14 units, and also reduces the amount of commercial space on ground floor, there is not expected to be any notable increase in service vehicle demands compared to the previous proposal.

Based on the above information the service vehicle/loading bay provisions, consistent with the provisions of the approved scheme, are acceptable.

8. Bicycle Parking Provisions

The bicycle parking provisions approved in the previous scheme were based on the recommended rates detailed in *Austroads Part 14: Bicycles*, which was below the general requirements of the 'Bowen Hills Urban Development Area (UDA) Development Scheme'. The scheme requires bicycle parking provisions for residential developments at a rate of 1 space per unit for residents and 1 space per 400m² GFA for visitors. Similarly, bicycle parking requirements for commercial uses is 1 space per 200m² GFA for employees and 1 space per 1000m² GFA for customers/visitors. Table 2 summarises the bicycle parking requirements for the revised development scheme based on these rates.

Table 2: EDQ Bicycle Parking Requirements

Parking Component	Parking Rate	Proposed Extent	Bicycle Parking Requirement
Residential (Tenant)	1 space per unit	256 units	256 spaces
Residential (Visitor)	1 space per 400m ² GFA	18,237m ² GFA	46 spaces
Commercial (Employee)	1 space per 200m ² GFA	437m ² GFA	2 spaces
Commercial (Visitor)	1 space per 1000m ² GFA	437m ² GFA	1 space
TOTAL			305 spaces

The revised development plans provide a total of 295 secured bicycle parking spaces in a communal area in Basement 1. In addition 10 bicycle parking spaces are also provided in the visitor parking area on the ground floor level. As such, the revised bicycle parking provisions satisfies the requirements of the development scheme.

9. Conclusion

The proposed modifications to the development scheme (and increased yield) have been suitably accommodated through appropriate increases in the respective resident and visitor parking provisions. The revised car parking plans are generally consistent with that in the approved scheme and are consistent with the requirements of AS2890.1.

In terms of external road impacts, the revised development scheme is expected to generate an additional 4 trips per hour in peak hour periods compared to the previously approved scheme, which is considered negligible.

There are no proposed changes to the site access or service vehicle provisions.

Bicycle parking is consistent with the requirements of the Bowen Hills UDA Development Scheme.

Overall, TTM considers that the proposed traffic and parking provisions of the modified development scheme is consistent with the previously approved scheme and is therefore acceptable.

If you have any queries in relation to the information provided in this letter, please contact myself on (07) 3327 9500.

Yours faithfully,



Ryan Bradley
Lead Consultant
TTM Consulting Pty Ltd

Reviewed by:



David Grummitt
Associate Director
TTM Consulting Pty Ltd

Attachments

- 1. Revised Development Plans**
- 2. Previous Approved TTM Traffic Engineering Report (TTM Ref 27073 Rep1, 17/12/2010)**

Attachment 1

Development Plans

Arqus Design Pty Ltd
100/105 Sturt Street
ANNEX 15 515 503
Level 3, 14 Main Street
Fortitude View Qld 4006
PO Box 2455
New Farm Qld 4005
Phone 07 553 8888
Fax 07 553 8890
info@arquusdesign.com.au
www.arquusdesign.com.au

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PROJECT
BOWEN HILLS RESIDENTIAL
DEVELOPMENT
37 Mayne Road,
BOWEN HILLS QLD

DRAWING
DEVELOPMENT SUMMARY

JOB NUMBER
14-0003

SCALE
1:1000 A1
@A3

DRAWING NUMBER
A1-600

ISSUED FOR
PRELIMINARY



NEW SCHEME DEVELOPMENT SUMMARY

NEW SCHEME PLOT INTS:	2014 R0	2014 R0
ALLOWABLE GFA	18641	18641
ACTUAL GFA	18641	18641
HEIGHT (LEVELS)	TOWER	22
MAX RL 102.65	TOTAL	26
UNITS	TOWER	230
PODIUM	PODIUM	12
TOTAL GFA FOR UNITS	TOTAL	11197
RETAIL	GROUND LEVEL	5
TOTAL GFA FOR COMMERCIAL	TOTAL	475.08
CAR PARKING	RESIDENTIAL	107
RESIDENTIAL VISITOR	RESIDENTIAL VISITOR	12
RESIDENTIAL PWD	RESIDENTIAL PWD	0
SCOOTER	SCOOTER	7
TOTAL	TOTAL	100
BIKE PARKING	BIKE PARKING	100
SERVING	MV / SV	2
WH	WH	1
TOTAL	TOTAL	4
OUTDOOR REC. SPACE	LEVEL 5	571.50M
LEVEL 27	LEVEL 27	674.11M
TOTAL	TOTAL	674.11M
QUANTITIES	SMALL UNITS	107
MEDIUM UNITS	MEDIUM UNITS	87

EXISTING SCHEME GFA AREA SUMMARY

ZONE	LEVEL	INTERNAL FLOOR AREA (SQM)	EXTERNAL FLOOR AREA (SQM)
BASEMENT	LEVEL -01 CPTD	22.4	
PODIUM	LEVEL 01 CPTD	48.0	
TOWER	LEVEL 02 CPTD	41.71	20.72
LEVEL 03	LEVEL 03	500.94	500.94
LEVEL 04	LEVEL 04	500.94	500.94
LEVEL 05	LEVEL 05	500.94	500.94
LEVEL 06	LEVEL 06	500.94	500.94
LEVEL 07	LEVEL 07	500.94	500.94
LEVEL 08	LEVEL 08	500.94	500.94
LEVEL 09	LEVEL 09	500.94	500.94
LEVEL 10	LEVEL 10	500.94	500.94
LEVEL 11	LEVEL 11	500.94	500.94
LEVEL 12	LEVEL 12	500.94	500.94
LEVEL 13	LEVEL 13	500.94	500.94
LEVEL 14	LEVEL 14	500.94	500.94
LEVEL 15	LEVEL 15	500.94	500.94
LEVEL 16	LEVEL 16	500.94	500.94
LEVEL 17	LEVEL 17	500.94	500.94
LEVEL 18	LEVEL 18	500.94	500.94
LEVEL 19	LEVEL 19	500.94	500.94
LEVEL 20	LEVEL 20	500.94	500.94
LEVEL 21	LEVEL 21	500.94	500.94
LEVEL 22	LEVEL 22	500.94	500.94
LEVEL 23	LEVEL 23	500.94	500.94
LEVEL 24	LEVEL 24	500.94	500.94
LEVEL 25	LEVEL 25	500.94	500.94
LEVEL 26	LEVEL 26	500.94	500.94
LEVEL 27	LEVEL 27	500.94	500.94
TOTAL	TOTAL	17964.19	17964.19
CHANGE FROM PREVIOUS SCHEME	CHANGE FROM PREVIOUS SCHEME	+202.29	+151.66

NEW SCHEME DEVELOPMENT SUMMARY

NEW SCHEME PLOT INTS:	2014 R0	2014 R0
ALLOWABLE GFA	18641	18641
ACTUAL GFA	18641	18641
HEIGHT (LEVELS)	TOWER	23
MAX RL 102.65	TOTAL	27
UNITS	TOWER	241
PODIUM	PODIUM	12
TOTAL GFA FOR UNITS	TOTAL	11706
RETAIL	GROUND LEVEL	5
TOTAL GFA FOR COMMERCIAL	TOTAL	485.08
CAR PARKING	RESIDENTIAL	109
RESIDENTIAL VISITOR	RESIDENTIAL VISITOR	12
RESIDENTIAL PWD	RESIDENTIAL PWD	0
SCOOTER	SCOOTER	24
TOTAL	TOTAL	206
BIKE PARKING	BIKE PARKING	305
SERVING	MV / SV	2
WH	WH	1
TOTAL	TOTAL	4
OUTDOOR REC. SPACE	LEVEL 5	584.50M
LEVEL 27	LEVEL 27	724.55M
TOTAL	TOTAL	724.55M
QUANTITIES	SMALL UNITS	109
MEDIUM UNITS	MEDIUM UNITS	87

EXISTING SCHEME GFA AREA SUMMARY

ZONE	LEVEL	INTERNAL FLOOR AREA (SQM)	EXTERNAL FLOOR AREA (SQM)
BASEMENT	LEVEL -01 CPTD	27.30	
PODIUM	LEVEL 01 CPTD	48.00	
TOWER	LEVEL 02 CPTD	42.00	72.10
LEVEL 03	LEVEL 03	452.25	452.25
LEVEL 04	LEVEL 04	452.25	452.25
LEVEL 05	LEVEL 05	452.25	452.25
LEVEL 06	LEVEL 06	452.25	452.25
LEVEL 07	LEVEL 07	452.25	452.25
LEVEL 08	LEVEL 08	452.25	452.25
LEVEL 09	LEVEL 09	452.25	452.25
LEVEL 10	LEVEL 10	452.25	452.25
LEVEL 11	LEVEL 11	452.25	452.25
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LEVEL 16	LEVEL 16	452.25	452.25
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LEVEL 24	LEVEL 24	452.25	452.25
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LEVEL 27	LEVEL 27	452.25	452.25
TOTAL	TOTAL	18206.70	18206.70
CHANGE FROM PREVIOUS SCHEME	CHANGE FROM PREVIOUS SCHEME	+202.29	+151.66

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20.03.14	REVISED ISSUE	G
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01.04.14	REVISED ISSUE	J
03.04.14	REVISED ISSUE	K



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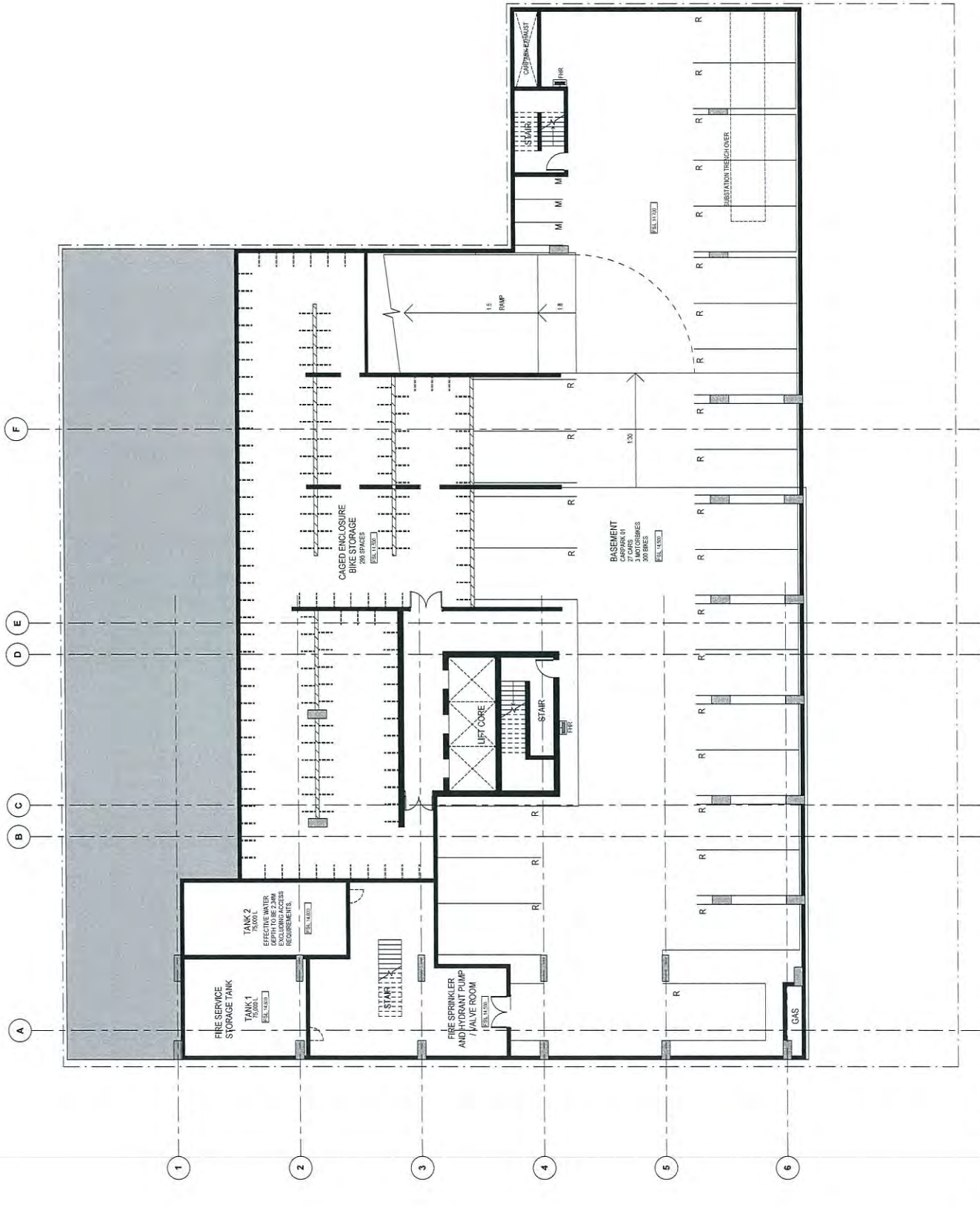
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1 Level -01 CP01
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Arqus Design Pty Ltd
 ARN 63 135 615 903
 Level 2 11 Mait Street
 Fortitude Valley QLD 4006
 PO Box 2655
 Brisbane QLD 4008
 Phone 07 3358 0888
 Fax 07 3358 0899
 email@arquusdesign.com.au
 www.arquusdesign.com.au

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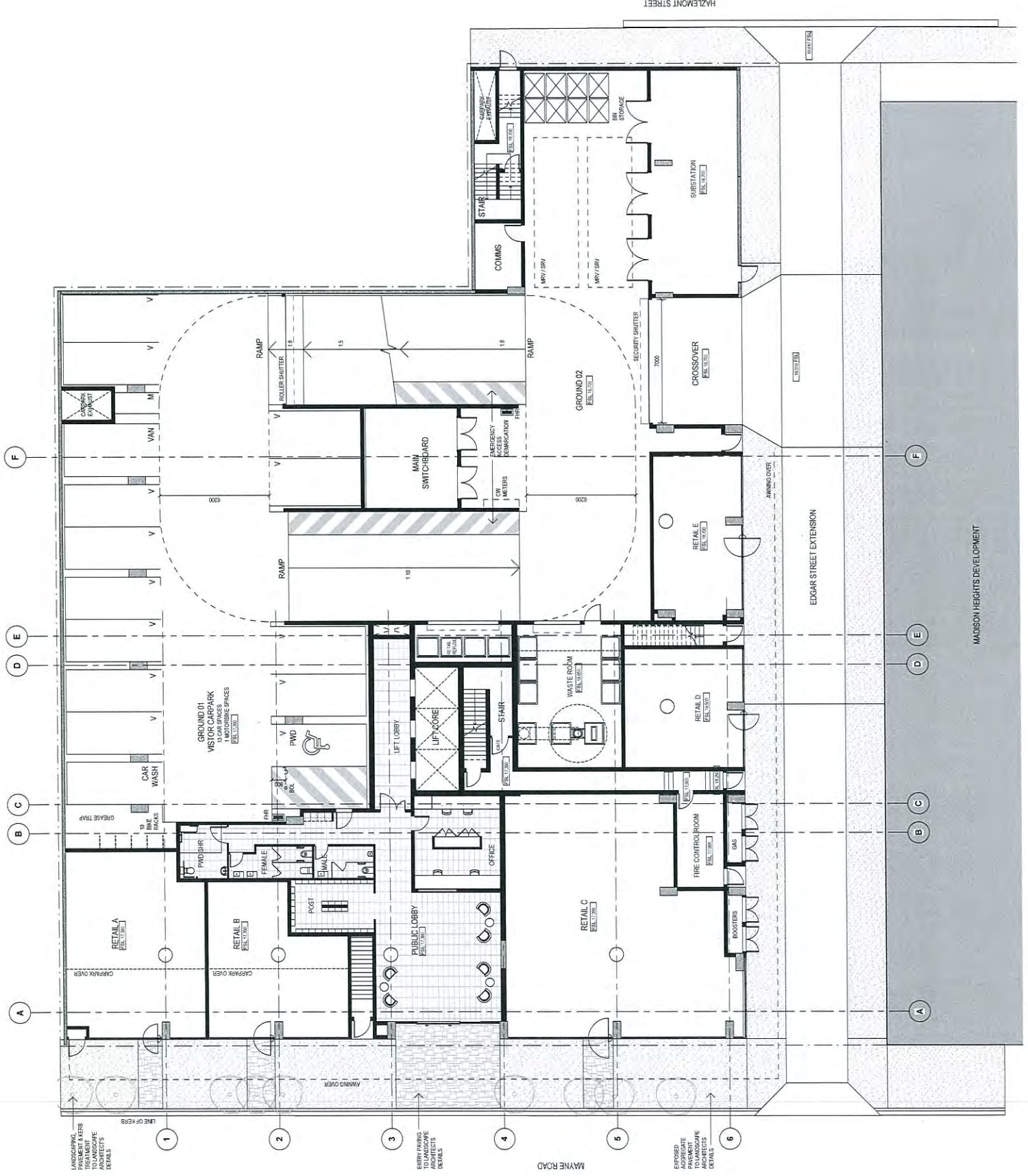
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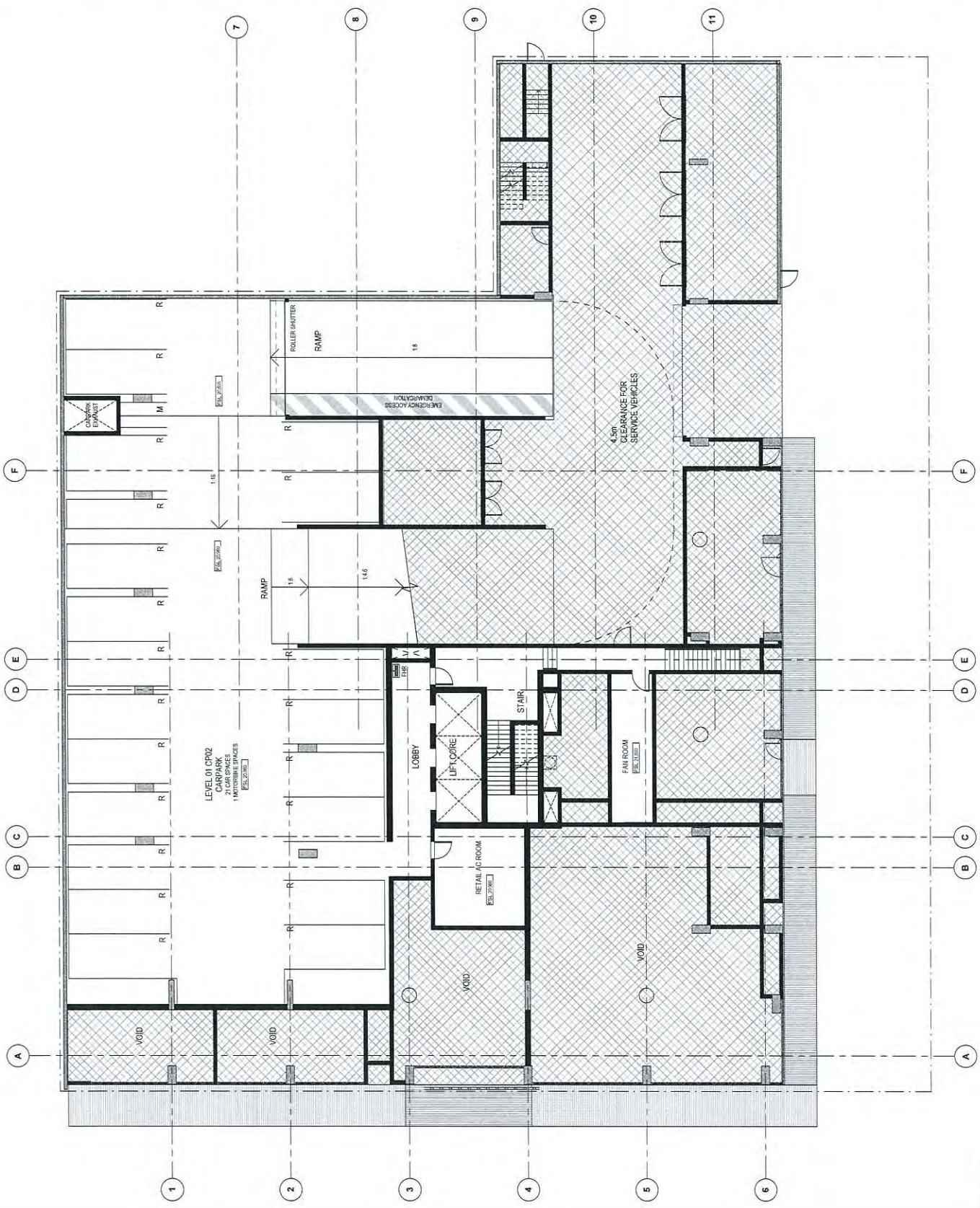
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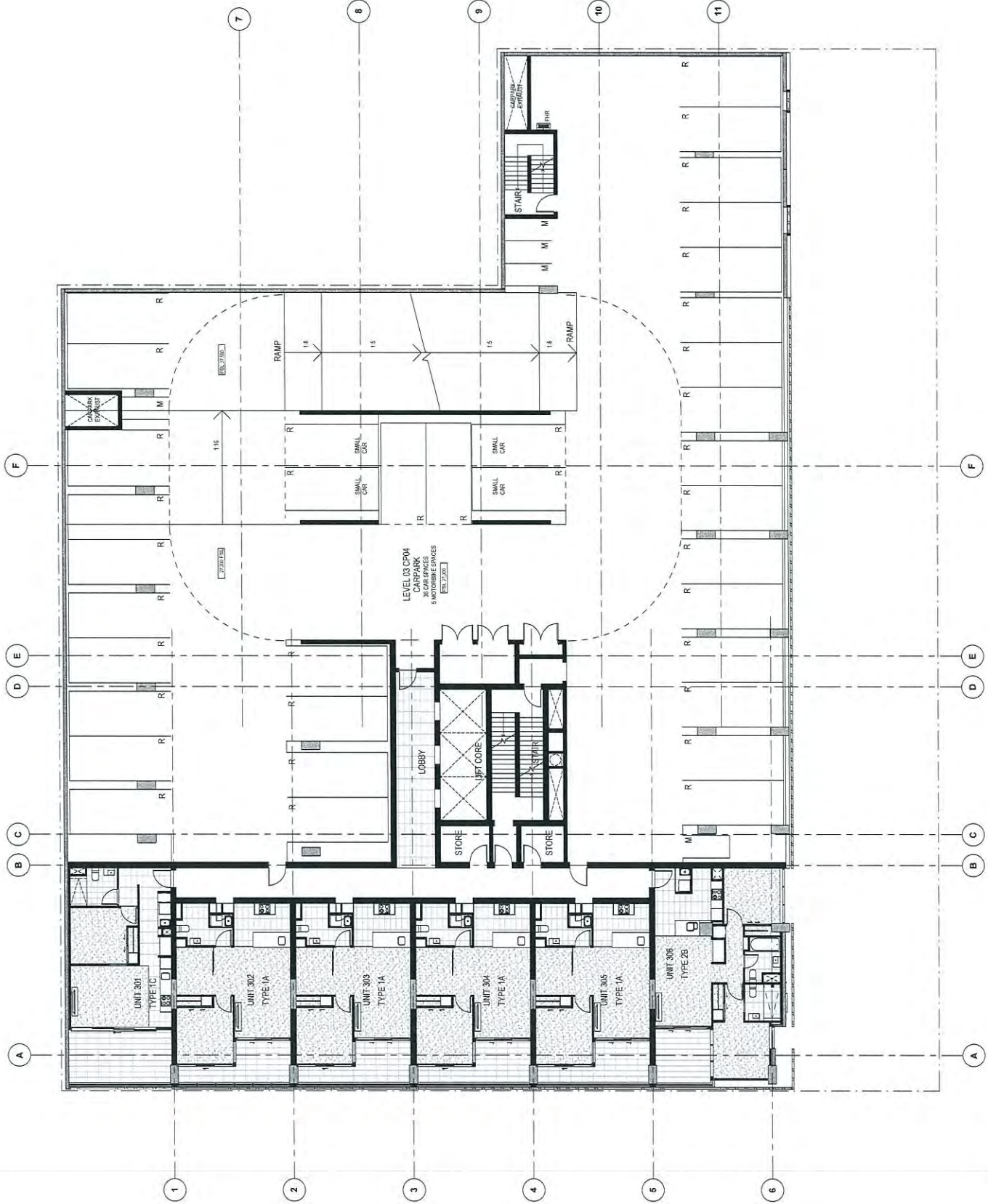
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17.03.14	REVISED ISSUE	F
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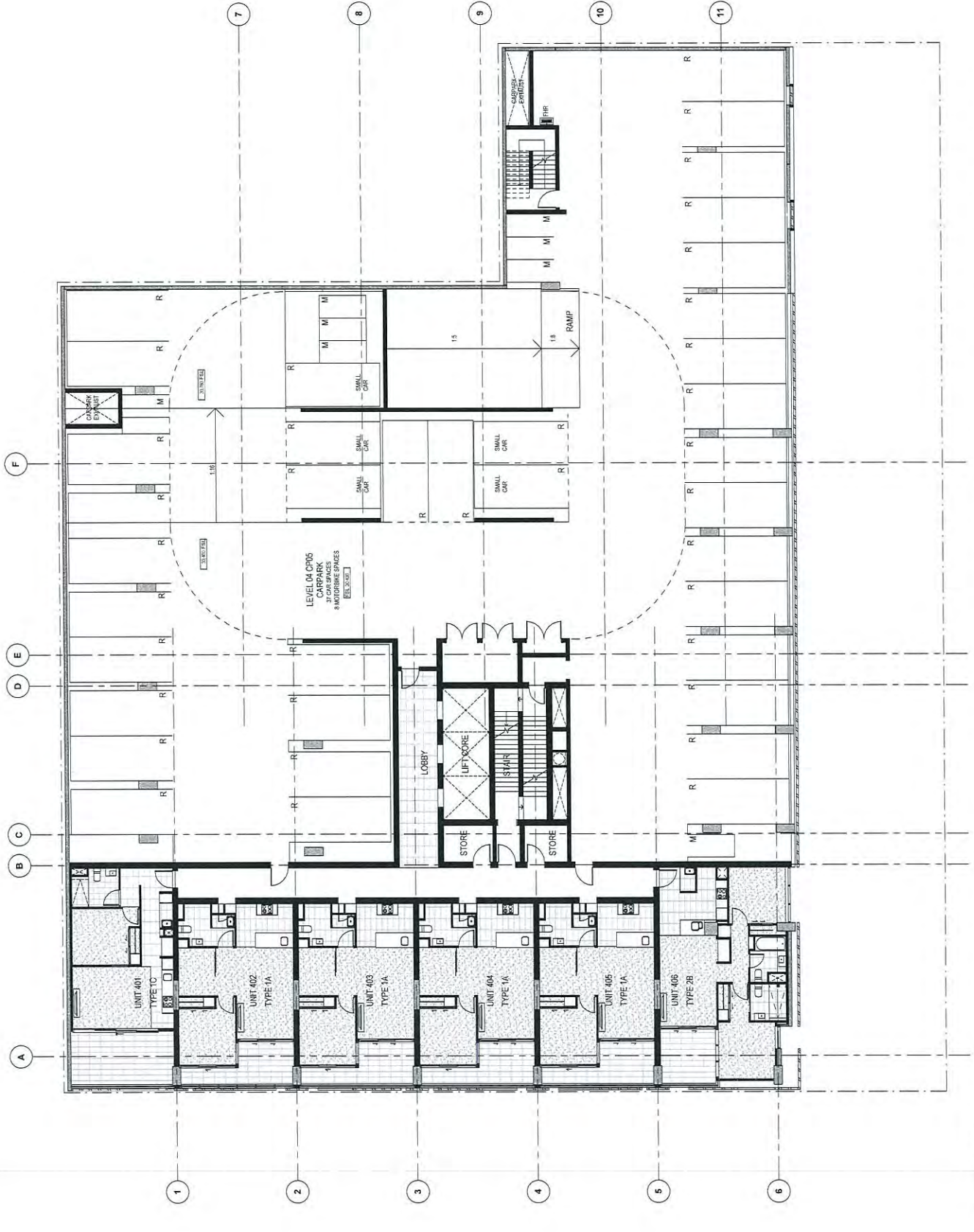


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14.03.16	D	REVISED ISSUE	D
14.03.16	E	REVISED ISSUE	E
17.03.14	F	REVISED ISSUE	F
20.03.14	G	REVISED ISSUE	G
31.03.14	H	REVISED ISSUE	H
03.04.14	I	REVISED ISSUE	I



Attachment 2

Previous Approved TTM Traffic Engineering Report

PLANS AND DOCUMENTS
referred to in the ULDA

Proposed Mixed Use Development
37 Mayne Road
Bowen Hills

APPROVAL dated 10 / 6 / 11

TRAFFIC ENGINEERING REPORT

Prepared for:
Metro (Bowen Hills No. 3) Pty Ltd

December 2010

Reference: 27073 Trep1

TRAFFIC • PARKING • ACOUSTICS

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ABN 65 010 868 621

Level 1/129 Logan Road, Woolloongabba

PO Box 1310 Coorparoo BC QLD 4151

T: (07) 3327 9500 F: (07) 3327 9501 E: ttmbris@ttmgroup.com.au

Document Status

Rev No.	Author	Reviewer		Description	Date
		Name	Signature		
1	Andrew Riddles	Brian Camilleri		Draft Report	3 Dec 10
2	Andrew Riddles	Brian Camilleri		Final Report	17 Dec 10

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Appendices

- A Proposed Development Layout
- B Preliminary Landscape Concept – Proposed Edgar Street Extension

1. Background

1.1 Introduction

TTM Consulting has been engaged by Metro (Bowen Hills No. 3) Pty Ltd to prepare a traffic engineering report investigating a proposed mixed use development comprising of residential and retail elements within the Bowen Hills Urban Development Area (UDA). It is understood that a Development Application will be lodged with the Urban Land Development Authority (ULDA).

The scope of this report includes an assessment of the following traffic aspects of the development:

- Parking supply;
- Car park layout;
- Access design and location;
- Service vehicle arrangements &
- Bicycle facilities.

The report has been prepared taking cognisance of the *'Bowen Hills Urban Development Area Development Scheme'* and other relevant documentation such as *'AS2890.1:2001 Parking Facilities: Part 1 – Off-Street Parking'*.

1.2 Site Location

The site is located at Bowen Hills, to the north-east of the Royal National Association (RNA) Showgrounds, as shown in Figure 1.1. The site has road frontages to Mayne Road and Hazelmount Street, and is currently occupied by several retailers.

The existing land use currently has access driveways on Mayne Road and Hazelmount Street.

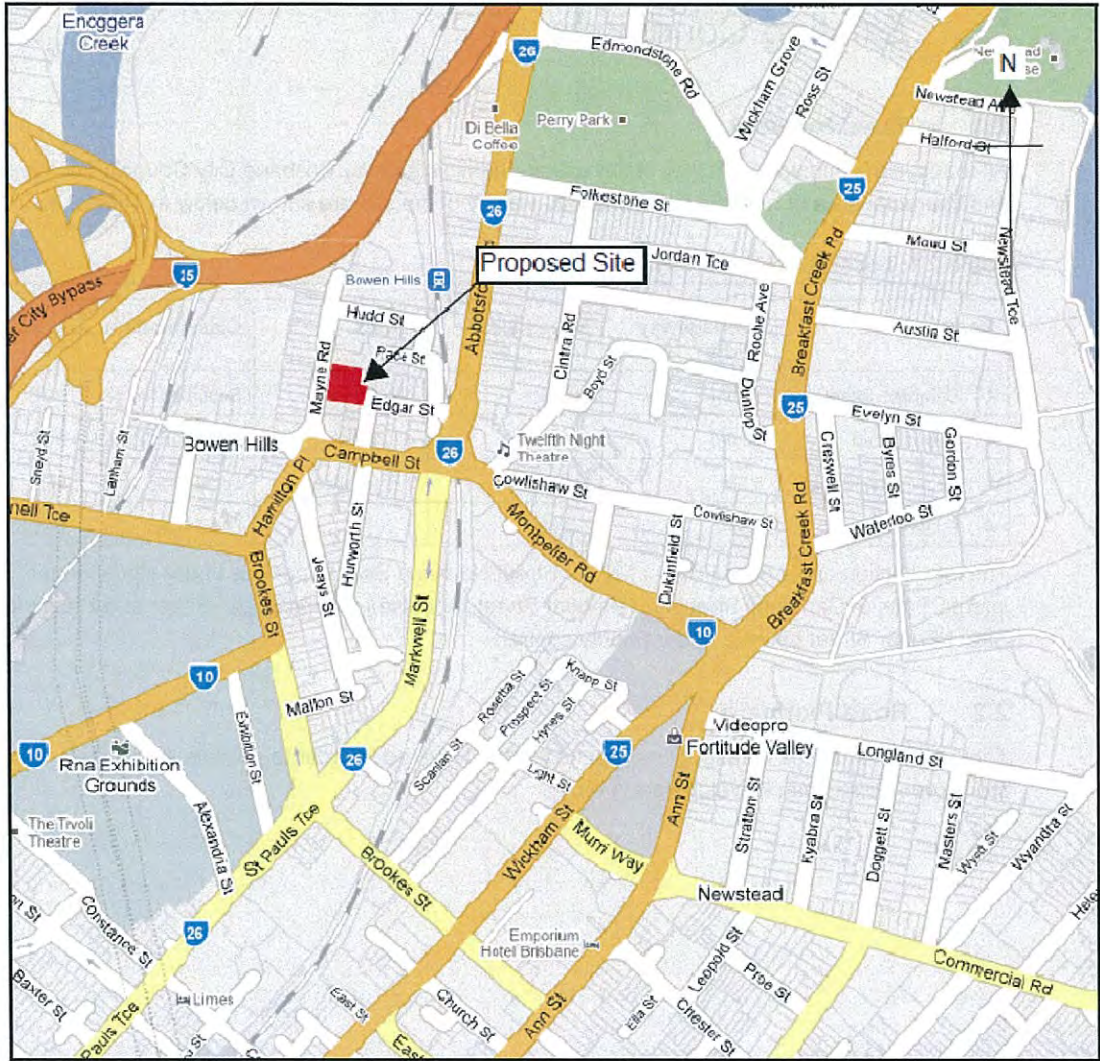


Figure 1.1: Site Location

The site is within Precinct 1 (i.e. Bowen Hills Heart) of the UDA.

2. Existing Conditions

2.1 Road Network

All roads in the immediate vicinity of the site are administered by Brisbane City Council. The hierarchy and characteristics of roads in the immediate vicinity of the site are shown below in Table 2.1.

Table 2.1: Local Road Hierarchy

Road	Carriageway Width	Speed Limit	Lanes	Classification	Management
◀ Campbell Street	12.0m	60kph	4 (undivided)	Suburban Route	BCC
◀ Mayne Road	12.0m	60kph	4 (undivided)	Suburban Route	BCC
◀ Hazelmount Street	5.5m	60kph	2 (undivided)	Local Road	BCC
◀ Edgar Street	3.5m	50kph	1	Local Road	BCC

The intersection of Campbell Street/Mayne Street/Hamilton Street operates under signal control whilst the intersections of Campbell Street/Hazelmount Street, Abbotsford Road/Edgar Street and Hazelmount Street/Edgar Street operate under priority control.

2.2 Road Planning

Table 2.2 summarises infrastructure required to be delivered in order to achieve the ULDA's vision for the Bowen Hills Urban Development Area.

Table 2.2: Proposed infrastructure improvements

Proposed catalyst infrastructure	
Infrastructure	Description of works
❶ Bowen Hills Railway Station	Stage 1 upgrade to improve safety, amenity and visual and physical access from Hudd Street.
Proposed infrastructure improvements	
Infrastructure	Description of works
❶ Road and street improvements	Widening of O'Connell Terrace and public realm improvements.
	Widening of Cambell Street east of Mayne Road through to Abbotsford Road and public realm improvements.
	Widening of Tufton Street and public realm improvements.
	Extension of Tufton Street through to the junction of Mayne Road and Hudd Street.
	Public realm improvements to Brookes Street between Gregory and O'Connell Terraces
	Public realm improvements to Hamilton Place.
	Intersection modifications at the junction of Campbell Street, Hamilton Place and Mayne Road.
	Intersection modifications at the junction of O'Connell Terrace, Hamilton Place and Brookes Street to allow for both lanes from O'Connell Terrace to turn right into Brookes Street.
❶ Transport Infrastructure	Intersection signalisation at the junction of Tufton Street and O'Connell Terrace.
	Upgrades to Bowen Hills Railway Station.
	New bus station linking to the Bowen Hills Railway Station.

In respect to Precinct 1 the ULDA anticipate the following outcomes:

- ❶ Hudd Street will be widened on the southern alignment, extended through to Abbotsford Road and developed as a new 'main street'. It will become one of the most important public streets within Bowen Hills due to its proximity to the Bowen Hills Railway Station and new bus facility and the range and intensity of the adjacent uses. It will be an attractive tree lined avenue with generous footpaths to optimise the area available for commercial and pedestrian activity to spill out into the street;
- ❶ Hudd Street will accommodate four lanes of vehicle traffic with two-way vehicle movement, a cycle way with median buffer, on-street parking outside of peak traffic periods and bio-retention planting areas;
- ❶ Jamieson and Edgar Streets will be realigned and remodelled to create an attractive and pedestrian friendly space through which vehicles are likely to pass but where vehicle speeds will be kept low. A road surface that is flush with adjacent pavements allows for the seamless flow of pedestrians across the street and the inclusion of trees in tree pits maximises the volume of street area available for outdoor commercial use and pedestrian enjoyment; &
- ❶ Edgar Street will be extended through to Mayne Road.

The 'Bowen Hills UDA Masterplan' states that the Edgar Street extension should function as a shared-use pavement which for cars provides access to adjacent sites. It is recommended that this link should have a streetscape sympathetic to pedestrians with car use restricted to access to adjacent car parks. It is considered that the speed limit on the link could be limited to 30kph in order to reduce the risk of speeding and allow pedestrians and cyclists to enjoy equal priority with other road users.

The Edgar Street extension through to Mayne Road is considered critical to provide access to the subject site.

The applicant has dedicated land to facilitate the extension through to Mayne Road. The land dedication is based on a concept plan provided by BCC and has been confirmed by the ULDA.

2.3 Public Transport and Other Road Users

Bowen Hills Train Station is located approximately 200m to the north of the site. Services operate every 20-30 minutes (approximately) in all directions. As illustrated in Table 2.3 below the station provides both direct and connecting rail services to Brisbane and the wider South East Queensland (SEQ) region.

Table 2.3: Rail Services

Route	Frequency (Monday to Friday)
AIRP (Varsity Lakes to Brisbane International Airport)	38 daily
BEEN (City to Beenleigh)	54 daily
CABL (City to Caboolture)	56 daily
CLEV (City to Cleveland)	50 daily
DMBN (City to Doomben - Pinkenba - Myrtletown)	33 daily
FERN (City to Ferny Grove)	56 daily
IPSW (City to Ipswich/Rosewood)	68 daily
SHOR (City to Shorncliffe)	43 daily
NAMB (City to Nambour) *	30 daily

* Includes Railbus Service no. 649 (Caboolture to Nambour)

Inspection of timetabling information indicates that Translink services no. 301 (Cultural Centre to Toombul) and 320 (Edward Street to Chermside) operate on Abbotsford Road whilst service no. 393 (Teneriffe Ferry Terminal to Normanby Station) operates on Hamilton Place. A summary of the timetabling information for the bus services is provided in the tables below.

Table 2.4: Timetabling Information for Service No. 301

Day	Cultural Centre to Toombul			Toombul to Cultural Centre		
	First	Last	Frequency	First	Last	Frequency
☛ Monday to Friday	06:40	22:42	29	05:55	22:25	29
☛ Saturdays	07:37	22:42	20	07:30	22:25	19
☛ Sundays & Public Holidays	08:47	19:42	9	08:30	19:25	9

Table 2.5: Timetabling Information for Service No. 320

Day	Edward Street to Chermside			Chermside to Edward Street		
	First	Last	Frequency	First	Last	Frequency
Monday to Friday	06:30	21:35	32	05:17	19:55	32
Saturdays	08:25	17:45	8	07:45	17:05	8
Sundays & Public Holidays	10:35	17:15	6	09:55	16:35	6

Table 2.6: Timetabling Information for Service No. 393

Day	Teneriffe Ferry to Normanby Hotel			Normanby Hotel to Teneriffe Ferry		
	First	Last	Frequency	First	Last	Frequency
Monday to Friday	06:27	17:36	42	06:49	18:06	42

The formal bus stops situated on both Abbotsford Road and Hamilton Place are within a 5 minute (400m) walk of the subject site.

It is therefore considered that the subject site enjoys a high level of connectivity to the public transport network with Bowen Hills train station and bus stops within a convenient walking distance.

The subject site is reasonably well served in terms of pedestrian facilities with footpath provision provided on both sides of Campbell Street and Mayne Street. Formal pedestrian crossing facilities are provided at adjacent signal controlled intersections.

3. The Proposed Development

3.1 Development Description

The schedule of accommodation of the proposed scheme is shown in Table 2.1 below.

Table 2.1: Proposed Development Schedule

Type	Number / GFA (m ²)
Residential: Studio	1
One Bedroom	155
Two Bedroom	86
Total	242 units
Retail	520m ²

The development plans are included in Appendix A.

3.2 Car Parking

The development plan also includes 180 parking spaces distributed over 5 levels plus 7 motorcycle spaces and 1 carwash space.

The development plan also includes 100 bicycle spaces.

All parking provided is intended for the residential component, with no parking allocation for the retail component.

3.3 Access Arrangements

Vehicular access/egress will be achieved via a driveway located on the Edgar Street (through to Mayne Street) extension. It is proposed that the Edgar Street extension will be one-way running from Hazlemount Street to Mayne Road.

In terms of the gradients on the Edgar Street extension it is proposed that the section directly adjacent to the driveway will be level whilst a gradient of 1:13 will be provided on the western section ramping up from Mayne Road and a gradient of 1:15 will be provided on the eastern section ramping up to Hazlemount Street. It is considered that the detail design of the Edgar Street extension will need to be coordinated between the applicants developing the parcels on either side the extension with input from the ULDA. It is considered that the detailed design of the Edgar Street extension will have to satisfy urban design and traffic objectives.

The concept plan showing the Edgar Street extension is included in Appendix B.

3.4 Development Timing

Depending on the progress of the development application it is anticipated that the development will be complete by 2013.

4. Car Parking Arrangements

4.1 ULDA Requirement for Car Parking

Residential

The 'Bowen Hills Urban Development Area Development Scheme' stipulates that on average 1 no. car parking space (inclusive of visitor car parking) is provided per dwelling. Based on this requirement 242 no. car parking spaces are necessitated to serve the residential component of the proposed development.

The total proposed on-site parking supply for the development is 180 spaces plus 7 motorcycle spaces.

The proposed parking supply rate is based on constraining the commuter traffic generated by the proposed development, which is consistent with Transport-Orientated-Development (TOD) principles. The UDA Development Criteria states:

"In support of TOD principles priority should be given to pedestrian, cycle and public transport modes, over private vehicle use".

As mentioned previously, the site enjoys a high level of connectivity to the public transport network, therefore it is considered appropriate in terms of travel demand management strategies to reduce the overall parking supply and encourage residents to use alternative modes of transport.

It is noted that the ULDA recently approved a similar residential development on Jeays Street (named CODE) with a parking rate of less than one space per unit (0.84 spaces per unit).

TTM consider the Brisbane City Council rate for CBD residential development appropriate for TOD sites such as Bowen Hills. The BCC rate is 0.5 spaces per bedroom plus 1 space per 20 units for visitors. The parking requirement based on the BCC CBD rates is shown in Table 4.1.

Table 4.1: Parking Provision – BCC CBD Rates

Unit Type	Parking Rate	No. of Parking Spaces Required
1 x studio	0.5 spaces per unit	1
150 x one bedroom units	0.5 spaces per unit	75
84 x two bedroom units	1.0 spaces per unit	84
4 x three bedroom units	1.5 spaces per unit	6
Visitors: 239 units	1.0 spaces per 20 no. units	12
Total		178

The proposed parking supply of 180 parking spaces plus 7 motorcycle spaces is therefore considered acceptable on the basis of travel demand management principles required to encourage residents to use public transport or walk/cycle as opposed to travelling by private vehicle.

It is proposed that 13 visitor spaces will be located at the ground level parking area.

Retail

The car park ratio applicable to retail development in Precinct 1 is a maximum of 1 space per 200m² of GFA.

The development plan does not provide any spaces for the retail component, which satisfies the 'maximum' criteria specified by the development criteria.

4.2 Proposed Car Park Design

'AS2890.1:2001' is adopted as a reference for car park design. The key design parameters in accordance with 'AS 2890.1' are set out in Table 4.2 below.

Table 4.2: Car Park Design Criteria

Criteria	Minimum Required	Proposed	Comply (Yes or No)
Parking Spaces	2.4m x 5.4m	2.4m x 5.4m	Yes
Small Car Spaces	2.3m x 5.0m	2.3m x 5.4m	Yes
Motorcycle Spaces	1.2m x 2.5m	1.2m x 2.5m	Yes
Parking Aisle	5.8m	6.2m	Yes
Circulation Road	5.5m	Varies	Yes
Ramp Grades	1:4 (up to 20m)/1:5 (over 20m)	Varies between 1:5 and 1:10	Yes

Taking cognisance of Table 4.2 it is evident that the proposal accords with Australian Standards.

Whilst the design of the car parking facility complies with the design criteria set out in 'AS 2890.1' it is considered that minor modifications are required to the layout at the detailed design stage to address operational issues. For example, it is considered that at some locations the introduction of small car spaces may be more desirable in terms of vehicle manoeuvrability. Inspection of the development plans included in Appendix A confirms that 12 spaces (or 7% of the total car park capacity) have been allocated as small car spaces. 'TAPS Policy' suggests that in fully reserved car parking areas, up to 20% of the spaces provided may be small. As such it is considered that the allocation of a number of additional spaces for small cars in the car park will still ensure that the proposal adheres to BCC's requirements.

5. Road Network Performance

5.1 Traffic Generation & Distribution

The proposed development is expected to generate approximately 50vph during the weekday AM and PM peak-hour periods based on a trip generation rate of 0.25vph, which is typical for high density residential accommodation in close proximity to the CBD with constrained parking. On distribution of the development traffic to the road network (Campbell Street, O'Connell Terrace, Markwell Street, Brooke Street, Hamilton Place, St Pauls Terrace) the impact will be negligible, thus not warranting a traffic impact assessment.

5.2 Road Network Performance

A majority of the proposed road improvement works summarised in Table 2.1 in the area has been devised to accommodate the traffic demands for development across the entire Bowen Hills UDA.

6. Site Access Arrangements

6.1 Access Design & Location

Vehicular access/egress will be achieved via a driveway located on the Edgar Street (through to Mayne Street) extension.

In accordance with 'AS 2890.1' a Category 2 driveway is required to facilitate vehicular access to the car park facility and service vehicle area. A Category 2 driveway requires a total width between 6.0m-9.0m. The proposed width of the driveway is 7.0m and as such this requirement is satisfied.

Swept path analysis has demonstrated that the required vehicle manoeuvres, (MRV's in this instance), can be accommodated at the driveway.

7. Service Vehicle Arrangements

7.1 Service Vehicle Bays

The service vehicle facility needs to accommodate the demands generated by the retail and residential components of the development. As illustrated on the development plans included in Appendix A it is proposed that 2 MRV spaces and a van space will be provided to facilitate the servicing of the development.

Retail

Brisbane City Council 'TAPS Policy' is the best guide to determine the number service vehicle bays required. The 'TAPS Policy' requires the following:

- 1 x Van; &
- 1 x MRV.

Residential

A significant proportion of the units within the development are classified as 'small' (i.e. <75m²) and are targeted at the investor market, which relates to a high proportion of rental units. Whilst this may relate to a higher turn-over of tenants, these tenants typically have less furniture to move in/out of the unit, therefore utes and vans are typically used as opposed to the large trucks in order to minimise cost.

It is possible to manage the furniture trucks in a manner that controls the size of the vehicle accessing the site and also time at which the residents move in/out of the development. The building manager allocates a specific time period to the tenants to lock off a lift and use one of the service vehicle bays. On this basis, it is TTM's view that an MRV is the appropriate design vehicle for the furniture truck.

It is considered that the provision of 2 MRV spaces and 1 van space is sufficient to ensure the adequate servicing of the residential and retail components.

7.2 Vehicle Manoeuvrability

As shown in Figures 7.1 and 7.2 all service vehicles can enter and exit the site in a forward motion. It is noted that service vehicles will be required to reverse into the bays at the bottom of the ramp within the path of traffic entering the basement car park, however the potential for conflict is considered minimal given the tidal flow of traffic and the infrequency of service vehicles. The inbound traffic flow will typically peak after 5pm on weekdays, after servicing is finished, thus avoiding any significant conflict.

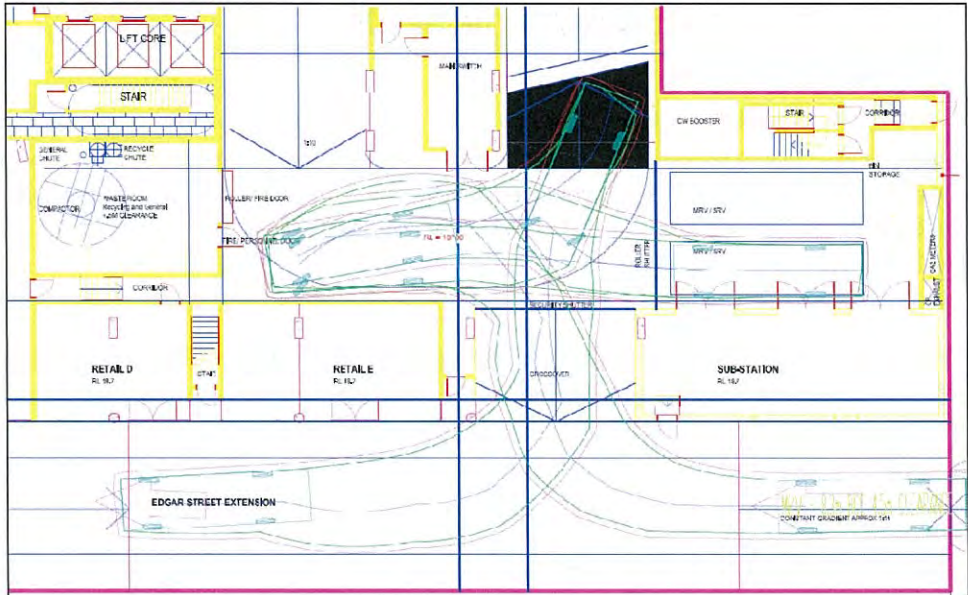


Figure 7.1: MRV Swept Path for Service Bay 1

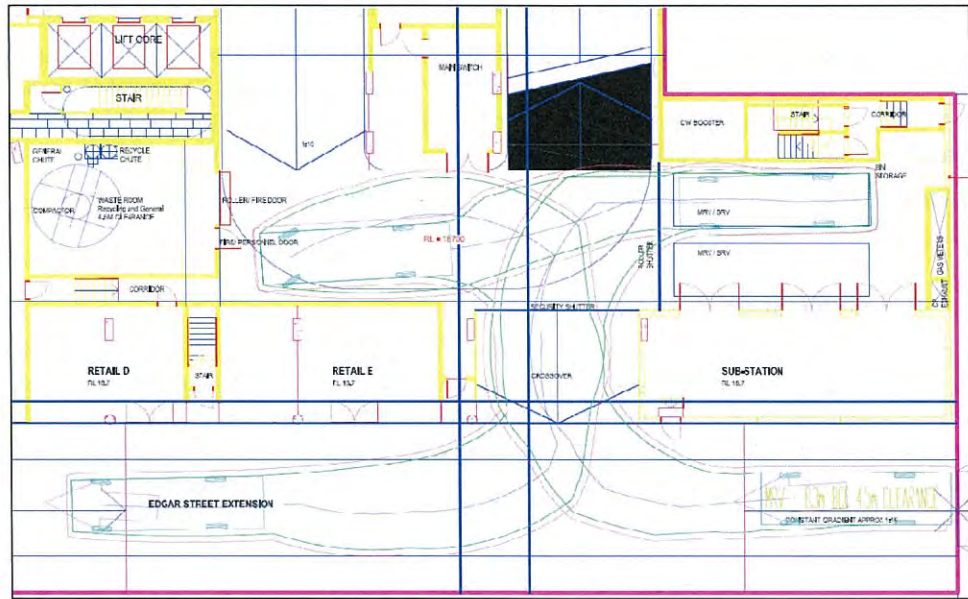


Figure 7.2: MRV Swept Path for Service Bay 2

8. Public Transport & Other Road Users

8.1 Public Transport

As intimated previously the subject site enjoys a high level of connectivity to the public transport network.

It has been demonstrated that the proposed development accords with Translink's requirements whereby public transport can be accessed within a 5 minute (400m) walk of the site.

As part of 'Bowen Hills Urban Development Area Development Scheme' it is anticipated that the Bowen Hills train station will be upgraded to improve safety, visual and physical access from Hudd Street.

In addition a new busway station linking to the train station is proposed as part of the Urban Development Area.

With all of these infrastructure upgrade works public transport services will be able to cater for the needs of the residents.

8.2 Other Road Users

It is proposed that the Edgar Street extension will have a streetscape sympathetic to pedestrians with car use restricted to access to adjacent car parks. It is considered that the speed limit on the link could be limited to 30kph in order to reduce the risk of speeding and allow pedestrians and cyclists to enjoy equal priority with other road users.

The UDA development criteria specifies bicycle parking requirements for residential development, which are as follows:

- Residents: One secure bicycle space per unit; &
- Visitors: One space per 400m² of GFA.

It is intimated in the 'Bowen Hills Urban Development Area Development Scheme' that the bicycle parking requirements are based on that set out in 'AS2890.3, Parking Facilities, Part 3 Bicycle Parking Facilities'. Inspection of this document has confirmed that it does not specify parking rates for bicycles.

The generally accepted guide for determining bicycle facilities is 'AustRoads Part 14-Bicycles'. Table 9.1 summarises the AustRoads bicycle parking requirement.

Table 8.1: Bicycle Parking Provided as per AustRoads

Land Use	Category	Parking Requirements	No. of Spaces Required
Residential	Tenants	1.0 space per 4 units	61
	Visitor	1.0 space per 16 units	15
Retail	Visitor	10.0 spaces minimum	10
Total			86

As shown in Table 8.1 above the proposed cycle parking provision satisfies the minimum requirements set out by Austroads.

It is acknowledged that it is imperative that the provision of bicycle spaces be maximised for the proposed development, particularly given the parking supply for cars is less than one (1) spaces per unit.

To minimise the space utilised by the bicycle storage facility, and subsequently improve the efficiency of the building, a bicycle rack system utilising double height storage is proposed.

9. Recommendations

9.1 Impact on Surrounding Road Network

It is concluded that the traffic generated by the proposed development will have a negligible impact upon the adjacent road network, and as such, TTM do not consider that a detailed impact analysis is necessary.

9.2 Development Access

Vehicular access/egress will be achieved via a driveway located on the Edgar Street extension.

In terms of the gradients on the Edgar Street extension it is proposed that the section directly adjacent to the driveway will be level whilst a gradient of 1:13 will be provided on the western section ramping up from Mayne Road and a gradient will be provided on the eastern section ramping up to Hazlemount Street. It is considered that the detail design of the Edgar Street extension will need to be coordinated between the applicants developing the parcels on either side the extension with input from the ULDA. It is considered that the detailed design of the Edgar Street extension will have to satisfy urban design and traffic objectives.

In accordance with 'AS 2890.1' a Category 2 driveway is required to facilitate vehicular access to the car park facility and service vehicle area. A Category 2 driveway requires a total width between 6.0m-9.0m. The proposed width of the driveway is 7.0m and as such this requirement is satisfied.

Swept path analysis has demonstrated that the required vehicle manoeuvres, (MRV's in this instance), can be accommodated at the driveway.

9.3 Car Parking Arrangements

The proposal includes 180 parking spaces distributed over 5 levels plus 1 carwash space.

All parking provided is intended for the residential component, with no parking allocation for the retail component.

The proposed parking supply is based on constraining the commuter traffic generated by the subject site and is consistent with TOD principles.

9.4 Service Vehicle Arrangements

The proposed service vehicle facilities are considered acceptable to service the demands for both the retail and the residential components of the development.

9.5 Public Transport and Other Road Users

The site is well located in terms of providing a high level of accessibility to public transport, with the Bowen Hills Train Station and RBWH Busway station within walking distance of the site. This reinforces the proposal to constrain resident car parking and encourage residents to use public transport.

The bicycle facilities provided on-site are well in excess of the minimum requirements of the Austroads Part 14, which is considered appropriate based on the constrained car park supply and the need to encourage residents to use alternative modes of transport.