TRAFFIC IMPACT ASSESSMENT (TIA)

Proposed Mixed Use Development
1105-1107 Barrenjoey Road, Palm Beach

Reference: 18.190r01v02
Date: August 2022

TRAFFIX
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DOCUMENT VERIFICATION

Job Number	18.190			
Project	1105-1107 Barrenjoey Road, Palm Beach			
Client	Macarthur Projects			
Revision	Date	Prepared By	Checked By	Signed
v02	29/08/2022	Shenara Wanigasekera	Vince Doan	

CONTENTS

1. INTRODUCTION

TRAFFIX has been commissioned by Macarthur Projects to undertake a traffic impact assessment (TIA) in support of a development application (DA) relating to mixed-use development at 1105-1107 Barrenjoey Road, Palm Beach, comprising of 120m^2 commercial gross lettable area (GLA), 330m^2 retail GLA and eight (8) residential units. The development is located within the Northern Beaches Council local government area 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 minor development and does not require referral to TfNSW 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 subject site is located at 1105-1107 Barrenjoey Road and is legally identified as Lot 3 and SP87024. It is located on the western side of Barrenjoey Road, at the intersection of Iluka Road and Barrenjoey Road. It is located approximately 570 metres west of Palm Beach and approximately 8.4 kilometres north of Mona Vale Town Centre.

The site has a total site area of 1,366.5m^2 and consists of a two-story mixed-use development comprising of ground floor commercial area and holiday/residential accommodation. It has an eastern frontage of approximately 39 metres to Barrenjoey Road and is bounded to the north and west by Iluka Road for approximately 26 metres and 45 metres respectively. It is bound to the south by holiday accommodation for approximately 43 metres.

Vehicular access to the site is currently provided via three access driveways along the northern and western boundary of the site from Iluka Road.

A Location Plan is presented in **Figure 1**, with a Site Plan presented in **Figure 2**.

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:

- Barrenjoey Road: part of an TfNSW Main Road (MR 164) that generally traverses north-south between Beach Road in the north and Pittwater Road in the south. In the vicinity of the site, Barrenjoey Road accommodates a single lane of traffic in each direction within an undivided carriageway and is subject to 50km/h speed zoning in the vicinity of the site. Kerbside parking is generally permitted along either side of Barrenjoey Road, subject to restriction. Additionally, angled parking is available opposite the subject site, subject to restrictions.
- Iluka Road: a local road that generally traverses north-south in a loop from Barrenjoey Road in the north to Barrenjoey Road in the south. Iluka Road accommodates two-way flow of traffic within an undivided carriageway and is subject to 50km/h speed zoning. In the vicinity of the site, a combination of restricted and unrestricted kerbside parking is permitted along either side of Iluka Road.

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. Barrenjoey Road is the main road to access the Palm Beach suburb.

Figure 3: Road Hierarchy

3.2 Public Transport

3.2.1 Bus Services

The existing public transport services that operate in the locality are presented in **Figure 4** and are summarised as follows :

- 190X – Palm Beach to City Wynyard (Express Service)
- 199 – Palm Beach to Manly

3.2.2 Ferry Services

The site is located approximately within 400 metres Palm Beach Wharf. These private ferry services are also presented in Figure 4 and are summarised as follows:

- PLMB – Palm Beach to Palm Beach (loop) Service
- WAGE – Palm Beach to Ettalong Service

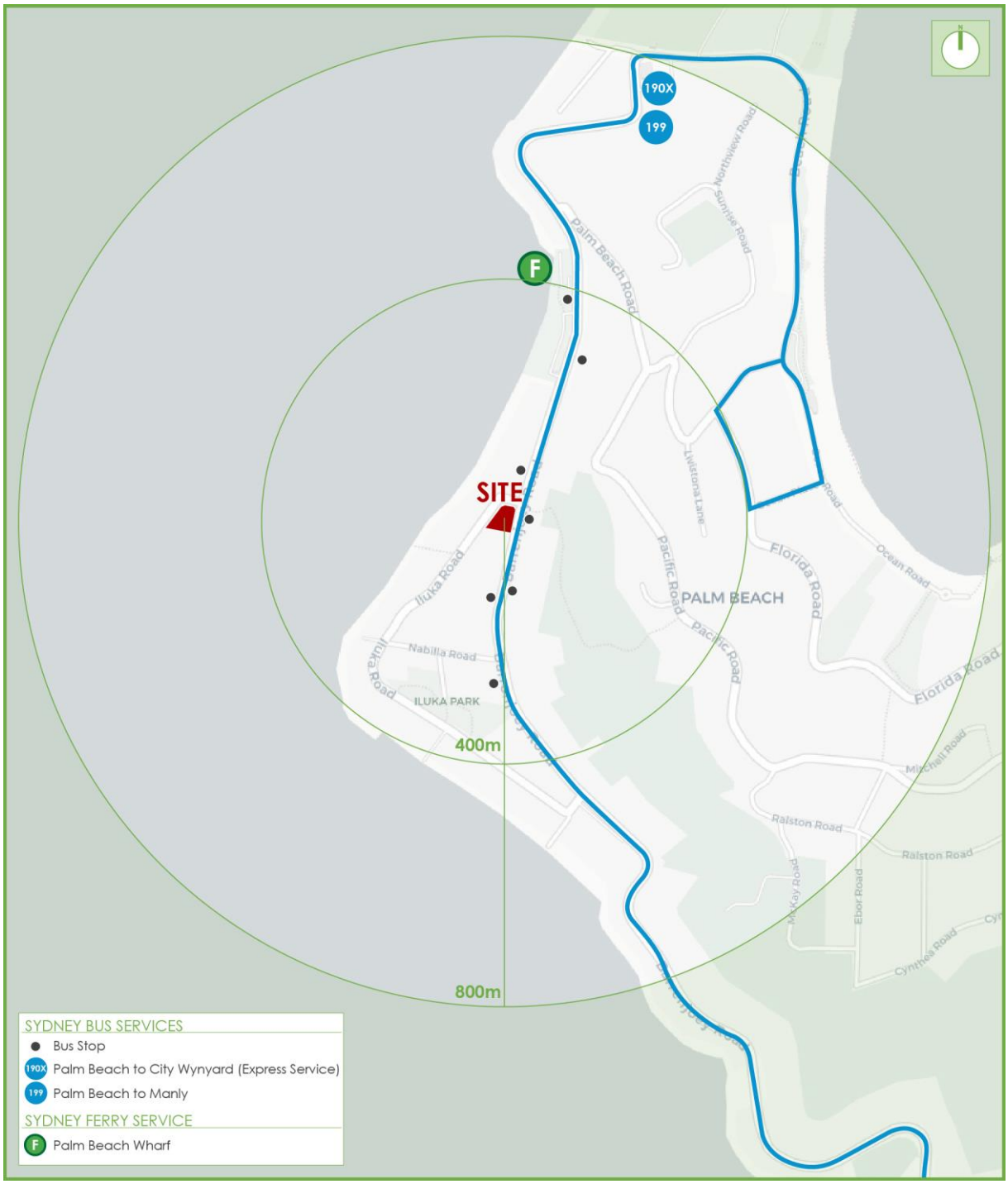

Figure 4: Public Transport

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 is a 3-storey mixed-use development comprising of the following components:

- 8 x three-bedroom residential apartments;
- A total of 120m^2 GLA of commercial area ;
- A total of 330m^2 GLA of ground floor retail; and
- A basement level providing parking for 33 vehicles.

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

5. PARKING REQUIREMENTS

5.1 Car Parking

The Pittwater 21 Development Control Plan (DCP), Part B6.3 – Off-Street Vehicle Parking Requirements, requires car parking for mixed-use developments to be determined at the minimum rate shown in **Table 1**:

Table 1: Car Parking Rates and Provision

Type	Area / Units	Minimum Parking Rate	Minimum Spaces Required	Spaces Provided
Commercial (Business Premises)				
Commercial Premises	120m²	2.5 spaces per 100m² GLA	3	3
		Subtotal	**3**	**3**
Residential				
3 Bed	8	2 spaces per dwelling	16	16
Visitor		1 space per 3 units[2]	2.7 (3)	3
		Subtotal	**19**	**19**
Retail				
Retail Premises	330m²	1 space per 30m² GLA	11	11
		Subtotal	**11**	**11**
		Total	**33**	**33**

[1]Parking rate for Residential Flat Buildings adopted from DCP for serviced apartments

[2]Visitor Parking rounded up to nearest whole number in accordance with DCP

It is evident from **Table 1** that the proposed development requires a minimum total of 33 spaces under Council's DCP.

In response, the development provides a total of 33 spaces comprising of three (3) spaces for the commercial uses, 19 spaces for residential apartments and 11 retail parking spaces.

It is noted that there are a total of four (4) tandem spaces provided within the basement. All tandem spaces are allocated for residential uses and are to be allocated to the same dwelling. Therefore, this arrangement is considered acceptable.

Accordingly, the proposed car parking provision satisfies the requirements of Council's DCP and is considered acceptable.

5.2 Accessible Parking

Part B6.3 of Council's DCP, requires accessible parking for mixed-use developments to be determined at the minimum rate shown in **Table 2**:

Table 2: Accessible Parking Rates and Provision

Type	Area / Parking Spaces	Minimum Parking Rate	Minimum Spaces Required	Spaces Provided
Commercial (Business Premises)	3	3% of required car parking spaces.	0.09 (0)	0
Residential	19 spaces	3% of required parking space excluding adaptable units	0.57 (1)	2
Retail	11	3% of required parking space or 1 space, whichever is greater	1	1
Total			**2**	**3**

It is evident from **Table 2** that the proposed development requires a minimum total of two (2) accessible parking spaces under Council's DCP. In response, the development provides a total of three (3) accessible spaces, including two (2) for the residential component and a single accessible space for the retail component. Accordingly, the proposed accessible parking provision exceeds (superior to) the requirements of Council's DCP and is considered acceptable. Reference should also be made to the Access Assessment Report, prepared by Building Control Group.

5.3 Bicycle Parking

The Pittwater 21 Development Control Plan (DCP) 2019, Part B6.3 – Off-Street Vehicle Parking Requirements under Northern Beaches Council, requires bicycle parking for mixed use developments to be determined at the minimum rate shown in **Table 3**:

Table 3: Bicycle Parking Rates and Provision

Type	Units / GFA	Minimum Parking Rate	Minimum Spaces Required
Commercial Premises	120m²	1 bicycle rack per 1000m² GFA, or a minimum of 4 bicycle racks, whichever is greater	4
Residential	8	1 bicycle rack per 3 units	2.7 (3)
Retail Premises	330m²	1 bicycle rack per 1000m² GFA, or a minimum of 4 bicycle racks, whichever is greater	4
		Total	**11**

Accordingly, the bicycle parking required under the DCP is a total of 11 spaces including four (4) spaces allocated for commercial uses, four (4) spaces allocated for retail uses and three (3) spaces allocated for residential uses of the site.

In response, the development provides a total of eight (8) spaces in the form of bicycle racks within the basement level and eight (8) storage units for residents which is able to accommodate bicycle storage, if needed. Therefore, the development provides sufficient bicycle parking.

5.4 Motorcycle Parking

Council's DCP requires that for business developments comprising of 200m² GFA or more, provision is to be made for motorcycle parking at a rate of 1 motorcycle parking space per 100 motor vehicle spaces. As the proposed development provides 14 car parking spaces for the commercial and retail component, there is no requirement for motorcycle parking for the commercial and retail component.

The DCP does not specify a motorcycle parking rate for residential or retail uses. Therefore, the development is not required to provide any motorcycle parking for these uses.

Accordingly, no motorcycle parking spaces are proposed within the development which is compliant with the DCP requirements.

5.5 Refuse Collection and Servicing

The development proposes to undertake all servicing and refuse collection via existing on-street arrangements at the kerbside. Given that refuse collection and servicing demands are relatively infrequent and will occur outside of peak periods in the morning and/or night, this arrangement is considered appropriate.

6. TRAFFIC AND TRANSPORT IMPACTS

6.1 Existing Site Generation

The subject site currently accommodates ground floor retail use and three shop top dwellings. The proposed development seeks to maintain ground floor retail use along frontage of the site. Therefore, there is expected to be no net change in traffic generation in relation to retail uses. In relation to the existing shop top dwellings, the traffic generation is summarised below:

The TfNSW Guideline to Traffic Generating Developments 2002 (GTTGD), provides trip generation rates for medium density residential flat buildings, specifically town house developments. The GTTGD recommends an average Sydney weekday peak hour trip rate of 0.4-0.5 vehicles per dwelling. The lower traffic generation rate of 0.4 vehicle trips per hour has been adopted for the existing development. Application of this trip rate to the three (3) existing dwellings and adopting an 80:20 split, results in the following predicted trip generation:

- 1 vehicle trips per hour in the morning peak period (0 in, 1 out).
- 1 vehicle trips per hour in the evening peak period (1 in, 0 out).

6.2 Development Trip Generation

The impacts of the proposed development on the external road network have been assessed having regard for the yield scenarios as summarised in **Section 4** above. This assessment has been undertaken in accordance with the requirements of the GTTGD and as such, the traffic generation rates published in the TfNSW Guide have been adopted for each individual land use. The result of this assessment is summarised below.

6.2.1 Residential

The above traffic generation rates for medium density residential flat buildings were adopted for the residential component of the development. Application of this trip rate to the proposed eight (8) dwellings and adopting an 80:20 split, results in the following predicted trip generation:

- 4 vehicle trips per hour in the morning peak period (1 in, 3 out).
- 4 vehicle trips per hour in the evening peak period (3 in, 1 out).

6.2.2 Commercial

The Technical Direction TDT 2013/04a provides updated traffic generation rates based on surveys for office block (commercial) developments. The TDT 2013/04a recommends a morning traffic generation rate of 1.6 trips per 100m^2 GFA and an evening traffic generation rate of 1.2 trips per 100m^2 GFA. Application of this rate to the proposed 120m^2 GLA (assuming that the GLA is approximately 75% of the GFA resulting in 160m^2 GFA) and adopting an 80:20 split, results in the following traffic generation.

- 3 vehicle trips per hour in the morning peak period (2 in, 1 out).
- 2 vehicle trips per hour in the evening peak period (0 in, 2 out).

6.2.3 Combined Traffic Generation

The combined traffic generation of the residential and commercial components can be summarised as follows:

- 7 vehicle trips per hour in the morning peak period (3 in, 4 out).
- 6 vehicle trips per hour in the evening peak period (3 in, 3 out).

6.2.4 Net Traffic Generation

It is reiterated that the ground floor retail area of the proposed development is comparable to the existing ground floor retail area of the site and therefore will not contribute to any net addition in traffic generation.

The net traffic generation of the proposed residential and serviced apartment components of the development with respect to the existing development can be summarised as follows:

- 6 vehicle trips per hour in the morning peak period (3 in, 3 out).
- 5 vehicle trips per hour in the evening peak period (2 in, 3 out).

6.3 Traffic Impacts

The morning and evening peak hour scenarios of an additional 5-6 vehicles per hour is comparable to an additional vehicle every 10-12 minutes. This volume of additional traffic is minor and is expected to be readily accommodated within the surrounding road network.

As such, the development is considered supportable from a traffic planning perspective with no external improvements to the network required.

7. ACCESS AND INTERNAL DESIGN ASPECTS

7.1 Site Vehicular Access

7.1.1 Access

The development proposes a total of 33 parking spaces with access to Iluka Road, a local access road. It is noted that the large majority of car parking spaces within the basement are User Class 1A and therefore require a Category 1 driveway under AS2890.1 (2004), being a combined entry and exit width of 3.0 to 5.5 metres. In response, a 6.6 metre access has been provided at the property boundary, narrowing to 3.4 metres wide on the ramp to the basement.

7.1.2 Traffic Signal System

A signal system has been provided with on-site waiting bays, this provision shall ensure the safe operation of the 3.4m wide ramp. The traffic signal system will operate with a passive green light for all vehicles entering with vehicles required to stop within the allocated waiting bay at the top of the ramp in the event of an exiting vehicle within the basement. Waiting bays are also provided within the basement level with all exiting vehicles be required to position themselves at a waiting bay until the system provides a green light. It is noted that six (6) retail spaces are required to wait within their car parking spaces for a green light. The specification so the traffic signals and timing will be designed by a traffic signal consultant at CC stage.

A swept path analysis has been conducted of the largest design vehicle to access the basement. This analysis shows satisfactory movements and is presented in **Appendix B**.

7.2 Internal Design

The internal basement car park complies with the requirements of AS 2890.1 (2004) and AS 2890.6 (2009), and the following characteristics are noteworthy:

7.2.1 Parking Modules

- All residential and commercial car parking spaces have been designed in accordance with User Class 1A being for residential parking. These spaces are provided with a minimum space length of 5.4m, a minimum width of 2.4m and a minimum aisle width of 5.8m.
- All retail car parking spaces have been designed in accordance with User Class 3 being for short term parking. These spaces are provided with a minimum space length of 5.4m, a minimum width of 2.6m and a minimum aisle width of 5.8m.
- 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 (2004).
- Three (3) accessible/adoptable parking spaces are proposed within the development. Compliance of these spaces are to be assessed and signed off by the accessibility consultant.

7.2.2 Ramps

- The internal ramp has a maximum gradient of 5% (1 in 20) for the first 6.0m inside the property boundary, in accordance with Section 3.3 (a) of AS 2890.1 (2004).
- The internal ramp has a maximum gradient of 20% (1 in 5) with sag and summit transitions of 12.5% (1:8) respectively. These provisions satisfy the requirements of AS 2890.1 (2004).

7.2.3 Clear Head Heights

- A minimum clear head height of 2.2m is to be provided for all areas within the basement car park as required by AS 2890.1 (2004).
- A minimum clear head height of 2.5m is to be provided above all accessible spaces in accordance with AS 2890.6 (2009).

7.2.4 Other Considerations

- All columns are located outside of the parking space design envelope shown in **Figure 5.2** of AS 2890.1 (2004).

- Visual splay has been provided at the access driveway in accordance with **Figure 3.3** of AS 2890.1 (2004).

7.3 Summary

In summary, the internal configuration of the car park has been designed in accordance with AS 2890.1 (2004) and AS 2890.6 (2009). 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 proposal seeks approval to construct a three-storey mixed use development at 1105 - 1107 Barrenjoey Road, Palm Beach, containing eight (8) residential dwellings, 120m^2 GLA of commercial area and a total of 330m^2 GLA of ground floor retail.
- The subject site is located within walking distance of several bus stops which provide good opportunity to encourage future tenants / visitors to use sustainable transport modes.
- The proposed development provides 33 parking spaces, including 19 residential parking spaces including three (3) visitor parking spaces, three (3) commercial parking spaces and 11 retail parking spaces. This provision complies with the minimum requirements of Council's DCP. As such, all normal parking demands will be readily accommodated on-site.
- The traffic generation arising from the development has been assessed as a net change over existing conditions, and equates to an additional 5-6 vehicle trips per hour during the morning and afternoon peak periods. This is considered a minor increase which is expected to be readily accommodated for within the surrounding road network. As such, no external improvements are required to facilitate the proposed development. The traffic impacts of the development are therefore considered acceptable.
- The basement car park has been assessed to comply with the requirements of AS 2890.1 (2004), and AS 2890.6 (2009), thereby ensuring safe and efficient operation.

This traffic impact assessment therefore demonstrates that the subject application is supportable on traffic planning grounds. TRAFFIX anticipates an ongoing involvement during the development approval process.

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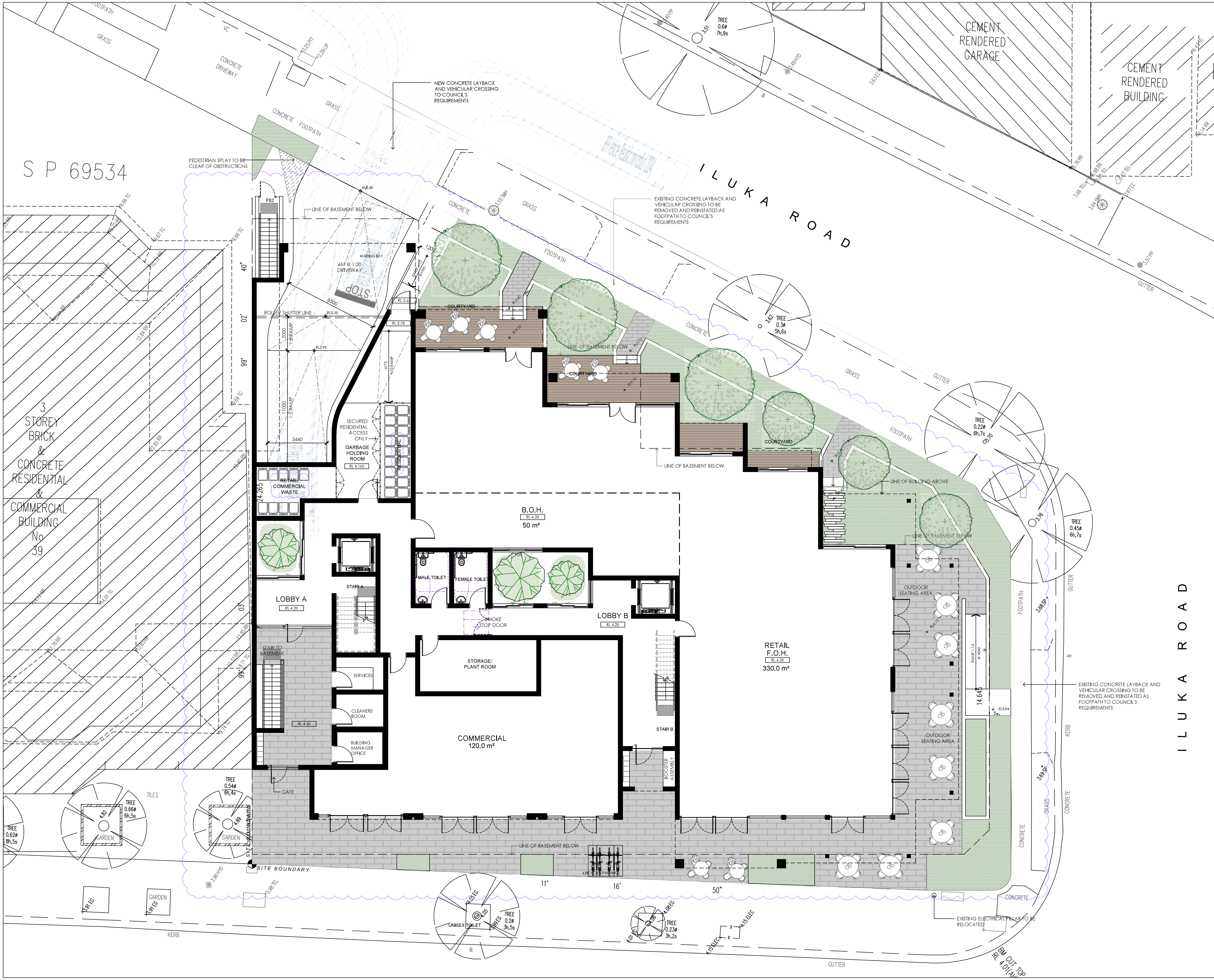
APPENDIX A

Reduced Plans



GENERAL NOTES:

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- AREA SCHEDULES SUPPLIED ARE APPROXIMATE ONLY- FUTURE ALLOWANCE FOR VERTICAL SERVICE DUCTS, STRUCTURAL WALL SYSTEMS AND CONSULTANT INPUT WILL BE REQUIRED

LEGEND:

AW	AWNING
HW	HIGHLIGHT WINDOW
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
MV	MECHANICAL RISER TO FUTURE DETAIL
GC	GARBAGE CHUTE
MB	MAILBOX TO FUTURE DETAIL
OG	OPAQUE GLASS
PB	PLANTERBOX
R	240L RECYCLING BIN
SK	SKYLIGHT
ST	STORAGE
WT	HOT WATER UNITS

MATERIALS LEGEND:

AFG	ALUMINIUM FRAMED GLAZING
AFL	ALUMINIUM ELLIPTICAL FIXED LOUVERS
AW	AWNING TO FUTURE DETAILS
BS	BATTEN SCREEN (TO FUTURE DETAIL)
FB	FACE BRICK
GB	FRAMELESS TOUGHENED GLASS BALUSTRADE (TO BCA/AUSTRALIAN STANDARDS)
MC	METAL CLADDING
MF	METAL FENCING (TO FUTURE SELECTION)
PS	PRIVACY SCREEN (TO FUTURE SELECTION)
PTx	PAINT FINISH TYPEx
RD	ROLLER DOOR
RP	RIVER PEBBLES
RW	RENDERED WALL/SELECTED PAINT FINISH
TC	TIMBER CLADDING

GENERAL AMENDMENT REFER TO SCHEDULE OF AMENDMENT

ISSUE	DATE	DESCRIPTION
B	2022.08.29	REVISED
A	2020.12.18	DA LODGMENT

CLIENT:
MACARTHUR PROJECTS

ARCHITECT:
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P - 02 9698 8140 E - info@pbdarchitects.com.au W - www.pbdarchitects.com.au
Level 2, 52 Albion Street, Surry Hills NSW 2010
Nominated Architect: Paul Buljevic NSW 7768
ABN 36 147 035 550

PROJECT:
PROPOSED SHOPTOP HOUSING
1105-1107 BARRENJOEY ROAD, PALM BEACH

DECEMBER 2017

DRAWING TITLE:
GROUND FLOOR PLAN

DRAWN BY: WT, CN
CHECKED BY: PB
SCALE: 1:100@A1 / 1:200@A3
DRAWING NO: DA101
ISSUE: B
PROJECT NO: 1816

S P 69534

ILUKA ROAD

NEW CONCRETE LAYBACK AND VEHICULAR CROSSING TO COUNCIL'S REQUIREMENTS

EXISTING CONCRETE LAYBACK AND VEHICULAR CROSSING TO BE REMOVED AND REINSTATED AS FOOTPATH TO COUNCIL'S REQUIREMENTS

PEDESTRIAN SPLAY TO BE CLEAR OF OBSTRUCTIONS

SITE BOUNDARY

LINE OF BASEMENT BELOW

NON-TRAFFICABLE ROOF AREA (LEVEL 2)

LEVEL 2 BALCONY BELOW

RL 13.70

NON TRAFFICABLE ROOF AREA

SKYLIGHT

SOLAR PANELS AREA
*REFER TO BASIX REPORT FOR REQUIRED SOLAR PANEL AREA

ROOFTOP SERVICES AREA
LIFT OVERRUN RL 15.00
AIRWELL
HWU
TANKS
ROOF ACCESS HATCH
CARPARK EXHAUST
PROVISION FOR RETAIL KITCHEN EXHAUST
ACOUSTIC METAL SCREEN

INDICATIVE POSITIONING OF FTA ANTENNA AND PTY DISHFINAL SIZE AND LOCATION TO BE ADVISED BY FIBRE

AWNING OVER RETAIL

EXISTING ELECTRICAL PLANT TO BE RELOCATED

3 STOREY BRICK & CONCRETE RESIDENTIAL & COMMERCIAL BUILDING No 39

CEMENT RendERED GARAGE

CEMENT RENDERED BUILDING

TREE 0.6ø 7h,9s

TREE 0.3ø 5h,6s

TREE 0.22ø 6h,7s

TREE 0.45ø 6h,7s

TREE 0.54ø 6h,4s

TREE 0.66ø 6h,5s

TREE 0.62ø 8h,5s

TREE 0.2ø 3h,5s

TREE 0.23ø 3h,2s

UNISEX TOILET

GARDEN

TILES

FOOTPATH

CONCRETE DRIVEWAY

GRASS

CONCRETE

KERB

GUTTER

VC

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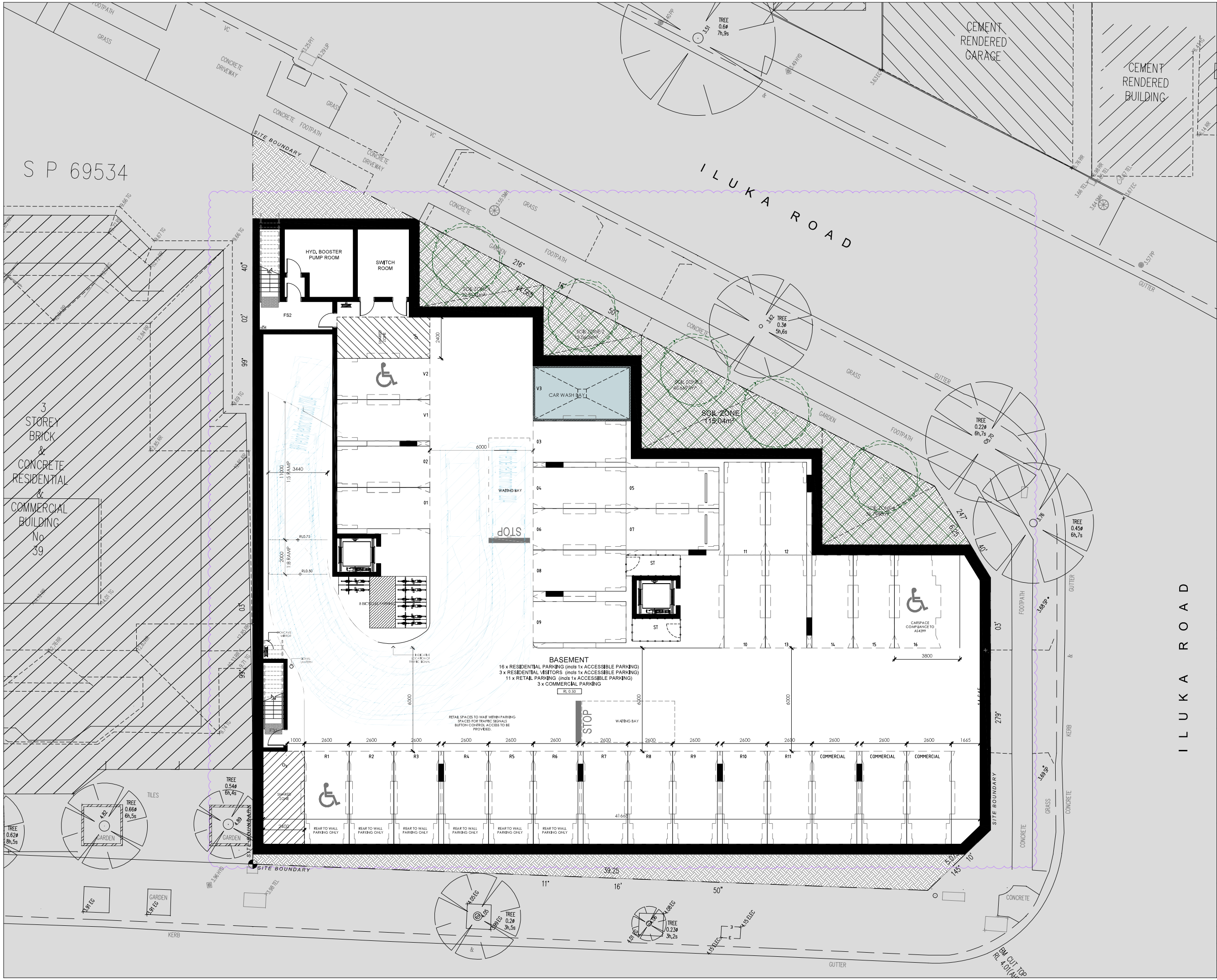

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ARCHITECT:
PBD | ARCHITECTS
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Level 2, 52 Albion Street, Surry Hills NSW 2010
Nominated Architect: Paul Buljevic NSW 7768 ABN 36 147 035 550

PROJECT:
PROPOSED SHOPTOP HOUSING
1105-1107 BARRENJOEY ROAD, PALM BEACH

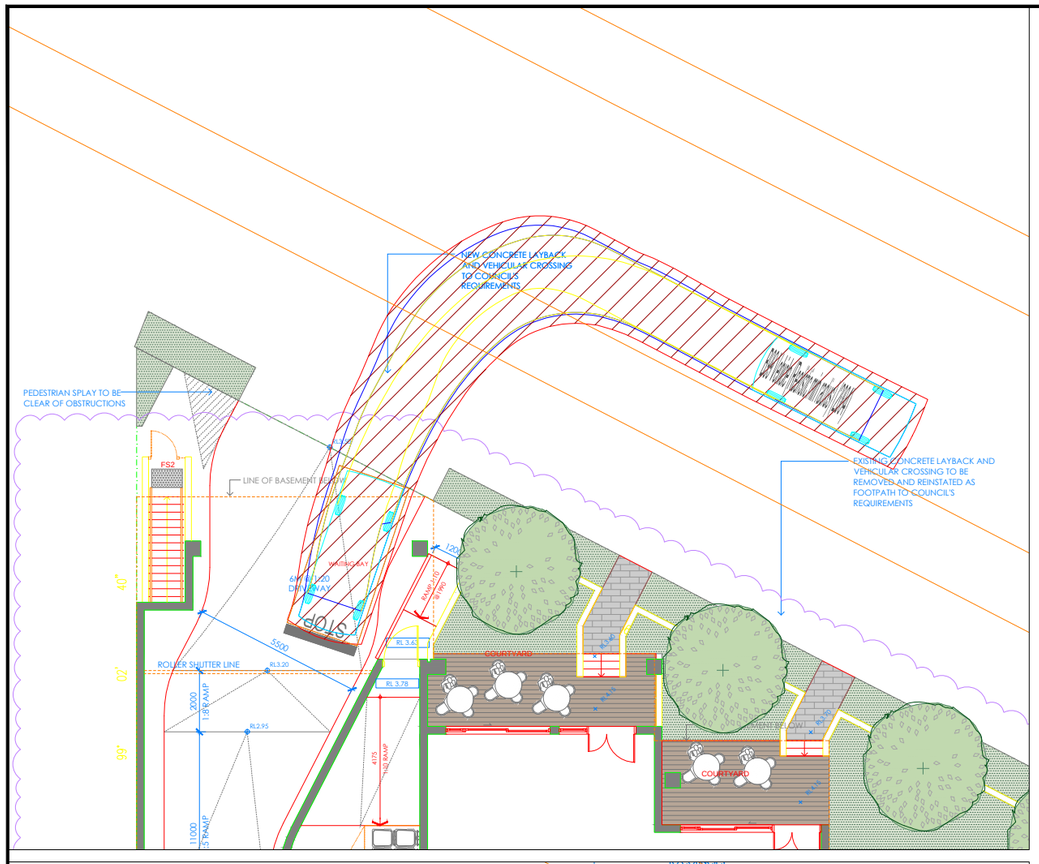
DECEMBER 2017

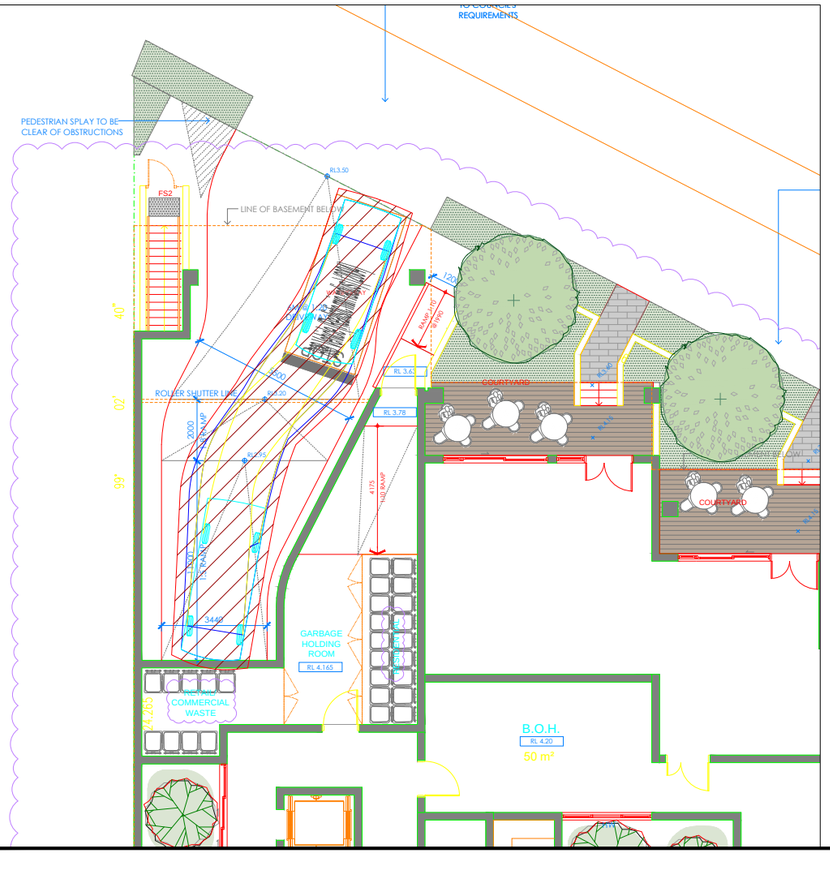
DRAWING TITLE:
BASEMENT PLAN

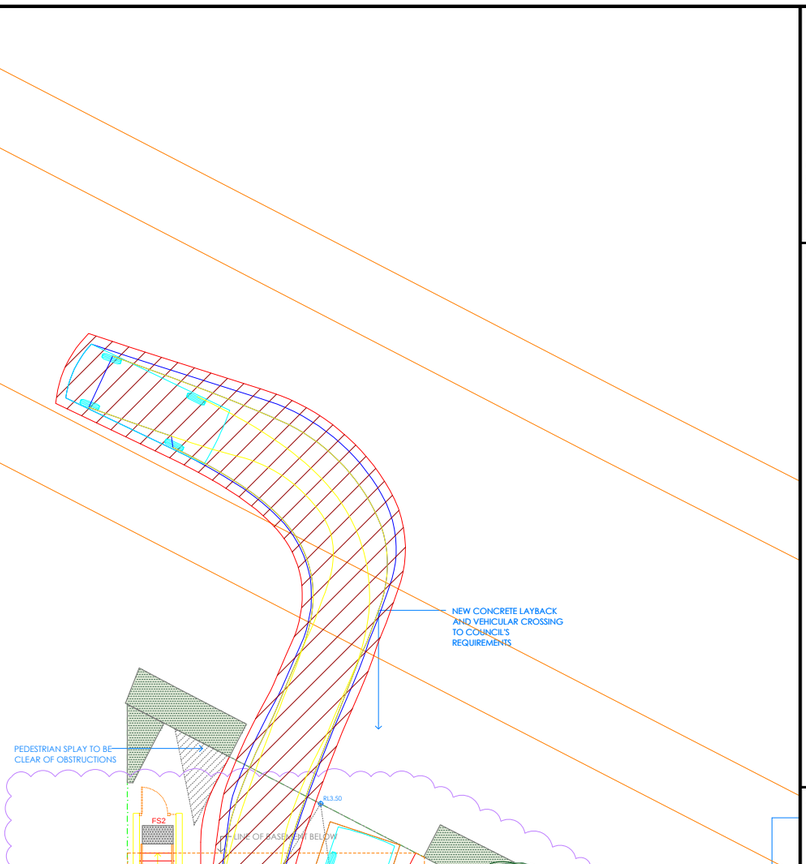
DRAWN BY:	CHECKED BY:	
WT, CN	PB	
SCALE: 1:100@A1 / 1:200@A3	DRAWING NO: DA100	ISSUE: B
PROJECT NO: 1816		

APPENDIX B

Swept Path Analysis







Notes:

This drawing is prepared for information purposes only. It is not to be used for construction.

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 *AS2890.2:2002 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.

Rev.	Revision Note	By.	Date
A	Design Review	SW	08-12-20
B	Design Review	SW	25-08-22

Swept Path Legend

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

Architect
PBD Architects

Client
Macarthur Projects

Scale / Plan Orientation
0 2 4 6 8m
1:200 @ A3

Project Description
1105-1107 Barrenjoey Road,
PALM BEACH NSW 2108

Drawing Prepared By

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TRAFFIC AND TRANSPORT PLANNERS
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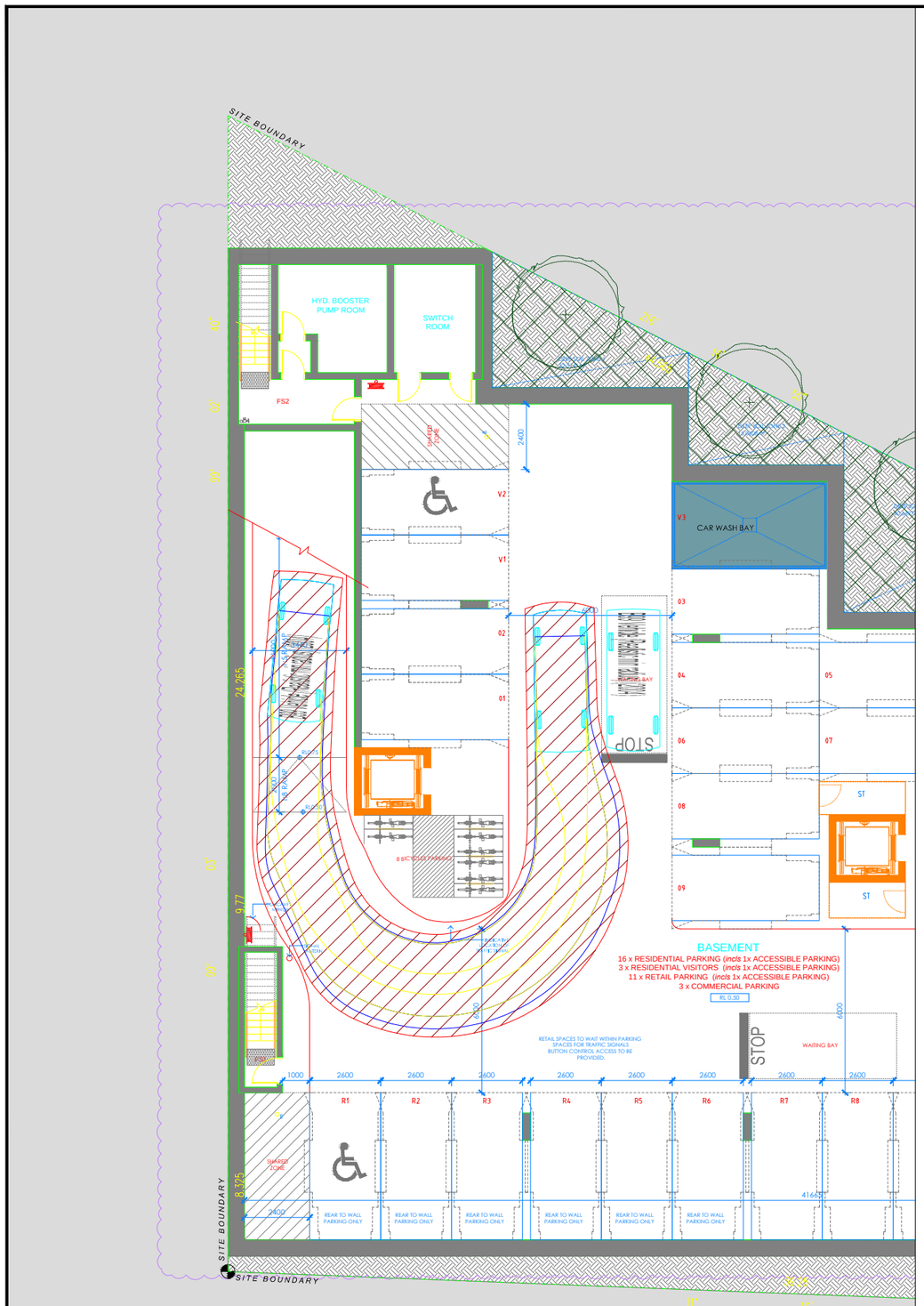
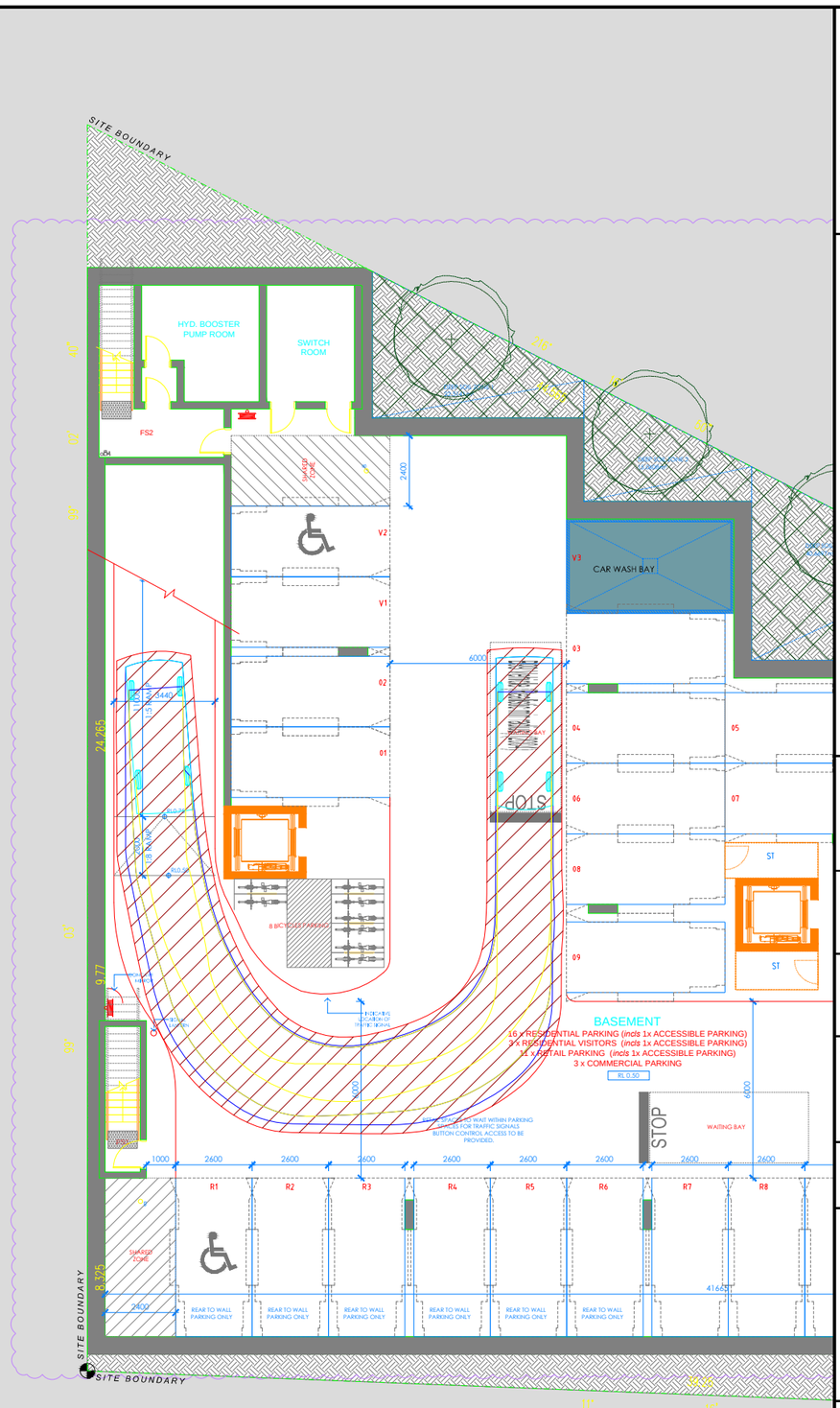
Drawing Title
Swept Path Analysis
B99 Design Vehicle
Ground Floor
Left: Entry Movements Right: Exit Movement

Drawn:	Checked:	Date:
SW	VD	08-12-20

18.190d05v01 TRAFFIX [220819 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
18.190	LEC	TX.01	B





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Swept Path Legend

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

Architect
PBD Architects

Client
Macarthur Projects

Scale / Plan Orientation

0 2 4 6 8m
1:200 @ A3

Project Description
1105-1107 Barrenjoey Road,
PALM BEACH NSW 2108

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Drawing Title
Swept Path Analysis
B99 Design Vehicle
Basement Floor
Left: Entry Movement Right: Exit Movement

Drawn:	Checked:	Date:
SW	VD	08-12-20

18.190d05v01 TRAFFIX [220819 Plans] Design Review.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
18.190	LEC	TX.02	B