

2 DELMAR PARADE DEE WHY
MIXED-USE DEVELOPMENT
DA NOISE ASSESSMENT

**REPORT NO. 19517
VERSION A**

FEBRUARY 2020

PREPARED FOR

LANDMARK GROUP
LEVEL 25, 88 PHILLIP STREET
SYDNEY NSW 2000

DOCUMENT CONTROL

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GLOSSARY OF ACOUSTIC TERMS

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors, which are demonstrated in the graph below, are here defined.

Maximum Noise Level (L_{Amax}) – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

L_{A1} – The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.

L_{A10} – The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} is a common noise descriptor for environmental noise and road traffic noise.

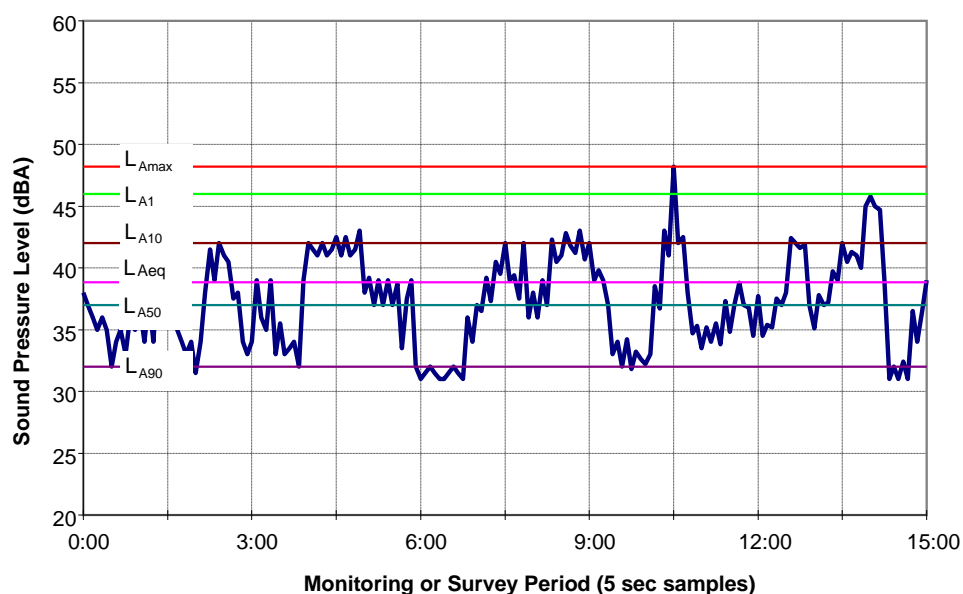
L_{A90} – The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

L_{Aeq} – The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

ABL – The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and nighttime) for each day. It is determined by calculating the 10th percentile (lowest 10th percent) background level (L_{A90}) for each period.

RBL – The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and nighttime.

Typical Graph of Sound Pressure Level vs Time



1 INTRODUCTION

Wilkinson Murray has been engaged by Landmark Group to conduct a revised development application noise assessment of the proposed mixed-use development at 2 Delmar Parade Dee Why. A previous Acoustic Assessment has been conducted by Acoustic Logic Consultancy – ALC (reference 20171606.1/1512A/R0/JL dated 15/12/2017) which has been used for this acoustic review.

Many of the findings of the ALC assessment remain relevant to the currently proposed design. The main issue that has been reviewed for this application is traffic noise intrusion and façade design.

The site is currently occupied by a commercial building.

The scope of the noise assessment involves:

- Ambient noise measurements review,
- Façade design,
- Review of mechanical services noise emission, and.
- Review of internal Acoustic Amenity of future residents of the development.

The following sections of this assessment detail the methodology, assessment criteria, results and acoustical recommendations.

Figure 1-1 Site Location*

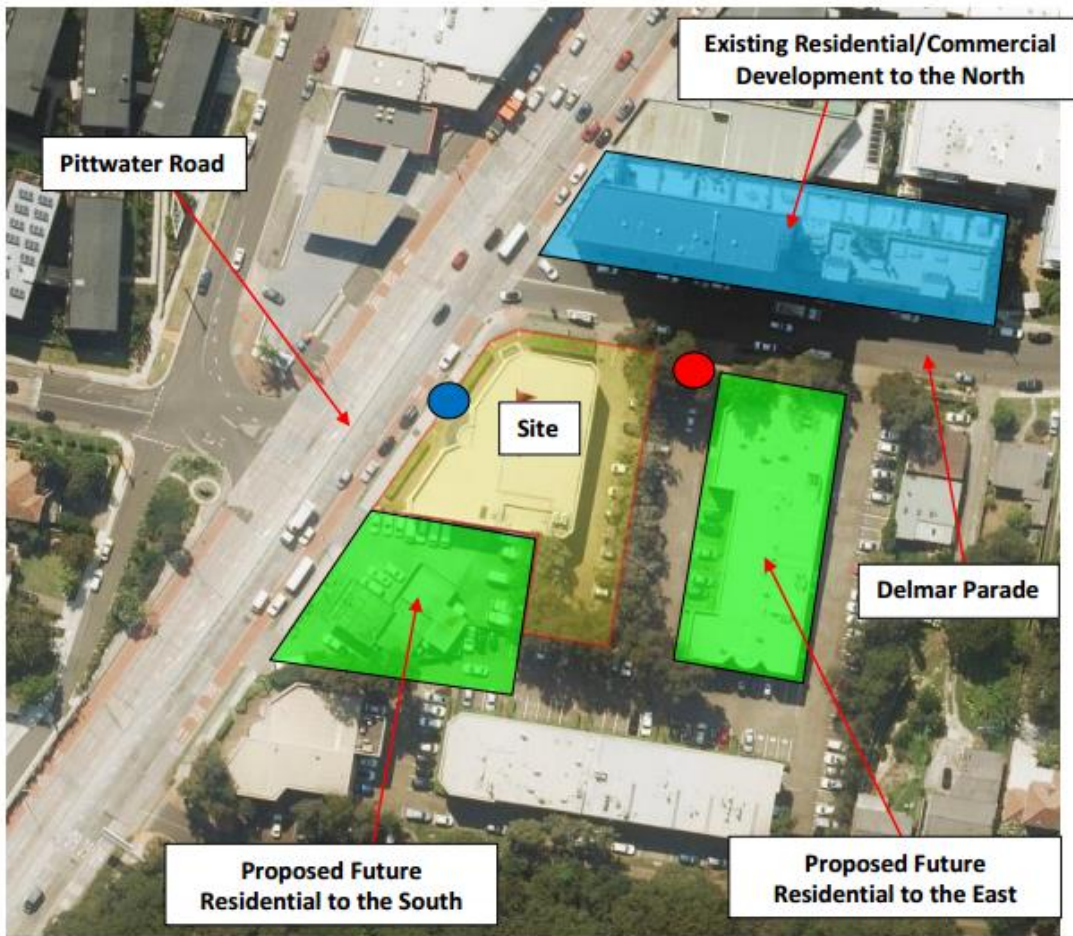


Figure 1 – Site Map

- Unattended Noise Measurements
- Attended Noise Measurements

*Source ALC

The site is bounded by.

- Commercial premises immediately to the east and south of the site. These are potential future residential sites
- Dee Why Grand to the North of the site across Delmar Road.
- A service station and residences across Pittwater Road to the west.

2 SITE DESCRIPTION & PROPOSAL

The site is located in a commercial area at 2 Delmar Parade Dee Why. The proposed development consists of:

- 2 Lower Ground carpark levels
- Ground Level with 3 retail tenancies and a cafe
- Level 1 - 3 with single- and 2-bedroom residential apartments
- Level 4 - 6 with 2- and 3-bedroom residential apartments

Plans are shown in Appendix A.

The use of the retail and commercial areas is unknown at this stage and their use will be the subject of future Development Applications by the end users of these tenancies.

3 AMBIENT NOISE LEVELS & NOISE CRITERIA

3.1 Existing Ambient Noise Levels

Unattended noise monitoring was conducted by ALC in November / December 2017. From the background noise levels (L_{A90}) the Rating Background Levels (RBLs) were determined using the methodology recommended in:

- *Noise Policy for Industry* (NPfI), dated October 2017, prepared by NSW Environment Protection Authority (EPA).

The EPA considers the RBLs to represent the background noise level. The equipment calibration was checked before and after the survey and no significant drift was noted.

Table 3-1 summarises the results, for daytime, evening and nighttime periods as defined in the *NPfI*. The summary values are:

Table 3-1 Measured Ambient RBL (Background) Noise Levels

Time Period ¹	Noise Levels (dBA)
Daytime (7am-6pm)	57
Evening (6pm-10pm)	52
Nighttime (10pm-7am)	40

In addition traffic noise levels have been determined as follows:

Table 3-2 Pittwater Road Façade Noise Levels $L_{Aeq,(period)}$

Time Period ¹	Noise Levels (dBA)
Daytime (7am-10pm)	72
Nighttime (10pm-7am)	69

The two descriptors are defined below:

- **$L_{Aeq,Period}$** – The overall L_{Aeq} noise level measured over the assessment period; and,
- **RBL** – Rating Background Level is a measure of typical background noise levels which are used in determining noise criteria.

3.2 Traffic Noise Criteria

The site subject to the requirements of the NSW State Environmental Planning Policy (Infrastructure) 2007 – (iSEPP) council has requested that “An acoustic report that addresses Clause 102 of SEPP (Infrastructure) 2007 must be submitted with the Application.”

The NSW State Environmental Planning Policy (Infrastructure) 2007 – (iSEPP) requires assessment for traffic noise intrusion when an adjacent road has more than 40,000 vehicles on an average day.

Clauses 102 are relevant this project and are reproduced below:

102 Impact of road noise or vibration on non-road development

(1) This clause applies to development for any of the following purposes that is on land in or adjacent to a road corridor for a freeway, a tollway or a transitway or any other road with an annual average daily traffic volume of more than 40,000 vehicles (based on the traffic volume data published on the website of the RTA) and that the consent authority considers is likely to be adversely affected by road noise or vibration:

- (a) a building for residential use,*
- (b) a place of public worship,*
- (c) a hospital,*
- (d) an educational establishment or childcare centre.*

The noise criteria relevant is summarised below:

(3) If the development is for the purposes of a building for residential use, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following L_{Aeq} levels are not exceeded:

- (a) in any bedroom in the building – 35 dB(A) at any time between 10pm and 7am,*
- (b) Anywhere else in the building (other than a garage, kitchen, bathroom or hallway) – 40 dB(A) at any time.*

The Interim Guideline 2008 that has been prepared by the NSW Department of Planning also provides additional information regarding the above noise criteria. In particular, it clarifies the parameter to be used for day and night. During the night an $L_{Aeq(9hr)}$ is to be used and for the day $L_{Aeq(15hr)}$.

Therefore, assessment is based on the above requirements with respect the day and night periods of the Interim Guideline 2008.

The proposed development will not generate significant traffic volumes. Therefore, no appreciable increase in traffic noise is predicted at surrounding residences. It is also noted that the carpark entrance is located on Delmar Parade, a road with significant traffic volumes. As such there will be no noticeable increase in traffic noise levels associated with the operation

of the new building.

In the case of traffic noise intrusion into future apartments calculations of internal traffic noise levels at apartments have been conducted. Preliminary internal traffic noise calculations indicate that the following glazing that is above standard glazing (typically 6 mm float glass) will be required.

- Type A – R_w 38 – 10.5 mm V Lam Hush Laminated Acoustic Glass or 12.38 mm laminated glass with acoustic seals.
- Type B – R_w 35 – 10.38 mm Laminated Glass with acoustic seals.
- Type C – R_w 31 – 6.38 mm Laminated Glass with acoustic seals
- Type D – Standard Glazing

The following table details recommended glazing for the proposed development

Table 3-3 Recommended Glazing

Level	Facade	Living	Bed
1-3	Pittwater Road	A	
1-3	Delmar Parade	C	C
4-6	Pittwater Road	B	B
4-6	Delmar Parade	C	C
1-3	Corner Bedroom		A*
4-6	Corner Bedroom		A - Bedroom Double façade B – Bedroom single facade
1-6	East / South Facade	D	D

*It is noted that in the case of the corner bedroom on Level 1-3 and exceedance of 3 dBA is predicted which would warrant double glazing to strictly comply with criteria. However given there are only three of these rooms and the practicality of opening 2 sets of doors it is recommended high performance single glazing is adopted on these rooms.

3.3 Site Noise Emission Noise Criteria

A review of the Warringah Council planning controls has been conducted to determine applicable acoustic criteria. A review of the Warringah Council Local Environment Plan (LEP) 2011 did not reveal any acoustic information or criteria relating to mechanical noise emission from a commercial premise. A review of the Warringah Council Development Control Plan (DCP) 2001 confirmed the following acoustic information and criteria relating to mechanical noise emission from a commercial premises:

D3 Noise

Objectives

- *To encourage innovative design solutions to improve the urban environment.*
- *To ensure that noise emission does not unreasonably diminish the amenity of the area or result in noise intrusion which would be unreasonable for occupants, users or visitors.*

Requirements

1. *Noise from combined operation of all mechanical plant and equipment must not generate noise levels that exceed the ambient background noise by more than 5dB(A) when measured in accordance with the NSW Industrial Noise Policy at the receiving boundary of residential and other noise sensitive land uses.*

According to the *Industrial Noise Policy (INP)*, the intrusiveness of a noise source may generally be considered acceptable if the equivalent continuous (energy-average) A-weighted level of noise from the source (represented by the L_{Aeq} descriptor) does not exceed the background noise level measured in the absence of the source by more than 5dB(A). The intrusiveness criterion is summarised as follows:

$L_{Aeq,15minute}$ Rating Background Level (RBL) plus 5dB(A)

It is noted that *INP* has been superseded by the *NPI*, however the intrusiveness criterion definition remains the same. Table 2-1 shows the relevant intrusiveness noise criteria for this assessment.

Table 2-1 Intrusiveness Criteria – All Sources

Time Period¹	RBL	Intrusiveness Criterion $L_{Aeq,15min}$
Daytime	57	62
Evening	52	57
Nighttime	40	48

Note 1. Daytime 7.00am–6.00am; Evening 6.00pm–10.00pm; Night 10.00pm–7.00am

No details of mechanical plant have been determined at this early stage of the project. Likely sources of mechanical noise from the proposed development will be the air-conditioning and ventilation plant located on the roof, basement level carpark fan ventilation shafts and possibly some pumps within the basement.

Mechanical plant such as rooftop exhausts, air-conditioning and refrigeration associated with the development should be assessed at the time of detailed design and selection, having regard to nearby residential and commercial properties surrounding the development and the noise criteria detailed above.

Any noise control measures can be incorporated into the development to ensure the acoustic amenity of nearby residences is protected. Therefore, no particular difficulty is foreseen in meeting the noise emission requirements from the development and it is likely that off the shelf

control measured can be used

3.4 Noise Transfer between Habitable Areas of the Development

The details of wall and floor constructions to meet the requirements of the National Construction Code (NCC) will be determined in the detail design stage of the project. Potential measures that can be adopted include:

- Masonry and / or plasterboard walls with acoustic insulation.
- Concrete floor slabs with suspended ceiling and insulation in cavities.
- Acoustic treatment of wastewater / supply water pipe work.

4 CONCLUSION

An acoustic assessment has been undertaken for the Development Application for the proposed mixed-use development at 2 Delmar Parade, Dee Why.

The following findings have been determined:

- Site-specific noise emission criteria have been established for the existing and future residential areas to the North, South and East of the site. It is noted that mechanical services and plant have not been selected; however, it is envisaged that compliance with criteria can be achieved. Where necessary standard engineering noise controls can be implemented at design stage to meet established noise criteria.
- Traffic associated the development will not adversely impact on the acoustic amenity of surrounding residences.
- Apartments facing Pittwater Road and Delmar Parade will require improved glazing to ensure that the acoustic amenity of future residences is protected. Preliminary recommendations provide options for upgraded laminated glazing.
- No special glazing is required on all other apartments.
- Internal noise isolation requirements in accordance with the NCC will be achieved by adopting appropriate constructions.

APPENDIX A
SITE PLANS



Revisions	Date	Description
P5	23.01.2020	FOR REVIEW
P6	24.01.2020	FOR REVIEW
P7	05.02.2020	FOR REVIEW
P8	12.02.2020	s4.55 Submission draft
P9	24.02.2020	s4.55 Submission

Project / **2 DELMAR PARADE**

Drawing / **BASEMENT LEVEL 2**

Project No. / **219132**

Date / **24.02.2020**

Author / **RIC**

Scale: @ A1 / **1 : 100**

Drawing No. / **TP01.08 P9**

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Project **2 DELMAR PARADE** Drawing **BASEMENT LEVEL 1** Project No. **219132** Date **24.02.2020** Author **BR** Scale: @ A1/ **1 : 100** Drawing No. **TP01.09 P9**

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P10	24.02.2020	s4.55 Submission

Project **2 DELMAR PARADE** Drawing **GROUND LEVEL** Project No **219132** Date **24.02.2020** Author **BR** Scale: @ A1 **1 : 100** Drawing No. **TP01.10 P10**

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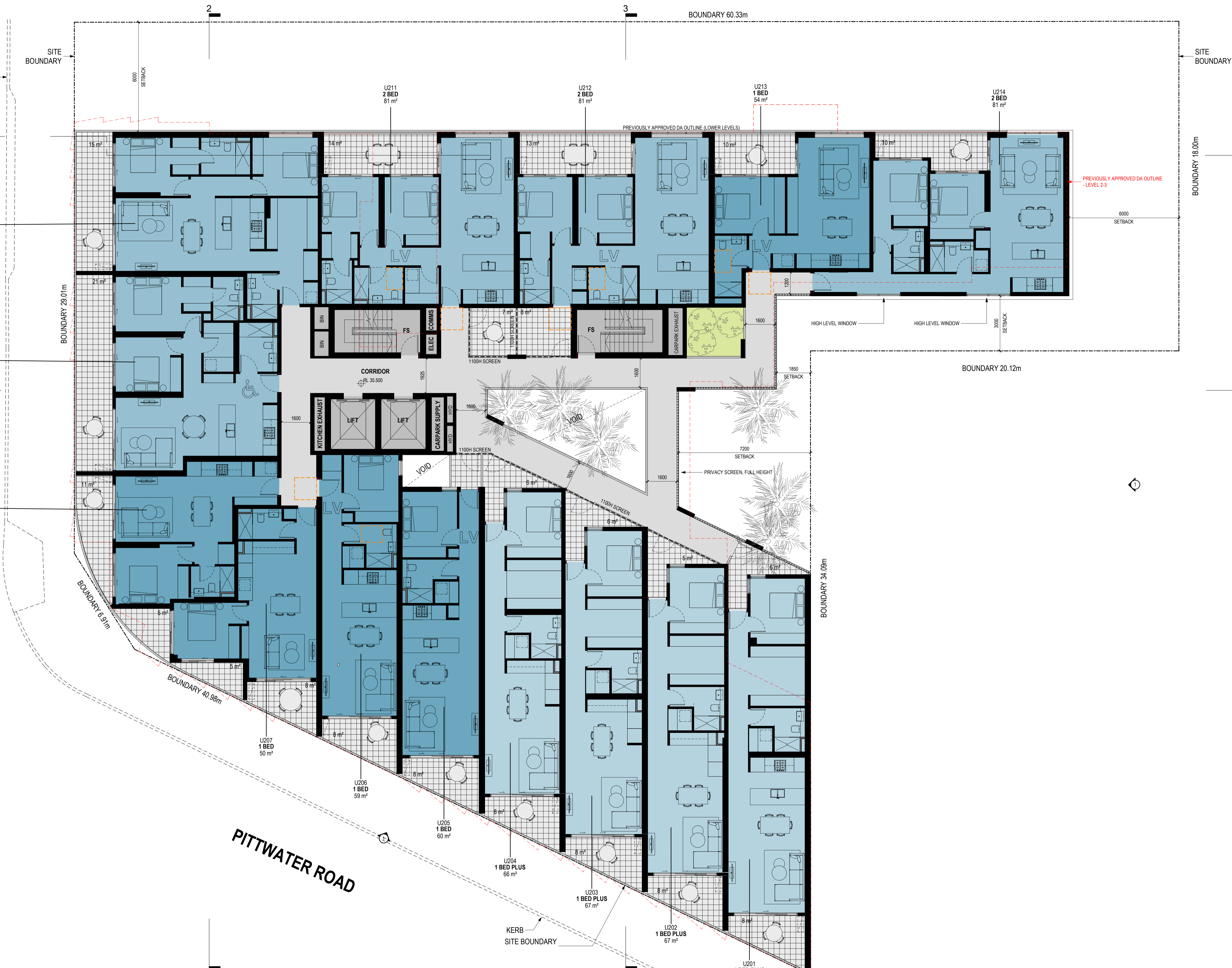
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PITTWATER ROAD

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Project **2 DELMAR PARADE**

Drawing **LEVEL 2**

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Date **24.02.2020**

Author **BR**

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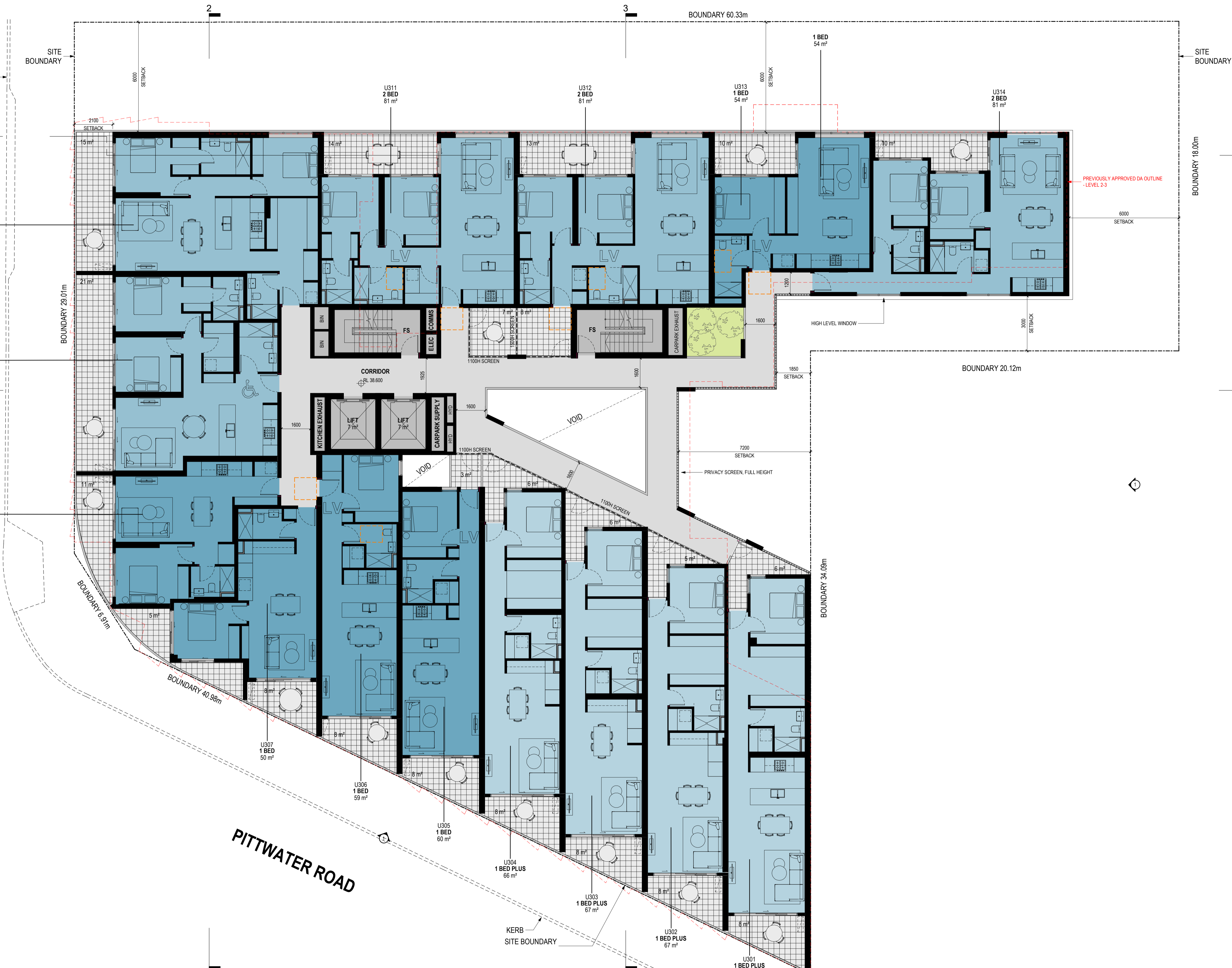
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Project / 2 DELMAR PARADE

Drawing / LEVEL 3

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Project / 2 DELMAR PARADE

Drawing / LEVEL 5

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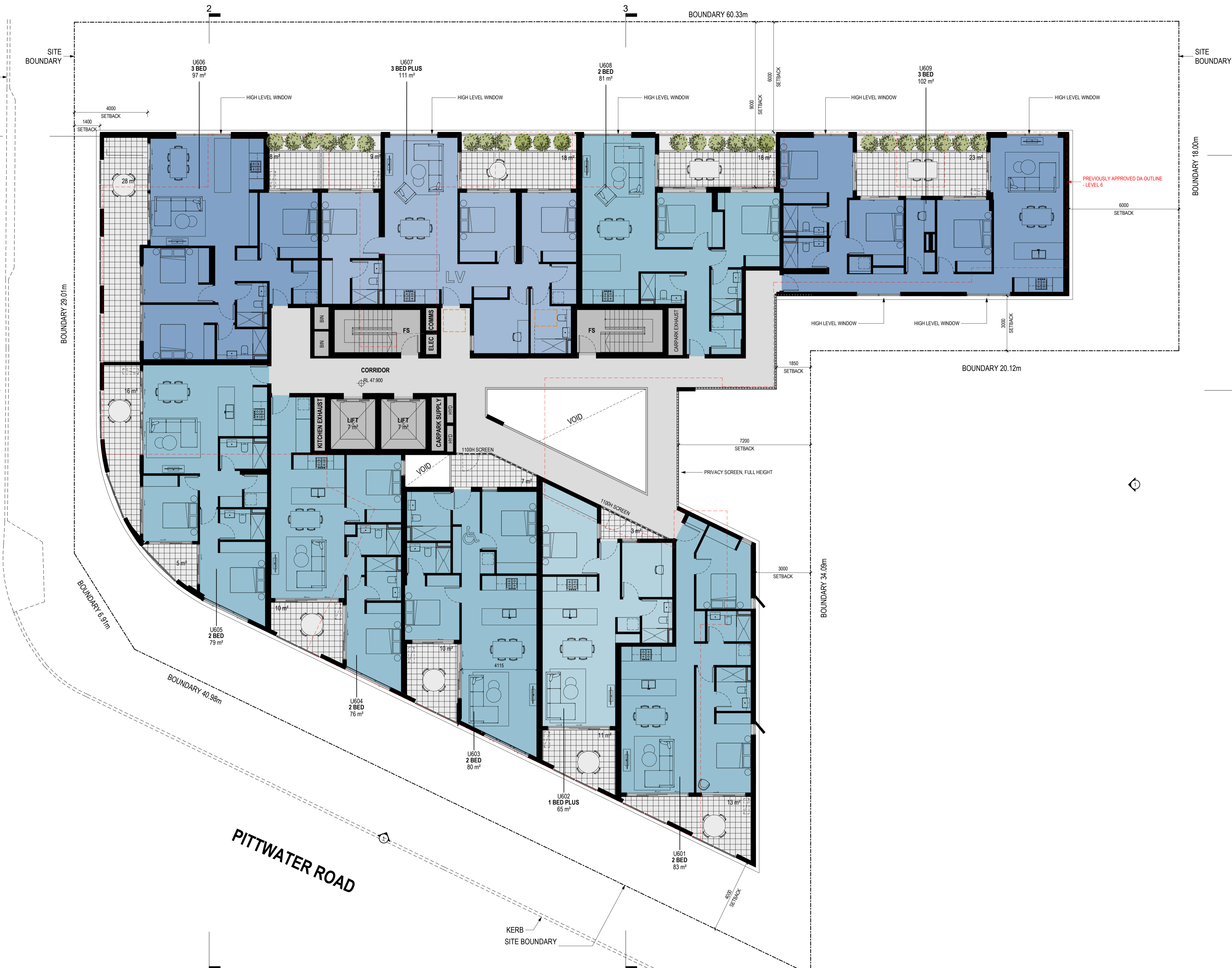
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SITE BOUNDARY

SITE BOUNDARY

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BOUNDARY 60.33m

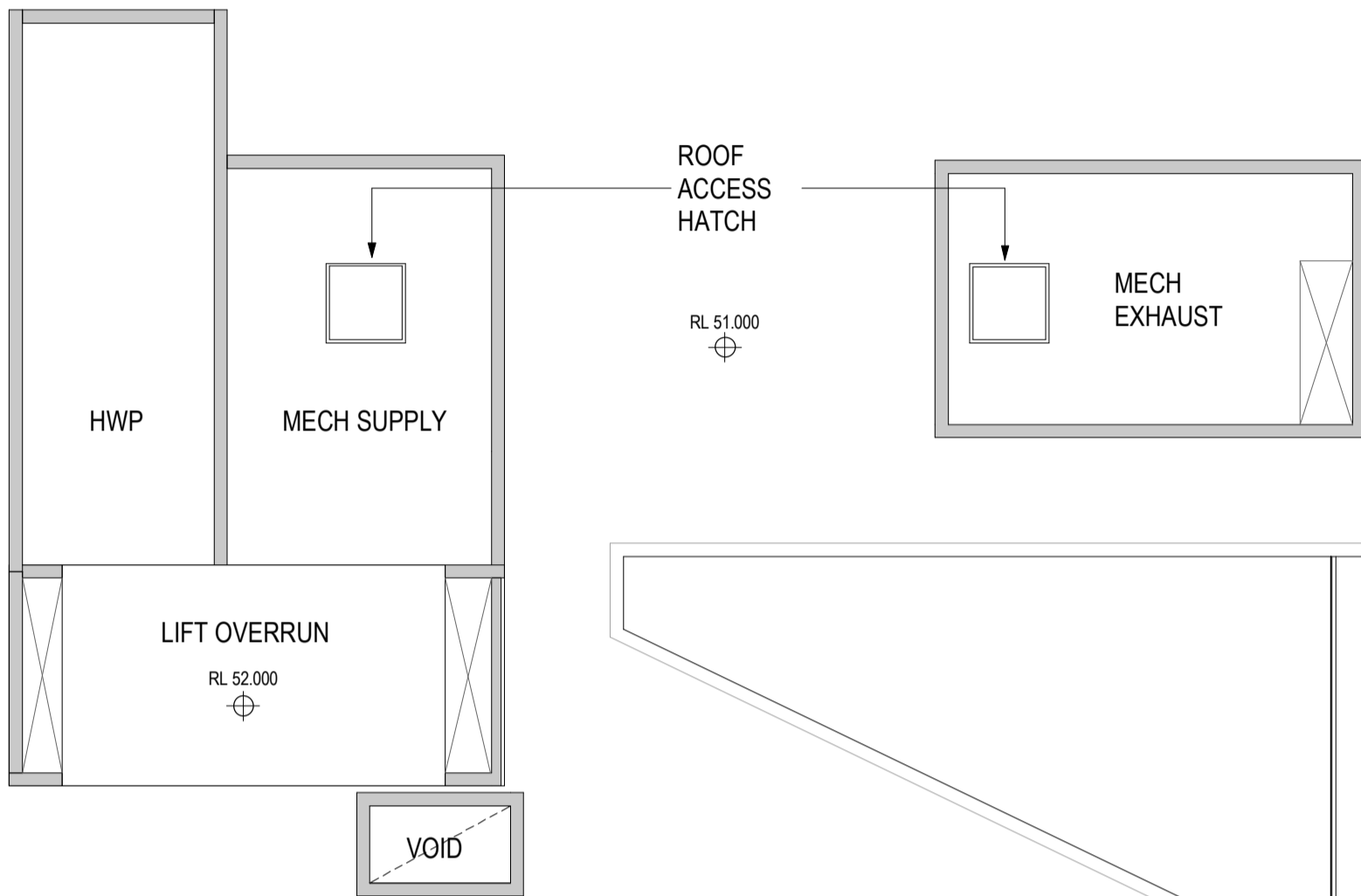
6000 SETBACK

BOUNDARY 18.00m

BOUNDARY 29.01m

1400 SETBACK

ROOF ACCESS HATCH
RL 51.000



3000 SETBACK

BOUNDARY 20.12m

1850 SETBACK

BOUNDARY 34.09m

3000 SETBACK

BOUNDARY 6.91m

BOUNDARY 40.98m

4000 SETBACK

PITTWATER ROAD

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SITE BOUNDARY

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