

BOLLIG DESIGN GROUP PTY LTD

**177 SCARBOROUGH BEACH ROAD
MOUNT HAWTHORN**

**DEVELOPMENT APPLICATION
ACOUSTIC REPORT**

JULY 2024

OUR REFERENCE: 32968-1-24232

DOCUMENT CONTROL PAGE

DA ACOUSTIC REPORT
177 SCARBOROUGH BEACH ROAD
MOUNT HAWTHORN

Job No: 24232

Document Reference : 32968-1-24232

FOR

BOLLIG DESIGN GROUP

DOCUMENT INFORMATION				
Author:	George Watts	Checked :	Paul Daly	
Date of Issue :	1 July 2024			
REVISION HISTORY				
Revision	Description	Date	Author	Checked
DOCUMENT DISTRIBUTION				
Copy No.	Version No.	Destination	Hard Copy	Electronic Copy
1	1	Bollig Design Group Attn: Edwin Bollig Email: edwin@bollig.com.au		✓

CONTENTS

1.0	INTRODUCTION	1
2.0	PROPOSED DEVELOPMENT	1
3.0	CRITERIA	1
3.1	BCA Provisions	1
3.2	Environmental Protection (Noise) Regulations 1997	2
3.3	Noise Ingress - Town of Vincent Sound Attenuation Policy 3.5.21	4
4.0	BCA REQUIRMENTS	4
5.0	NOISE INGRESS	5
5.1	Noise Source Identification	5
5.2	Measurements	5
6.0	NOISE FROM DEVELOPMENT	5
6.1	Commercial Tenancies	5
6.2	Mechanical Services	6

APPENDICIES

A	PLANS
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1.0 INTRODUCTION

Herring Storer Acoustics was commissioned by Bollig Design Group to conduct a preliminary review of the proposed development at 177 Scarborough Beach Road, Mount Hawthorn.

This report has been based on the Development Application drawings provided. For reference, plans of the proposed development are attached in Appendix A.

2.0 PROPOSED DEVELOPMENT

The proposed development site is located on the south side of Scarborough Beach Road at 177 Scarbough Beach Road, Mount Hawthorn.

The development is a mixed use development with a small commercial tenancy on the ground floor with 5 levels of apartments above (the penthouse being spread over the top two floors).

3.0 CRITERIA

3.1 BCA PROVISIONS

For Class 2 or 3 buildings, Part F5 of the National Construction Code (NCC), outlines the minimum acoustic isolation of apartments. The following summarises the acoustic criteria:

3.1.1 Walls

Wet to wet	$R_W + C_{tr}$ not less than 50 dB.
Living to living	$R_W + C_{tr}$ not less than 50 dB.
Wet to living construction.	$R_W + C_{tr}$ not less than 50 dB plus discontinuous
Kitchens to living construction.	$R_W + C_{tr}$ not less than 50 dB plus discontinuous

Note: Where kitchens are part of an open living area, we consider the kitchen to be part of the living area and in these cases a discontinuous construction is required. This also includes cases where kitchens are back-to-back, however, discontinuous construction is only required on one side.

3.1.2 Floors

Floors	$R_W + C_{tr}$ not less than 50 dB.
Impact Isolation	$L_{n,w}$ not more than 55 dB is recommended.

Note: The impact isolation criteria under the BCA is an $L_{n,w}$ of not more than 62 dB. However, as a member firm of the Association of Australasian Acoustic Consultants, (AAAC) we recommend a criteria of an $L_{n,w}$ of not more than 55 dB be adopted for a development of this type.

3.1.3 Service Risers

to Habitable Rooms $R_W + C_{tr}$ not less than 40 dB.

to Non-Habitable Rooms $R_W + C_{tr}$ not less than 25 dB.

3.1.4 Hydraulics

The above requirements also apply to storm water down pipes.

3.1.5 Doors

Door (Connecting) R_W not less than 30 dB.

The development would be designed to comply with the requirements of Part F5 of the BCA.

3.2 ENVIRONMENTAL PROTECTION (NOISE) REGULATIONS 1997

The *Environmental Protection (Noise) Regulations 1997* stipulate the allowable noise levels at any noise sensitive premises from other premises. The allowable or assigned noise levels for noise sensitive premises are determined by the calculation of an influencing factor, which is added to the baseline criteria set out in Table 1 of the Regulations. The baseline assigned noise levels are listed in Table 3.1. For commercial premises, the allowable or assigned noise levels are the same for all hours of the day. Table 3.1 also lists the assigned noise levels for commercial premises.

TABLE 3.1 – ASSIGNED NOISE LEVELS

Premises Noise	Receiving	Time of Day	Assigned Level (dB)		
			L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises within 15 metres of a dwelling		0700 - 1900 hours Monday to Saturday	45 + IF	55 + IF	65 + IF
		0900 - 1900 hours Sunday and Public Holidays	40 + IF	50 + IF	65 + IF
		1900 - 2200 hours all days	40 + IF	50 + IF	55 + IF
		2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	35 + IF	45 + IF	55 + IF
Commercial Premises		All Hours	60	75	80
Industrial Premises		All hours	65	80	90

Note: The L_{A10} noise level is the noise that is exceeded for 10% of the time.
The L_{A1} noise level is the noise that is exceeded for 1% of the time.
The L_{Amax} noise level is the maximum noise level recorded.

It is a requirement that noise from the site be free of annoying characteristics (tonality, modulation and impulsiveness) at other premises, defined below as per Regulation 9.

“impulsiveness” means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax\ Slow}$ is more than 15dB when determined for a single representative event;

“modulation” means a variation in the emission of noise that –

- (a) is more than 3dB $L_{A\ Fast}$ or is more than 3dB $L_{A\ Fast}$ in any one-third octave band;
- (b) is present for more at least 10% of the representative assessment period; and
- (c) is regular, cyclic and audible;

“tonality” means the presence in the noise emission of tonal characteristics where the difference between –

- (a) the A-weighted sound pressure level in any one-third octave band; and
- (b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A\ Slow}$ levels.

Where the above characteristics are present and cannot be practicably removed, the following adjustments are made to the measured or predicted level at other premises.

TABLE 3.2 – ADJUSTMENTS FOR ANNOYING CHARACTERISTICS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+ 5 dB	+ 5 dB	+ 10 dB

From a review of the development, the influencing factor for this development would be 5 dB, based on the following :

Secondary Roads within inner circle;

Scarborough Beach Road + 2 dB

Commercial Premises within the inner circle;

50 % + 2.5 dB

Commercial Premises within the outer circle;

10 % + 0.5 dB

Total IF +5 dB

Hence the influencing factor would be +5 dB and the assigned noise levels would be as listed in Table 3.3.

TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Noise	Receiving	Time of Day	Assigned Level (dB)		
			L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises within 15 metres of a dwelling		0700 - 1900 hours Monday to Saturday	50	60	70
		0900 - 1900 hours Sunday and Public Holidays	45	55	70
		1900 - 2200 hours all days	45	55	60
		2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	40	50	60

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.

We note that noise emissions from the premises need to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*. This not only includes noise associated with mechanical services (ie air conditioning and ventilation systems), but also noise from commercial premises within the site.

3.3 NOISE INGRESS - TOWN OF VINCENT SOUND ATTENUATION POLICY 3.5.21

Inbound Noise Levels

The Town of Vincent Sound Attenuation Policy specifies that inbound noise to a residential development is to be treated by designing the residential building façade to achieve the following internal sound levels :

- L_{eq} 35 dB(A) in sleeping areas (bedrooms); and
- L_{eq} 40 dB(A) in living/work areas and other habitable rooms.

It is noted that these internal design sound levels are congruent with other noise ingress policies (such as the WAPC State Planning Policy 5.4).

The L_{eq} noise level is not to be unduly biased toward the lower frequencies of the octave band spectrum (between 31.5Hz – 125Hz). If this is the case, the findings should be discussed with the Town of Vincent Environmental Health Officers.

For areas not defined as residential, AS2107 is to be utilised for guidance as to acceptable internal noise levels.

Outbound Noise

Noise emissions associated with a development are to comply with the Assigned Noise Levels in accordance with the *Environmental Protection (Noise) Regulations 1997*.

4.0 BCA REQUIRMENTS

The proposed development would be constructed to comply with the requirements of Part F5 of the NCC.

5.0 NOISE INGRESS

5.1 NOISE SOURCE IDENTIFICATION

The area of the proposed development was examined to ascertain the applicable noise sources.

Noise levels were recorded during peak hour traffic conditions and, based upon experience in the area, are considered likely to be congruent with ambient noise levels associated with the late evening period in the area. Noise levels associated with the late evening period will be undertaken during the design development phase of the project to confirm this.

Given the above noise source identification, it was determined that noise levels during peak traffic were the most pertinent for the design of the development.

5.2 MEASUREMENTS

Noise level measurements were recorded on the 29th March 2023 adjacent to the facing fronting Scarborough Beach Road, at approximately 3:30pm to quantify traffic noise levels during peak traffic.

The measured noise levels, including octave band data, are listed below in Table 5.1

TABLE 5.1 – MEASURED NOISE LEVEL DATA

Noise Source	Octave Band Centre Frequency (Hz) / Noise Level dB							
	63	125	250	500	1K	2K	4K	8K
Traffic	71	65	60	58	58	54	48	41

Based on the measured noise levels, the traffic noise during peak hour dictates the acoustic design of the façade.

The criteria used for noise ingress was:

Bedrooms	-	L _{Aeq} of 35 dB(A)
Living and work spaces	-	L _{Aeq} of 40 dB(A)

To determine the acoustic requirements of the development's construction, preliminary calculations were undertaken to ascertain the typical façade treatment that may be required. Generally, this dictates the minimum glazing requirements of the development.

This preliminary assessment is included in our report (our Ref : 32975-1-24232) which accompanies this development application submission.

6.0 NOISE FROM DEVELOPMENT

The main source of noise from the proposed development will be from mechanical services consisting of ventilation fans and air-conditioning condenser units. Noise received at neighbouring premises from these items need to comply with the assigned noise levels as determined under the *Environmental Protection (Noise) Regulations 1997*.

6.1 COMMERCIAL TENANCIES

Noise emissions from the commercial tenancy, would need to comply with the requirements of the environmental regulations. An assessment of these noise emissions

will be undertaken when the details of the proposed areas are known. However, given the barrier effect that is provided by the awning on ground level compliance with the Regulations should be easily achieved.

6.2 MECHANICAL SERVICES

The main source of noise from the proposed development will be from mechanical services consisting of a car-park ventilation fans and air-conditioning plant and condenser units. Noise received at residence (neighbours and residence within the development) from these items need to comply with the assigned noise levels as determined under the *Environmental Protection (Noise) Regulations 1997*.

As the mechanical services could operate during the night, noise emissions from the development needs to comply with the assigned L_{A10} night period noise level of 40 dB(A) at residential premises. Potentially, noise emissions from mechanical services could be tonal, in which case an +5 dB(A) penalty for a tonal component could be applied to the resultant noise levels. Therefore, the design level at the neighbouring residential premises would be 35 L_{A10} dB.

6.2.1 Ground Floor Commercial Tenancy

Noise emissions associated with the ground floor commercial tenancy associated with the project will be assessed and appropriate noise controls will be incorporated into the design to ensure compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997*. However, we do not believe that compliance will be difficult to achieve, given the location of the tenancies and the separation to the apartments within the development.

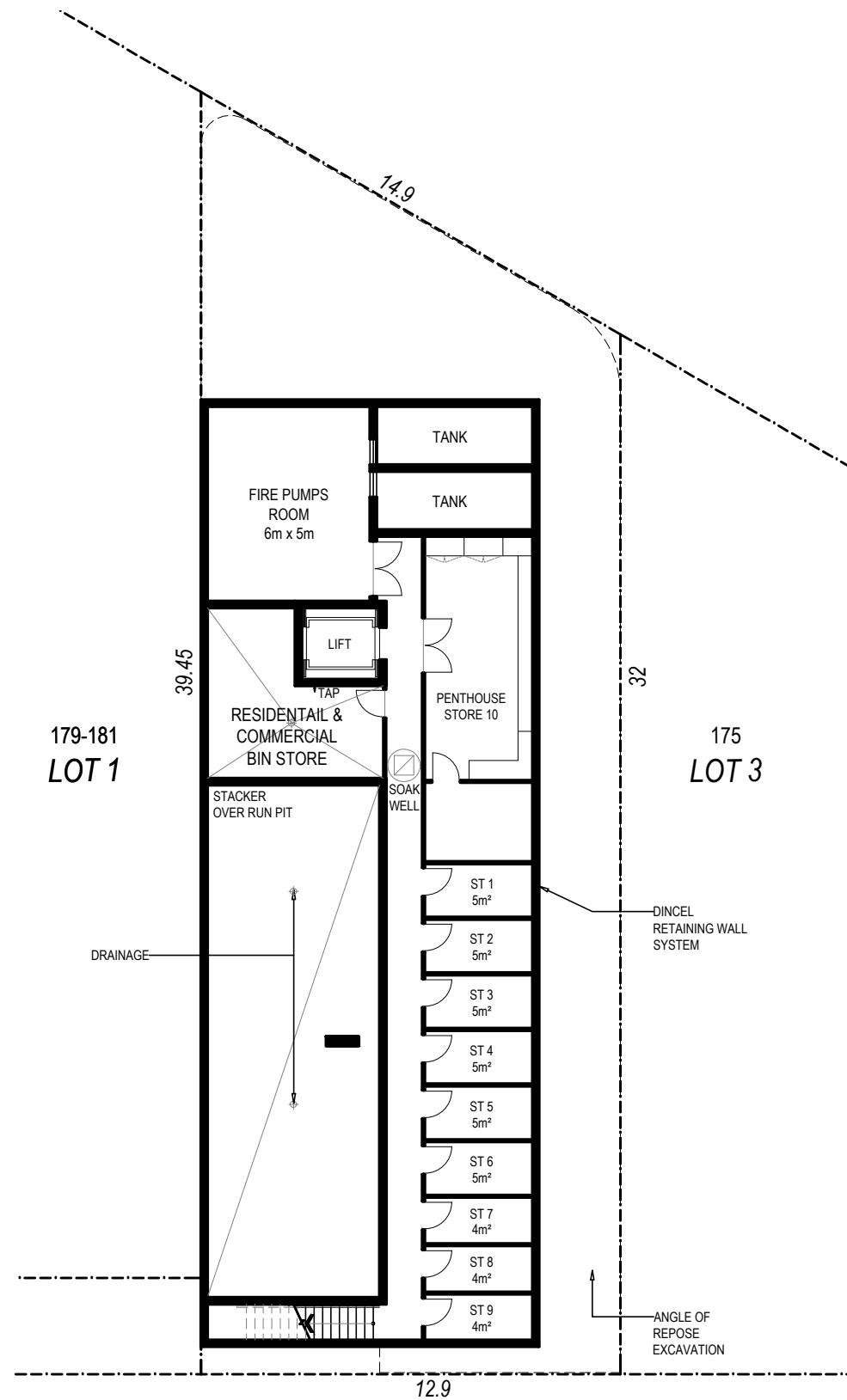
6.2.2 Apartments

The air conditioning for the apartments is not yet known.

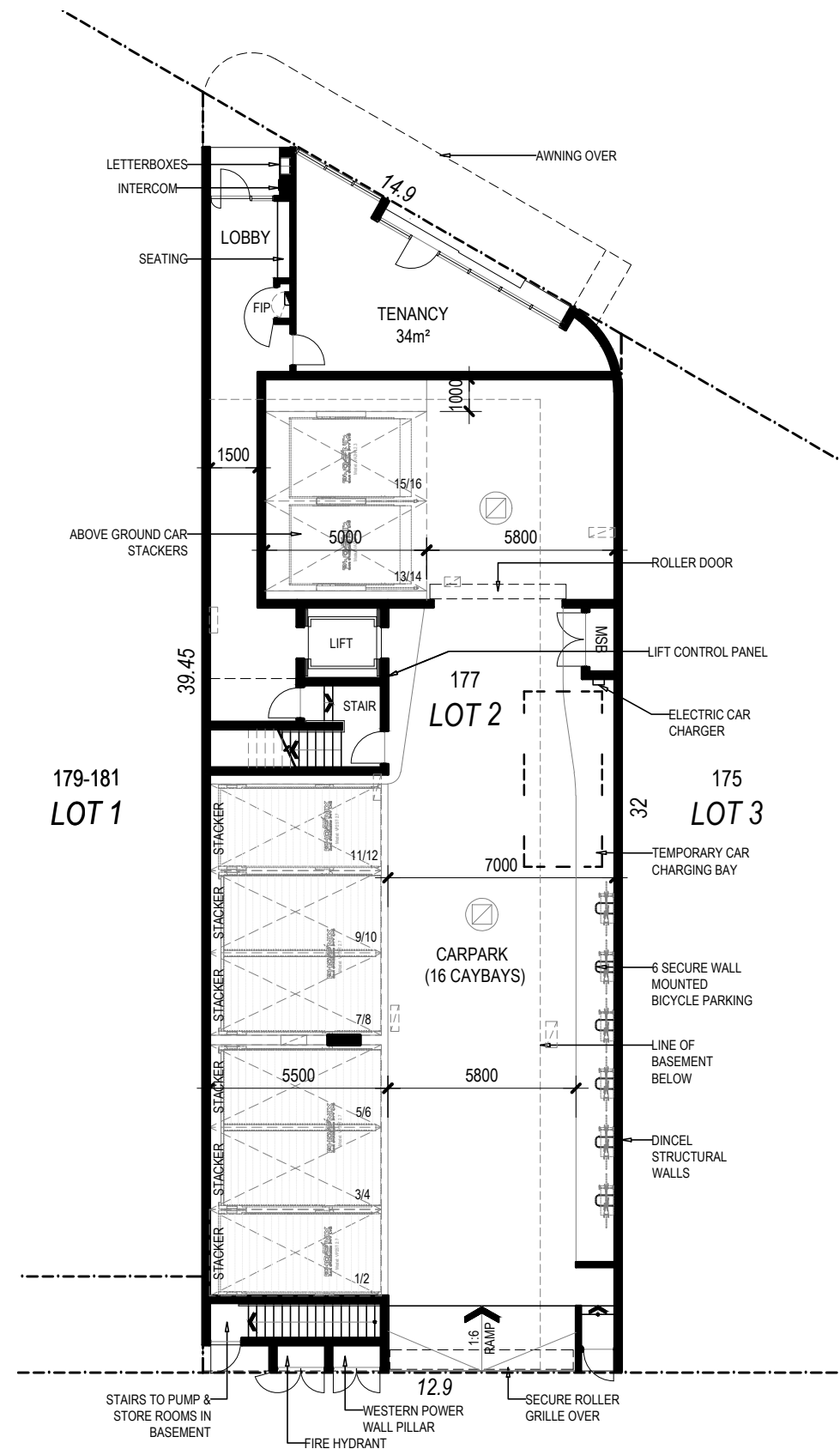
Once the design of the system is finalised, an acoustic assessment will be carried out of noise emissions from the mechanical plant and any noise amelioration required will be incorporated into the design to ensure compliance with the *Environmental Protection (Noise) Regulations 1997*. However, we believe that compliance would be easily achieved and any noise mitigation would be minimal, with the proposed design.

APPENDIX A

PLANS



BASEMENT FLOOR PLAN
SCALE 1:200



GROUND FLOOR PLAN
SCALE 1:200

DEVELOPMENT DATA

PLOT RATIO

GROUND FLOOR LEVEL	34 m2
LEVEL 1	327 m2
LEVEL 2	327 m2
LEVEL 3	327 m2
LEVEL 4	215 m2
LEVEL 5	180 m2
TOTAL	1410 m2

SITE AREA	461m2
PLOT RATIO	3

APARTMENTS

1x PENTHOUSE	
6x 3B2B APARTMENTS	
3x 2B2B APARTMENTS	
TOTAL	10 APARTMENTS

CAR BAYS

GROUND FLOOR LEVEL	16 BAYS (8 STACKER)
TOTAL	16 CAR BAYS

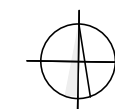
BICYCLE PARKING

RESIDENT	5
VISITOR	1
TOTAL	6 BICYCLE BAYS

SK01
REV A

177 SCARBOROUGH BEACH APARTMENTS BASEMENT & GROUND FLOOR PLAN

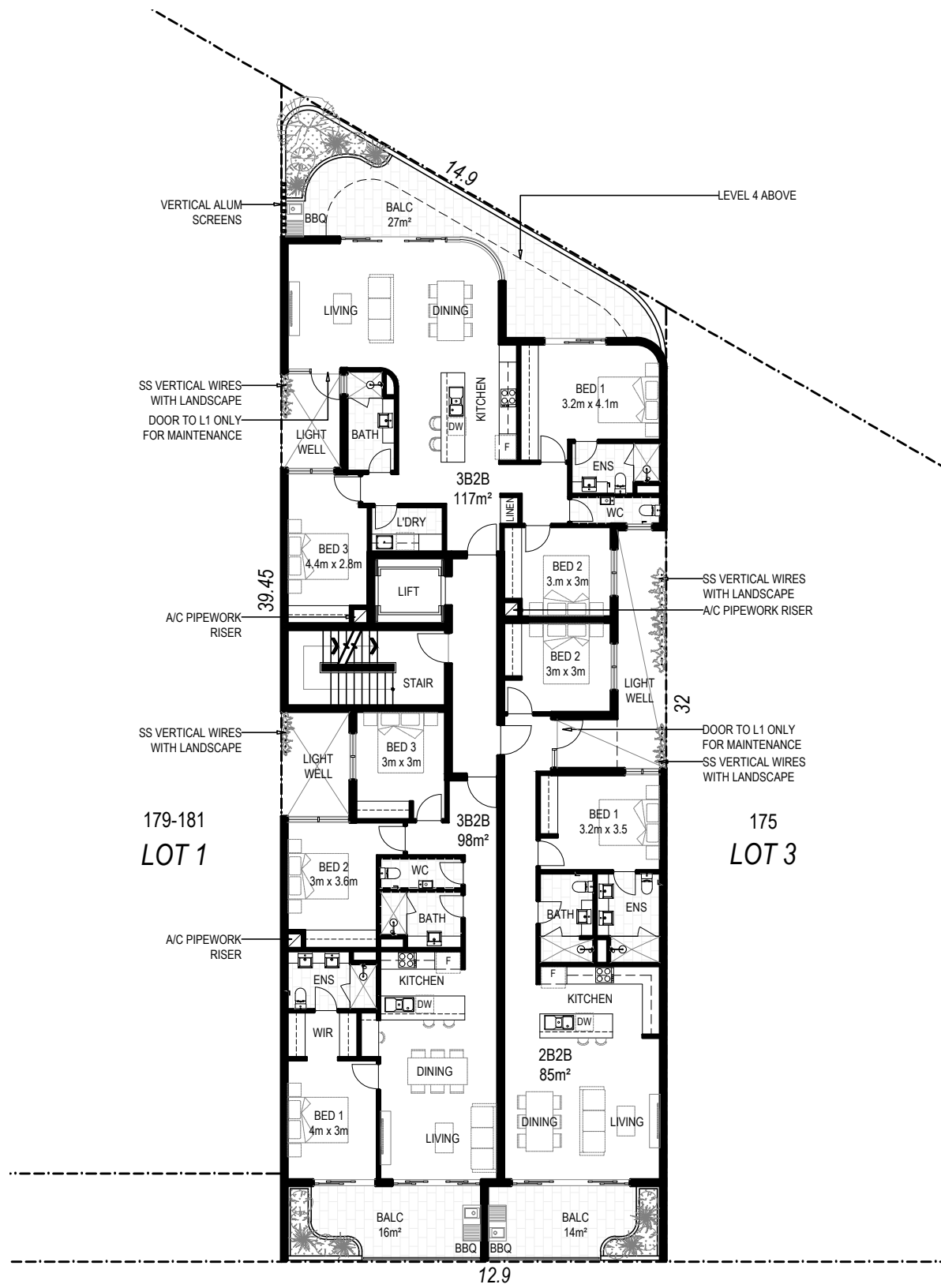
JUNE 2024 SCALE 1 : 200 @ A3 JOB NO. BDG 2336



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LEVEL 1-3 FLOOR PLAN
SCALE 1:200

SK02
REV A

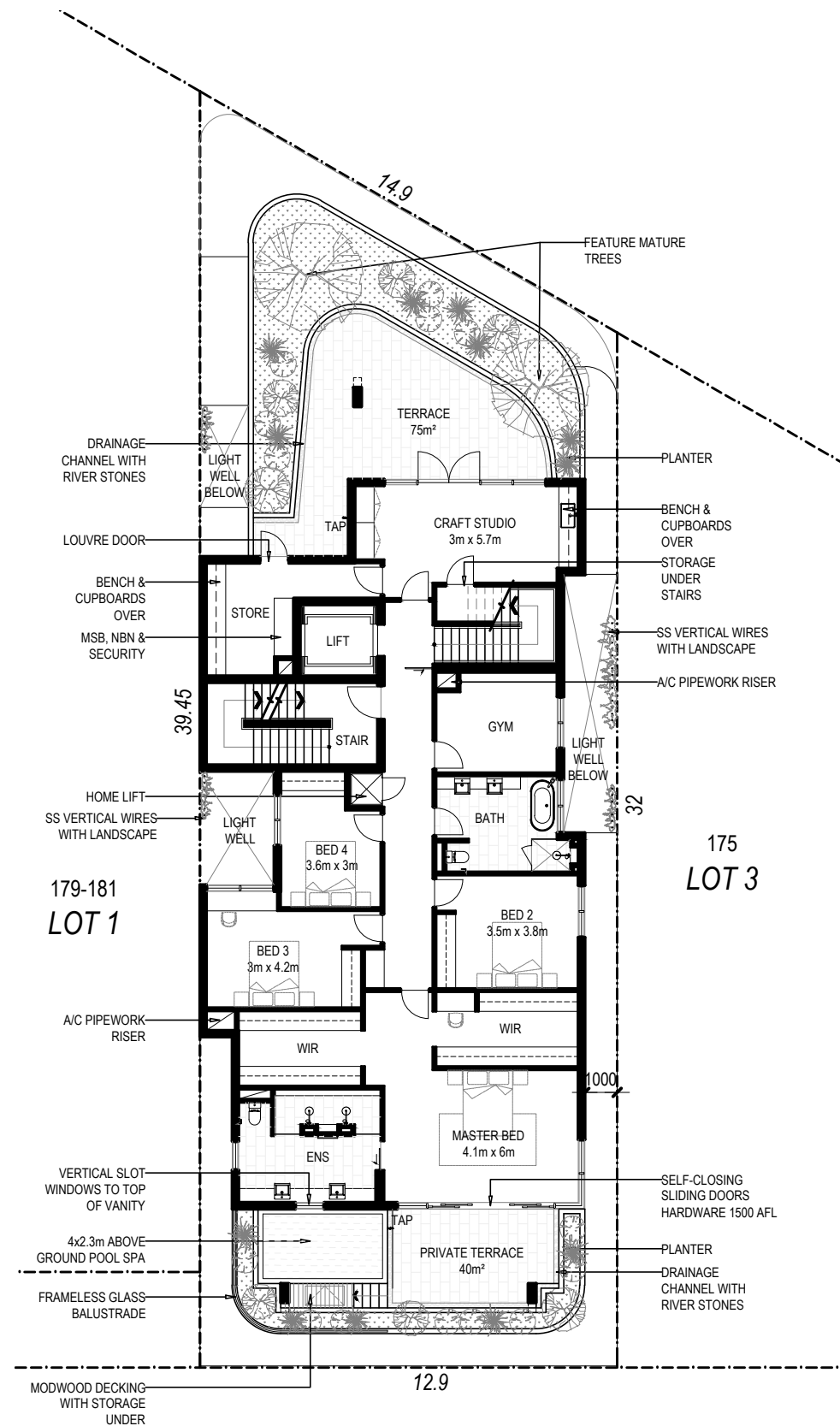
177 SCARBOROUGH BEACH APARTMENTS
LEVEL 1-3 FLOOR PLAN
JUNE 2024 SCALE 1 : 200 @ A3 JOB NO. BDG 2336



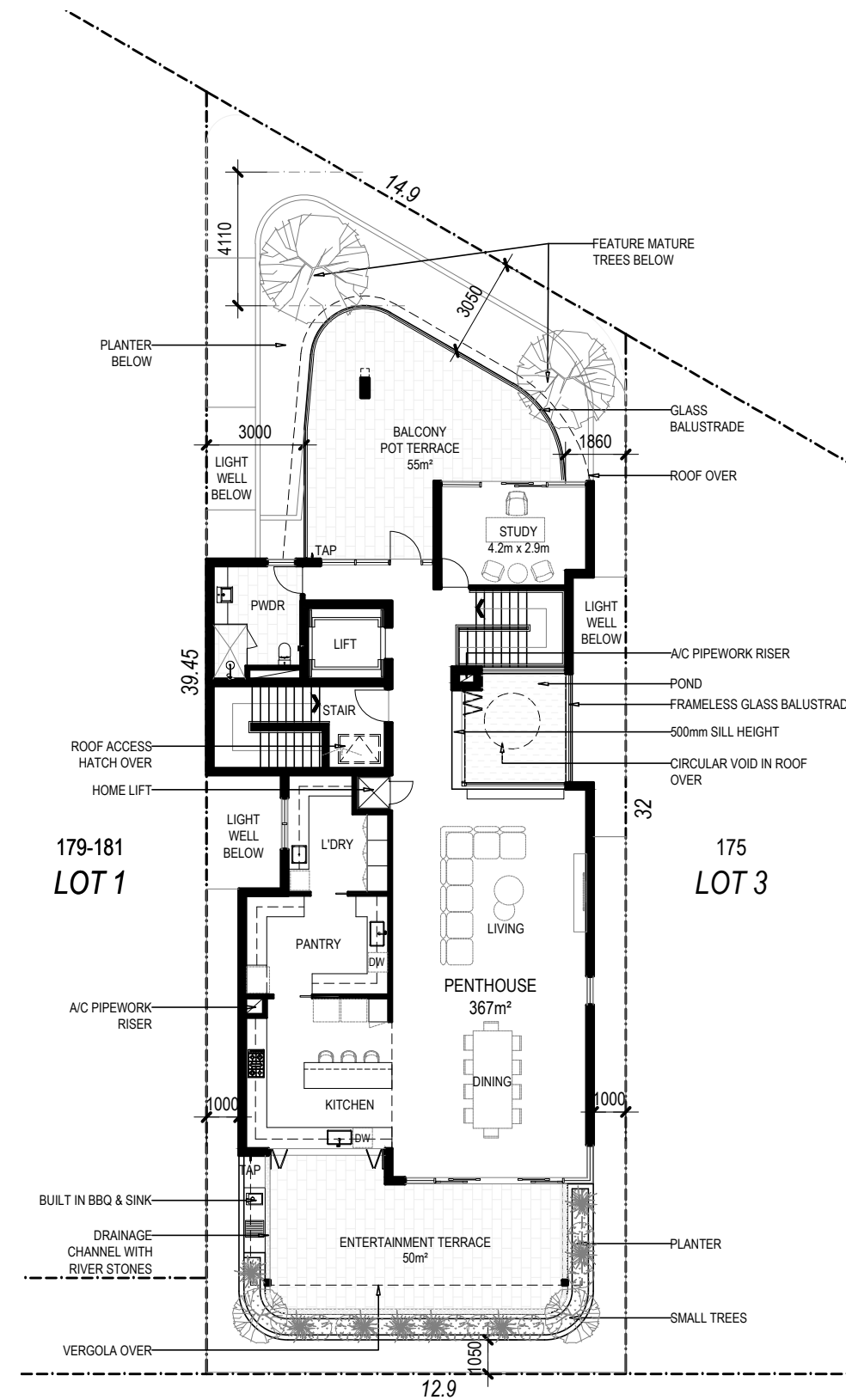
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LEVEL 4 FLOOR PLAN
SCALE 1:200



LEVEL 5 FLOOR PLAN
SCALE 1:200

SK03
REV A

177 SCARBOROUGH BEACH APARTMENTS LEVEL 4 & LEVEL 5 PENTHOUSE FLOOR PLAN

JUNE 2024 SCALE 1 : 200 @ A3 JOB NO. BDG 2336



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