OCTAVE ACOUSTICS
NOISE & VIBRATION

99 BREWER RD, BENTLEIGH

Acoustic Report

PLANNING AND ENVIRONMENT ACT 1987
GLEN EIRA PLANNING SCHEME

This plan/document is endorsed
as part of Planning Permit:

GE/DP-33820/2020/A

Sheet: 1-46 of 46

Endorsed by MID as a delegate
of the Responsible Authority (Glen Eira City Council)

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H.CO

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1 Introduction

Octave Acoustics was engaged by H.CO to carry out an assessment for the proposed mixed use development at 99 Brewer Road, Bentleigh. The project consists of a four-level building set atop a basement, incorporating:

- Basement – Parking;
- Ground Floor – Parking, café, and Allied Health tenancies;
- Level One – Allied Health tenancies;
- Level Two and Three – A child care centre with associated outdoor play areas.

The proposed operating hours for each use within the development are as follows;

- Childcare Centre – 6:30am to 6:30pm, Monday to Saturday
- Café – 8am to 5pm, 7 days a week
- Allied Health – 8am to 9pm, Monday to Friday, 8am to 5pm Saturday

The assessment is based on the town planning drawings prepared by Jam Architects dated 19th June 2023 (Appendix A).

2 Site Assessment

2.1 Noise Measurements

Octave Acoustics carried out on-site long term unattended noise monitoring between Wednesday the 15th and Thursday the 23th of July 2020. Monitoring was carried out on the west boundary (adjacent to the rail corridor) and on the north boundary of the existing site at 99 Brewer Road (refer to Figure 1 below). Both monitors were installed in free field conditions 1.2m above the ground, with a clear line of sight to both train passes and traffic on Bendigo Road.

Monitoring was carried out using NTI XL2 sound level meters which were calibrated before and after the assessment period using a Bruel Kjaer 4320 calibrator. No drift in calibration was detected. The NTI XL2 complies with the requirements of IEC 61672-1.2013 Sound Level Meters and is classified as a Class 1 instrument. The calibrator complies with the requirements of IEC 60942.2004 Sound Calibrators. Both the XL2s and calibrator carry current NATA certification or manufacturers certification if less than two years old. Key results of noise monitoring are presented in Table 1 below.

TABLE 1 – SUMMARY OF KEY NOISE MONITORING RESULTS

Period	Background Noise Level[1], LA90
Day	35[2]
Evening	28[3]
Night	29[4]

Notes:

1. *Lowest $LA90_{(30min)}$ over the monitoring period and proposed operating hours.*
2. *9:30am – 10am Friday 17th of July 2020*
3. *9:30pm – 10pm Tuesday 21st of July 2020*
4. *5am – 5:30am Saturday 18th of July 2020*

2.1.1 Rail Noise Measurement Results

Rail noise measurements were extracted from the results of the unattended noise measurements at Location 1 in Figure 1 below. From this data, the 10th percentile loudest hour was calculated to assess internal noise levels within the development due to rail noise.

TABLE 2 – 10TH PERCENTILE HOUR RAIL NOISE MEASUREMENTS

Noise Monitoring Location	dB(A)	Octave Band Centre Frequency Hz dB(Z)							
		63	125	250	500	1K	2K	4K	8K
1	65	61	58	59	62	61	57	48	39

2.1.2 Road Traffic Noise Measurements

Road noise measurements were extracted from the results of the unattended noise measurements at Location 2 in Figure 1 below. From this data, the 10th percentile loudest hour was calculated to assess internal noise levels within the development due to road noise.

TABLE 3 – ROAD NOISE MEASUREMENTS

Noise Monitoring Location	dB(A)	Octave Band Centre Frequency Hz dB(Z)							
		63	125	250	500	1K	2K	4K	8K
2	53	62	56	54	52	47	42	34	23

2.2 Ground Vibration Measurements

Continuous ground vibration measurements were carried out onsite between Wednesday the 15th of July and Monday the 20th of July. These measurements were carried on the western boundary of the subject site shared with the rail corridor (refer to Figure 1) using a Sigicom C22 vibration meter. A summary of the results of these measurements are presented in Section 4.2.3.

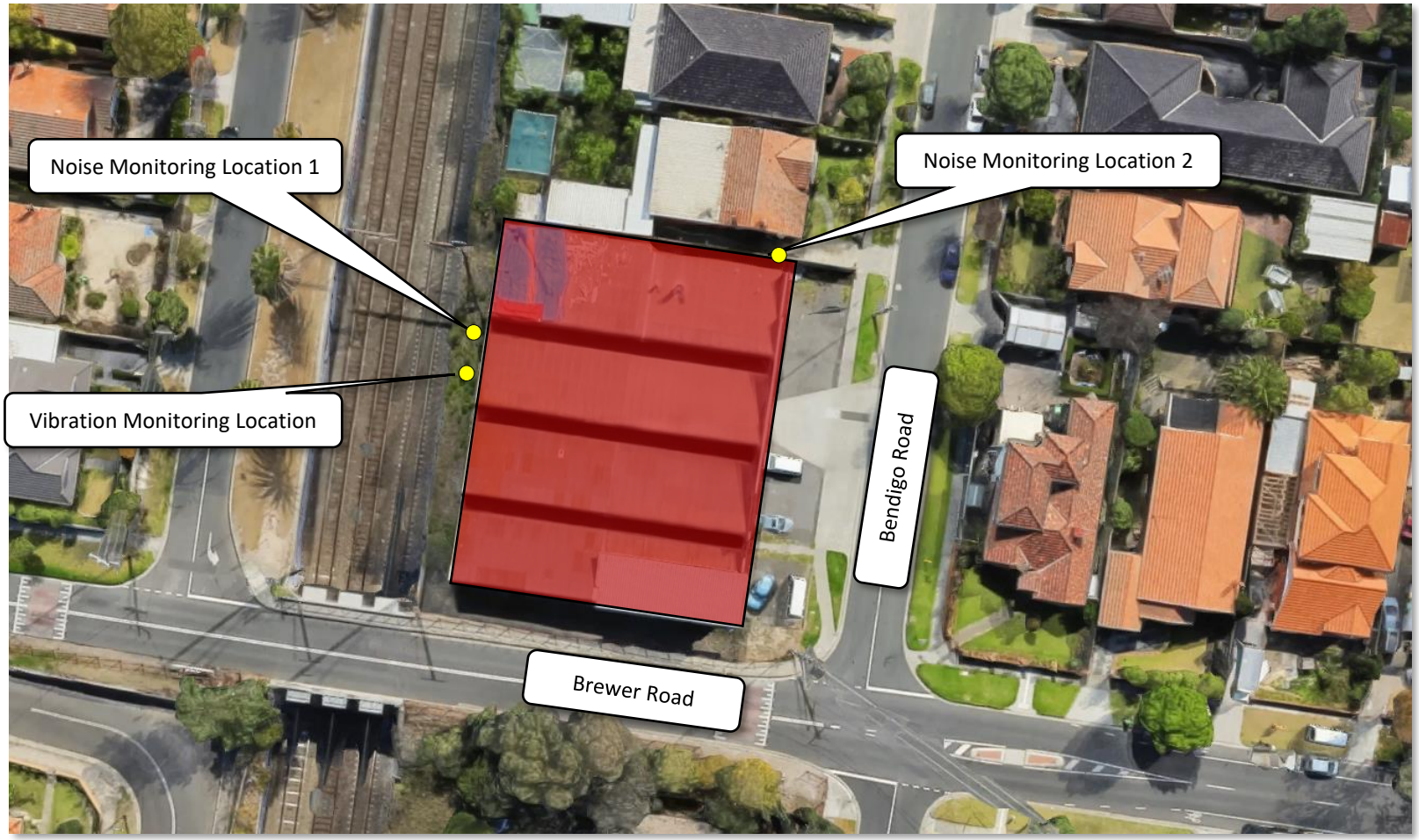

FIGURE 1 - SITE CONTEXT

3 Criteria

3.1 Mechanical Plant

Noise associated with commercial building plant and services is required to comply with Part 5.3 of the *Environment Protection Regulations 2021* (EPR 2021). *EPA Victoria Noise Limit and Assessment Protocol for the Control of Noise from Commercial, Industrial and Trade Premises and Entertainment Venues Publication 1826.4* (Publication 1826.4) provides a protocol for determining EPR 2021 noise limits and carrying out subsequent assessment of noise impacts.

EPR 2021 is a regulation under the *Environment Protection Act 2017* (EP Act) and compliance is mandatory when noise levels are assessed at noise sensitive areas which includes residential properties. The applicable EPR 2021 noise limits for plant and services noise emissions have been calculated and are presented in Table 4 below.

TABLE 4 – EPR 2021 MECHANICAL PLANT NOISE LIMITS

Period	Background Noise Level, dB L_{A90}[1]	Zoning Level, L_{eq} dB(A)	Background Classification	Applicable Noise Limit, dB L_{Aeq}
Day	35	51	Low	48
Evening	28	45	Low	40
Night	29	40	Low	38

Notes:

1. *Taken from 30 min measurement from unattended noise logger*
2. *Day period is:*
   - *07:00 – 18:00 Monday – Friday*
   - *07:00 – 13:00 Saturday*
3. *Evening period is:*
   - *18:00 – 22:00 Monday – Friday*
   - *13:00 – 22:00 Saturday*
   - *07:00 – 22:00 Sunday*
4. *Night period is:*
   - *22:00 – 07:00 Monday – Sunday*

3.2 Music Noise

Music noise emissions from the development are required to comply with Part 5.3 of the *Environment Protection Regulations 2021* (EPR 2021). *EPA Victoria Noise Limit and Assessment Protocol for the Control of Noise from Commercial, Industrial and Trade Premises and Entertainment Venues Publication 1826.4* (Publication 1826.4) provides a protocol for determining EPR 2021 noise limits and carrying out subsequent assessment of noise impacts.

EPR 2021 is a regulation under the *Environment Protection Act 2017* (EP Act) and compliance is mandatory when noise levels are assessed at noise sensitive areas which includes residential properties. The applicable EPR 2021 noise limits for music noise emissions have been calculated from the results of on-site noise measurements and are presented in Table 5 and Table 6.

These criteria were calculated from the lowest ambient background noise levels representative of those occurring during the three EPR 2021 periods. This approach is conservative as compliance with these criteria will result in compliance during all other trading hours when ambient background noise levels are higher.

TABLE 5 – EPR 2021 DAY & EVENING PERIOD CRITERIA FOR MUSIC NOISE

Period	Minimum Ambient Background, dB L_{A90}	+ 5 dB	Applicable EPR 2021 criteria, dB L_{Aeq}
Day	35[1]	+5	40
Evening	28[2]	+5	33
Notes:	*1. 9:30am – 10am Friday 17th of July 2020* *2. 8:30pm – 9pm Tuesday 21st of July 2020*		

TABLE 6 – EPR 2021 NIGHT PERIOD CRITERIA FOR MUSIC NOISE

Metric	Octave Band Center Frequency (Hz)						
	63	125	250	500	1000	2000	4000
Minimum Ambient Background, dB L_{90} [1]	45	34	31	28	25	21	18
+ 8 dB	+8	+8	+8	+8	+8	+8	+8
Applicable EPR 2021 criteria, dB L_{10}	53	42	39	36	33	29	26
Notes:	*1. 5am – 5:30am Saturday 18th of July 2020*						

3.3 Sleep Disturbance Criteria

Octave Acoustics applies sleep disturbance triggers to the assessment of transient noise occurring during the night period. Whilst there are currently no policies or guidelines in Victoria for the assessment of sleep disturbance, VCAT typically accepts triggers defined in accordance with the NSW Environmental Criteria for Road Traffic Noise 1999 (ECRTN). The ECRTN concludes that:

- *Maximum internal noise levels below 50-55dB(A) are unlikely to awaken people from sleep; and*

- *One or two noise events per night, with maximum internal noise levels of 65-70dB(A) are not likely to affect health and wellbeing significantly*

Assessment with respect to these triggers is carried out for the night period, between the hours 10pm to 7am. Where residential windows may be open for ventilation, it is generally accepted that the noise reduction via the open window is 10dB(A). Therefore, external noise levels need to exceed sleep disturbance triggers by more than 10dB(A) to warrant further assessment. Refer to Table 7.

TABLE 7 – SLEEP DISTURBANCE NOISE TRIGGERS

Bedroom Trigger Level (dB, L_{Amax})	Correction for Outdoor Level	Associated Outdoor Trigger Level (dB, L_{Amax})
50-55	+10 dB	60-65

3.4 Rail Noise

Appropriate criteria for the protection of building occupants from rail and traffic noise are as set out in Australian Standard AS2107 *Recommended Design Sound Levels and Reverberation Times for Building Interiors*, 2016 as presented in Table 8 below.

AS2017 provides a recommended design sound level range for rooms found to be acceptable by most people occupying the space under consideration.

TABLE 8 – RECOMMENDED DESIGN SOUND LEVELS

Type of occupancy/activity	Design sound level (LAeq) range[1]
Childcare Activity Areas	40 – 45
Sleeping areas	35 – 40
Medical Consulting Rooms	40 – 45
Note	*1. Sound levels within the given ranges have been found to be acceptable by most people for the space under consideration. When the sound level is greater than the upper level of the range most people occupying the space will become dissatisfied with the level of the sound. When the sound level is below the lower level of the range, the inadequacy of background sound to provide masking sound can become problematic, for example, by allowing other intermittent noise sources to cause distraction, annoyance, or lack of privacy.*

3.5 Vibration

3.5.1 Building Damage

British Standard 7385: Part 2 "Evaluation and measurement of vibration in buildings", is used to assess the likelihood of building damage associated with vibration. Trigger levels from the standard are given below in Table 9.

TABLE 9 – BS 7385 STRUCTURAL DAMAGE CRITERIA

Group	Type of Structure	Peak Component Particle Velocity, mm/s		
		4Hz to 15Hz	15Hz to 40Hz	40Hz and above
1	Reinforced or framed structures Industrial and heavy commercial buildings	50		
2	Un-reinforced or light framed structures Residential or light commercial type buildings	15 to 20	20 to 50	50

The peak vibration triggers for minimal risk of 'cosmetic' damage are: 15mm/s for un-reinforced or light framed structures, for example residential or light commercial buildings (increasing as the frequency content of the vibration increases) and 50mm/s for reinforced or framed structures, for example industrial and heavy commercial buildings (constant across all frequencies). 'Minor' damage (the formation of cracks or loosening in plaster surfaces, or cracks in brick/concrete blocks) is considered possible at vibration magnitudes which are twice those given for 'cosmetic' and 'major' damage to a building structure may occur at levels greater than four times the 'cosmetic' values.

These values relate to transient vibrations only. Continuous vibration can give rise to dynamic magnifications due to resonances and triggers may need to be reduced by up to 50%. These values have not been established to address potential structural damage associated with vibration induced subsidence.

The levels set by this standard are considered 'safe limits' up to which no damage due to vibration has been observed. Damage comprises minor non-structural effects such as hairline cracks on drywall surfaces, hairline cracks in mortar joints and cement render, enlargement of existing cracks and separation of partitions or intermediate walls from load bearing walls. These criteria do not apply to the assessment of potential for vibration induced subsidence.

3.5.2 AAAC Guidelines for Vibration

The Association of Australasian Acoustical Consultants (AAAC) Guideline for Commercial Building Acoustics provides the following recommendations for vibration levels within commercial buildings:

Items such as mechanical plant, passing trains or even footfall on lightweight flooring, can cause vibration. Australian Standard 2670.2:1990 – Evaluation of Human Exposure to Whole Body Vibration Part 2 provides a series of curves that provide acceptable levels for varying frequencies. For continuous vibration, such as from mechanical plant, it is recommended that Curve 2 not be exceeded. For intermittent vibration, such as from passing trains, it is recommended that Curve 4 not be exceeded.

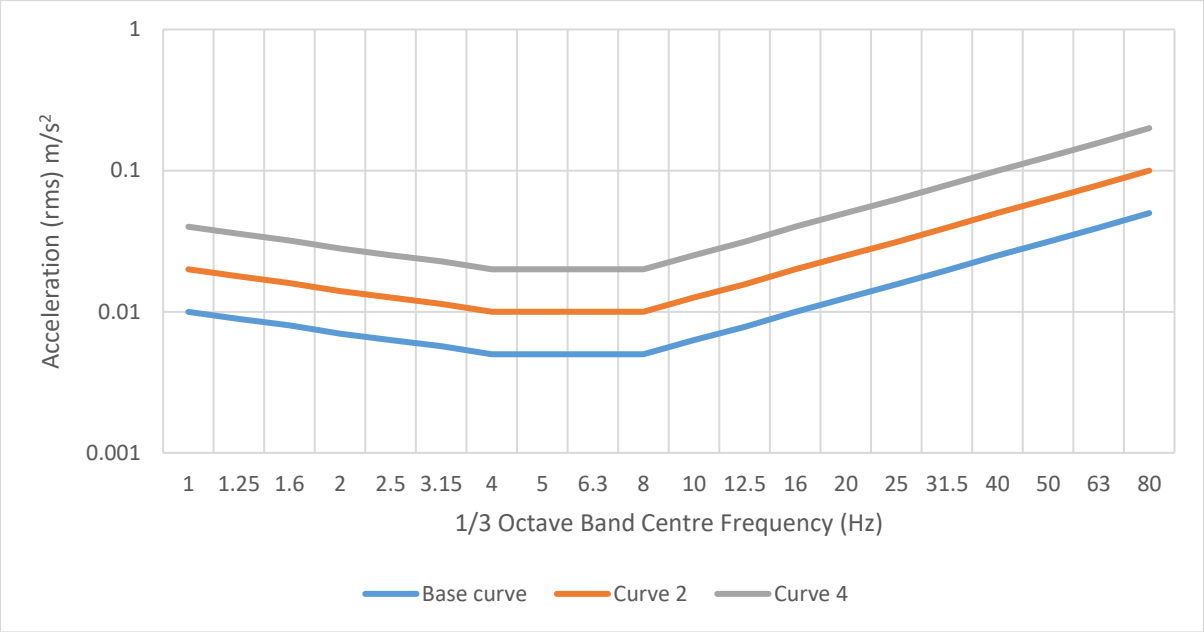

FIGURE 2 – Z-AXIS ACCELERATION CURVES

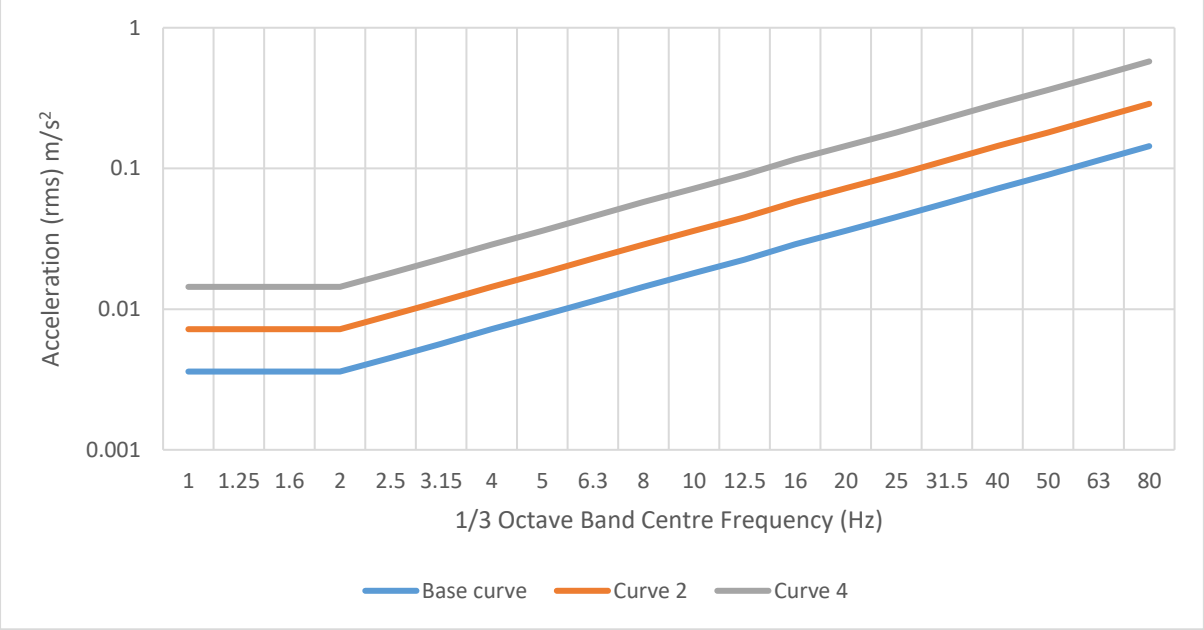

FIGURE 3 - X,Y AXIS ACCELERATION CURVES

3.5.3 Department of Environment and Conservation NSW

Assessing Vibration: a technical guideline released by the Department of Environment and Conservation NSW provides recommended criteria for continuous vibration levels for various workspaces, as shown in Table 10 below.

TABLE 10 – CRITERIA FOR EXPOSURE TO IMPULSIVE VIBRATION

Place	Weighted RMS Acceleration (m/s^2)			
	Preferred Values		Maximum Values	
	Z-Axis	X and Y axes	Z-Axis	X and Y axes
Offices, schools, educational institutions and places of worship	0.64	0.46	1.28	0.92

3.5.4 Ground Borne Noise

There are no Australian Standards that specify acceptable maximum noise levels from rail passes. The AAAC Guidelines recommend a value 10 dB higher than the maximum recommended design sound levels listed in AS/NZS 2107:2016, in Table 8 above.

3.6 Childcare Centre

There are currently no guidelines or policies in Victoria for the assessment of noise emissions associated with outdoor play areas of child care centres. In lieu of such guidelines or policies, it is appropriate to consider Version 2.0 of the *Guideline for Child Care Centre Acoustic Assessment*, October 2013 published by the Association of Australasian Acoustic Consultants (the AAAC Guideline) and Victorian Civil and Administrative Tribunal (VCAT) precedent.

3.6.1 AAAC Guideline

The AAAC Guideline sets out a recommended assessment method and criteria for noise impacts associated with outdoor play areas. However, the AAAC guideline is not referenced in Victorian planning schemes, policies or guidelines and compliance is not mandatory. The AAAC Guideline recommends that noise impact associated with outdoor play areas do not exceed:

- 5dB(A) above background noise where outdoor play is greater than 2 hours per day; and
- 10dB(A) above background noise where outdoor play is less than 2 hours per day.

However, it is the experience of acoustic consultants in Victoria that strict adherence to these criteria may in many circumstances be overly onerous and burdensome. In order to understand why this may be the case, it is informative to consider the origins of the AAAC Guideline which lie in the paper *Are We Assessing Child Care Noise Fairly?* by T. Gowen. This paper was based on a questionnaire put to

attendees of a meeting of the Australian Acoustical Society in NSW. Outcomes of the questionnaire included:

- that 46% of respondents disagreed that childcare centres should be assessed the same manner as industrial premises; and
- A number of respondents agreeing that childcare centres should be assessed in the same manner as industrial premises recommended an exception to noise associated with outdoor play.

This reflects that it is the position of the majority of suitably qualified people, that the emission of noise associated with children at play is less likely to be considered unreasonable when compared to comparable noise levels from other activities such as those related to commerce and industry.

Therefore, it is considered that the '5dB(A) above background noise' criteria may be too onerous. Instead, it is appropriate that the application of objective criteria take into account the broader circumstances of the proposal, such as:

- Local zoning
- The need for additional childcare spaces
- The implications associated with noise mitigation treatments (such as shadowing associated with noise fences)
- The hours and days of the week during which the outdoor play area will be used.

3.6.2 VCAT Precedent

A key VCAT decision is:

- Petzierides v Hobsons Bay CC (Red Dot) [2012] VCAT 686 (28 May 2012).

  The matter related to an amendment to a Permit to undertake minor building works at an existing child care centre and to increase the number of children from 75 to 80. This is a Red Dot decision. The reason given for why this decision was considered of significant is as follows:

  The Noise of Children in Child Care Centres – General agreement that noise emanating from child care centres is reasonable in residential areas does not obviate need to ensure any noise impact is of an acceptable level.

  As of 2022 there were 24 VCAT decisions referencing the Petzierides v Hobsons Bay CC decision.

A further VCAT decision of interest is:

- Tamoe Investments Pty Ltd v Glen Eira CC [2015] VCAT 719 (12 May 2015)

The decision refers to the following References from Petzierides V Hobsons Bay CC and concludes that this accords with the need for consideration of amenity impacts under the decision guidelines of the local zoning and Clause 65 of the Planning Scheme.

In this day and age, where child care centres may have anywhere between, say, 40 and 140 children, it is appropriate for such centres to take responsibility for its potential noise impacts and provide acoustic attenuation to minimise the impact of the noise of children playing upon adjoining residential properties to an acceptable level.

The decision also states that:

The AAAC Guideline is not a reference document in the Scheme and it is not an adopted policy of Council. This limits the weight I give to this document. Even if I was to find the AAAC Guideline a useful guide to judging the acoustic impact of the proposal, I consider the proposal, subject to permit conditions relating to acoustic treatment, would achieve an acceptable outcome.

Overall, the above commentary:

- Supports a position that noise impacts associated with childcare centres do not need to be assessed in accordance with the AAAC Guideline.
- Does not rule out the validity of the AAAC Guideline as an assessment tool.
- Acknowledges that there is general agreement that noise emanating from childcare centres is reasonable in residential areas.
- Acknowledges a requirement for the minimisation of noise impacts associated with children playing.

3.6.3 Proposed Approach

Octave Acoustics considers that the criteria set out in the AAAC Guideline are a useful tool in the assessment of potential amenity impacts. However, rather than being treated as rigid requirements (as per EPR 2021), Octave Acoustics treats the criteria as trigger noise levels, beyond which consideration should address whether attenuation has been provided to minimise the noise and:

- the character of the noise
- the time and duration of the noise
- whether the noise is typical for the area
- how often the noise occurs
- the number of people affected by the noise

Collectively, the above bullet points are equivalent to the *Offensive Noise Test* in the NSW Department of Environment, Climate Change and Water *Noise Guide for Local Government*, 2009 referred to and accepted in Beis Efraim College Limited v Bayside CC [2014] VCAT 856 (16 July 2014) by the Member[1] as *"…factors could reasonably be taken into account in assessing this proposal…"*

Trigger noise levels were calculated from the results of noise monitoring as presented in Table 11 below. As the AAAC Guideline was developed largely in NSW, the Daytime Rating Background Level was calculated in accordance with the NSW EPA Noise Policy for Industry (2017).

TABLE 11 – TRIGGER NOISE LEVELS FOR THE ASSESSMENT OF NOISE ASSOCIATED WITH OUTDOOR PLAY AREAS

Period	Rating Background Level, dB(A)	Trigger Level Range, LAeq	
		Lower	Upper
Day	39	44	49
Evening	38	43	48
Night	36	41	46

[1] Referencing the decision of the NSW Land and Environment Court in the matter of Meridian School v Pedavoli.

4 Assessment and Recommendations

4.1 Rail Noise Intrusion

A 3-D computer model of the proposed development was established in CadnaA software implementing the ISO9613 environmental noise prediction algorithms. The noise model was validated using the resultant 10th percentile loudest hour of rail noise. The model was then run to calculate rail induced sound pressure across the façade of the Proposed Development. Rail noise intrusion to the development was calculated using standard transmission loss algorithms.

The model was then modified to calculate traffic noise impacts to the Brewer Road and Bendigo Road facades of the Proposed Development. This involved the use of results of road traffic noise measurements for validation and calibration.

TABLE 12 – 3-D NOISE MODEL CALIBRATION LEVELS FOR RAIL NOISE

Noise Descriptor	Calibration Level
10th Percentile Loudest Hour	65 dB LAeq

A performance requirement for the glazing and façade system was developed to meet the established indoor noise targets. The resulting performance requirements (Rw) are presented in Table 13 below. Non-glazed façade walls are required to achieve a weighted sound reduction index plus Ctr not less than 40.

TABLE 13 – MINIMUM PERFORMANCE REQUIREMENT FOR FAÇADE GLAZING SYSTEMS, RW

Location	Performance Requirement for Glazing Assembly including Frame and Seals	Indicative Glazing[1]
All glazed elements of the facade	$R_w \geq 30$	Glazing system incorporating not less than one pane of 6mm thick laminated glass. Operable windows to include EPDM seals. Sliding doors to include full perimeter double wool pile seals
Note:	*1. Indicative glazing details are provided for informative purposes only. The builder may use other glass, seal and framing combinations that also satisfy the established Rw performance requirement.*	

4.2 Vibration

The vast majority of train pass-bys had consistent vibration levels, however, there were approximately 2 train pass-bys with noticeably higher vibration levels per day. Most of these have been clearly identified by correlation with the audio recording as being from freight trains. In general, there was

only one freight train pass-by during normal office hours. As such, with the exception of an analysis for building damage, these have been removed from the analysis as they do not represent typical train pass-bys.

4.2.1 Building Damage

The highest peak particle velocity associated with any train pass-by (including freight trains) was 3.4 mm/s in the z-axis and 3.3 mm/s in the x,y-axes. The peaks were between 60 and 100Hz, depending on the train. This is comfortably below the building damage criteria.

4.2.2 AAAC Guidelines for Vibration

The 5 train pass-bys with the highest acceleration levels (ignoring freight trains) were analysed and compared against the acceleration curves from Figure 2 and Figure 3. These are presented below in Figure 4 and Figure 5. The acceleration levels were consistent across most octave bands and comfortably comply with the requirement of being below Curve 4 as detailed in Section 3.5.2.

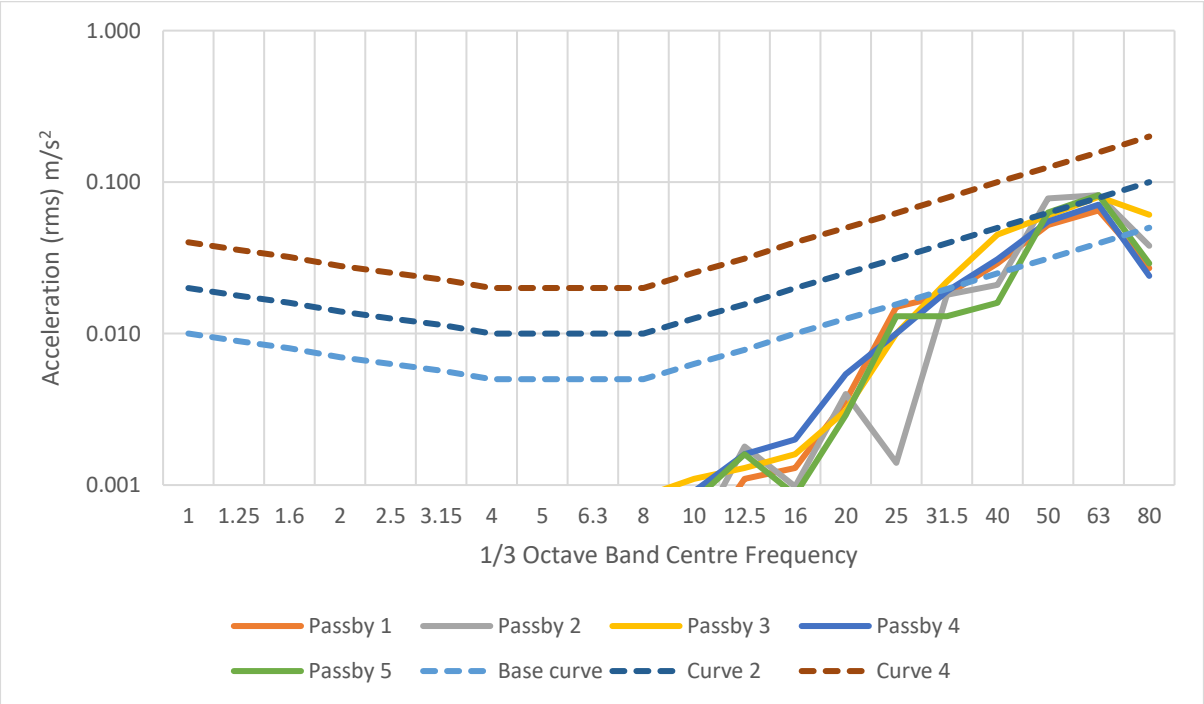

FIGURE 4 - TRAIN PASS-BY ACCELERATION LEVELS, Z-AXIS

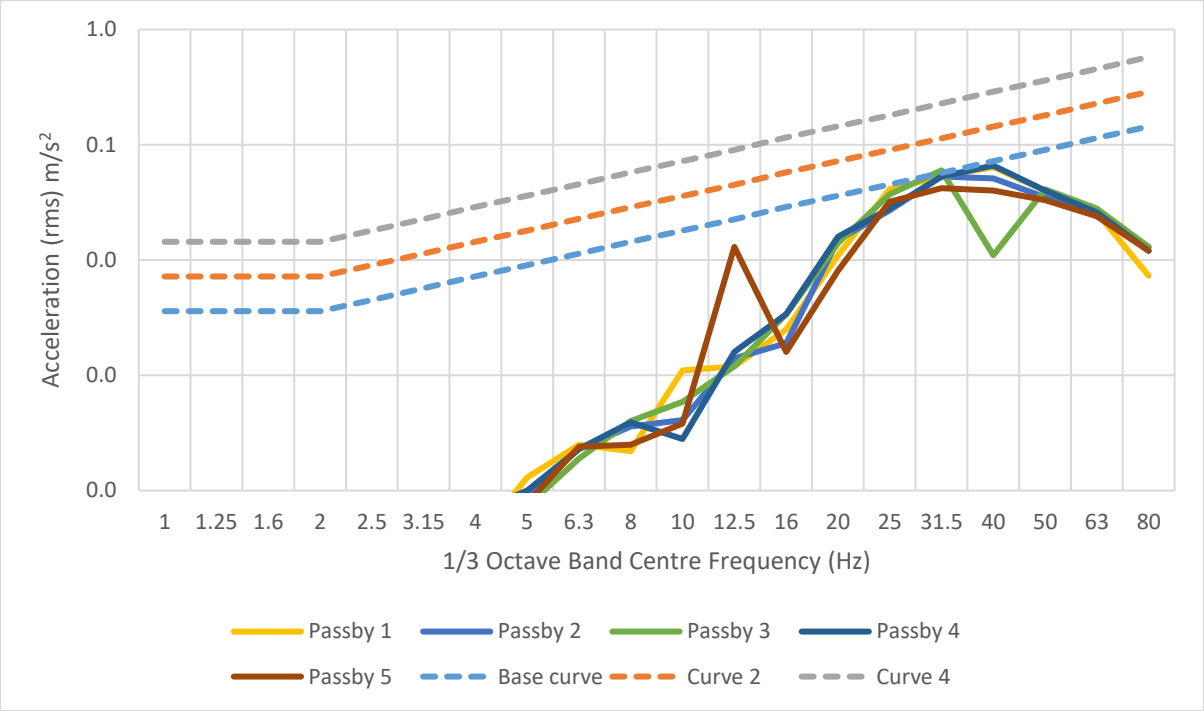

FIGURE 5 - TRAIN PASS-BY ACCELERATION LEVELS, X, Y AXES

4.2.3 Department of Environment and Conservation NSW

The vibration measurements are shown below in Figure 6. With the exception of freight train pass-bys, vibration levels from train pass-bys were below the preferred values given in Table 10 in each direction. As such, the vibration levels comply with the Depart of Environment and Conservation NSW recommended vibration levels for offices.

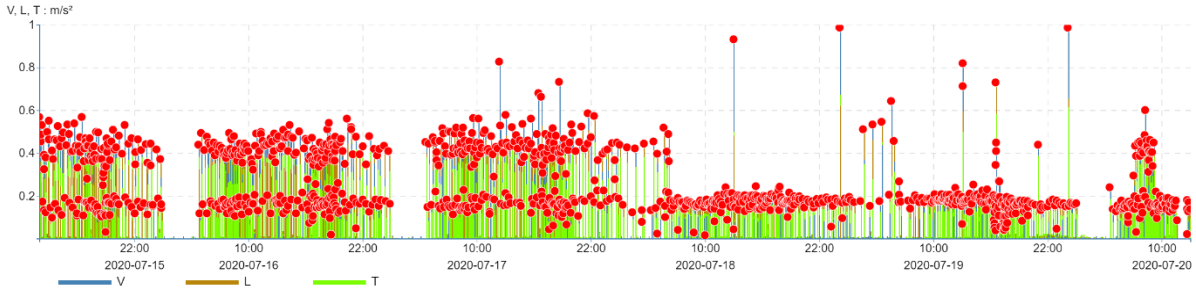

FIGURE 6 - ACCELERATION LEVELS FROM TRAIN PASS-BYS

4.2.4 Ground Borne Noise

Ground borne noise transmission within the development was calculated to comply with the requirement of the upper AS/NZS 2107 recommended levels plus 10dB.

4.3 Childcare Centre

The aforementioned 3-D computer noise model of the site and surrounds was modified in CadnaA software and calculations run implementing the ISO9613 algorithms. The ISO9613 algorithms calculate the propagation of noise between source and receiver taking into account propagation effects associated with:

- Source sound power
- Geometrical spreading
- Atmospheric conditions
- Air-absorption
- Ground absorption
- Reflections
- Barrier effects associated with topography and built form, including buildings and fences as referenced in Appendix A.

Sound power levels associated with children playing in the designated outdoor areas on the two mezzanines were taken from the AAAC Guideline. Octave bands were adapted from Wayne O. Olsen's paper Average Speech Levels and Spectra in Various Speaking/Listening Conditions: A Summary of the Pearson, Bennett, & Fidell (1977) Report, published 1998, as presented in Table 14 below. These levels were used to calculate sound power levels for the total number of children playing outside contemporaneously (refer Table 15). The children were modelled as an area source 0.5m above the level they were based.

Overall, this methodology is conservative as:

1. It is unlikely that all children in attendance will be playing outdoors at the same time.
2. It assumes that all 120 children are in attendance.

In addition, it should be noted that the adopted sound power levels were taken from the upper level specified for each age group in the AAAC Guideline, an approach that further contributes to the conservative nature of this assessment.

TABLE 14 – SOUND POWER LEVELS FOR GROUPS OF 10 CHILDREN PLAYING, RE 10^{-12} W

Age Group	SWL	Octave Band Centre Frequency, Hz						
		125	250	500	1000	2000	4000	8000
0 – 2	80	55	77	80	75	70	68	65
2 – 3	87	62	84	87	82	77	75	72
3 – 4	90	65	87	90	85	80	78	75

TABLE 15 – SOUND POWER LEVELS UTILISED WITHIN MODEL FOR EACH AGE GROUP, RE 10^{-12} W

Number of Age Group	OA	Octave Band Centre Frequency, Hz						
		125	250	500	1000	2000	4000	8000
60 Babies and Toddlers	85	63	85	88	83	78	76	73
30 Three-year-olds	89	67	89	92	87	82	80	77
30 Four-year-olds	91	70	92	95	90	85	83	80
All 120 Children	94	72	94	97	92	87	85	82

4.3.1 Resultant Noise Levels

In order to understand how noise emissions from the two proposed play areas propagate to the neighbouring dwellings, all 120 children were modelled evenly distributed across the two proposed play areas, with babies and toddlers on level 2, and 3/4 year-olds on level 3.

The assessment of predicted noise levels with respect to the trigger levels is presented in Table 16 below. The table shows the highest residential noise levels with 1.8m high glazed screening along all edges of both outdoor play areas (as per the provided project plans). The results indicate that resultant noise levels at residential receivers fall within or below the trigger range at all properties, during the day and evening periods. It is noted that noise from child's play exceeds the trigger levels at three properties during the night period, by a maximum of 2dB. Generally, an exceedance of this magnitude at a few dwellings would not constitute a recommendation to close the outdoor areas during the night period. However, as noted below, it is recommended that the outdoor play areas are not utilised during the night period as a result of transient play noise.

In addition to this observation, it is relevant to again consider the conservative aspects of this assessment, being that the assessment assumes the unlikely scenario that both outdoor areas are at 100% capacity. This result is considered to be an acceptable outcome. However, though steady state noise associated with child's play is expected to be acceptable, transient noise associated with play may exceed sleep disturbance criteria at neighbouring properties. It is for this reason that it is recommended that the outdoor play areas are not utilised before 7am.

TABLE 16 – PREDICTED HIGHEST RESIDENTIAL NOISE LEVELS AT FROM OUTDOOR PLAY AREAS – DAY PERIOD

Address	Trigger Level, dB L_{Aeq}	Noise Level with screening as described in provided plans, dB L_{Aeq}	Further consideration required?
101 Brewer Rd	44-49	48	No
40 Bendigo Ave	44-49	46	No
42 Bendigo Ave	44-49	45	No
44 Bendigo Ave	44-49	45	No
49 Bendigo Ave	44-49	46	No
47 Bendigo Ave	44-49	47	No
45 Bendigo Ave	44-49	47	No
43 Bendigo Ave	44-49	42	No
5 Burgess St	44-49	45	No
3 Burgess St	44-49	44	No
1 Burgess St	44-49	45	No
110 Brewer Rd	44-49	41	No

TABLE 17 – PREDICTED HIGHEST RESIDENTIAL NOISE LEVELS AT FROM OUTDOOR PLAY AREAS – EVENING PERIOD

Address	Trigger Level, dB L_{Aeq}	Noise Level with screening as described in provided plans, dB L_{Aeq}	Further consideration required?
101 Brewer Rd	43-48	48	No
40 Bendigo Ave	43-48	46	No
42 Bendigo Ave	43-48	45	No
44 Bendigo Ave	43-48	45	No
49 Bendigo Ave	43-48	46	No
47 Bendigo Ave	43-48	47	No
45 Bendigo Ave	43-48	47	No
43 Bendigo Ave	43-48	42	No
5 Burgess St	43-48	45	No
3 Burgess St	43-48	44	No
1 Burgess St	43-48	45	No
110 Brewer Rd	43-48	41	No

TABLE 18 – PREDICTED HIGHEST RESIDENTIAL NOISE LEVELS AT FROM OUTDOOR PLAY AREAS – NIGHT PERIOD

Address	Trigger Level, dB L_{Aeq}	Noise Level with screening as described in provided plans, dB L_{Aeq}	Further consideration required?
101 Brewer Rd	41-46	48	No[1]
40 Bendigo Ave	41-46	46	No
42 Bendigo Ave	41-46	45	No
44 Bendigo Ave	41-46	45	No
49 Bendigo Ave	41-46	46	No
47 Bendigo Ave	41-46	47	No[1]
45 Bendigo Ave	41-46	47	No[1]
43 Bendigo Ave	41-46	42	No
5 Burgess St	41-46	45	No
3 Burgess St	41-46	44	No
1 Burgess St	41-46	45	No
110 Brewer Rd	41-46	41	No
Notes	*1. The outdoor play areas are recommended to be closed during the Night period, as transient noise may exceed sleep disturbance criteria. As such, no further consideration is required*		

4.4 Carpark Noise

The proposed development includes a carpark on the northern side of the site, for 12 vehicles at ground level and 39 within the basement, for a total of 51 spaces. The receiver potentially most affected by noise associated with the operation of vehicles in the carpark is the property at 45 Bendigo Avenue. There are no policies or guidelines in Victoria that apply to noise associated with the operation of private vehicles on commercial or private land. However, in order to provide context as to any amenity impact, carpark noise sources were included in the noise model and the results compared to EPR 2021 limits (noting that EPR 2021 does not apply to carpark noise) and sleep disturbance triggers. The following assumptions were applied:

- 131 vehicle movements an hour (peak traffic generation as from version F01 of the supplied Ratio Consultants Traffic Report) within the carpark as a representation of a busy period of car-park activity.
- That the 2.4m high boundary timber paling fence is constructed along the northern site boundary (refer to details in Section 4.4.1 for acoustic fencing construction requirements).
- Vehicle sound power levels in accordance with those presented in Table 19.

TABLE 19 – VEHICLE SOUND POWER LEVELS DB, RE 10^{-12} W

Source	'A'	Octave Band Centre Frequency, Hz							
		63	125	250	500	1000	2000	4000	8000
Car moving within carpark, Leq	77	84	81	76	73	71	69	69	64
Car engine start, Leq	81	89	80	75	75	74	74	75	73
Car engine start, Lmax	92	104	90	84	85	84	84	85	86
Car door close, Lmax	94	109	102	92	93	85	82	77	70

Results of the noise model were compared with the EPR 2021 criteria as presented in Table 20. These results indicate that average carpark noise levels during the peak period will be approximately 40dB(A) at 45 Bendigo Avenue. This result is comfortably below the day period limit, and equal to the evening limit. The result is above the trigger level for the night period, a result usually requiring further consideration. However, it is understood as from version F01 of the supplied Ratio Consultants Traffic Report, that peak vehicle movements during the night are expected to be significantly less than that of the peak AM/PM times. As such, it is expected that steady state vehicle noise (e.g. vehicles moving through the ground level carpark to the basement carpark entrance) during the night period will be acceptable.

TABLE 20 – ASSESSMENT OF CARPARK NOISE – AVERAGE NOISE LEVELS – 45 BENDIGO AVENUE

Period	Noise Assessment Trigger, LAeq	Maximum Predicted Carpark Noise Level, LAeq	Further consideration required?
Day	48	40	No
Evening	40		No
Night	38		No

Sleep disturbance assessments are typically limited to the night period between 10pm and 7am the following day. The loudest transient noise events that typically occur in carparks is noise associated with door closing and engine starting. Assessment of maximum noise levels at 45 Bendigo Avenue with respect to sleep disturbance triggers are presented in Table 21. The resulting noise level of 63dB(A) is within the sleep disturbance trigger range.

TABLE 21 – ASSESSMENT OF CARPARK NOISE – TRANSIENT NOISE LEVELS

Potentially Most Affected Receiver	Outdoor Sleep Disturbance Assessment Trigger, LAeq	Maximum Predicted Carpark Noise Level Indoors, LAmax	Further consideration required?
45 Bendigo Avenue	60-65	63	Yes

As it is proposed that Allied Health and the childcare centre will operate during the night period, it is recommended that only the underground carpark is utilised during the night period, between 5am and 7am. Average noise levels from vehicle movements using the basement carpark entry is expected

to be below EPR 2021 limits, and transient noise events such as door slams and engine starts within the basement carpark are expected to be below the sleep disturbance triggers presented above.

4.4.1 Acoustic Fencing

The acoustic fencing described in Section 4.4 shall be consistent with the recommendations of this report, detailed as follows:

- Acoustic fencing may be constructed using double lapped timber palings as long the selected material (or combined skins) has a mass of at least 12kg/m^2;
- The fence shall have no gaps or holes in it, or the likelihood of such occurring through natural causes or deformations, thus allowing noise to pass through;
- The fence must be designed and built in an acceptable manner so that noise will not pass underneath it;
- It is preferable that the selected cladding is pre-fabricated to be jointed with an overlap or rebated joint (e.g. ship lapped);
- Where the above requirement cannot be met, any butt joints shall be sealed with a fire-rated weatherproof mastic or an overlapping piece of material meeting the mass requirements of 12kg/m^2 (minimum 35mm each side of the butt joint);
- Where acoustic timber palings are installed, all palings shall overlap by a minimum of 35mm;
- Where multiple cladding layers are used (e.g. FC sheeting over timber paling screen), joints in the cladding materials shall not coincide.

4.5 Music noise

It is recommended that a condition within the occupancy permit for the Café space is included with words to the effect of;

The tenant shall ensure that the level of noise emitted from the premises shall not exceed the permissible noise levels for entertainment noise as specified in the EPA Victoria Noise Limit and Assessment Protocol for the Control of Noise from Commercial, Industrial and Trade Premises and Entertainment Venues Publication 1826.4.

The applicable EPR 2021 limits are provided in Section 3.2.

5 Conclusion

Octave Acoustics was engaged by H.CO to carry out an acoustic assessment for the proposed mixed-use development at 99 Brewer Road, Bentleigh. The Proposed Development consists of a four storey commercial building with medical facilities and a childcare centre, bounded by a rail corridor to the west and Brewer Road to the South.

Octave Acoustics has carried out a series of on-site noise and vibration measurements to assess road and rail impacts on the subject site. The results of these measurements were then used to calculate resultant impacts throughout the Development. Performance requirements have been set for the façade and glazing to reduce airborne noise impacts to acceptable levels, while it is expected that ground-borne noise levels will comply with best practice criteria with the implementation of standard construction methods.

Noise impacts associated with children playing in the outdoor areas were calculated in 3-D computer modelling software. The results of the assessment indicate that noise emissions from the proposed childcare centre during full utilisation of the outdoor areas will fall within or below the trigger range as defined by the AAAC guideline during the day and evening periods, with screening to the edges of the outdoor areas as per the provided plans. This result is considered to be an acceptable outcome, alongside the recommendation that the outdoor play areas are not utilised before 7am.

Noise associated with private vehicles on commercial and private land is not subject to any noise policy or guideline in Victoria. However, in order to provide some context of potential amenity impacts, carpark noise sources were included in the noise model and the results compared with EPR 2021 limits and sleep disturbance triggers. Results of the noise model during the maximum level of carpark activity indicate that average carpark noise levels will be below or at the EPR 2021 limits for all periods. Additional modelling indicated a maximum transient carpark noise level of 63dB(A) at the potentially most affected receiver. This result is within the 60-65dB(A) sleep disturbance trigger range, indicating that maximum transient carpark noise may result in sleep disturbance. As such, it is recommended that only the basement carpark is utilised during the night period.

A condition for tenancy agreements requiring compliance with EPR 2021 and its associated noise protocol is recommended to assist in the control and management of music noise emissions.

Appendix A: Provided Project Plans

TP	00	Cover Page
TP	01	Copy of Land Survey
TP	02	Site Plan
TP	03	Basement
TP	04	Ground Floor Plan
TP	05	First Floor Plan
TP	06	Second Floor Plan
TP	07	Third Floor Plan
TP	08	Roof Plan
TP	09	Elevations
TP	10	Elevations
TP	11	Elevations
TP	12	Elevations
TP	13	Sections
TP	14	Sections
TP	15	Streetscape Elevation
TP	16	Signage Details
TP	17	Service Elevations

AREA SCHEDULE

	FOOD & BEVERAGE m²	MEDICAL/ ALLIED HEALTH m²	CHILD CARE m²	TOTAL m²	GROSS m²	SITE AREA m2	CAR BAYS
B					1,236		39
G	195	273		468	1,150		12
1		1,010		1,010	1,087		
2			570	570	1,097		
3			305	305	800		
TOTAL m2	195	1,283	875	2,353	5,370	1584	51

99 Brewer Road, Bentleigh VIC
Mixed Use Development
Town Planning
June 2023

JAM>rchitects

Town Planning

Dwg No.	TP00
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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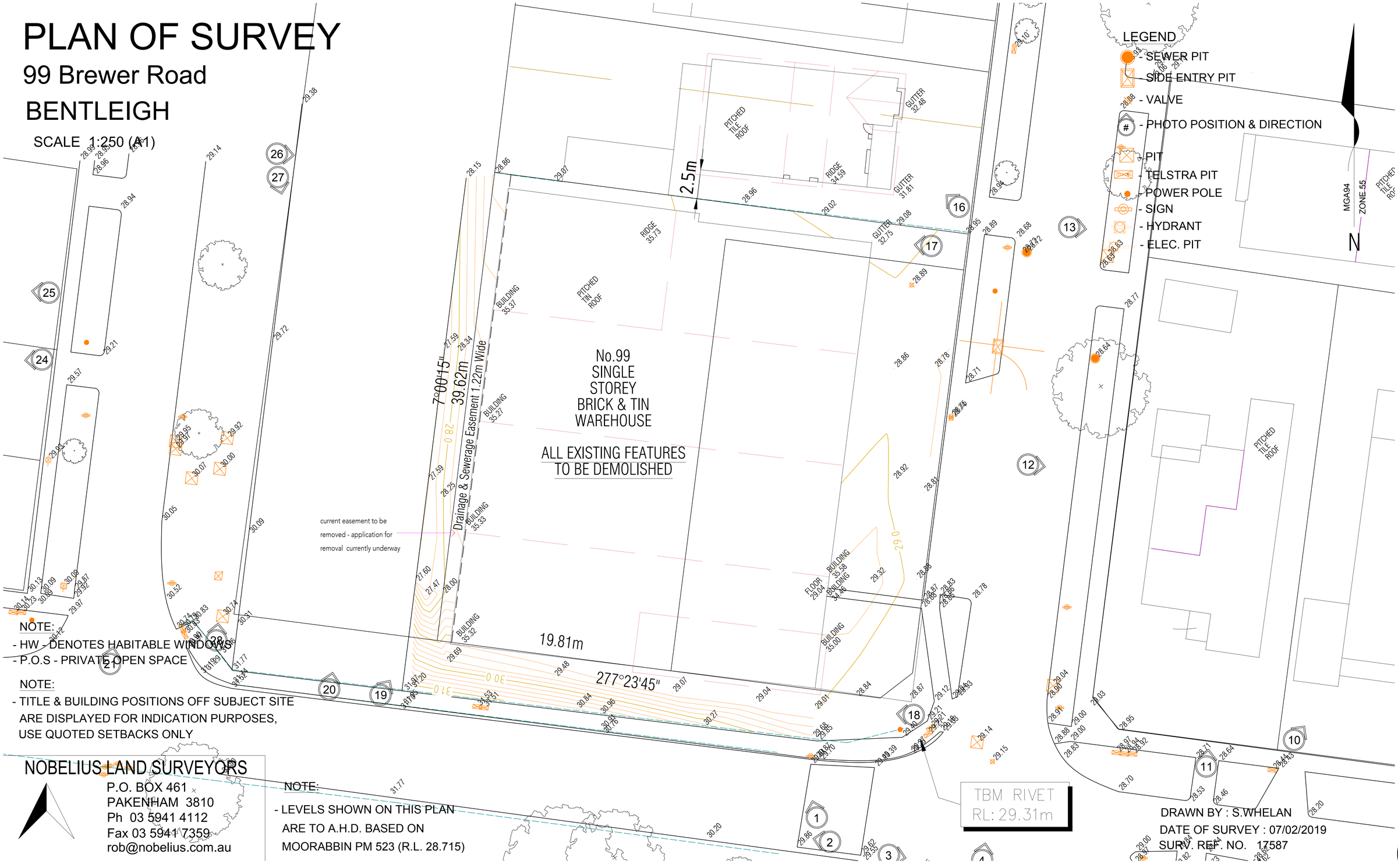
JAM

PLAN OF SURVEY

99 Brewer Road

BENTLEIGH

SCALE 1:250 (A1)



NOTE:
- HW - DENOTES HABITABLE WINDOWS
- P.O.S - PRIVATE OPEN SPACE

NOTE:
- TITLE & BUILDING POSITIONS OFF SUBJECT SITE ARE DISPLAYED FOR INDICATION PURPOSES, USE QUOTED SETBACKS ONLY

NOBELIUS LAND SURVEYORS
P.O. BOX 461
PAKENHAM 3810
Ph 03 5941 4112
Fax 03 5941 7359
rob@nobelius.com.au

NOTE:
- LEVELS SHOWN ON THIS PLAN ARE TO A.H.D. BASED ON MOORABBIN PM 523 (R.L. 28.715)

DRAWN BY : S.WHELAN
DATE OF SURVEY : 07/02/2019
SURV. REF. NO. 17587

Notes

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Project	Mixed Use Development	**Client**	Benewer Pty Ltd
Address	99 Brewer Road, Bentleigh VIC	**Date**	19/6/2023 **Drawn**
Dwg No.	TP01		
Project No.	2150	**Revision**	

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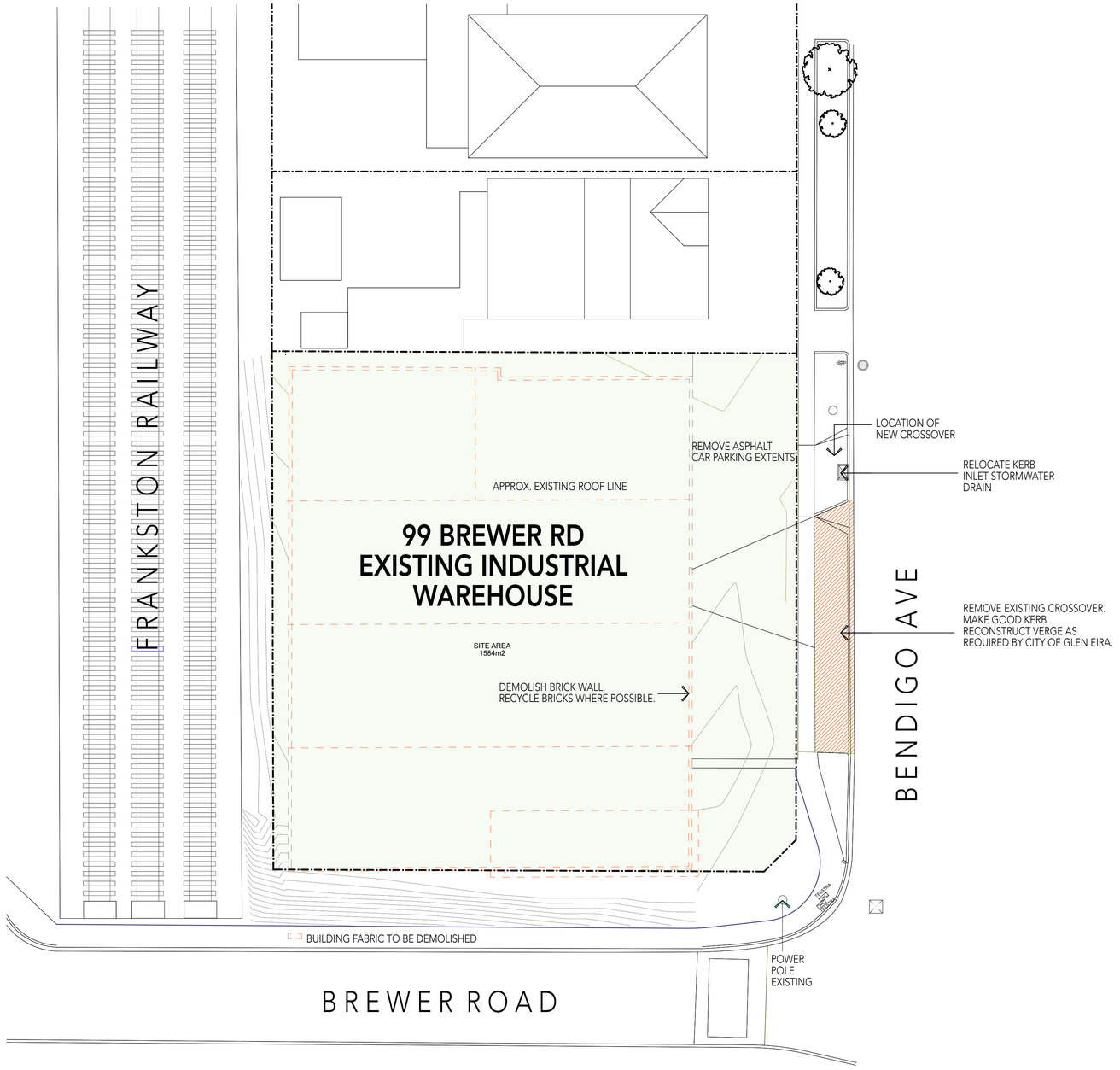

SITE PLAN

SCALE 1:200

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Town Planning

Dwg No.	TP02
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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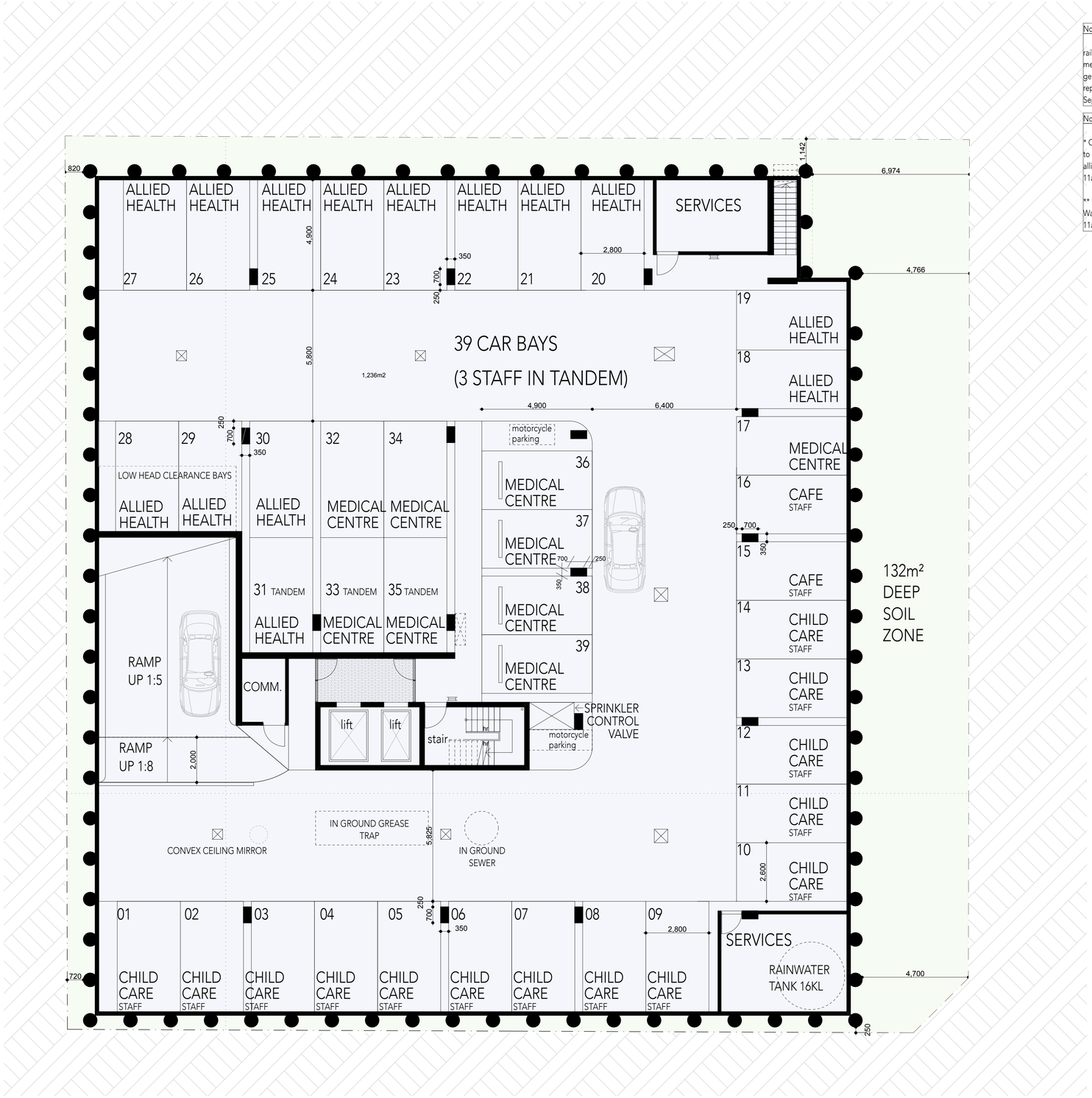

BASEMENT

SCALE 1:100

Note Acoustic report

rail noise intrusion, building facade and glazing, mechanical plant noise generation, tenant noise generation, car park usage to align with acoustic report undertaken by Octave Acoustics - 4th September 2020

Note - Car Bays 40-51

* Childcare parent pick-up / drop-off spaces are to be made available for use by patrons of the allied health during the times of 5am-8am, 11am-3pm and after 6:30pm.

** Space 51 is to be dedicated as a Loading & Waste Collection bay between the times of 11am-3pm.

General Note:

All glazing, glazed balustrade/screening to be in accordance with Octave Acoustics acoustic report dated 4 September 2020

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Town Planning

Dwg No.	TP03
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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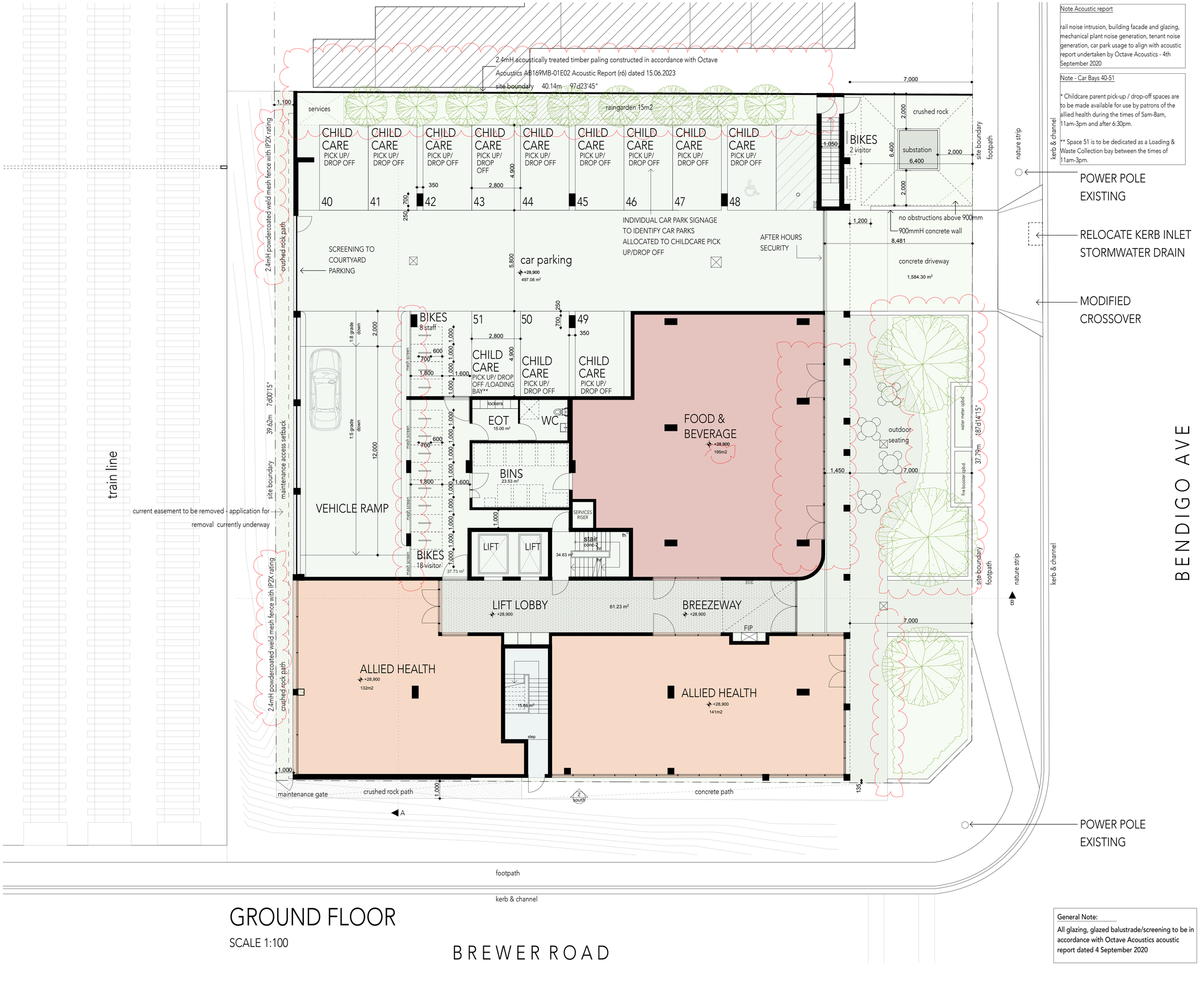

GROUND FLOOR

SCALE 1:100

BREWER ROAD

Note Acoustic report

rail noise intrusion, building facade and glazing, mechanical plant noise generation, tenant noise generation, car park usage to align with acoustic report undertaken by Octave Acoustics - 4th September 2020

Note - Car Bays 40-51

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General Note:

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Town Planning

Dwg No.	TP04
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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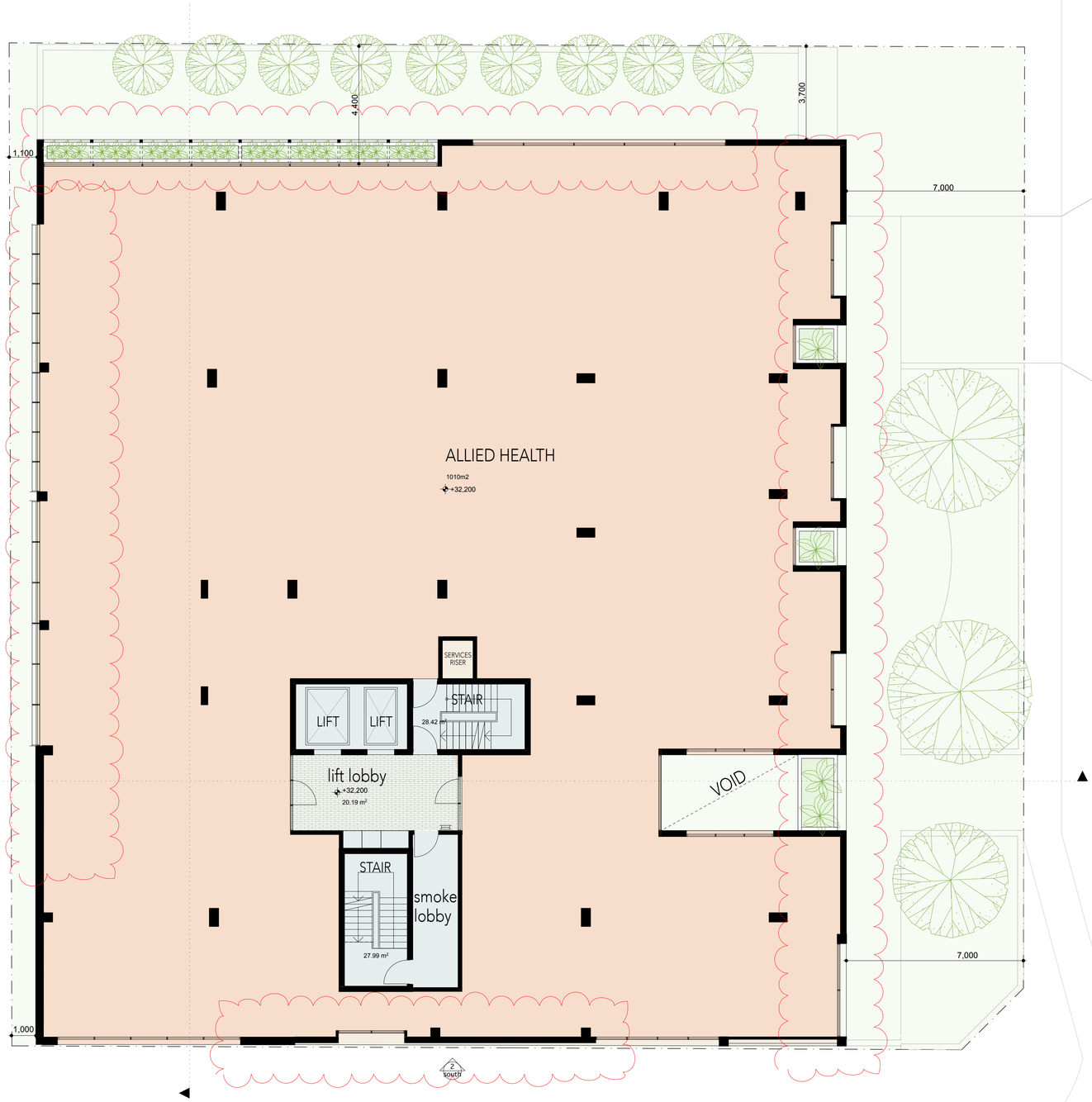

BENDIGO AVE

FIRST FLOOR

SCALE 1:100

BREWER ROAD

Note Acoustic report

rail noise intrusion, building facade and glazing, mechanical plant noise generation, tenant noise generation, car park usage to align with acoustic report undertaken by Octave Acoustics - 4th September 2020

Note - Car Bays 40-51

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** Space 51 is to be dedicated as a Loading & Waste Collection bay between the times of 11am-3pm.

General Note:

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Town Planning

Dwg No.	TP05
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

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JAM

SECOND FLOOR

SCALE 1:100

BREWER ROAD

BENDIGO AVE

Note Acoustic report

rail noise intrusion, building facade and glazing, mechanical plant noise generation, tenant noise generation, car park usage to align with acoustic report undertaken by Octave Acoustics - 4th September 2020

Note - Car Bays 40-51

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** Space 51 is to be dedicated as a Loading & Waste Collection bay between the times of 11am-3pm.

General Note:

All glazing, glazed balustrade/screening to be in accordance with Octave Acoustics acoustic report dated 4 September 2020

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Town Planning

Dwg No.	TP06
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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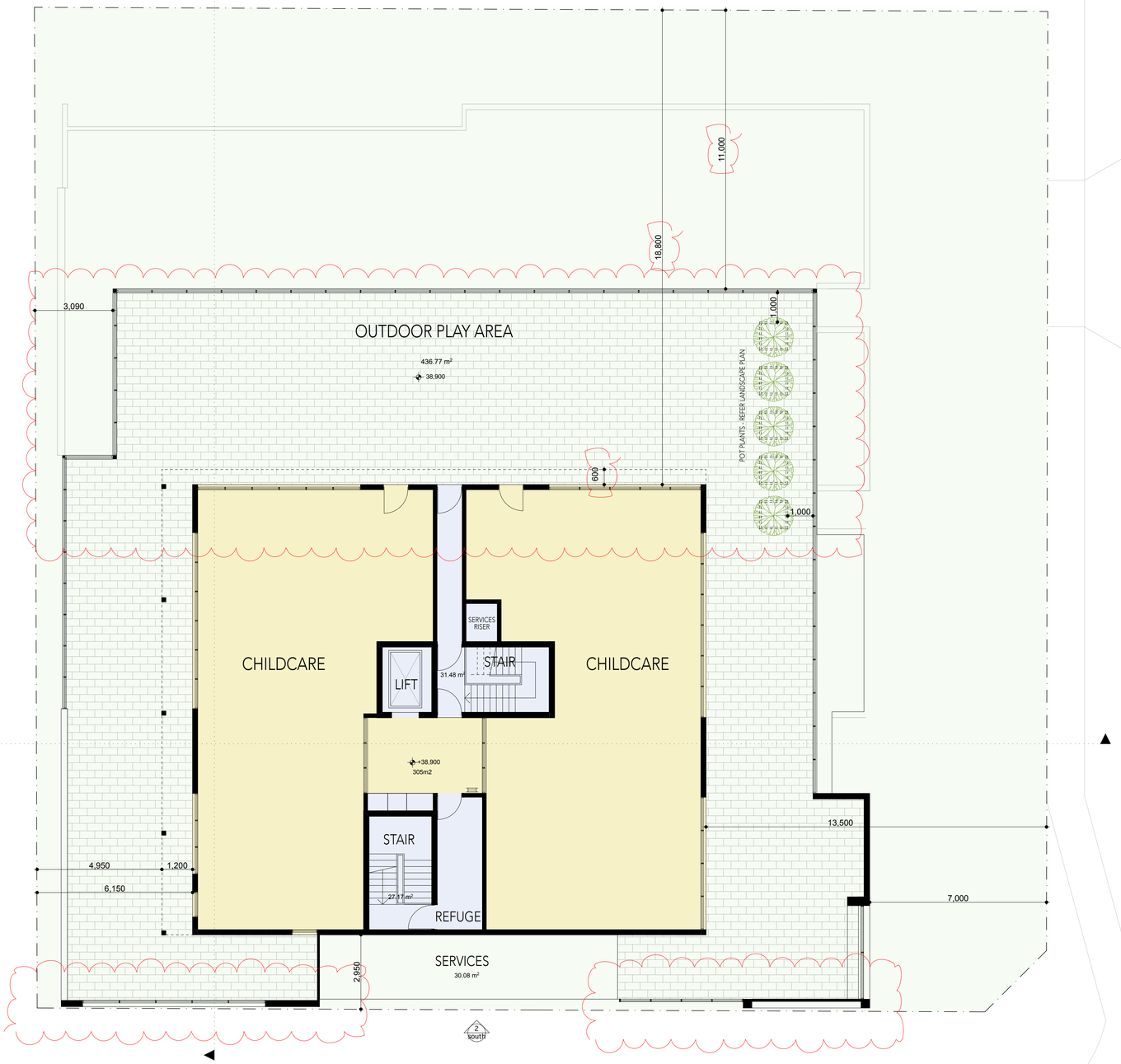

THIRD FLOOR

SCALE 1:100

BREWER ROAD

BENDIGO AVE

Note Acoustic report

rail noise intrusion, building facade and glazing, mechanical plant noise generation, tenant noise generation, car park usage to align with acoustic report undertaken by Octave Acoustics - 4th September 2020

Note - Car Bays 40-51

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** Space 51 is to be dedicated as a Loading & Waste Collection bay between the times of 11am-3pm.

General Note:

All glazing, glazed balustrade/screening to be in accordance with Octave Acoustics acoustic report dated 4 September 2020

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Town Planning

Dwg No.	TP07
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

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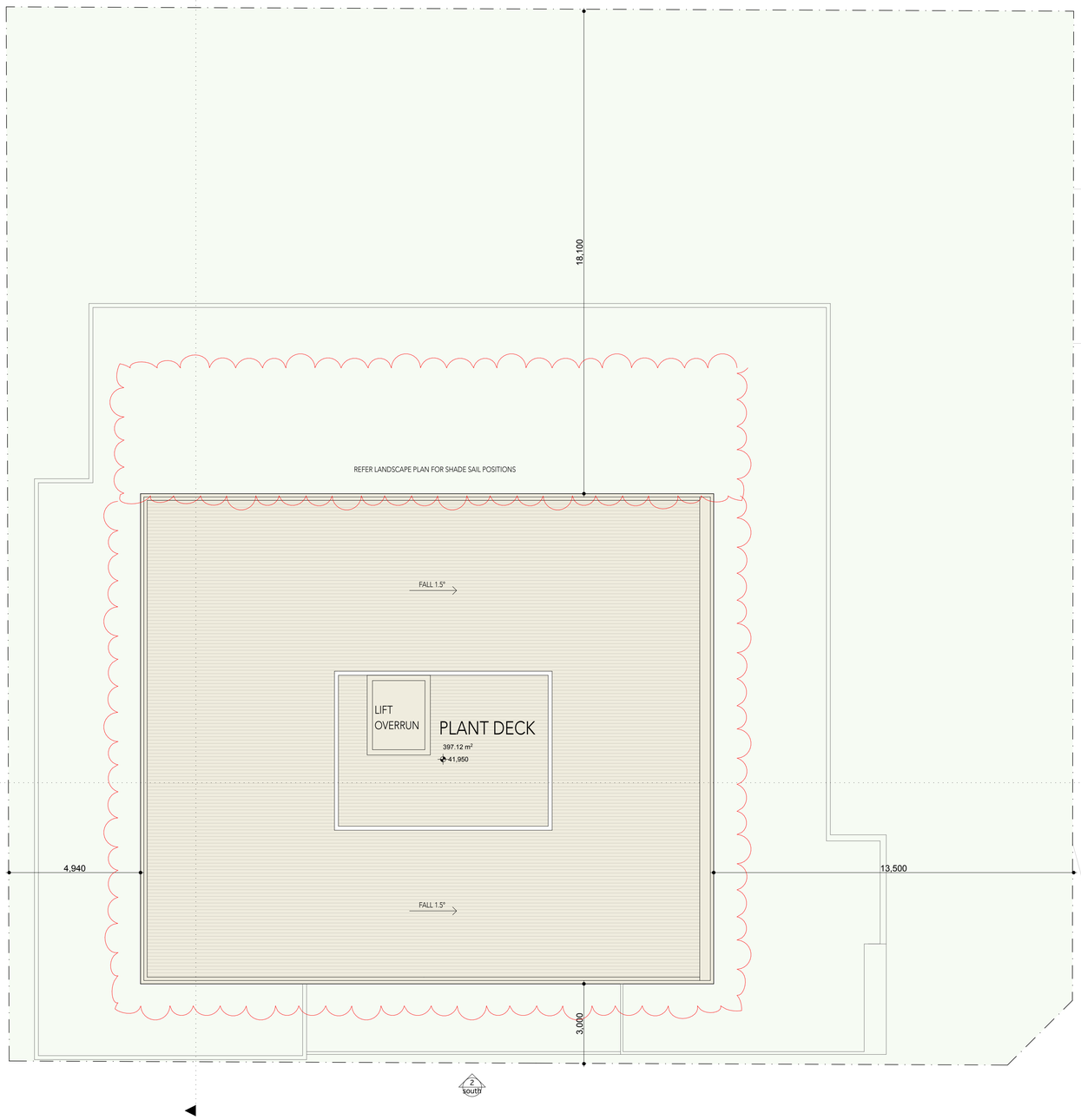

ROOF FLOOR

SCALE 1:100

BREWER ROAD

BENDIGO AVE

Note Acoustic report

rail noise intrusion, building facade and glazing, mechanical plant noise generation, tenant noise generation, car park usage to align with acoustic report undertaken by Octave Acoustics - 4th September 2020

Note - Car Bays 40-51

* Childcare parent pick-up / drop-off spaces are to be made available for use by patrons of the allied health during the times of 5am-8am, 11am-3pm and after 6:30pm.

** Space 51 is to be dedicated as a Loading & Waste Collection bay between the times of 11am-3pm.

General Note:

All glazing, glazed balustrade/screening to be in accordance with Octave Acoustics acoustic report dated 4 September 2020

JAM>rchitects

Town Planning

Dwg No.	TP08
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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JAM

EAST ELEVATION

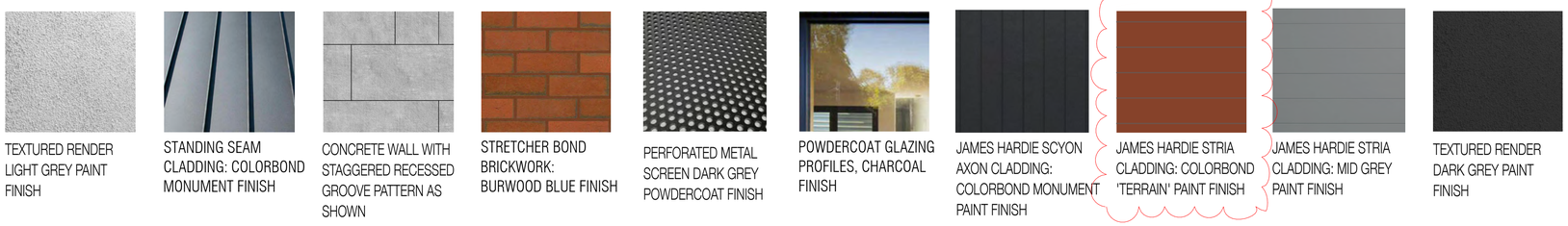
(BENDIGO AVENUE)

SCALE 1:100

General Note:

All glazing, glazed balustrade/screening to be in accordance with Octave Acoustics acoustic report dated 4 September 2020

MATERIAL PALETTE



TEXTURED RENDER LIGHT GREY PAINT FINISH

STANDING SEAM CLADDING: COLORBOND MONUMENT FINISH

CONCRETE WALL WITH STAGGERED RECESSED GROOVE PATTERN AS SHOWN

STRETCHER BOND BRICKWORK: BURWOOD BLUE FINISH

PERFORATED METAL SCREEN DARK GREY POWDERCOAT FINISH

POWDERCOAT GLAZING PROFILES, CHARCOAL FINISH

JAMES HARDIE SCYON AXON CLADDING: COLORBOND MONUMENT PAINT FINISH

JAMES HARDIE STRIA CLADDING: COLORBOND 'TERRAIN' PAINT FINISH

JAMES HARDIE STRIA CLADDING: MID GREY PAINT FINISH

TEXTURED RENDER DARK GREY PAINT FINISH

JAM>rchitects

Town Planning

Dwg No.	TP09
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

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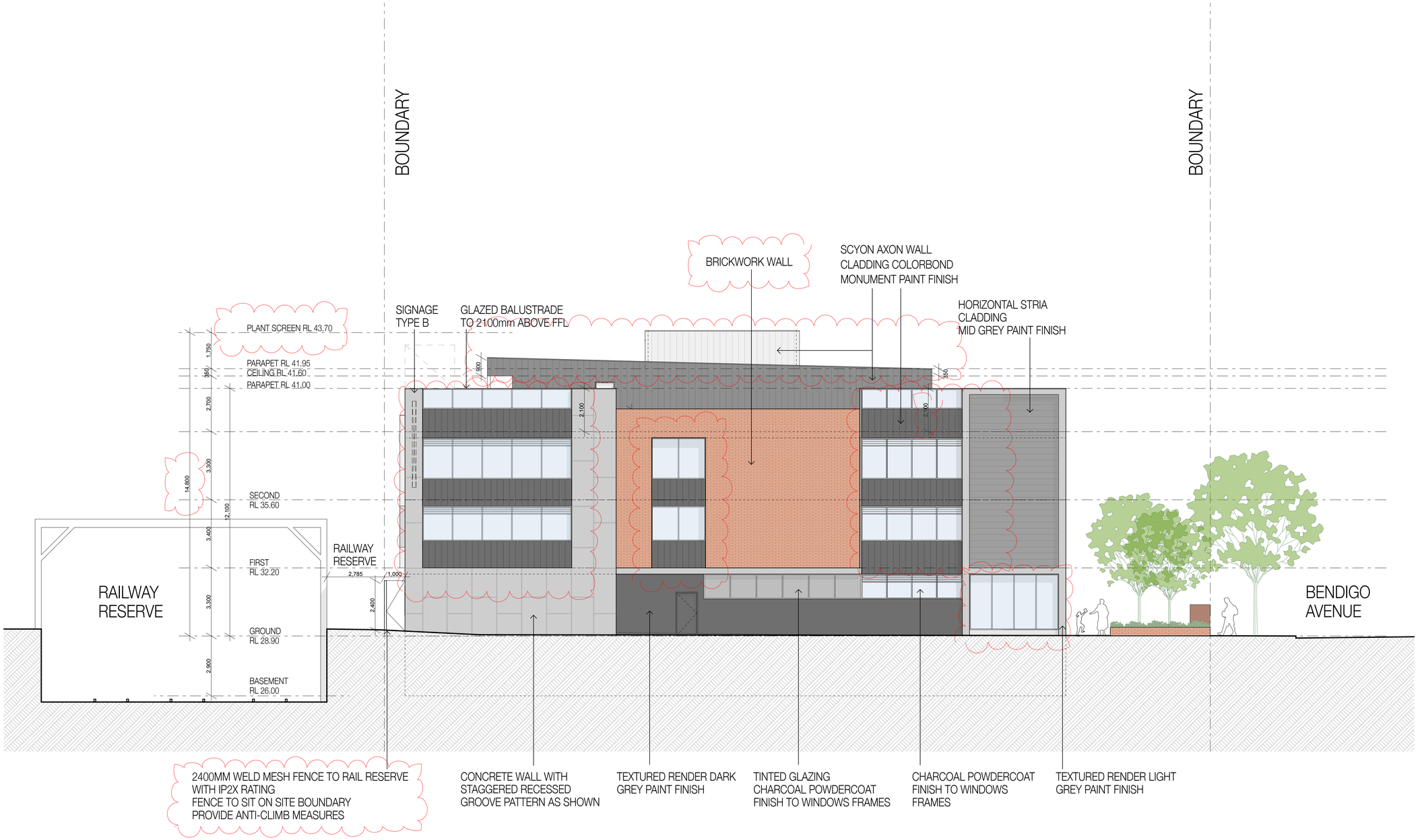


SOUTH ELEVATION

(BREWER ROAD)

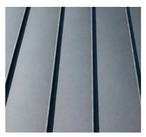
SCALE 1:100

General Note:

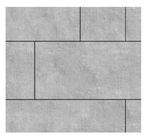
All glazing, glazed balustrade/screening to be in accordance with Octave Acoustics acoustic report dated 4 September 2020

MATERIAL PALETTE

TEXTURED RENDER LIGHT GREY PAINT FINISH

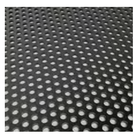


STANDING SEAM CLADDING: COLORBOND MONUMENT FINISH

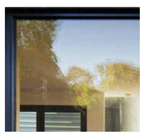


CONCRETE WALL WITH STAGGERED RECESSED GROOVE PATTERN AS SHOWN

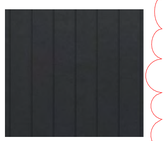
STRETCHER BOND BRICKWORK: BURWOOD BLUE FINISH



PERFORATED METAL SCREEN DARK GREY POWDERCOAT FINISH

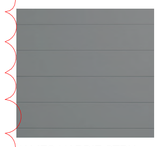


POWDERCOAT GLAZING PROFILES, CHARCOAL FINISH



JAMES HARDIE SCYON AXON CLADDING: COLORBOND MONUMENT PAINT FINISH

JAMES HARDIE STRIA CLADDING: COLORBOND 'TERRAIN' PAINT FINISH



JAMES HARDIE STRIA CLADDING: MID GREY PAINT FINISH

TEXTURED RENDER DARK GREY PAINT FINISH

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Town Planning

Dwg No.	TP10
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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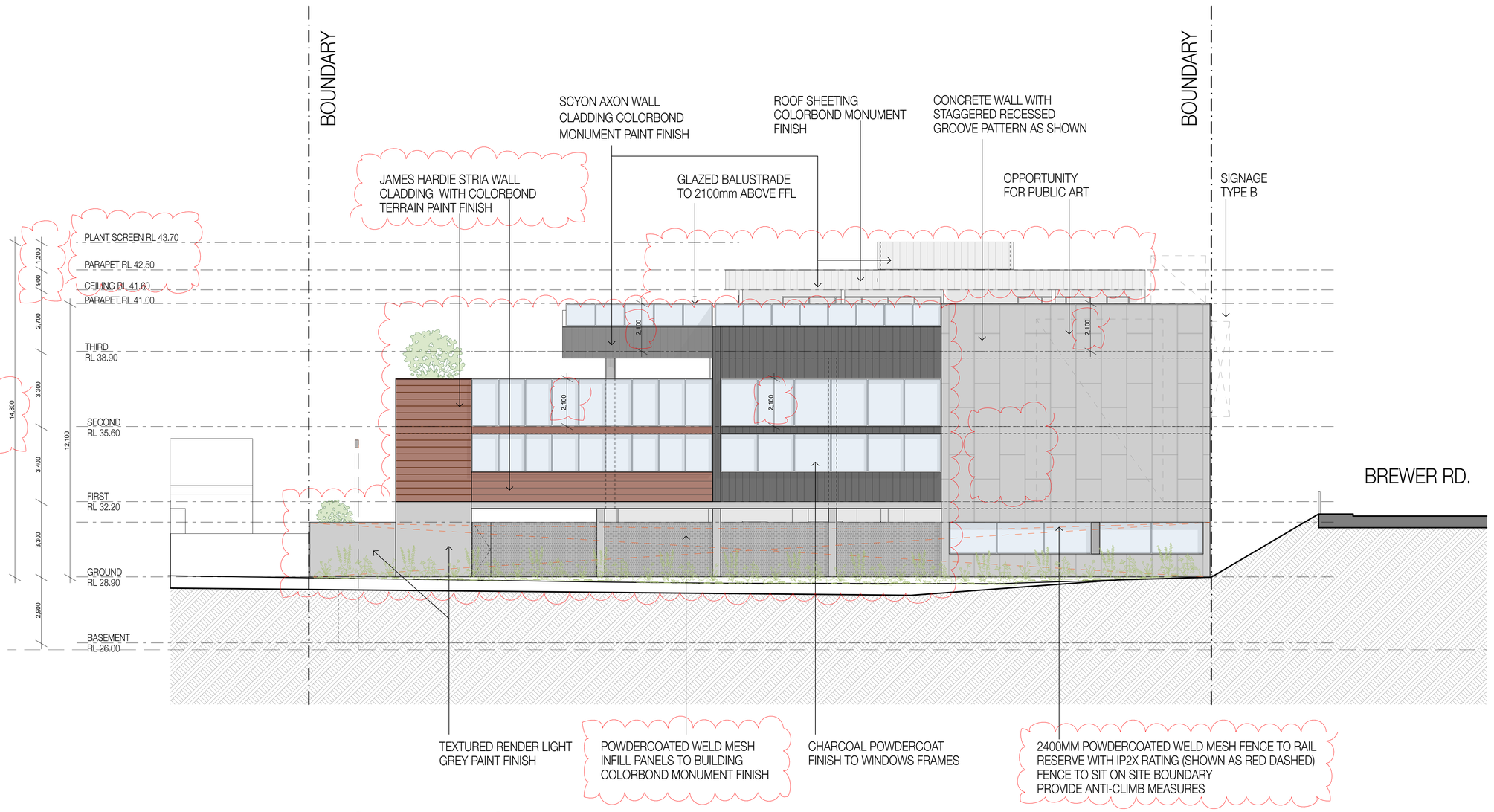


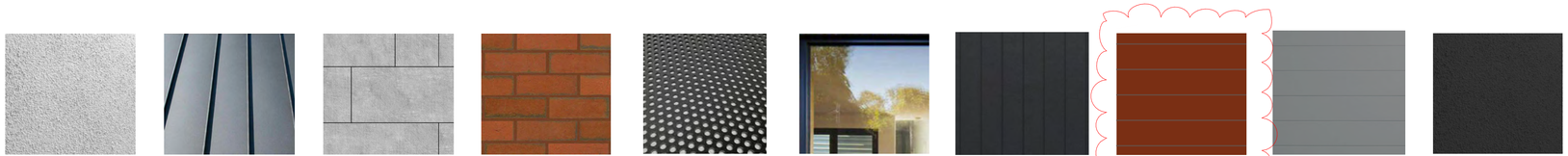
WEST ELEVATION

SCALE 1:100

General Note:

All glazing, glazed balustrade/screening to be in accordance with Octave Acoustics acoustic report dated 4 September 2020

MATERIAL PALETTE



TEXTURED RENDER LIGHT GREY PAINT FINISH

STANDING SEAM CLADDING: COLORBOND MONUMENT FINISH

CONCRETE WALL WITH STAGGERED RECESSED GROOVE PATTERN AS SHOWN

STRETCHER BOND BRICKWORK: BURWOOD BLUE FINISH

PERFORATED METAL SCREEN DARK GREY POWDERCOAT FINISH

POWDERCOAT GLAZING PROFILES, CHARCOAL FINISH

JAMES HARDIE SCYON AXON CLADDING: COLORBOND MONUMENT PAINT FINISH

JAMES HARDIE STRIA CLADDING: COLORBOND 'TERRAIN' PAINT FINISH

JAMES HARDIE STRIA CLADDING: MID GREY PAINT FINISH

TEXTURED RENDER DARK GREY PAINT FINISH

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Town Planning

Dwg No.	TP11
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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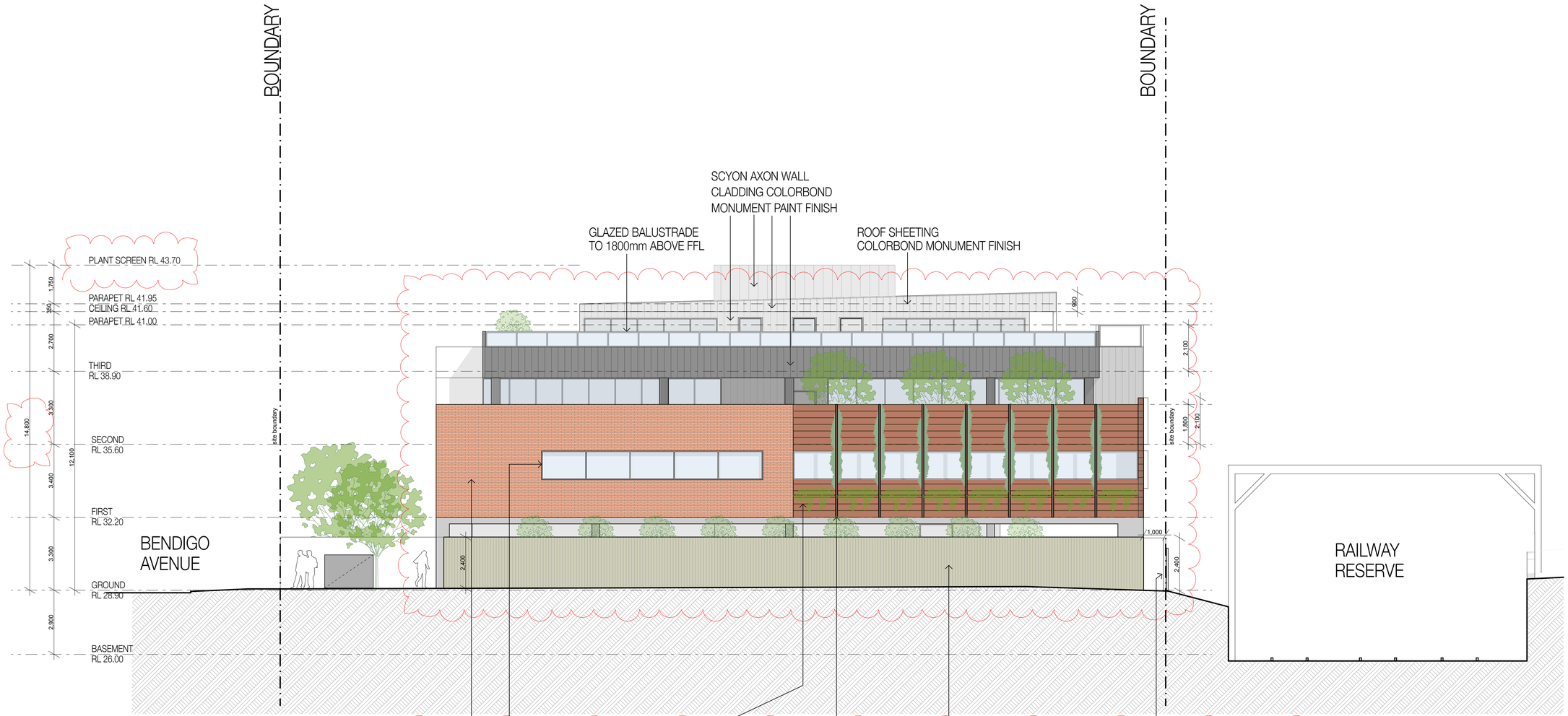


NORTH ELEVATION

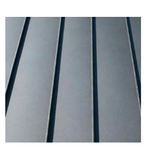
SCALE 1:100

General Note:

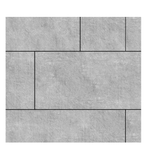
All glazing, glazed balustrade/screening to be in accordance with Octave Acoustics acoustic report dated 4 September 2020

MATERIAL PALETTE

TEXTURED RENDER
LIGHT GREY PAINT
FINISH

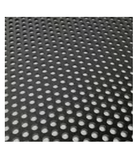


STANDING SEAM
CLADDING: COLORBOND
MONUMENT FINISH

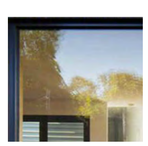


CONCRETE WALL WITH
STAGGERED RECESSED
GROOVE PATTERN AS
SHOWN

STRETCHER BOND
BRICKWORK:
BURWOOD BLUE FINISH



PERFORATED METAL
SCREEN DARK GREY
POWDERCOAT FINISH



POWDERCOAT GLAZING
PROFILES, CHARCOAL
FINISH

JAMES HARDIE SCYON
AXON CLADDING:
COLORBOND MONUMENT
PAINT FINISH

JAMES HARDIE STRIA
CLADDING: COLORBOND
'TERRAIN' PAINT FINISH

JAMES HARDIE STRIA
CLADDING: MID GREY
PAINT FINISH

TEXTURED RENDER
DARK GREY PAINT
FINISH

JAM>rchitects

Town Planning

Dwg No.	TP12
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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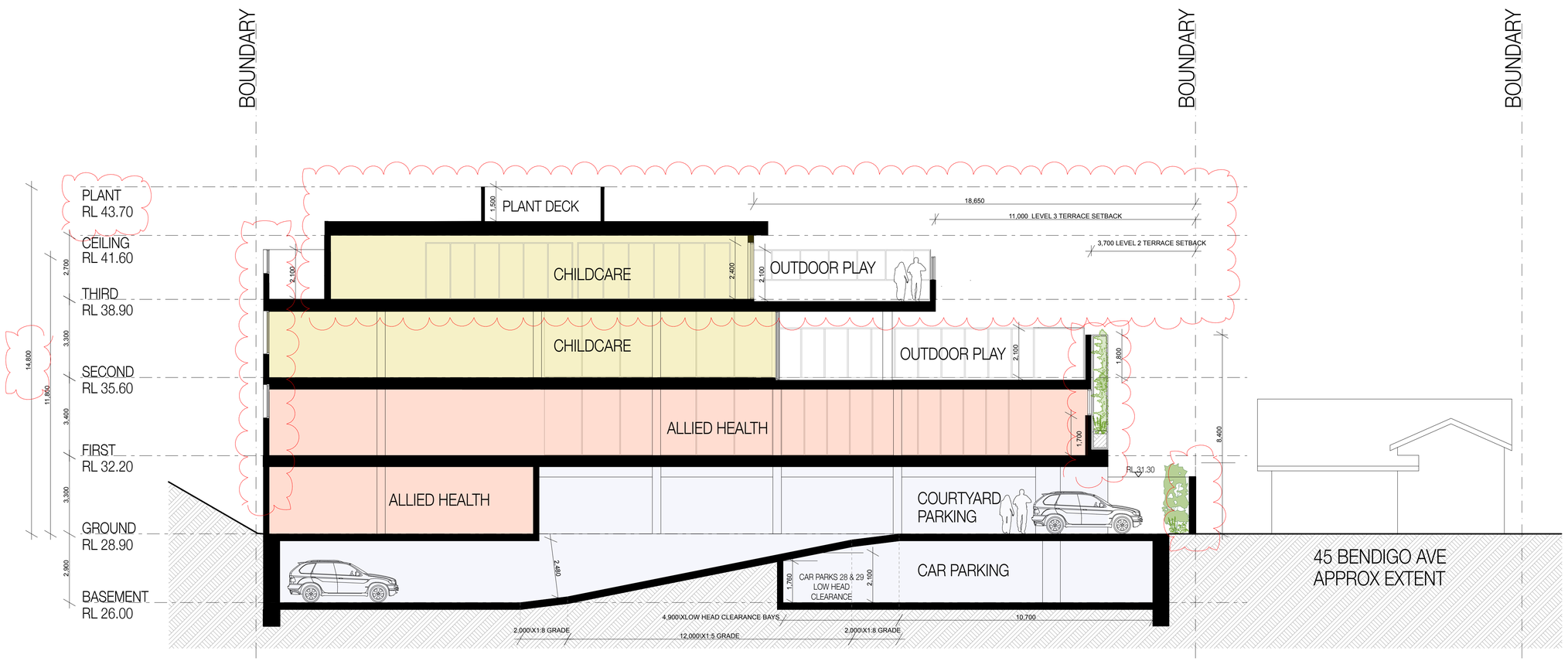

DESIGN SECTION A

General Note:

All glazing, glazed balustrade/screening to be in accordance with Octave Acoustics acoustic report dated 4 September 2020

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Town Planning

Dwg No.	TP13
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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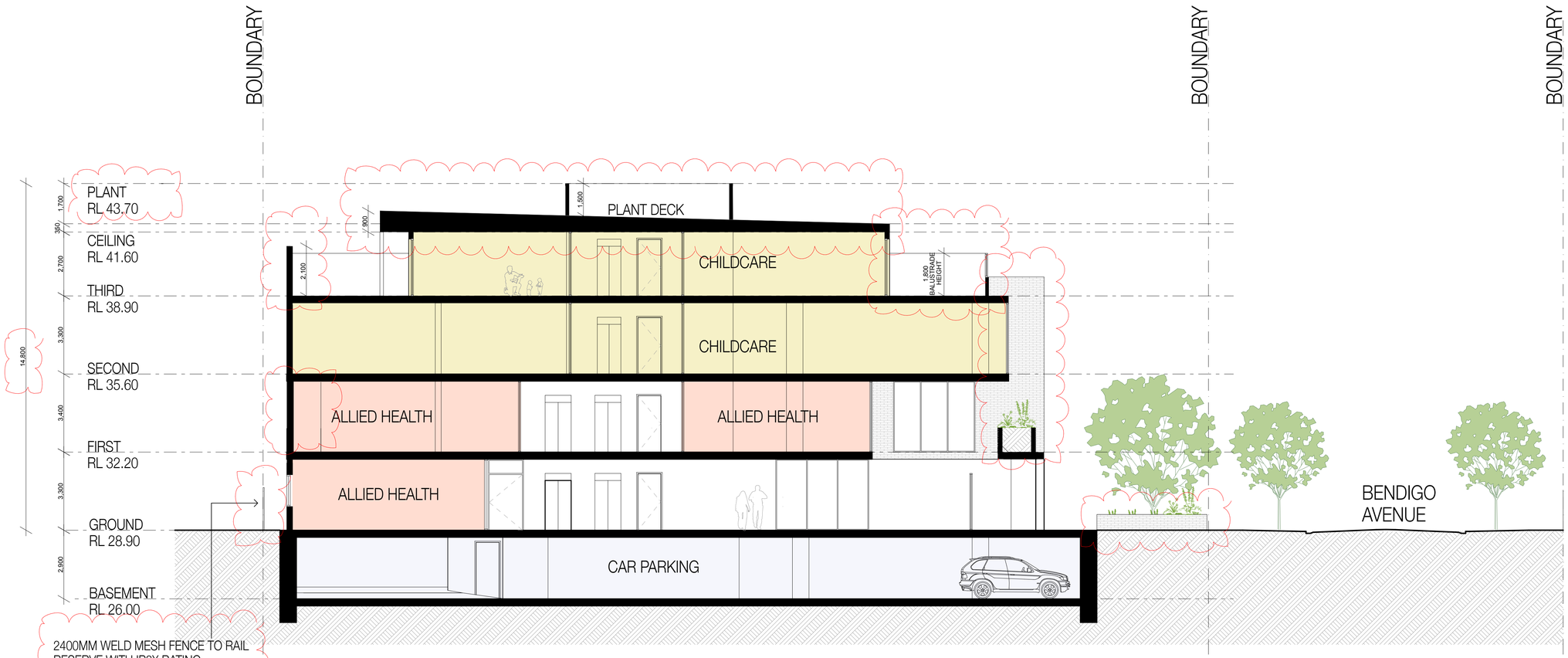

DESIGN SECTION B

General Note:

All glazing, glazed balustrade/screening to be in accordance with Octave Acoustics acoustic report dated 4 September 2020

JAM>rchitects

Town Planning

Dwg No.	TP14
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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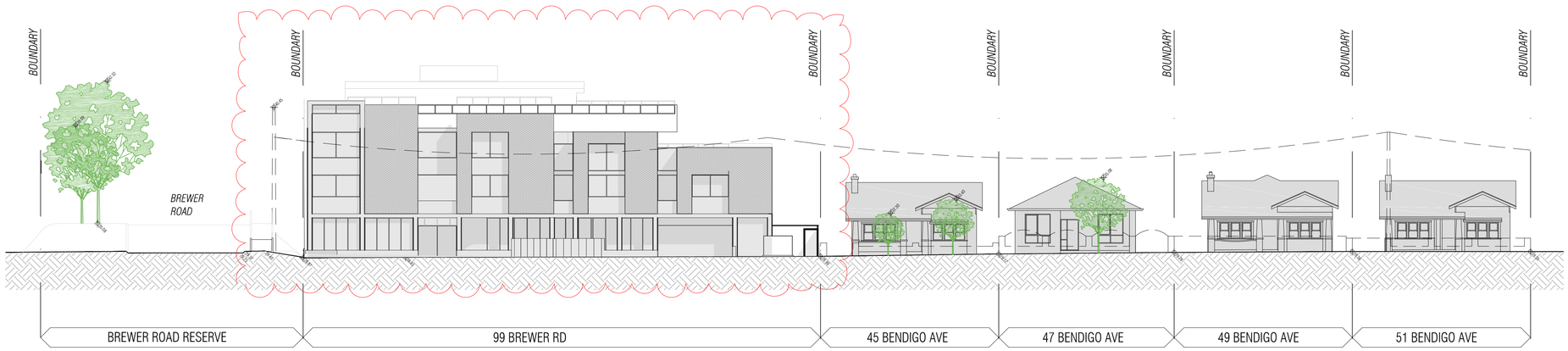

STREETSCAPE ELEVATION

General Note:

All glazing, glazed balustrade/screening to be in accordance with Octave Acoustics acoustic report dated 4 September 2020

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Town Planning

Dwg No.	TP15
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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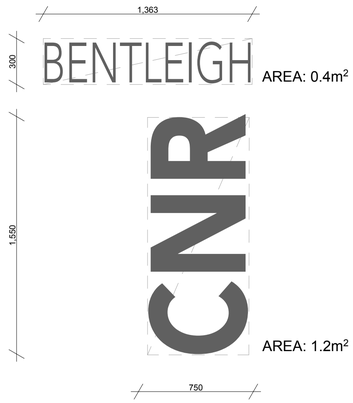
TYPE A: BUILDING IDENTITY

TYPE A1 - 1x LOCATION



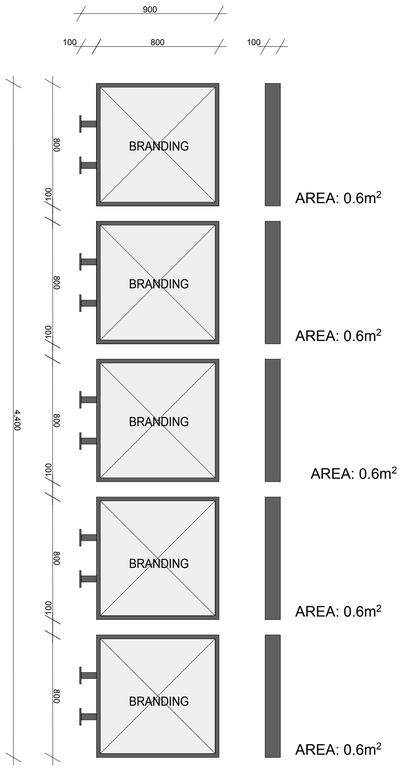
OVERALL AREA	1.6m2
NOTES	CHARCOAL POWDERCOAT FINISH TO LASER CUT LETTERS. *BUILDING NAME IS A PLACEHOLDER ONLY AND TO BE CONFIRMED.

TYPE A2 - 2x LOCATIONS

OVERALL AREA	3.8m²
NOTES	CHARCOAL POWDERCOAT FINISH TO LASER-CUT METAL LETTERS. *BUILDING NAME IS A PLACEHOLDER ONLY AND TO BE CONFIRMED.

TYPE B: HIGH LEVEL TENANCY

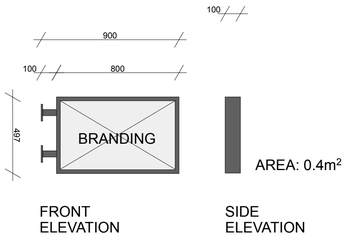
TYPE B - 1x LOCATION



OVERALL AREA	6m² (INC AREA TO BOTH SIDES OF SIGNS)
NOTES	DOUBLE SIDED LIGHT BOXES WITH CHARCOAL POWDERCOATED FRAMING. ARRANGED IN A VERTICAL FORMAT AS SHOWN.

TYPE C: PEDESTRIAN LEVEL TENANCY

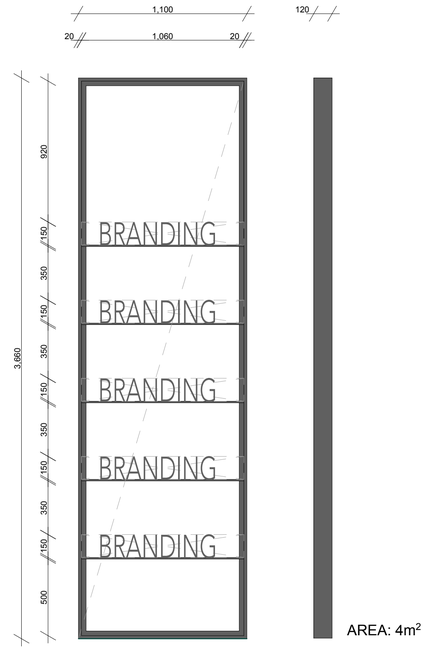
TYPE C - 4x LOCATIONS



OVERALL AREA	3.2m² (INC AREA TO BOTH SIDES OF SIGNS)
NOTES	DOUBLE SIDED LIGHT BOX WITH CHARCOAL POWDERCOATED FRAME

TYPE D: SITE DIRECTORY

TYPE D - 1x LOCATION



OVERALL AREA	4m²
NOTES	CHARCOAL POWDERCOAT FINISH TO METAL ARCH WITH FREE STANDING LASER-CUT TENANCY LETTERS.

OVERALL TOTAL SIGNAGE AREA: 15.4m2

General Note:

All glazing, glazed balustrade/screening to be in accordance with Octave Acoustics acoustic report dated 4 September 2020

JAM>rchitects

Town Planning

Dwg No.	TP16
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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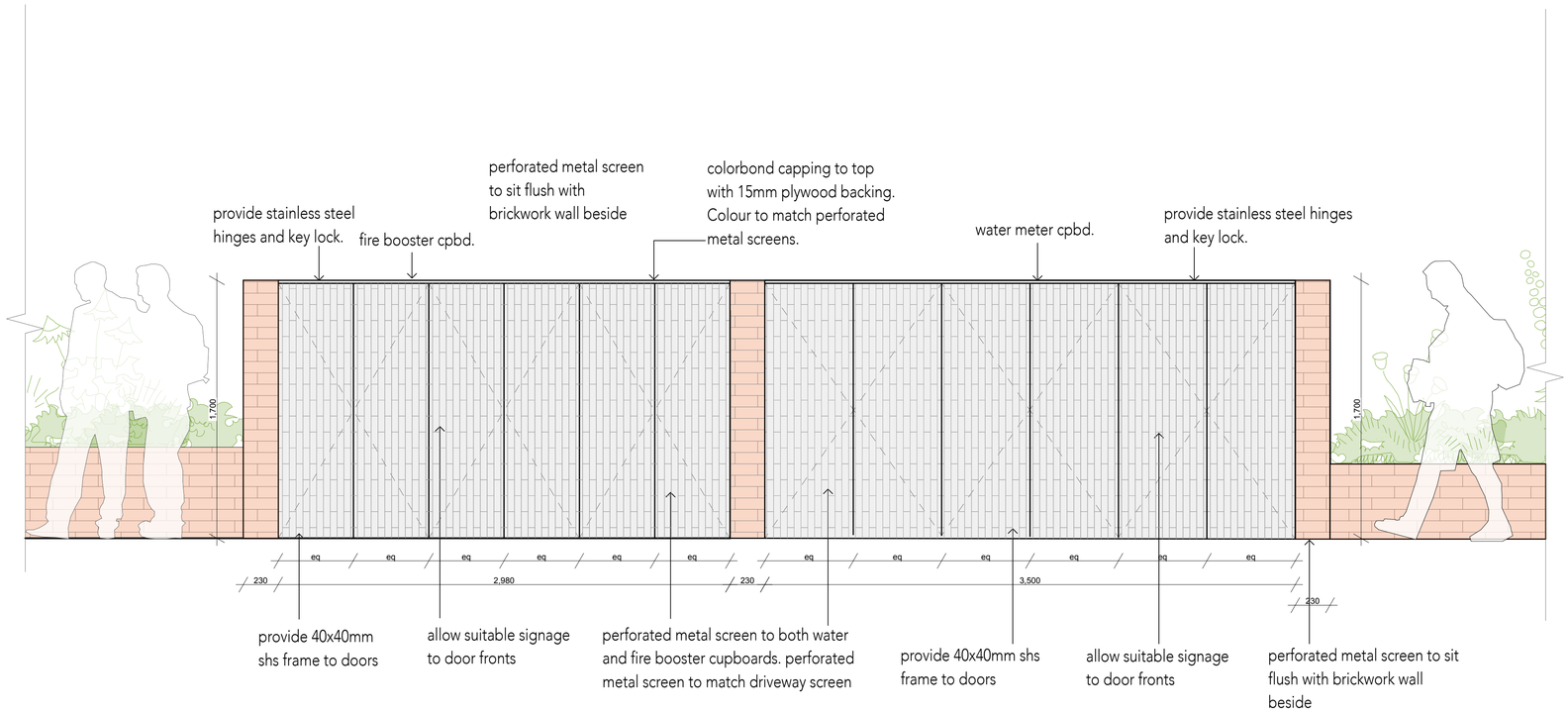

FIRE BOOSTER CUPBOARD ELEVATION

SCALE 1:20

WATER METER CUPBOARD ELEVATION

SCALE 1:20

General Note:

All glazing, glazed balustrade/screening to be in accordance with Octave Acoustics acoustic report dated 4 September 2020

JAM>rchitects

Town Planning

Dwg No.	TP17
Project No.	2150
Revision	
Date	19/6/2023
Project	Mixed Use Development
Address	99 Brewer Road, Bentleigh VIC
Client	Benewer Pty Ltd

Notes

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