

**PROPOSED CHILD CARE CENTRE
15 WILL COCK STREET
ARDROSS**

ENVIRONMENTAL ACOUSTIC ASSESSMENT

APRIL 2021

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PROPOSED CHILD CARE CENTRE
WILLCOCK STREET, ARDROSS

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FOR

HARLEY DYKSTRA

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1. INTRODUCTION

Herring Storer Acoustics were commissioned to undertake an acoustic assessment of noise emissions associated with the proposed day care centre to be located at 15 Willcock Street, Ardross.

The report considers noise received at the neighbouring premises from the proposed development for compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997*. This report considers noise emissions from :

- Children playing within the outside play areas of the centre; and
- Mechanical services.

We note that from information received from DWER, the bitumised area would be considered as a road, thus noise relating to motor vehicles is exempt from the *Environmental Protection (Noise) Regulations 1997*. We note that these noise sources are rarely critical in the determination of compliance. However, as requested by council and for completeness, they have been included in the assessment, for information purposes only.

For information, a plan of the proposed development is attached in Appendix A.

2. SUMMARY

Under Regulation 16 – Community Noise, noise received at the neighbouring residences from the outdoor play area would be exempt for needing to comply with the Regulations 7 and 8 (ie the assigned noise levels). However, for the existing residences located across Willcock Street, this could be considered as increase in the community noise, thus, an assessment for compliance with the assigned noise levels has been undertaken. For future possible new residences, the provisions of Regulation 16 and Schedule 3 would be applicable and compliance at these proposed residences is not required. Hence, noise received at the neighbouring residences, both existing and proposed, would be deemed to comply with requirements of the *Environmental Protection (Noise) Regulations 1997*.

Note : Although the proposed facility would open before 7 am (ie during the night period), the outdoor play area would not be used until after 7am. Thus, noise received at the neighbouring existing residences from the outdoor play area needs to comply with the assigned day period noise level.

Additionally, noise from the mechanical services has also been assessed to comply with the relevant criteria.

It is noted that noise associated with car movements and cars starting are exempt from complying with the Regulations. However, noise emissions from car doors is not strictly exempt from the Regulations. Noise received at the neighbouring residences from these noise sources would comply with the Regulatory requirements.

Thus, noise emissions from the proposed development, would be deemed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* for the proposed hours of operation.

3. CRITERIA

The allowable noise level at the surrounding locales is prescribed by the *Environmental Protection (Noise) Regulations 1997*. For this child care centre, there are 2 situations relating to compliance at the neighbouring residence, given that some residence are existing and some are still to be developed.

Noting that the child care centre is an educational facility, that would be regulated under the *Education and Care Services National Law* and the *Education and Care Services National Regulations* (assessed under the *National Quality Framework* against National Quality Standard benchmark for early childhood education) governed by the Education and Care Regulatory Unit (Department of Communities), the requirements of Regulation 16 – Community Noise would be applicable. Thus, under this Regulation, noise from educational facilities are classified as community noise and Regulation 7 – Prescribed Standard for Noise Emissions, does not apply to community noise. From Schedule 3 of the Regulations :

4. *Noise emitted as a consequence of a recreational or educational activity from premises occupied for educational purposes if the activity —*
 - (a) *is conducted under the control of the occupier of the premises; and*
 - (b) *does not include the use of mechanical equipment other than musical instruments.*

We note that we believe that the relevant part of Regulation 16, is clause 4, relating to conditions when a noise control notice can be issue in relation to community noise :

- (4) *If the CEO is satisfied that —*
 - (a) *a type of community noise has increased, or has increased its effect on the environment, since the coming into operation of these regulations; or*
 - (b) *a type of community noise has, or is likely to have, a detrimental effect on the environment that exceeds the benefit to the community of the activity that gives rise to that noise,*

the CEO may cause to be served on the owner or the occupier, or on both the owner and the occupier, of the premises or public place a noise control notice in respect of the community noise.

As noise associated with outdoor play would be under the control of the occupier of the premises, Regulations 7 and hence, the assigned noise level would not apply. Thus, for the future residence, as the environment would include the child care centre, the assigned noise levels would not be applicable. However, for the existing residence, the introduction of the child care centre could increase the community noise, to be considered as NOT being unreasonable, compliance with the assigned noise levels should be achieved.

Note : For reference, Regulation 16 and Schedule 3 of the *Environmental Protection (Noise) Regulations 1997* are attached in Appendix B.

Regulations 7 & 8 stipulate maximum allowable external noise levels. For highly sensitive area of a noise sensitive premises this is determined by the calculation of an influencing factor, which is then added to the base levels shown below in Table 3.1. The influencing factor is calculated for the usage of land within two circles, having radii of 100m and 450m from the premises of concern. For other areas within a noise sensitive premises, the assigned noise levels are fixed throughout the day, as listed in Table 3.1.

TABLE 3.1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises : highly sensitive area	0700 - 1900 hours Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days (Evening)	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	35 + IF	45 + IF	55 + IF
Noise sensitive premises : any area other than highly sensitive area	All hours	60	75	80

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.
 IF is the influencing factor.

Under the Regulations, a highly sensitive area means that area (if any) of noise sensitive premises comprising –

- (a) A building, or a part of a building, on the premises that is used for a noise sensitive purpose; and
- (b) Any other part of the premises within 15 m of that building or that part of the building.

It is a requirement that received noise be free of annoying characteristics (tonality, modulation and impulsiveness), 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 15 dB when determined for a single representative event;

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

- (a) is more than 3 dB L_{Afast} or is more than 3 dB L_{Afast} 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_{ASlow} levels.

Where the noise emission is not music, if the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 3.2 below.

TABLE 3.2 - ADJUSTMENTS TO MEASURED LEVELS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

For this development, the closest neighbouring residences of concern to the proposed development, are located on the southern side of Willcock Street.

It is noted that as part of the Riseley Centre Structure plan the neighbouring premises to the north of Willcock Street could in the future be 4 storeys high, with those north of Post Lane beginning up to 6 storeys.

At the neighbouring residences, to the south of Willcock Street, the influencing factor has been determined to be +6 dB. We note that for the future possible residence located near the child care centre, the Influencing Factor would also be +6 dB. Thus, the assigned noise levels would be as listed in Tables 3.3 and 3.4.

TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises : highly sensitive area	0700 - 1900 hours Monday to Saturday (Day)	51	61	71
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	46	56	71
	1900 - 2200 hours all days (Evening)	46	56	61
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	41	51	61

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.

4. PROPOSAL

From information supplied, we understand that the child care centre normal hours of operations would be between 0630 and 1830 hours, Monday to Friday (closed on public holidays). It is understood that the proposed childcare centre will cater for a maximum of 62 children; with the following breakdown :

Ground Floor 1	0 – 2 years	12 places
First Floor	2 – 3 years	20 places
First floor	3+ Years	30 places

It is noted that although the proposed child care centre would open before 7 am (ie during the night period), the outdoor play area would not be used until after 7am.

For reference, plans are attached in Appendix A.

5. MODELLING

To assess the noise received at the neighbouring premises from the proposed development, noise modelling was undertaken using the noise modelling program SoundPlan.

Calculations were carried out using the DWER's weather conditions, which relate to worst case noise propagation, as stated in the Department of Environment Regulation "*Draft Guidance on Environmental Noise for Prescribed Premises*". These conditions include winds blowing from sources to the receiver(s).

Calculations were based on the sound power levels used in the calculations are listed in Table 5.1.

TABLE 5.1 – SOUND POWER LEVELS

Item	Sound Power Level, dB(A)
Children Playing	83 (per 10 children)
Car Moving in Car Park	79
Car Starting	85
Door Closing	87
Car Stacker	74
Air conditioning condensing Unit	2 @ 75

Notes :

- 1 Even though the noise emitted from children under the age of 2 is significantly less (6 dB(A) less), acoustic modelling of outdoor play noise was made, based on 50 children playing within the outdoor play areas at the one time, utilising 5 groups of 10 children, sound power levels distributed as plane sources. For information, for modelling, 1 group have been located within the ground floor playscape and 4 groups located within the first floor playscape.
- 2 The noise level for the air conditioning has been based on the sound power levels used for previous assessment of child care centres. From other studies, we understand that the noise associated with the condensing units would be conservative.
- 3 From information provided, it is understood that the mechanical services would be located on the roof. To future proof noise emission from the mechanical services, the air condition is to have night period "Low Noise" mode.
- 4 Noise modelling was undertaken to a number of different receiver locations for each of the neighbouring residences. However, to simplify the assessment, only the noise level in the worst case location, have been listed.
- 5 It has been noted that there are a number of car stackers located within the car park. Thus, an assessment of noise emissions from these has been undertaken.

6. ASSESSMENT

The resultant noise levels at the neighbouring residence from children playing outdoors and the mechanical services are tabulated in Table 6.1.

From previous measurements, noise emissions from children playing does not contain any annoying characteristics. Noise emissions from the mechanical services could be tonal and a +5 dB(A) penalty would be applicable, as shown in Table 6.1. Noise emissions from both outdoor play and the mechanical services needs to comply with the assigned L_{A10} noise levels.

**TABLE 6.1 - ACOUSTIC MODELLING RESULTS FOR L_{A10} CRITERIA
OUTDOOR PLAY AREAS AND MECHANICAL PLANT**

Neighbouring Premises	Calculated Noise Level (dB(A))		
	Children Playing	Air Conditioning	
		Day	Night
Current - South of Willcock Street	35	25 (30)	19 (24)
Future development to West	49	41 (46)	34 (39)
Future development to East	50	37 (42)	31 (36)
Future development to north	51	36 (41)	31 (36)

() Includes +5 dB(A) penalty for tonality

With regards to noise associated with cars within the parking area, resultant noise levels are tabulated in Tables 6.2 and 6.3. It is noted that noise emissions from a moving car being an L_{A1} noise level, with noise emissions from cars starting and doors closing being an L_{AMax} noise level.

Based on the definitions of tonality, noise emissions from car movements and car starts, being an L_{A1} and L_{AMax} respectively, being present for less than 10% of the time, would not be considered tonal. Thus, no penalties would be applicable, and the assessment would be as listed in Table 6.2 (Car Moving) and Table 6.3 (Car Starting). However, noise emissions from car doors closing could be impulsive, hence the +10dB penalty has been included in the assessment.

**TABLE 6.2 - ACOUSTIC MODELLING RESULTS L_{A1} CRITERIA
CAR MOVING**

Neighbouring Premises	Calculated Noise Level (dB(A))	Car Stacker (dB(A))
Current - South of Willcock Street	37	30
Future development to West	44	38
Future development to East	39	37
Future development to north	47	47

**TABLE 6.3 - ACOUSTIC MODELLING RESULTS L_{AMax} CRITERIA
CAR STARTING / DOOR CLOSING**

Neighbouring Premises	Calculated Noise Level (dB(A))	
	Car Starting	Door Closing
Current - South of Willcock Street	40	40 [50]
Future development to West	51	52 [62]
Future development to East	51	51 [61]
Future development to north	55	56 [66]

[] Includes +10 dB(A) penalty for impulsiveness.

Tables 6.4 to 6.10 summarise the applicable Assigned Noise Levels, and assessable noise level emissions for each identified noise.

**TABLE 6.4 – ASSESSMENT OF L_{A10} NOISE LEVEL EMISSIONS
OUTDOOR PLAY (DAY PERIOD)**

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
Current - South of Willcock Street	35	51	Complies
Future development to West	49	51	Complies
Future development to East	50	51	Complies
Future development to north	51	51	Complies

TABLE 6.5 – ASSESSMENT OF L_{A10} DAY PERIOD NOISE LEVEL EMISSIONS

AIR CONDITIONING

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
Current - South of Willcock Street	30	51	Complies
Future development to West	46	51	Complies
Future development to East	42	51	Complies
Future development to north	41	51	Complies

TABLE 6.6 – ASSESSMENT OF L_{A10} NIGHT PERIOD NOISE LEVEL EMISSIONS

AIR CONDITIONING

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
Current - South of Willcock Street	24	41	Complies
Future development to West	39	41	Complies
Future development to East	36	41	Complies
Future development to north	36	41	Complies

TABLE 6.7 – ASSESSMENT OF L_{A1} NIGHT PERIOD NOISE LEVEL EMISSIONS

CAR MOVEMENTS

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
Current - South of Willcock Street	37	51	Complies
Future development to West	44	51	Complies
Future development to East	39	51	Complies
Future development to north	47	51	Complies

TABLE 6.8 – ASSESSMENT OF L_{A1} NIGHT PERIOD NOISE LEVEL EMISSIONS

CAR STACKER

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
Current - South of Willcock Street	30	51	Complies
Future development to West	38	51	Complies
Future development to East	37	51	Complies
Future development to north	47	51	Complies

TABLE 6.9 – ASSESSMENT OF L_{Amax} NIGHT PERIOD NOISE LEVEL EMISSIONS

CAR STARTING

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
Current - South of Willcock Street	40	61	Complies
Future development to West	51	61	Complies
Future development to East	51	61	Complies
Future development to north	55	61	Complies

TABLE 6.10 – ASSESSMENT OF L_{Amax} NIGHT PERIOD NOISE LEVEL EMISSIONS

CAR DOOR

Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
Current - South of Willcock Street	50	61	Complies
Future development to West	62	61	Complies
Future development to East	61	61	Complies
Future development to north	66	61	Complies

7. CONCLUSION

Under Regulation 16 – Community Noise, noise received at the neighbouring residences from the outdoor play area would be exempt for needing to comply with the Regulations 7 and 8 (ie the assigned noise levels). However, for the existing residences across Willcock Street, this could be considered as increase in the community noise, thus, an assessment for compliance with the assigned noise levels has been undertaken. For the future residences located around the centre, the provisions of Regulation 16 and Schedule 3 would be applicable and compliance at these proposed residences is not required. Hence, noise received at the neighbouring residences, both existing and proposed, would be deemed to comply with requirements of the *Environmental Protection (Noise) Regulations 1997*.

The air conditioning condensing units have also been assessed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times, provided they have night period “Low Noise” modes.

It is noted that noise associated with cars movements and cars starting are exempt from complying with the Regulations. However, noise emissions from car doors is not strictly exempt from the Regulations. Noise received at the neighbouring residences from these noise sources would comply with the Regulatory requirements.

Thus, noise emissions from the proposed development, would be deemed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* for the proposed hours of operation, with the inclusion of the mitigation as outlined above.

APPENDIX A

PLANS



**CONTEXT &
CHARACTER**



6 WILLCOCK STREET
MULTI RESIDENTIAL (APPROVED)



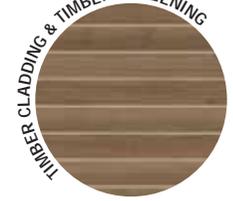
8 WILLCOCK STREET
MULTI RESIDENTIAL (CONSTRUCTED)

MATERIAL PALETTE

RENDERED FINISH



TIMBER CLADDING & TIMBER SCREENING



PAINTED FINISH



STONE TILE CLADDING



RENDERED BALCONY & AWNING FASCIA



CLEAR GLAZING PANEL



26-28 WILLCOCK STREET
MULTI RESIDENTIAL
(UNDER CONSTRUCTION)

EXISTING & FUTURE SITE CONTEXT

01 CONTEXT AND CHARACTER



17 WILLCOCK STREET
APPLECROSS COUNSELING



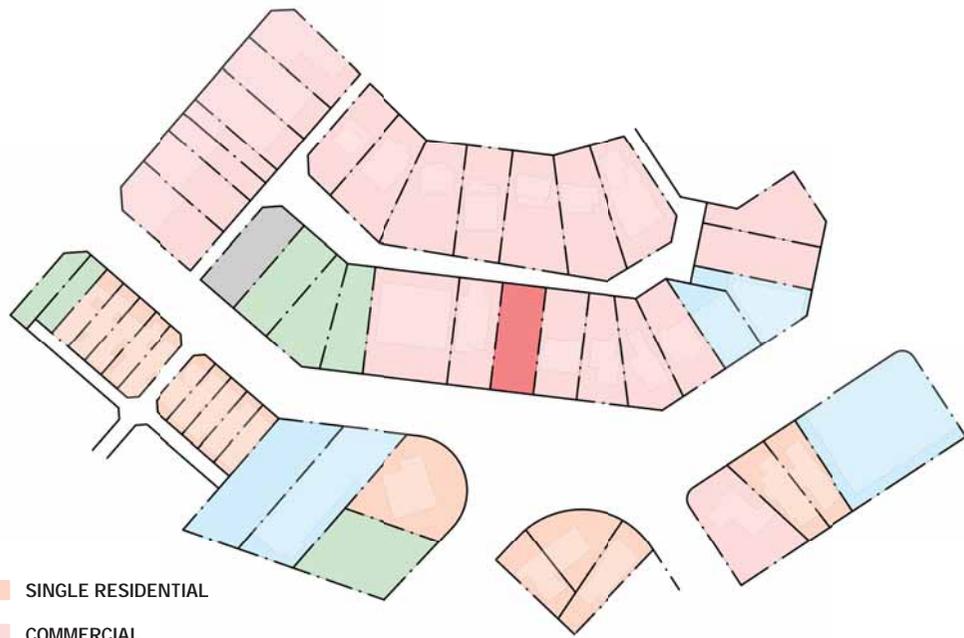
13 WILLCOCK STREET
BSC ELECTRONICS

ADDRESS

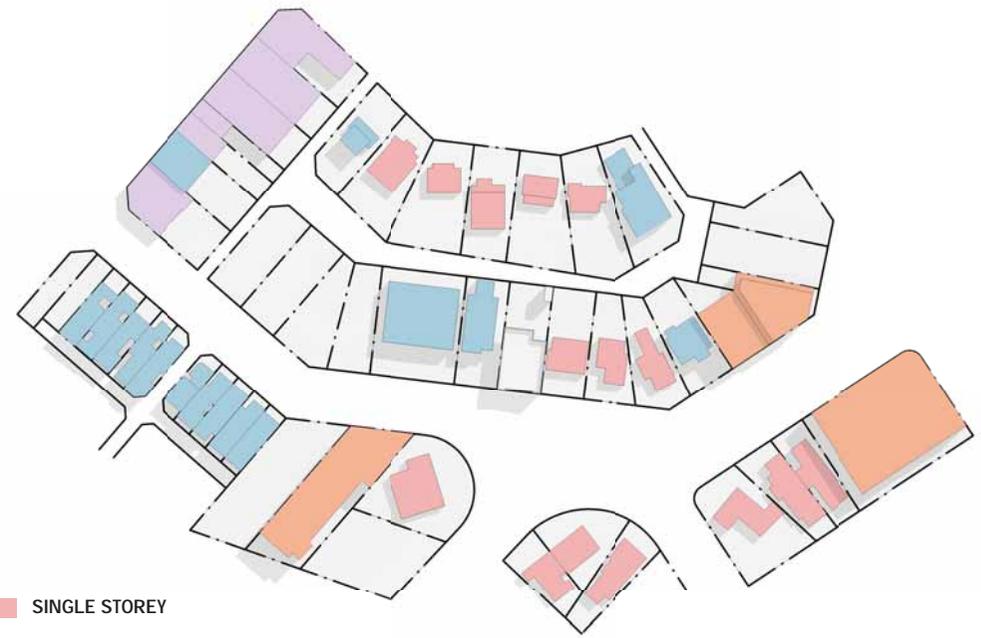
15 WILLCOCK STREET

BLOOM

ARCHITECTURE



- SINGLE RESIDENTIAL
- COMMERCIAL
- MULTI RESIDENTIAL/
MIXED USE
- VACANT LAND
- CAR PARK



- SINGLE STOREY
- SINGLE STOREY + PARAPET
- 2 STOREY
- +2 STOREYS

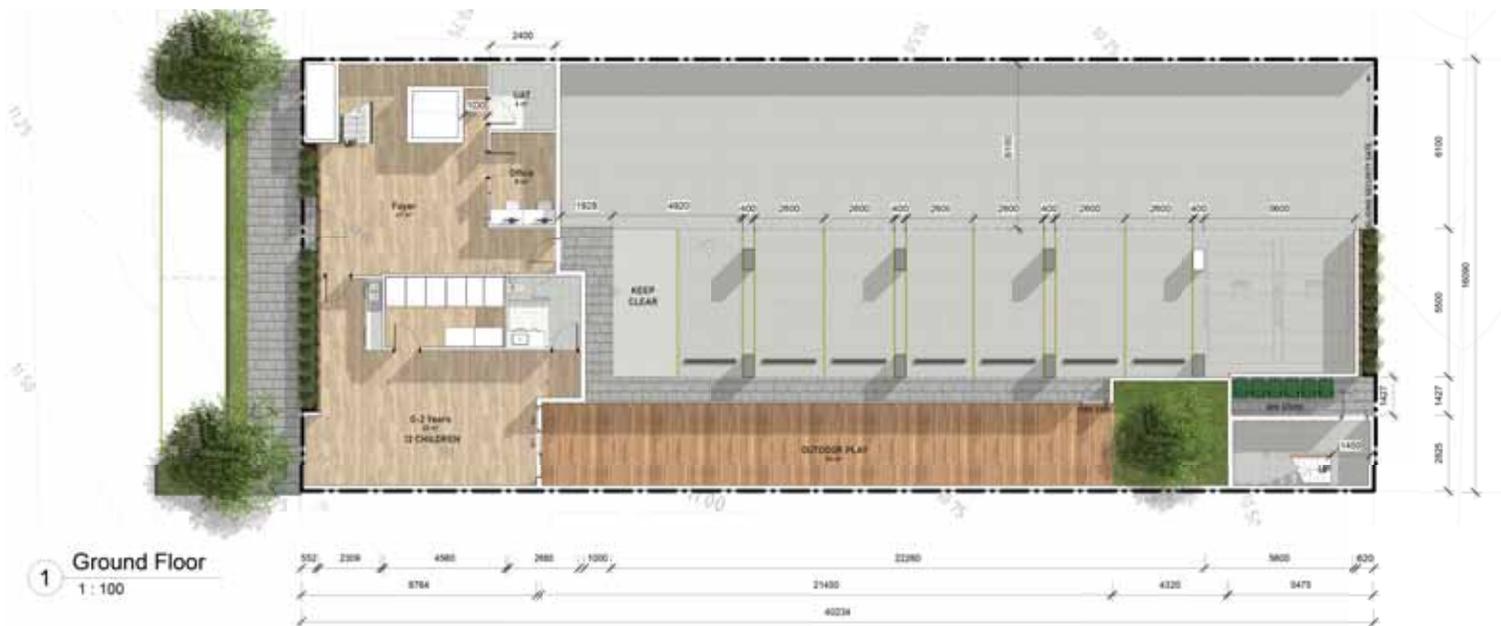
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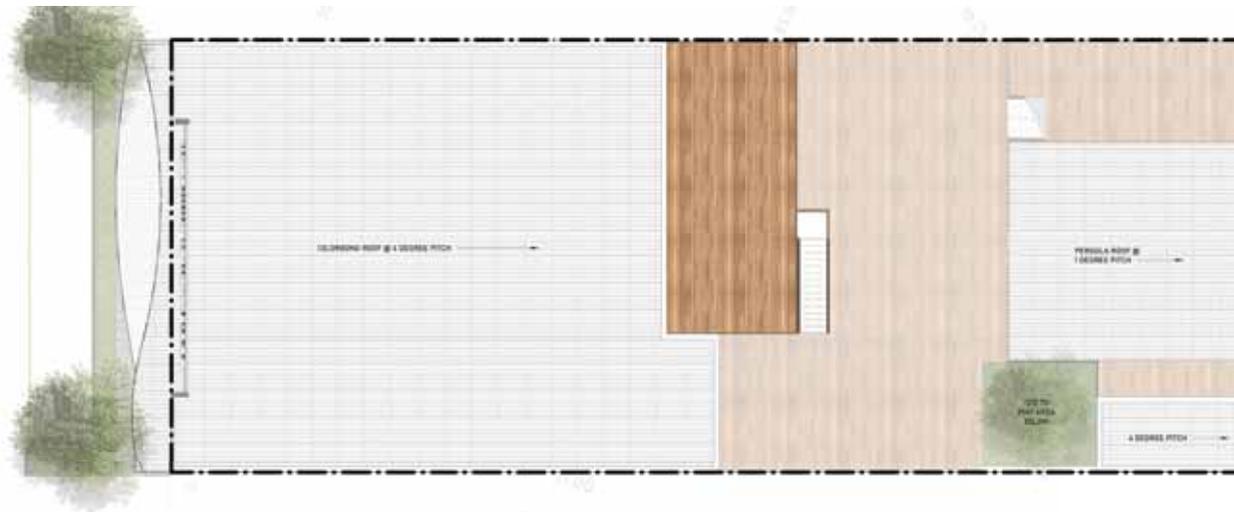
15 WILLCOCK STREET

BUILT FORM & SCALE

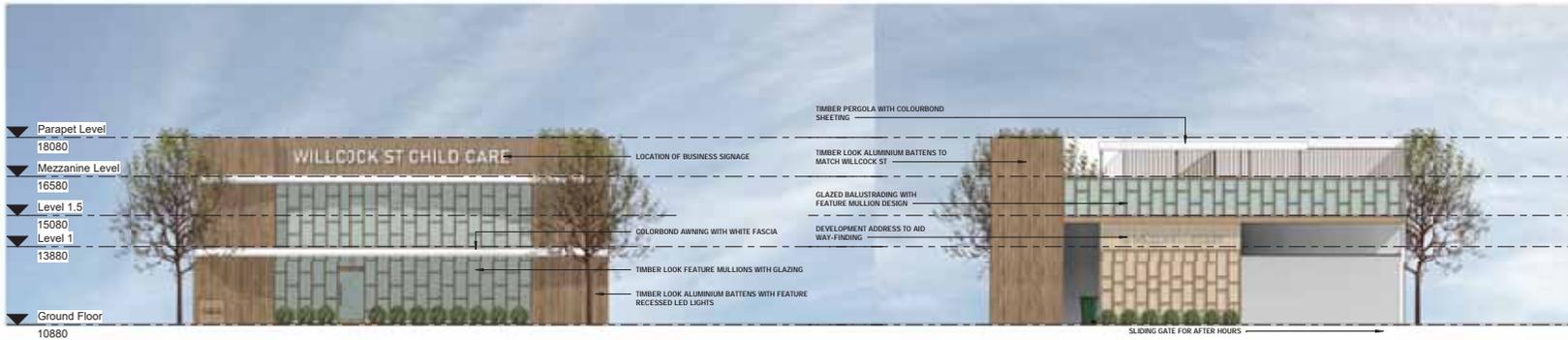
BLOOM

ARCHITECTURE





1 Mezzanine Level
1 : 100

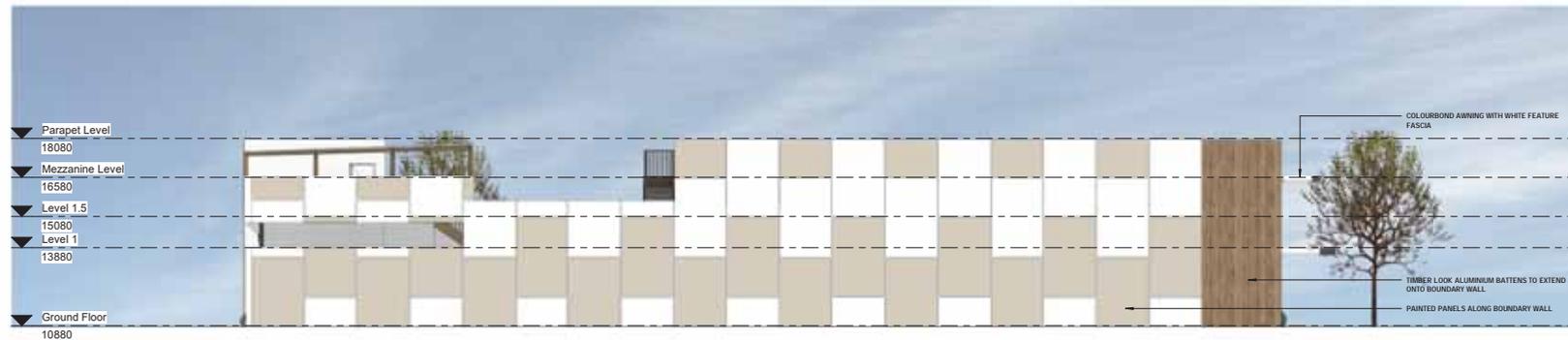


1 Willcock Street Elevation
1 : 100

2 Post Lane Elevation
1 : 100



3 East
1 : 100



4 West
1 : 100