

# **Attachment 5**

Acoustic Assessment

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# PROPOSED CHILD CARE CENTRE 40 MARLBORO ROAD SWAN VIEW

# **ENVIRONMENTAL ACOUSTIC ASSESSMENT**

**MARCH 2023** 

OUR REFERENCE: 30689-1-23032





## DOCUMENT CONTROL PAGE

# **ENVIRONMENTAL ACOUSTIC ASSESSMENT**

## PROPOSED CHILD CARE CENTRE SWAN VIEW

Job No: 23032

Document Reference: 30689-1-23032

FOR

# **CHARTER HALL**

Author:	Tim Reynolds		Checked By:		Paul Daly	
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A SITE PLAN

## 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 40 Marlboro Road, Swan View.

We note that this child care is to incorporated into the Swan View Shopping Centre, therefore the car parking is existing. Hence this 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.

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

### 2. <u>SUMMARY</u>

Noise received at the neighbouring residences from the outdoor play area would comply with day period assigned noise level, with fencing as shown on Figure 5.1 in Section 5 - Modelling.

The air conditioning condensing units have also been assessed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times. It is understood that the air conditioning condensing units be located within the drying yard / bin store, as shown on the drawing attached in Appendix A.

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 following:

- 1 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.
- 2 Fencing to be as shown on Figure 5.1 in Section 5 Modelling. We note that for this development, colourbond is an acceptable fencing material.
- 3 The air conditioning condensing units to be located within the drying yard / bin store.

### 3. <u>CRITERIA</u>

The allowable noise level at the surrounding locales is prescribed by the *Environmental Protection (Noise) Regulations 1997.* 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.

Premises	Time of Day	Assigned Level (dB)		
Receiving Noise	Time of Day	L <sub>A10</sub>	L <sub>A1</sub>	L <sub>Amax</sub>
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
Commercial Premises	All hours	60	75	80

 $L_{\text{A1}}$  is the noise level exceeded for 1% of the time.

 $L_{\mbox{\scriptsize Amax}}$  is the maximum noise level.

IF is the influencing factor.

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 –
	<ul> <li>(a) is more than 3 dB L<sub>AFast</sub> or is more than 3 dB L<sub>AFast</sub> in any one-third octave band;</li> </ul>
	(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 –
	<ul> <li>(a) the A-weighted sound pressure level in any one-third octave band; and</li> </ul>
	(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 presentWhere modulation is presentWhere impulsiveness is present					
+5 dB(A) +5 dB(A) +10 dB(A)					

TABLE 3.2 - ADJUSTMENTS TO MEASURED LEVELS

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



For this development, the closest existing neighbouring residences are located to the north, east and south of the proposed child care, as shown on Figure 3.1.

FIGURE 3.1 – NEIGHBOURING LOTS

At the neighbouring residences, the Influencing Factor has been determined to be +4 dB. Thus, the assigned noise levels would be as listed in Table 3.3.

Premises	Time of Day	Assigned Level (dB)		
Receiving Noise	Time of Day		L <sub>A1</sub>	L <sub>Amax</sub>
Noise sensitive premises: highly sensitive area	0700 - 1900 hours Monday to Saturday (Day)	49	59	69
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	44	54	69
	1900 - 2200 hours all days (Evening)	44	54	59
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	39	49	59
Note: L <sub>A10</sub> is	the noise level exceeded for 10% of the time.			

**TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL** 

 $L_{A10}$  is the noise level exceeded for 10% of the time.  $L_{A1}$  is the noise level exceeded for 1% of the time.

 $L_{\mbox{\scriptsize Amax}}$  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 82 children: with the following breakdown:

Group 1 (0 – 24 months)	12 places
Group 2 (24 – 36 months)	15 places
Group 3 (24 – 36 months)	15 places
Group 4 (36+ months)	20 places
Group 5 (36+ months)	20 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.

### 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.

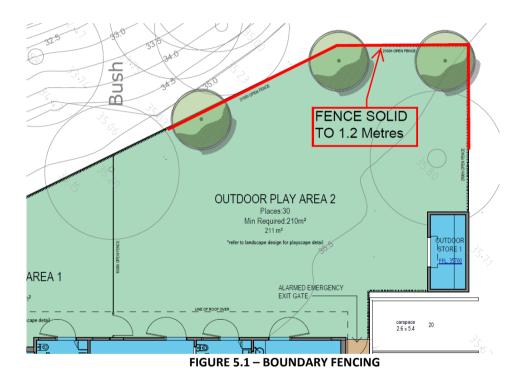
Calculations were carried out using the DWER's weather conditions, which relate to worst case noise propagation, as stated in the Department of Water and Environment Regulation *"Draft Guidance on Environmental Noise for Prescribed Premises"*. These conditions include winds blowing from sources to the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

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

Item	Sound Power Level, dB(A)		
Children Playing	83 (per 10 children)		
Air conditioning condensing Unit	3 @ 72		

#### Notes:

- 1 Even though the noise emissions from children under the age of 2 years is relatively low compared to the other children, to be conservative, acoustic modelling of outdoor play noise was made, based on 80 children playing within the outdoor play areas at the one time, utilising 8 groups of 10 children, sound power levels distributed as plane sources.
- 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 For this development, it is understood that the air conditioning condensing units would be located drying yard / bin store, as indicated on the drawing attached in appendix A.
- 4 Noise modelling has been based on the solid fencing being as shown in Figure 5.1. All other fencing can be open style fencing.
- 5 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 (ie highest noise level), have been listed.



#### 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.

	Calculated Noise Level (dB(A))		
Neighbouring Premises	Children Playing	Air Conditioning	
North	45	12 (17)	
East	49	32 (37)	
South	39	29 (34)	

# TABLE 6.1 - ACOUSTIC MODELLING RESULTS FOR LA10 CRITERIAOUTDOOR PLAY AREAS AND MECHANICAL PLANT

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

Tables 6.2 and 6.3 summarise the applicable Assigned Noise Levels, and assessable noise level emissions for each identified noise.

OUTDOOR PLAY (DAY PERIOD)					
Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level		
North	45	49	Complies		
East	49	49	Complies		
South	39	49	Complies		

# TABLE 6.2 – ASSESSMENT OF LA10 NOISE LEVEL EMISSIONS

# TABLE 6.3 – ASSESSMENT OF LA10 NIGHT PERIOD NOISE LEVEL EMISSIONS

MECHANICAL SERVICES					
Location	Assessable Noise Level dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level		
North	17	39	Complies		
East	37	39	Complies		
South	34	39	Complies		

## 7. CONCLUSION

Noise received at the neighbouring residences from the outdoor play area would comply with day period assigned noise level, with fencing as shown on Figure 5.1 in Section 5 - Modelling.

The air conditioning condensing units, being located on the roof above the store, have also been assessed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times.

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 following:

- 1 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. Additionally, the fencing to the child care centre be as shown in Figure 5.1 in Section 5.1 Modelling.
- 2 We note that for this development, colourbond is an acceptable fencing material.
- 3 The air conditioning condensing units to be located within the drying yard / bin store.

# **APPENDIX A**

SITE PLAN

# PROPOSED CHILDCARE CENTRE 40 MARLBORO ROAD, SWAN VIEW, WA



SHEET NUMBER

DA00 DA01 DA02 DA03 DA04 DA05

# **GENERAL NOTES**

DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT, PREPARATION OF SHOP DRAWINGS OR MANUFACTURING. FIGURED DIMENSIONS TAKE PRECEDENCE OVER SCALING. VERIFY LOCATION OF EXISTING SERVICES BEFORE COMMENCEMENT.

ALL CONSTRUCTION TO BE IN ACCORDANCE WITH THE NATIONAL CONSTRUCTION CODE OF AUSTRALIA, BUILDING ACT 1975 AS AMENDED, STANDARD BUILDING BY-LAWS AND RELEVANT AUSTRALIAN STANDARDS.

C	)	UDPATED DA SUBMISSION SET	17/04/202
E	3	DA SUBMISSION SET	15/03/202
A	۱. ۱	PRELIMINARY DA SET	02/03/202
ISS	UE	DESCRIPTION	DATE





# **DRAWING REGISTER PLANNING**

SHEET NAME	ISSUE	DESCRIPTION	DATE
COVER SHEET	С	UDPATED DA SUBMISSION SET	17/04/2023
EXISTING CONDITIONS / DEMOLITION PLAN	С	UDPATED DA SUBMISSION SET	17/04/2023
SITE PLAN	С	UDPATED DA SUBMISSION SET	17/04/2023
FLOOR PLAN	С	UDPATED DA SUBMISSION SET	17/04/2023
ELEVATIONS	С	UDPATED DA SUBMISSION SET	17/04/2023
SECTIONS	С	UDPATED DA SUBMISSION SET	17/04/2023

CLIENT:		
CHARTI	ER H	ALL

LOCATION: 40 MARLBORO RD, SWAN VIEW, WA

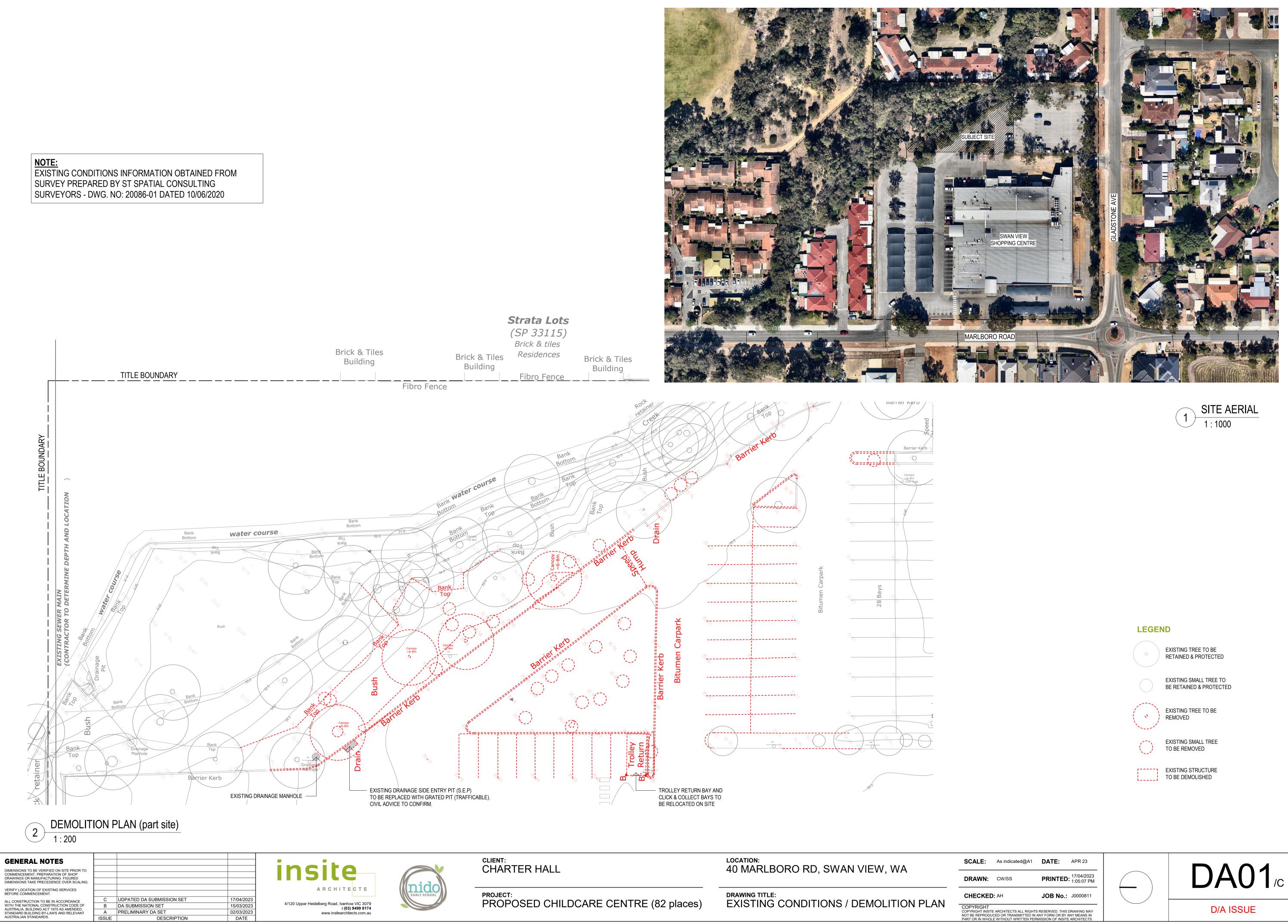
PROJECT: PROPOSED CHILDCARE CENTRE (82 places)

DRAWING TITLE: **COVER SHEET** 

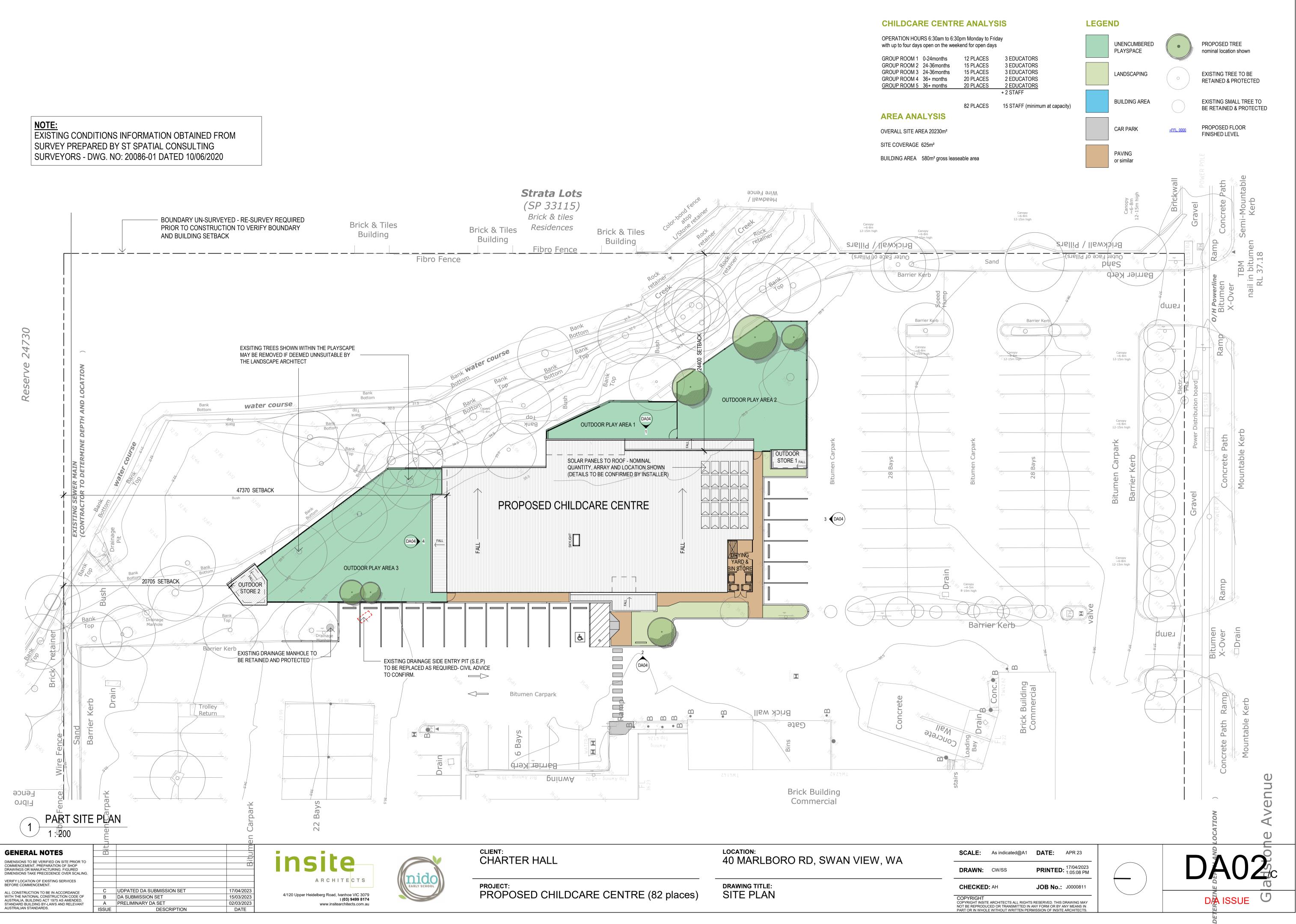


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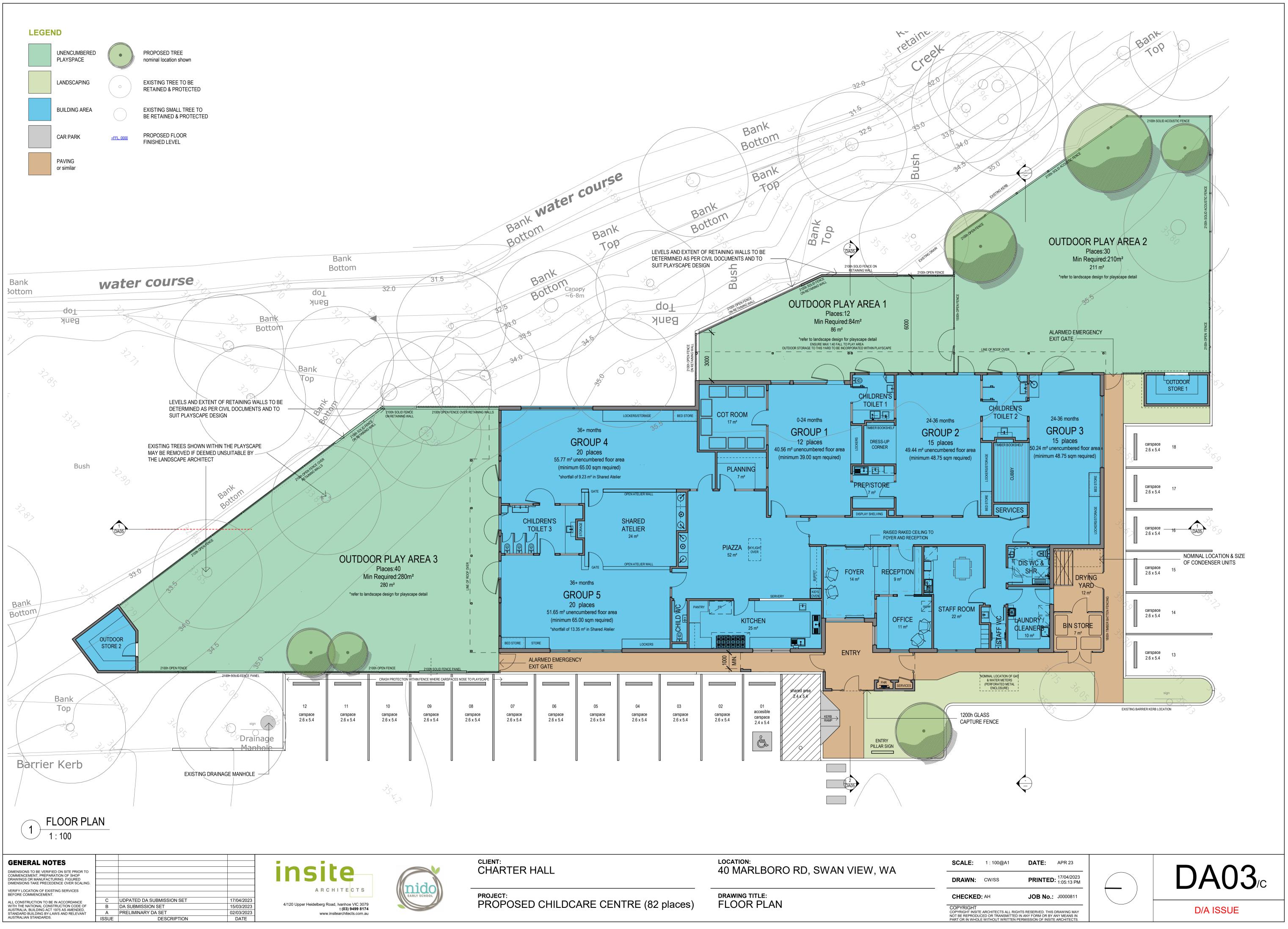




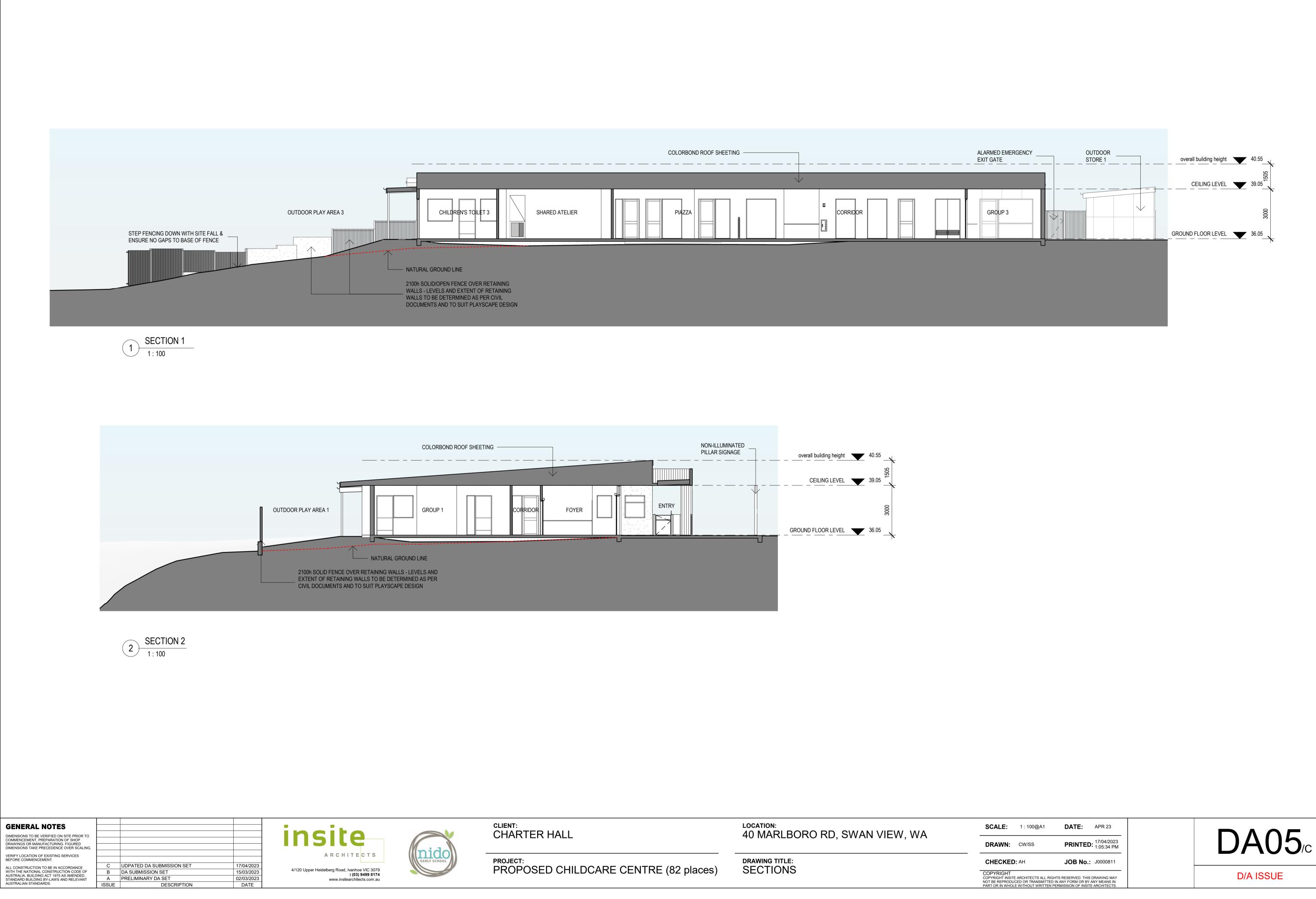
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GROUP ROOM 1	0-24months	12 PLA
<b>GROUP ROOM 2</b>	24-36months	15 PLA
<b>GROUP ROOM 3</b>	24-36months	15 PLA
GROUP ROOM 4	36+ months	20 PLA
<b>GROUP ROOM 5</b>	36+ months	20 PLA







HEETING		NON-ILLUMINATED PILLAR SIGNAGE	overall building height 40.55
			CEILING LEVEL    39.05
	FOYER		GROUND FLOOR LEVEL V 36.05
			, ,

CLIENT: CHARTER HALL	LOCATION: 40 MARLBORO RD, SWAN VIEW, WA		1 : 100@A1	DATE:	APR 23
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PROJECT: PROPOSED CHILDCARE CENTRE (82 places)	DRAWING TITLE: SECTIONS	CHECKED: AH JOB No.: J0000811			
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