Noise Assessment Report

1686 Channel Highway
Margate

For: Falcon Building Group

Project No: 10115

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Document Control

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Version:	Final
Project:	10115
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Version:			Date:
DRAFT 1	Bruce Harpley	ES&D	5/03/2026
FINAL	Bruce Harpley	ES&D	10/03/2026

Contents

Project Summary **4**

1 Background **5**

2 Site Assessment **5-9**

2.1 Observation 5

2.2 Sound Level Meter 6

2.3 Conditions 6

2.4 Field Measurements- Noise 6-7

2.5 Noise Limits 7-9

3 Noise – Childcare Centre **10-12**

4 Discussion **12-13**

5 Recommendations ..... **-13**

Appendix A - Acoustic Barrier Locations

List of Figures

Figure 1 – Site Plan 4

Figure 2 - Measurement Location 7

Figure 3 - Guideline indicative Sound Power Levels 8

List of Tables

Table 1 - Noise Measurement Data 7

Table 2 – Calculated Potential Noise Levels 10

Table 3 - Recommended Materials for Construction of Acoustic Barriers 13

Project Summary

Municipality	Kingborough
Location	1686 Channel Highway Margate
Client	Falcon Building Group
Date of Assessment	3 March 2026

Figure 1 – Site Aerial

1686 Channel Highway Margate

1 Background

Environmental Services and Design Pty Ltd have been engaged by Falcon Building Group to conduct a noise assessment for a childcare centre at 1686 Channel Highway Margate.

The purpose of the noise assessment is to determine levels and compliance for a development application to Kingborough Council for internal renovation of the existing building and extension to create a childcare facility in the Local Business zone.

Under the proposal the centre will cater for:

- 74 children aged 6 weeks - 5 years,
- Corporate office and up to 28 trained childcare staff and administration staff.

Normal operating hours are to be Monday to Friday 7.15am to 7.00pm.

The site is directly adjacent to the Channel Highway with developed residential (sensitive use) to the north and west. To the east is a mixture of residential and local businesses. To the south are local businesses and vacant land zoned local business.

2 Site Assessment

A site assessment was conducted on 2-3 March 2026 to measure background noise levels at adjacent residential premises (sensitive use). Based on initial observations relating to the adjacent sensitive uses and the requirements of clause 20.3.2 of the Kingborough Interim Planning Scheme noise measurements were taken in accordance with the Tasmanian Noise Measurement Procedures Manual.

Clause 20.3.2 Noise - Acceptable Solutions of the Kingborough Interim Planning Scheme states:

Noise emissions measured at the boundary of a residential zone must not exceed the following:

(a) 55dB(A) (LAeq) between the hours of 7.00 am to 7.00 pm;
(b) 5dB(A) above the background (LA90) level or 40dB(A) (LAeq), whichever is the lower, between the hours of 7.00 pm to 7.00 am;
(c) 65dB(A) (LAmax) at any time.

Measurement of noise levels must be in accordance with the methods in the Tasmanian Noise Measurement Procedures Manual, second edition, July 2008, issued by the Director of Environmental Management, including adjustment of noise levels for tonality and impulsiveness.

Noise levels are to be averaged over a 15 minute time interval.

Section 5.2 of the Noise Measurement Procedures Manual, second edition, 2008 requires measurements to be made in 'free field' and the L_{90} statistic recorded for background noise. The planning scheme requires compliance with the L_{eq} limits stated in clause 20.3.2. Therefore, compliance with the procedure manual in relation to the noise values utilised for assessment requires deference to the requirements of the planning scheme for direct comparison.

The boundary fence between the subject site and the residential units at 1684 Channel Highway, the existing building and the southern metal boundary fence at the subject site are acoustically reflective surfaces.

Direct access to the receptor premises was not possible therefore, measurements were taken at a position 3.5m from the boundary fence with the sensitive use, 10m from the existing building and 12.5m from the southern boundary fence. This complies with the requirements of section 5.2 of the manual and no adjustments for reflective surfaces are required.

2.1 Observations

The Channel Highway is major traffic route for travel to and from Hobart from points south of Margate and Bruny Island areas. The dominant noise at the subject site and the surrounding local business and residential areas is traffic noise from vehicles travelling north and south through Margate. It was not possible to conduct noise measurements at the appropriate times without significant traffic noise. There were no tonal or modulating components to the noise.

The areas of concern are to the north and east with adjacent sensitive uses within the general residential zone. Land to the west and south is within the local business zone and is not required to be considered under clause Clause 20.3.2 Noise - Acceptable Solutions of the Kingborough Interim Planning Scheme.

2.2 Sound Level Meter

All measurements were taken with a Type 1 Rion NL32 sound level meter with calibration conducted 10/03/2025 with re-calibration due 10/03/2027. Pre and post measurement field calibrations were conducted with a Rion acoustic calibrator model NC-74 with calibration date of 10/03/2025. The pre and post calibration check resulted in a 0.2dB(A) deviation which is not considered significant.

2.3 Conditions

Conditions for the sound level measurements were as follows:

- 2 March 2026 between 6.30pm – 6.45pm,
- 3 March between 7.00am - 7.15am and 9.12am – 9.27am,
- 2 March 2026 low full cloud cover,
- 3 March 2026 high level cloud cover,

- Wind – calm to 11k/hr,
- No rain,
- Sound level meter mounted on tripod at 1.2m above ground level,
- Free field - no walls or reflective surfaces within 3.5m and 10m,
- Measurements taken generally in accordance with the Noise Measurements Procedures Manual, second edition, 2008.

2.4 Field Measurements - Noise

Noise measurement times were chosen to represent the existing noise level exposure to existing local businesses and sensitive uses at times relevant to the operation of the proposed childcare facility.

LA_{90} and LA_{eq} 15 minute measurements were taken 7.00am – 7.15am, 6.30pm – 6.54pm and 9.12am to 9.27am. Table 1 contains the measured noise levels noted during the survey. Figure 2 shows the location of the measurement site relative to the potentially effected sensitive use.

Table 1 – Noise Measurement Data

Location	Time	L_{Aeq}	L_{Max}
1686 Channel Highway	7.00-7.15am	60.5	69.3
1686 Channel Highway	6.30-6.45pm	57.1	66.8
1686 Channel Highway	9.12-9.27am	65.8	72.3

The general noise level within the area during daytime hours when children would be in the play areas on the western boundary is 65.8dB(A). This measurement will be used as the general background level.

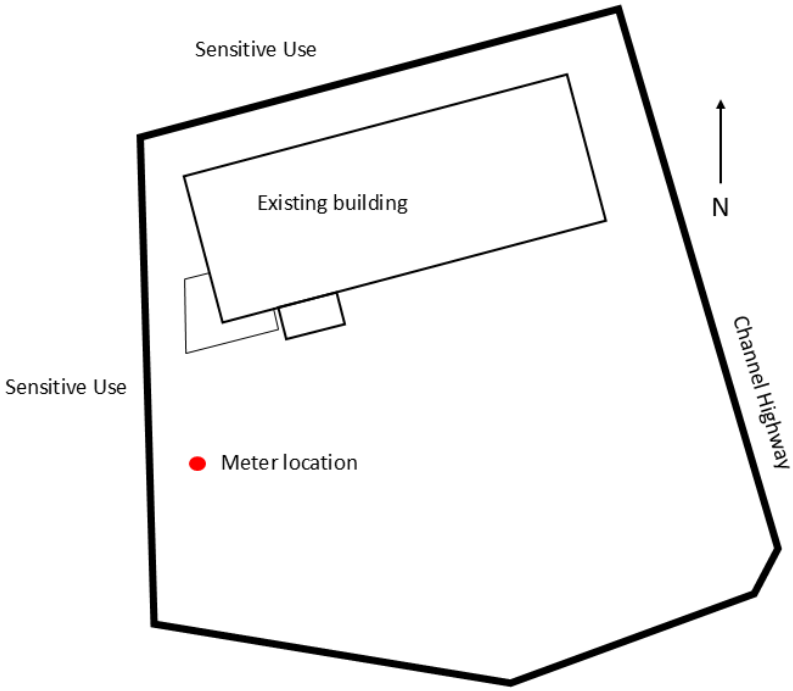

Figure 2 – Measurement Location

Measurements were not taken at the northern boundary of the lot or at the sensitive uses west of the highway as the position of the building shields these areas from playground noise.

Measurements were not taken at the southern boundary as the lots south of the property are not within a residential zone and clause20.3.2 of the planning scheme are not relevant.

2.5 Noise Limits

The Kingborough Interim Planning Scheme clause 20.3.2 specifies noise limits for development within the local business zone to ensure there is no unreasonable impact on land within a residential zone.

As the childcare centre is proposed to operate between 7.15am and 7.00pm the relevant noise limits from clause 20.3.2 are:

(a) 55dB(A) (LAeq) between the hours of 7.00 am to 7.00 pm, and
(c) 65dB(A) (LAmax) at any time.

Noise limits stated in clause (c) between 7.00pm and 7.00am are not relevant to the assessment as the centre does not operate during these hours and no measurements were necessary.

The Tasmanian Environment Protection Policy (2009) Table 1 shows an L_{Aeq} of 55dB(A) for outdoor playgrounds can cause annoyance during play. The policy states that this is an indicative noise level and is not mandatory. However, it does mirror the limit set within clause 20.3.2 of the Kingborough Interim Planning Scheme.

As the center has not been constructed and measurements of the noise cannot be taken it is necessary to determine the potential effects on existing sensitive uses to maintain the amenity of the surrounding area. The Association of Australasian Acoustical Consultants (AAAC) have released a "Guideline for Child Care Acoustic Assessment" Version 3 (September 2020).

Whilst the guidelines do not set limits for a childcare facility it does contain useful data relating to sound power levels for groups of 10 children playing spread over 3 age groups along with acceptable increases above the background noise levels.

As the facility has not yet been constructed it is reasonable to utilize the data presented in the guideline to assess the potential noise effects and any noise reduction recommendations required.

Table 1 of the AAAC guidelines provides recommended sound power levels for lots of 10 children in different age groups. The AAAC Table 1 is reproduced below as figure 3.

All discussion within the AAAC guideline is based on L_{Aeq} levels which enable a clear comparison with the limits set in clause 20.3.2 of the planning scheme.

Number and Age of Children	Sound Power Levels [dB] at Octave Band Centre Frequencies [Hz]								
	dB(A)	63	125	250	500	1k	2k	4k	8k
10 Children - 0 to 2 years	78	54	60	66	72	74	71	67	64
10 Children - 2 to 3 years	85	61	67	73	79	81	78	74	70
10 Children - 3 to 5 years	87	64	70	75	81	83	80	76	72

Figure 3 – Guideline Indicative Sound Power Levels

3 Noise – Childcare Centre

The projected age ranges and number of children at the centre are:

- 6 weeks-24 months – 24,
- 24-36 months – 20, and
- 3-5 years – 30.

It is predicted that the number of children playing outside, engaged in active play, at any one time would be:

- 24-36 months – 10, and
- 3-5 years - 10-15.

Children in the age group 6 weeks to 24 months would predominantly be engaged in passive play and it is predicted that no more than 10 children would be outside at any one time.

There are 3 separate outdoor play areas:

- Area 1 – passive play – 6 weeks to 24 months,
- Area 2 - active play - 24 months to 36 months, and
- Area 3 - active play – 3 – 5 years.

Play Area 1

Based on the levels shown in figure 3 for 10 children the passive outdoor play area 3 would have a noise level of 78dB(A) for children 0-24 months.

- 0-24 months - up to 24 children – 78dB(A)

The AAAC guideline allows for an adjustment of -6dB where children area engaged in “passive” play. Based on the age range and ‘passive’ play within area 3 the -6dB has been applied to the levels from figure 3 resulted in a projected noise level of 72dB(A).

Play Area 2

Based on the levels shown in figure 3 for 10 children the active outdoor play area 2 has a predicted noise level of 85dB(A).

Play Area 3

Based on the levels shown in figure 3 for 10 children the active outdoor play area 2 has a predicted noise level of 87dB(A).

With a possible 15 children utilizing the play area the predicted noise level is calculated at 87dB(A) + 3dB(A) giving a total of 91dB(A).

Car Park

Table 3 of the AAAC guideline shows a potential noise level of 81dB for a car entering and leaving the car park area.

The proposed location of the car park to the east of the lot is adjacent to the Channel Highway. The sensitive uses to the west, in the residential zone, are shielded from car park noise by the proposed extension to the existing building.

Sensitive uses and local business to the east are currently affected by traffic noise on the Channel Highway and cars entering and leaving the car park will have minimal effect on the noise levels in the area.

Noise from cars entering and leaving the site during pick-up and drop-off of children is unlikely to unreasonably impact the sensitive uses to the east and west of the building.

Predicted Noise Levels Adjustment

It is envisaged that compliance with the Cancer Council Tasmania 'Sunsmart' policy children would be utilizing the outdoor play areas for approximately 2 hours in the morning and 2 hours in the afternoon for a total of 4 hours per day.

The AAAC guideline states: 'If outdoor play is limited to no more than 2 hours in the morning and 2 hours in the afternoon, the contributed Leq, 15 minutes noise level emitted from the outdoor play shall not exceed the background noise level by more than 10 dB at the assessment location'.

Adding 10dB to the existing background noise levels allows for calculation of any exceedance of the recommendations in the guidelines. Table 2 shows the potential exceedances for each play area.

Play Area	Background L_{Aeq} +10dB	Projected Noise	Exceedance dB
1	75.8	75dB(A) 6 weeks to 24 months	Nil
2	75.8	85dB(A) 24-36 months	9.2
3	75.8	91dB(A) 3 – 5 years	15.2

Table 2 – Calculated Potential Noise Levels

The figures presented in Table 2 indicate that play areas 2 and 3 have the potential to exceed the recommended 10dB above background during outdoor play periods.

The maximum exceedance of 15.2dB is the 'worst case' scenario and should be used to inform recommendations for noise control to reduce annoyance to surrounding residential premises (sensitive uses).

4 Discussion

There is potential for the childcare centre to exceed the recommended noise levels of 10dB above background at sensitive premises. The exceedance varies between 9.2dB and 15.2dB depending upon the age ranges of the children.

Play area 2 is located towards the southwest corner of the lot and has the potential to exceed the recommended background increase by up to 9.2dB. The sensitive uses to the west are likely to be impacted.

Play area 2 will require noise reduction measures to the west.

Play area 3 is located to the west of the building facing the existing sensitive uses. Residential premises to the north are partially shielded from play area 3 by the childcare building.

Play area 3 exceeds the recommended 10dB above background by 15.2dB(A). The sensitive uses to the west and north are likely to be impacted.

Acoustic Barriers

As noted above, noise reduction barriers are required to ensure noise at sensitive uses does not exceed 10dB above the existing background. The maximum noise level to be treated is at worst case 15.2dB.

Acoustic barriers can be constructed using timber, concrete blocks, polycarbonate sheeting or glass. Table 3 (Noise and Sound Services Pty Ltd – Childcare Center Noise Impact Assessment dated November 2023) shows the potential noise reduction possible using the various construction methods of acoustic barriers.

Material	Typical Thickness (mm)	Surface Density (kg/m^2)	Sound Transmission Loss - R_w (dB)
Polycarbonate or Acrylic	12	15	33
	20	24	35
Timber	15	7.3	24
	30	16	28
Aerated Concrete blocks	75	40	38
Toughened Glass	6	15	30

Note: R_w values are based on the material density. Actual performance is related to the height of the barrier and the quality of installation.

Table 3 – Recommended Materials for Construction of Acoustic Barriers

5 Recommendations

As detailed in section 4 there is potential for residential premises (sensitive uses) to the north and west to be exposed to noise levels greater than 10dB above the existing background level. The area to the north is predominantly shielded by the existing building which will form part of the childcare center.

It is recommended that an acoustic barrier is installed to reduce impacts of the effected residential area. Attachment A shows the location of the acoustic barrier required.

The areas requiring an acoustic barrier are:

- Western boundary, and
- Northwest corner of play area 3.

An acoustic barrier with a sound transmission loss of at least 15.2dB and a minimum height of 1.8m is required to the west and northwest corner of the lot. For example, a timber fence with a minimum thickness of 15mm and surface density of not less than $7.3kg/m^2$ has the potential to reduce the noise from the play areas and service areas by 24dB – Refer Table 3. This is provided good lapped and capped construction methods result in no holes or gaps and no gaps at the base of the barriers.

Any acoustic barrier construction, or a combination of methods detailed in Table 3, can be used provided the minimum sound transmission loss exceeds 15.2dB.

Appendix A – Acoustic Barrier Locations