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Proposed Boarding House
159 Jamison Road
Penrith

ACOUSTIC REPORT




Client:
Alpha Engineering & Development Pty Ltd

Reference:
1019019 R01E 159 Jamison Road Penrith RTN ENV MECH

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Document Information

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1. Introduction

The following report is in response to a request by Alpha Engineering and Development Pty Ltd for an environmental and road traffic noise assessment for a proposed boarding house to be located at 159 Jamison Road, Penrith. This traffic noise assessment was conducted in accordance with Penrith City Council and the NSW *Development Near Rail Corridors and Busy Roads – Interim Guideline*. To facilitate the assessment, unattended noise monitoring was conducted to determine the traffic impacts to the proposed boarding house and onsite activities to sensitive receivers.

2. Site Description

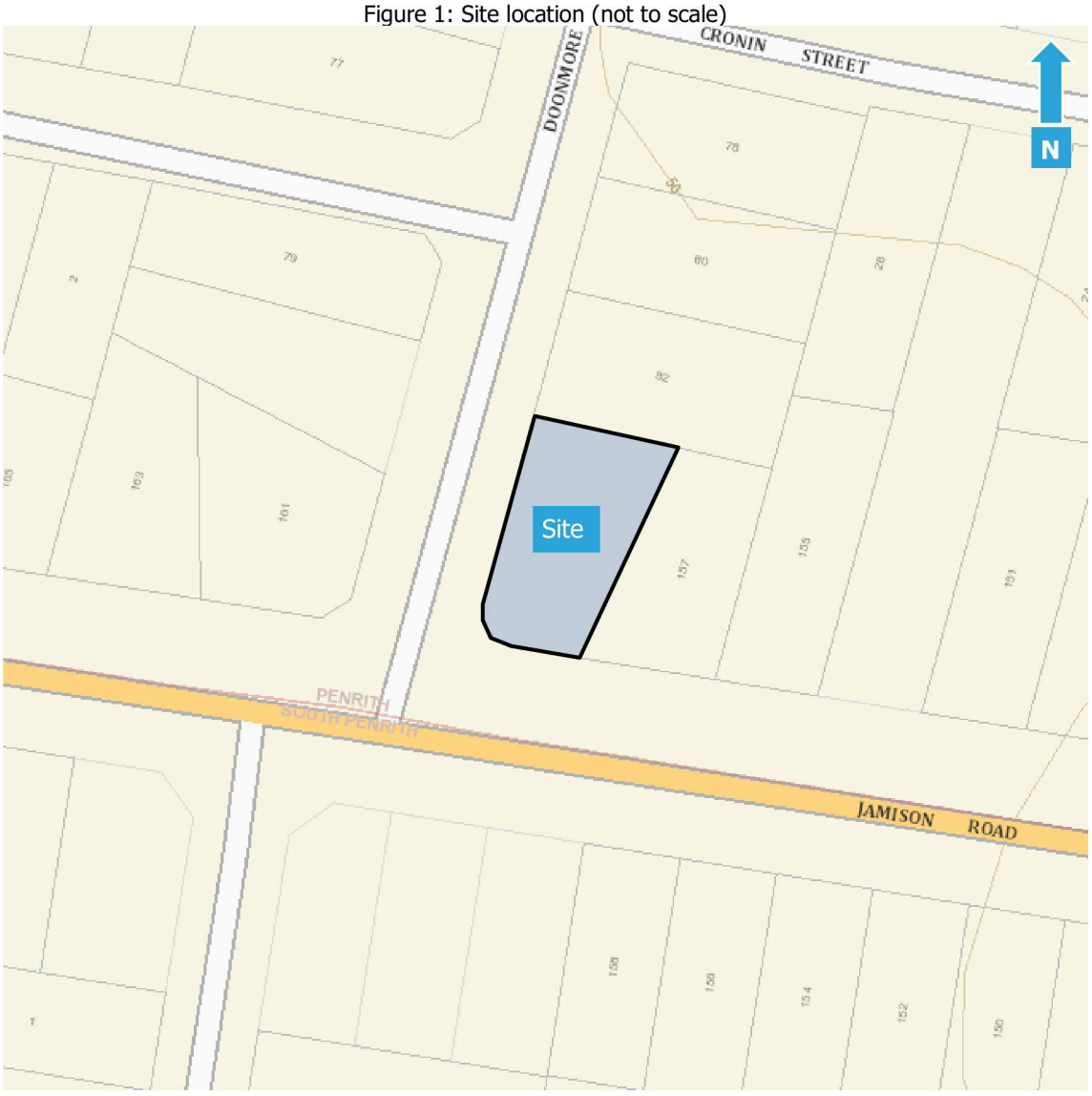
2.1 Site location

The site is described by the following:

159 Jamison Road, Penrith
Lot B on DP413314

Refer to Figure 1 for site location.

Figure 1: Site location (not to scale)



A comprehensive site survey was conducted on the 6th March 2019 and identified the following:

a) A single storey dwelling currently occupies the site and will be demolished for the proposed development.
b) Jamison Road separates the site from residential dwellings.
c) Residential dwellings are located on the western side of Doonmore Street.
d) Single storey residential dwellings are located adjacent to the northern and eastern side boundaries.

2.2 Proposal

The proposal is to construct a two storey boarding house comprised of the following:

- Site area of approximately 702.5m^2.
- Basement carpark containing 11 parking spaces, disabled parking space, bin storage room, 4 motorcycle spaces and 5 bicycle spaces.
- Ground and first floors consisting of 22 studio rooms, managers room with open space terrace and communal room.
- Site access via Doonmore Street.

Refer to the Appendices for development plans.

2.3 Acoustic environment

The surrounding area is primarily affected by traffic noise from the surrounding road network.

3. Equipment

The following equipment was used to record noise levels:

- Rion NL42 Environmental Noise Monitor (SN# 00171587)
- Pulsar Model 105 Ltd Sound Calibrator (SN # 57417)

The Environmental Noise Monitor holds current NATA Laboratory Certification and was field calibrated before and after the monitoring period, with no significant drift from the reference signal recorded.

4. Noise Monitoring Location

4.1 Receiver locations

The nearest representative residential receiver locations were identified as follows;

1. A single storey residential dwelling is located adjacent the eastern site boundary at 157 Jamison Road.
2. A single storey residential dwelling is located adjacent the northern site boundary at 82 Doonmore Road.
3. A single storey residential dwelling is located on the western side of Doonmore Street at 83 Doonmore Street.
4. Residential properties are located on the southern side of Jamison Road at 160 Jamison Road.

Refer to Figure 2 for these locations.

Figure 2: Noise monitoring location

4.2 Unattended noise monitoring

A Rion NL42 environmental noise monitor was placed approximately 12.5m from the nearest lane of Jamison Road to measure road traffic and ambient noise levels. The monitor was located in a free field position with the microphone approximately 1.4 metres above ground surface level. The noise monitor was set to record noise levels between 6th and 14th March 2019.

The environmental noise monitor was set to record noise levels in "A" weighting, Fast response with 15 minute statistical intervals. Road traffic noise was conducted in general accordance with Australian Standard *AS2702:1984 'Acoustics – Methods for the measurement of road traffic noise'*.

For the unattended noise monitoring location refer to Figure 2.

5. Existing Ambient Noise Levels

The following tables present the measured ambient noise levels from the unattended noise survey. Any periods of inclement weather or extraneous noise are omitted from the measured data prior to determining the overall results.

5.1 Meteorological conditions

Meteorological observations during the unattended noise monitoring survey were obtained from the Bureau of Meteorology website (http://www.bom.gov.au/climate/data), shown in Table 1 below.

Table 1: Meteorological conditions – Penrith NSW

Day	Date	Rainfall (mm)	Wind			
			9am		3pm	
			Speed (km/h)	Direction	Speed (km/h)	Direction
Wednesday	06/03/2019	0	2	S	30	W
Thursday	07/03/2019	0	15	S	11	SE
Friday	08/03/2019	0	4	N	11	NE
Saturday	09/03/2019	0	6	SSW	6	ENE
Sunday	10/03/2019	0.6	2	NNE	11	NE
Monday	11/03/2019	0	6	SW	9	SE
Tuesday	12/03/2019	0	4	SE	15	W
Wednesday	13/03/2019	0	6	SSW	7	W

5.2 Unattended road traffic noise levels

The measured road traffic noise levels at the monitoring location are as follows;

Table 2: Measured road traffic noise levels

Day	Date	LA10(18h)	LAeq(15h)	LAeq(9h)
		6am-12pm	7am-10pm	10pm-7am
Thursday	07/03/2019	65.2	63.2	55.7
Friday	08/03/2019	65.1	62.6	55.0
Saturday	09/03/2019	64.9	62.7	54.7
Sunday	10/03/2019	62.7	60.6	55.4
Monday	11/03/2019	64.1	62.4	56.0
Tuesday	12/03/2019	64.1	61.9	55.6
Wednesday	13/03/2019	64.9	62.7	56.0

Refer to the appendix for graphical representation.

5.3 Ambient background noise level

The measured rating background noise levels (RBL), in accordance with the NSW Noise Policy for Industry, are as follows;

Table 3: Measured L90 noise levels

Day	Date	Background L90 dBA		
		Day	Evening	Night
Wednesday	06/03/2019	x	42.9	32.3
Thursday	07/03/2019	46.1	39.0	31.4
Friday	08/03/2019	46.2	43.9	38.2
Saturday	09/03/2019	45.4	41.1	35.2
Sunday	10/03/2019	44.5	42.6	38.4
Monday	11/03/2019	44.8	41.5	39.0
Tuesday	12/03/2019	46.4	43.5	35.2
Wednesday	13/03/2019	46.6	39.7	34.7
RBL		46	42	35

6. Road Traffic Noise Criteria

To determine the appropriate noise criteria to be applied, a review of the Penrith City Council Pre-Lodgement Advice and NSW Development Near Rail Corridors and Busy Roads – Interim Guideline was conducted.

6.1 Penrith City Council

The Penrith City Council Pre-Lodgement Advice – Key Issues and Outcomes – Environmental Management – Noise Impacts, states the following:

"An acoustic assessment is required to be submitted as a part of the development application to demonstrate that the proposed boarding house will not have any impact on nearby sensitive receivers. This report is to be prepared by a suitably qualified acoustic consultant, and is to consider:

- *The 'NSW Noise Policy for Industry' in terms of assessing the noise impacts associated with the development, including noise from the indoor and outdoor communal spaces on surrounding properties (including their outdoor spaces), the car parking spaces, as well as any mechanical plant associated with air conditioning for individual units or mechanical ventilation for the development including basement carpark.*
- *The AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors in terms of ensuring that internal noise levels can be achieved.*
- *The Interim Construction Noise Guideline in assessing the impacts associated with the construction phase of the development.*
- *The potential impact from road traffic noise resulting from vehicles entering and exiting site demonstrating compliance with NSW 'Road Noise Policy'.*

Should mitigation measures be necessary, recommendations should be included to this effect. Recommendations and mitigation measures shall be shown on all architectural plans."

6.2 Development Near Rail and Corridors and Busy Roads – Interim Guideline

The NSW Department of Planning's Development Near Rail Corridors and Busy Roads –Interim Guideline 2008 specifies internal noise criterion for residential buildings as follows:

Table 4: Road traffic noise criteria - DNRCBR 2008

Location	Noise Level dBA	Applicable time period
Living Areas	≤40 (L_{eq}9h) & (L_{eq}15h)	At any time
Sleeping Areas	≤35 (L_{eq}9h)	Night (10 pm to 7 am)

6.3 Noise Policy for Industry

Assessment of noise in accordance with NSW EPA Noise Policy for Industry (2017) has two main components: intrusiveness and amenity criteria. These are compared to each other (after conversion of amenity noise level to LAeq,15min equivalent level) to determine the overall project noise trigger level.

6.3.1 Intrusiveness noise level

The intrusiveness noise level is based on the $L_{Aeq\ (15\ min)}$ associated with commercial activity being less than or equal to the measured L_{A90} Rating Background Level + 5dB as per section 2.3 of the policy. A modifying factor should also be added where appropriate to allow for tonality, impulsiveness, and intermittency or low frequency effects.

6.3.2 Amenity noise level

The amenity noise level is determined in accordance with Section 2.4 of the policy based on the land use and relevant noise criteria specified in Tables 2.2 and 2.3.

The Noise Policy for Industry sets out acceptable noise levels for various locations. Determination of which residential receiver category applies is described in Table 2.3 of the policy.

Table 5: Receiver category (Table 2.3 of the Noise Policy for Industry)

Receiver category	**Typical planning zoning – standard instrument**	**Typical existing background noise levels**	**Description**
Rural residential	RU1 – primary production RU2 – rural landscape RU4 – primary production small lots R5 – large lot residential E4 – environmental living	Daytime RBL <40 dB(A) Evening RBL <35 dB(A) Night RBL <30 dB(A)	**Rural** – an area with an acoustical environment that is dominated by natural sounds, having little or no road traffic noise and generally characterised by low background noise levels. Settlement patterns would be typically sparse. Note: Where background noise levels are higher than those presented in column 3 due to existing industry or intensive agricultural activities, the selection of a higher noise amenity area should be considered.
Suburban residential	RU5 – village RU6 – transition R2 – low density residential R3 – medium density residential E2 – environmental conservation E3 – environmental management	Daytime RBL<45 dB(A) Evening RBL<40 dB(A) Night RBL <35dB(A)	**Suburban** – an area that has local traffic with characteristically intermittent traffic flows or with some limited commerce or industry. This area often has the following characteristic: evening ambient noise levels defined by the natural environment and human activity.
Urban residential	R1 – general residential R4 – high density residential B1 – neighbourhood centre (boarding houses and shop-top housing) B2 – local centre (boarding houses) B4 – mixed use	Daytime RBL> 45 dB(A) Evening RBL> 40 dB(A) Night RBL >35 dB(A)	**Urban** – an area with an acoustical environment that: • is dominated by 'urban hum' or industrial source noise, where urban hum means the aggregate sound of many unidentifiable, mostly traffic and/or industrial related sound sources • has through-traffic with characteristically heavy and continuous traffic flows during peak periods • is near commercial districts or industrial districts • has any combination of the above.

To determine the appropriate receiver category, the following observations were made:

- The nearby residential receivers are zoned R2 – Low Density Residential and R3 Medium Density Residential which corresponds with typical planning zoning of the suburban category.
- The measured RBL values presented in Section 5.3 corresponds with the typical existing background noise levels of the urban category.
- The acoustic environment of the surrounding area has local traffic with characteristically intermittent traffic flows or with some limited commerce or industry, which corresponds with description of the suburban category.

Therefore, the nearest residential receivers would be assessed against the suburban criteria.

6.3.3 Modifying factors

The Noise Policy for Industry includes correction factors such as tonal noise, low-frequency noise, intermittent noise and duration. Where two or more modifying factors are present, the maximum adjustment to a noise source level is 10dBA (excluding duration correction).

6.4 Project noise trigger level

To determine the project trigger noise level, the amenity noise level must first be standardised to and equivalent LAeq 15min in order to compare to the intrusiveness noise level. This is done in accordance with section 2.2 of the policy as follows;

$$L_{Aeq,15min} = L_{Aeq,\ period} - 5dB + 3dB$$

Therefore, based on the measured data presented in Section 5, the project specific noise limits are determined.

6.4.1 Intrusive noise impacts

Based on the measured data, the intrusive noise limits are as follows;

Table 6: Intrusive noise criteria

Time period	Criteria $L_{eq\ (15min)}$ dB(A)
Day (7am-6pm Mon-Sat; 8am-6pm Sun)	51
Evening (6pm-10pm)	47
Night (10pm-7am Mon-Sat; 10pm-8am Sun)	40

6.4.2 Amenity criteria

Based on the measured data, the amenity noise limits are as follows;

Table 7: Amenity criteria

Time period	Criteria $L_{eq(period)}$ dB(A)
Day	53
Evening	43
Night	38

6.4.3 Project specific noise criteria

The project noise trigger level is the lower (that is, the most stringent) value of the intrusiveness and amenity noise levels. Therefore the project noise trigger levels are as follows:

Table 8: Project criteria

Time period	Criteria $L_{eq\ (15min)}$ dBA
Day	51
Evening	43
Night	38

6.5 NSW Road Noise Policy 2008

The NSW Road Noise Policy outlines the criteria for any increase in the total traffic noise level at the location due to a proposed project or traffic generating development. Therefore the following criteria applies:

Table 9: Relative increase criteria for residential land uses

Road Category	Type of project/development	Total traffic noise level increase – dB(A)	
		Day (7am to 10pm)	Night (10pm to 7am)
Freeway/arterial/sub-arterial roads and transitways	New road corridor/redevelopment of existing road/land use development with the potential to generate additional traffic on existing road	Existing traffic $L_{Aeq(15hr)}$ + 12dB (external)	Existing traffic $L_{Aeq(9hr)}$ + 12dB (external)

7. Road Traffic Assessment

7.1 Traffic volumes

Traffic volumes were obtained by a report by JACOBS "*The Northern Road Upgrade, Glenmore Parkway, Glenmore Park to Jamison Road, South Penrith*" dated 26th August 2016, which is available on the Roads and Maritime Services website (http://www.rms.nsw.gov.au).

To be conservative, an estimated 1% annual traffic volume growth factor was applied for the 10-year planning horizon. Using this procedure, the relative increase in traffic noise levels over 10 years is calculated to be approximately 0.4dBA, which is taken into account for the future traffic noise predictions.

7.2 Predicted road traffic noise levels - 2029

Road traffic noise modelling for the proposed development was based on the following information:

- Proposed layout, floor plans and elevations provided by Alpha Engineering and Development Pty Ltd, Project 18-030, Drawings 1001, 2001 to 2004, 3001, 3201 and 4001, drawn by Platform 5 Design dated 18/03/2019.
- Jamison Road speed limit of 60km/h and 40km/h school zone.
- Receiver heights 1.5m above finished floor level.

Table 10 presents the external predicted road traffic noise levels for the development.

Table 10: Predicted road traffic noise impacts

Floor	Unit	Room	LAeq(15hr)	LAeq(9hr)
Ground	G01	Studio	64	58
Ground	G02	Studio	60	54
Ground	G03	Studio	59	53
Ground	G04	Studio	57	51
Ground	G05	Manager	52	46
Ground	G06	Studio	54	48
Ground	G07	Studio	55	49
Ground	G08	Studio	57	51
Ground	G09	Studio	59	53
Ground	G10	Studio	61	55
Ground	G11	Studio	64	58
First	101	Studio	65	59
First	102	Studio	61	55
First	103	Studio	60	54
First	104	Studio	57	51
First	105	Studio	57	51
First	106	Studio	59	53
First	107	Studio	59	53
First	108	Studio	60	54
First	109	Studio	60	54

Floor	Unit	Room	LAeq(15hr)	LAeq(9hr)
First	110	Studio	61	55
First	111	Studio	62	56
First	112	Studio	65	59

Based on the predicted noise levels, additional façade treatments would be required. Refer to Section 10 for recommendations.

8. Environmental Assessment

8.1 Onsite activities

Noise associated with the development was assessed based on previous measurements of similar activities. The calculations assume that the nominated activities are located at a representative distance within the development site to each receiver location. Any relevant shielding or building transmission loss is taken into account for these activities.

8.2 Project specific criteria

The noise source levels at the receiver locations are shown in Table 11. LAeq results are not shown where the calculated total is less than 0dBA.

Table 11: Project specific noise levels

Receiver	Receivers 1. 157 Jamison Road. 2. 82 Doonmore Street. 3. 83 Doonmore Street. 4. 160 Jamison Road. Description	Source Leq@1m dB(A)	Correction dB(A)*	Corrected Leq@1m dB(A)	LAeq adj,T ext. dB(A) Day	LAeq adj,T ext. dB(A) Eve	LAeq adj,T ext. dB(A) Nigh	LAeq 15 min Compliance Day	Eve	Night
	Criteria							51	43	38
	Car passby	69		69	29	29	29	Yes	Yes	Yes
1	Car start	74	2	76	24	24	24	Yes	Yes	Yes
	Car door closure	75		75	23	23	23	Yes	Yes	Yes
	Voice conversation	70		70	33	33	33	Yes	Yes	Yes
	Total				35	35	35	**Yes**	**Yes**	**Yes**
	Criteria							51	43	38
	Car passby	69		69	35	35	35	Yes	Yes	Yes
2	Car start	74	2	76	27	27	27	Yes	Yes	Yes
	Car door closure	75		75	26	26	26	Yes	Yes	Yes
	Voice conversation	70		70	32	32	32	Yes	Yes	Yes
	Total				38	38	38	**Yes**	**Yes**	**Yes**
	Criteria							51	43	38
	Car passby	69		69	31	31	31	Yes	Yes	Yes
3	Car start	74	2	76	26	26	26	Yes	Yes	Yes
	Car door closure	75		75	25	25	25	Yes	Yes	Yes
	Voice conversation	70		70	24	24	24	Yes	Yes	Yes
	Total				34	34	34	**Yes**	**Yes**	**Yes**
	Criteria							51	43	38
	Car passby	69		69	29	29	29	Yes	Yes	Yes
4	Car start	74	2	76	24	24	24	Yes	Yes	Yes
	Car door closure	75		75	23	23	23	Yes	Yes	Yes
	Voice conversation	70		70	21	21	21	Yes	Yes	Yes
	Total				32	32	32	**Yes**	**Yes**	**Yes**

Compliance is predicted for onsite activities during all time periods.

9. Road Traffic Noise

The existing annual average daily traffic volume for Jamison Road is approximately 14,580 vehicles per day. In accordance with the RTA *Guide to Traffic Generating Developments*, the proposed boarding house is predicted to produce an additional 28 vehicle movements per day.

Therefore, based on the available information, the predicted increase in daily $LAeq_{(15hr)}$ for receivers near Jamison Road is calculated to be less than 1dB(A) due to traffic generation by the proposed development, which complies with the criterion of +12dB(A) as outlined in Section 6.5.

10. Recommendations

10.1 Road Traffic Noise

All building treatments for road traffic noise were calculated in accordance with Australian Standard *AS3671:1989 'Road Traffic Noise Intrusion – Building Siting and Construction'* and *"Development Near Rail Corridors and Busy Road Interim Guideline 2008"*.

10.1.1 Glazing

The minimum glazing treatments presented in Table 12 are required to comply with the following:

- The minimum glass thickness specified shall not be reduced regardless of the R_w performance of the glazing system.
- If compliance cannot be achieved with the minimum R_w ratings, the glazing system shall be upgraded until compliance is achieved.
- Glazing specified with acoustic seals requires a Q-lon seal or an equivalent product, mohair seals are not acceptable.
- The glazier shall provide NATA test reports on request to verify compliance with the minimum R_w ratings. Generic reports are not acceptable.

Table 12: Required façade acoustic ratings

Unit	Floor	Location	Rw Ratings				Glazing		Acoustic seals
			Wall	Roof	Windows 1	Windows 2	Windows 1	Windows 2	
G01	Ground	Studio	40		28	28	5mm tough	5mm tough	yes
G02	Ground	Studio	40		27		4mm float		yes
G03	Ground	Studio	40		22		4mm float		no
G04	Ground	Studio	40		22		4mm float		no
G05	Ground	Manager	40		22	22	4mm float	4mm float	no
G06	Ground	Studio	40		22		4mm float		no
G07	Ground	Studio	40		22		4mm float		no
G08	Ground	Studio	40		22		4mm float		no
G09	Ground	Studio	40		22		4mm float		no
G10	Ground	Studio	40		22		4mm float		no
G11	Ground	Studio	40		27	27	4mm float	4mm float	yes
101	First	Studio	40	40	30	30	6mm float	6mm float	yes
102	First	Studio	40	40	27		4mm float		yes
103	First	Studio	40	40	22		4mm float		no
104	First	Studio	40	40	22		4mm float		no
105	First	Studio	40	40	22	22	4mm float	4mm float	no
106	First	Studio	40	40	22	22	4mm float	4mm float	no
107	First	Studio	40	40	22		4mm float		no
108	First	Studio	40	40	22		4mm float		no
109	First	Studio	40	40	22		4mm float		no
110	First	Studio	40	40	22		4mm float		no
111	First	Studio	40	40	22		4mm float		no
112	First	Studio	40	40	30	28	6mm float	5mm tough	yes

Any locations not identified in Table 12 would require 4mm float for windows (minimum R_w 22) and 4mm toughened for sliding doors (minimum R_w 22)

10.1.2 Wall construction

The minimum required wall acoustic rating is Rw 40 with brick veneer or double brick complying. For lightweight wall system the following construction would be required:

Table 13: Typical lightweight wall constructions

Description	Cavity insulation	R_W Rating
Minimum 9mm fibre cement sheeting external, 90mm timber studs, 13mm plasterboard internal	75mm glasswool batts (11 kg/m^3)	40

Note that the construction systems listed in the table are not the only possible types of construction. Other similar systems achieving at least minimum Rw 40 would also be suitable.

More detailed information for cladding may be provided on request.

10.1.3 Roofing construction

The required roof/ceiling acoustic rating is Rw 40. For pitched sheet metal roof, the following typical construction would be required:

Table 14: Typical roof constructions

Description	Cavity insulation	R_W Rating
Tiled roof with 60mm Anticon, ceiling joists or trusses at 450mm centres, 10mm thick plasterboard ceiling	Minimum 165mm glasswool batts (14kg/m^3) or equivalent	40

Note that the construction system listed in the table is not the only possible type of construction. Other similar systems achieving at least minimum Rw 40 would also be suitable.

10.1.4 Alternative ventilation

To achieve the required internal noise levels for the development, all bedrooms and living spaces would require the provision for an alternative ventilation system (in accordance with National Construction Code 2016 requirements) similar to air-conditioning or mechanical ventilation to allow doors and windows to be closed.

10.2 Onsite activities

Based on the measured noise levels and assessment of the site and surrounds, noise impacts at the residential receiver locations are predicted to satisfy the assessment criteria for all time periods. Therefore, no further noise attenuation would be necessary in order to comply with the criteria. We recommend that waste collection be conducted in accordance with the surrounding residential properties with recommended hours of 7am to 6pm weekdays and 8am to 6pm weekends.

10.3 Onsite mechanical plant

No information regarding mechanical services was available at the time of the assessment. We recommend that any new mechanical plant is designed to comply with the criteria stated in Section 6.4.3 with an assessment undertaken by qualified acoustic consultant to be conducted prior to installation.

10.4 Construction Noise & Vibration

We recommend that a construction noise management plan is prepared and submitted to council prior to construction certification, in accordance with the *NSW Interim Construction Guideline*.

11. Conclusion

An environmental and road traffic noise assessment was conducted for the proposed boarding house to be located at 159 Jamison Road, Penrith. With the inclusion of acoustic treatments as recommended in Section 10, the development is predicted to satisfy all assessment requirements.

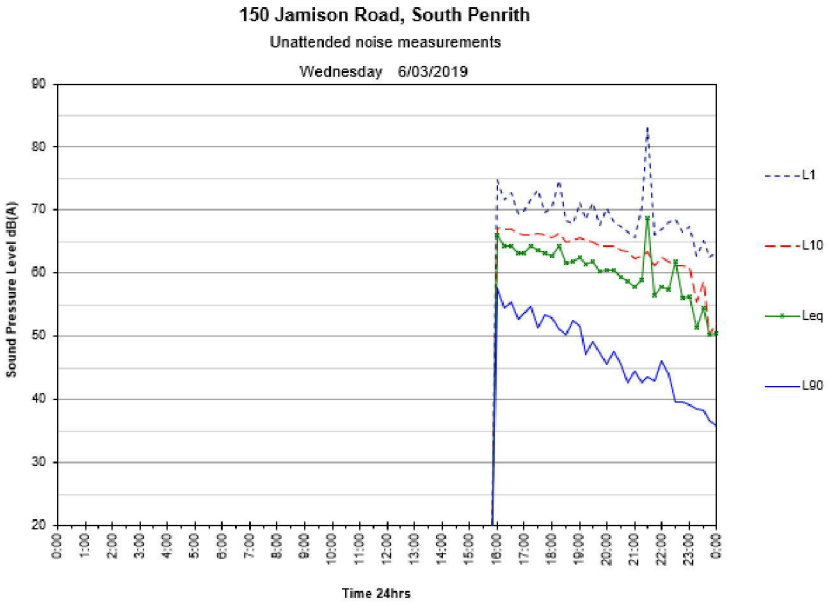
Should you have any queries please do not hesitate to contact us.

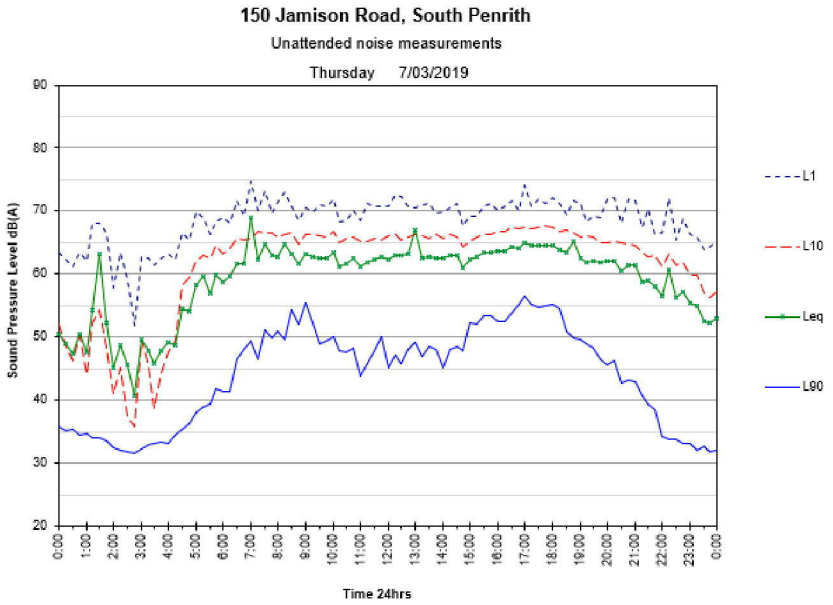
Yours faithfully,

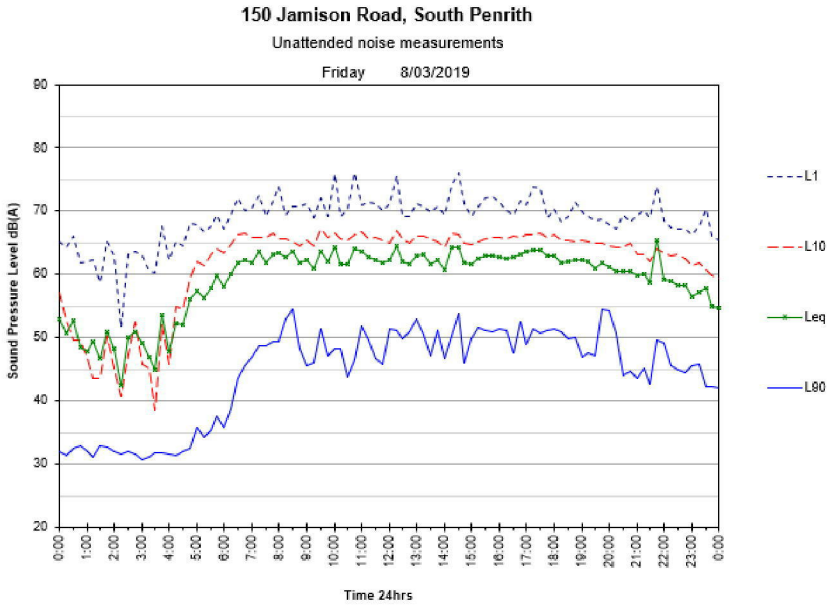
Christian Nguyen
Acoustic Consultant
acousticworks)))

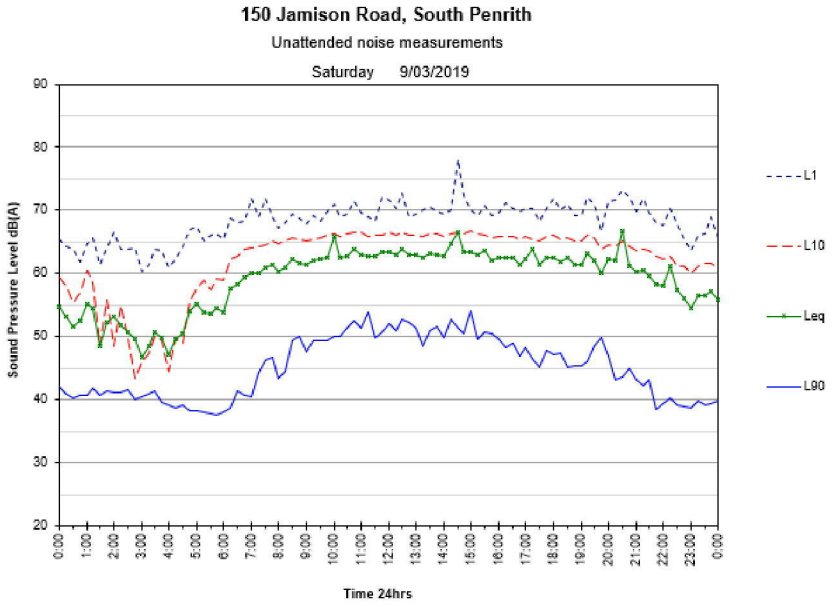
12. Appendices

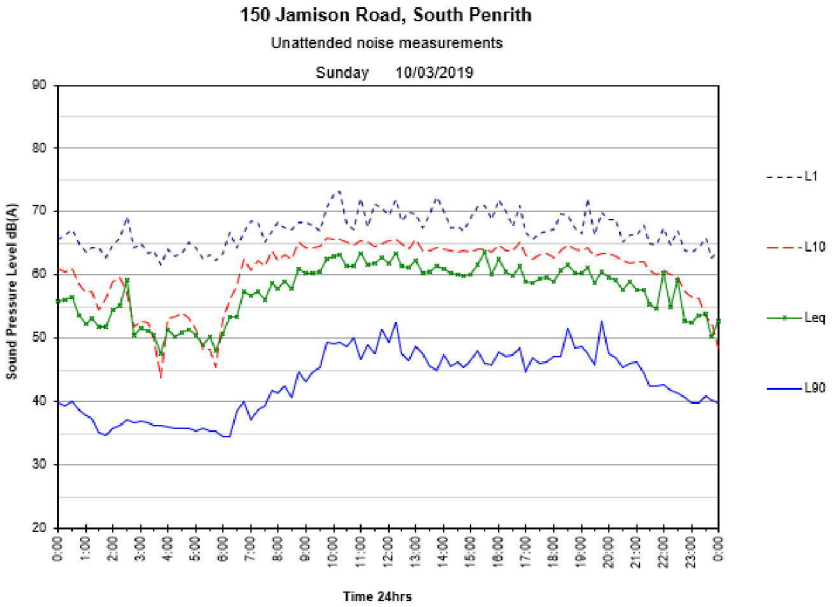
12.1 Noise Monitoring Charts

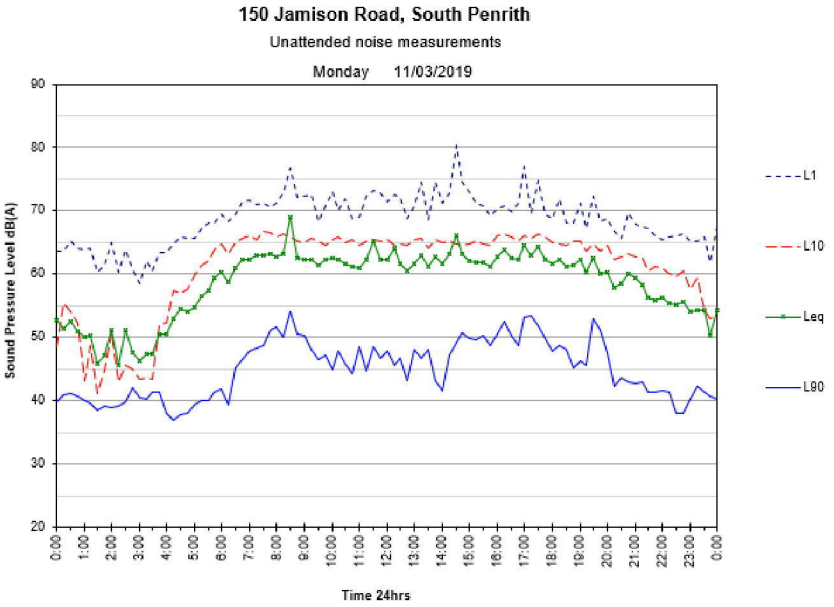


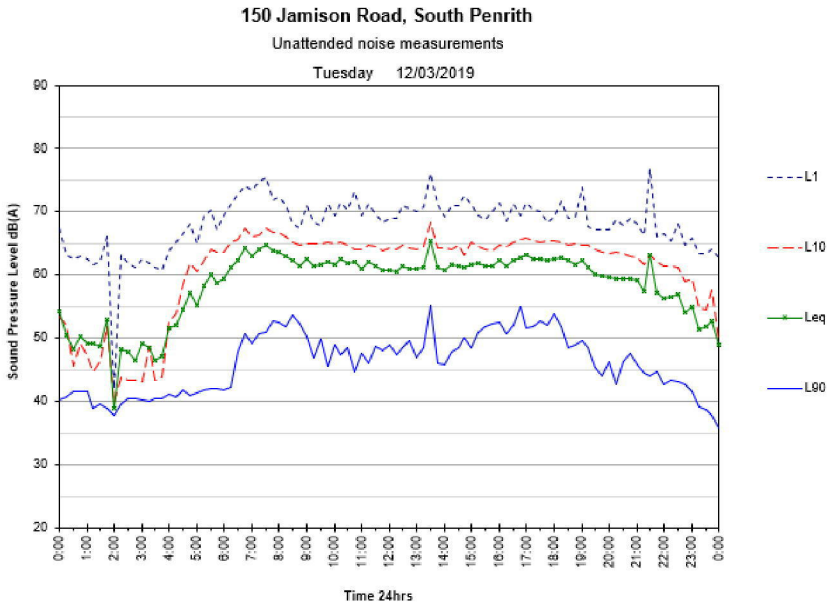


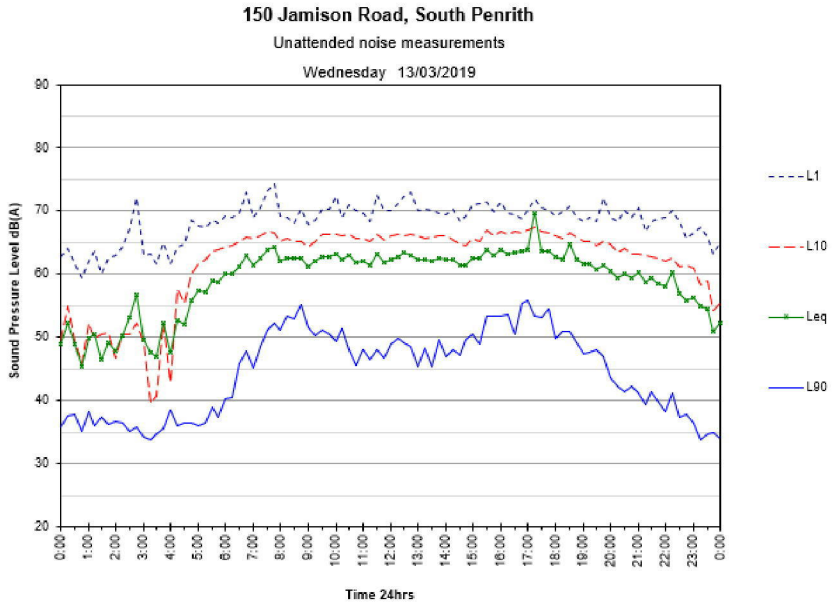


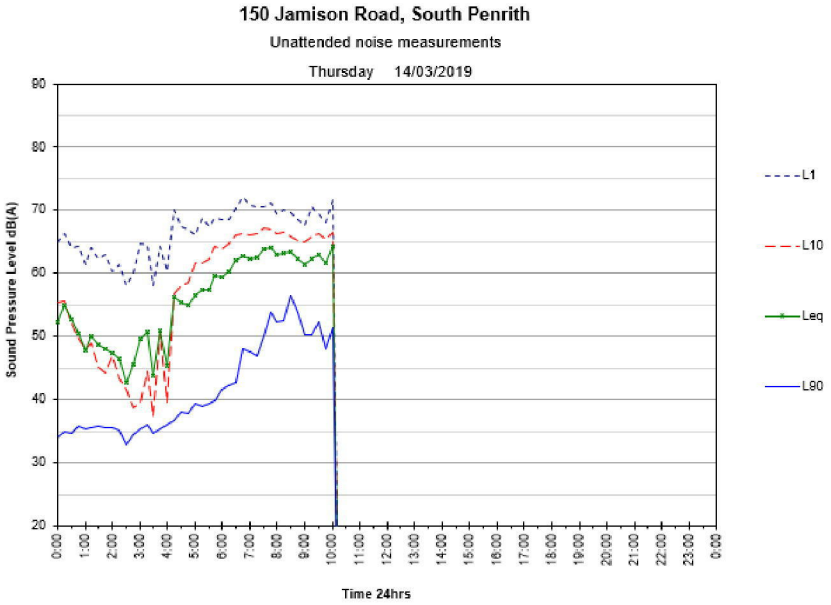




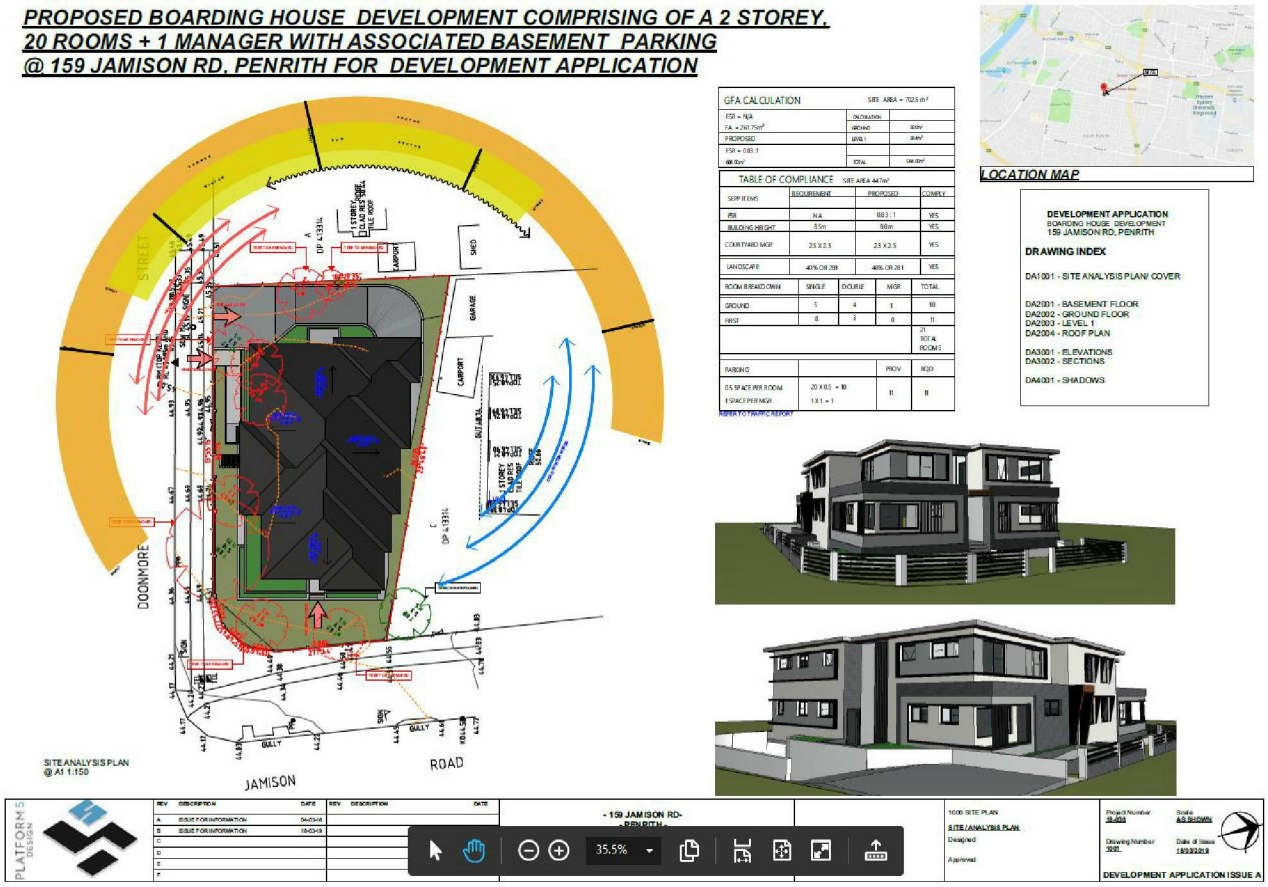


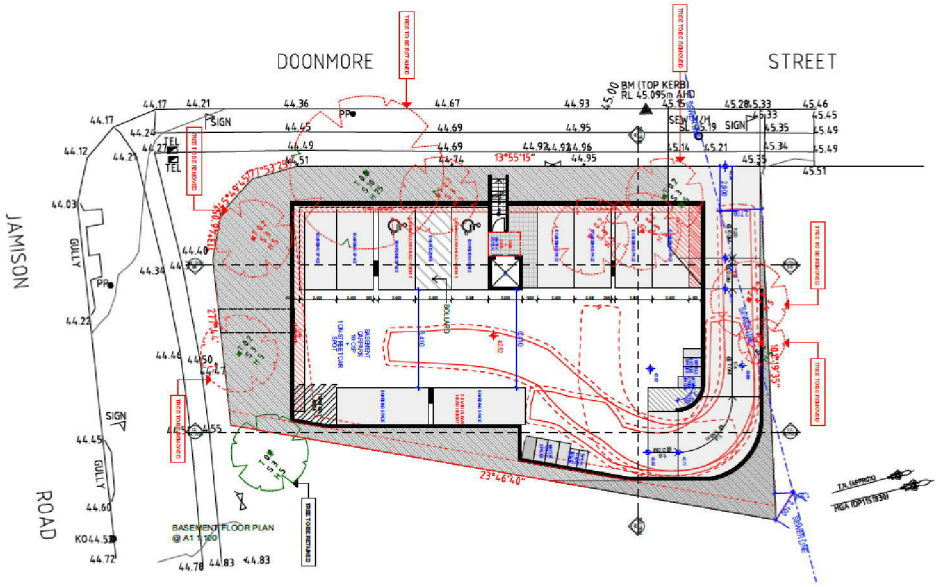


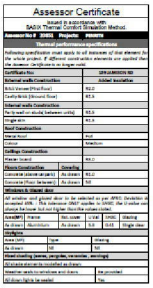




12.2 Development Plans







1Thermal Spec_159 JAMISON RD1

- 159 JAMISON RD-
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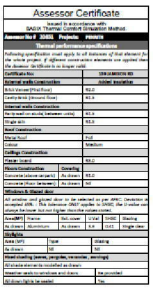
- NSW - SYDNEY -
DEVELOPMENT APPLICATION TWO STOREY BOARDING HOUSE DEVELOPMENT

2000 FLOOR PLANS
BASEMENT PLAN

DEVELOPMENT APPLICATION ISSUE A



0Thermal Spec_159 JAMISON RD1

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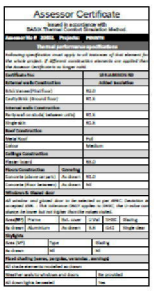
DEVELOPMENT APPLICATION TWO STOREY BOARDING HOUSE DEVELOPMENT

2000 FLOOR PLANS
GROUND FLOOR PLAN

DEVELOPMENT APPLICATION ISSUE A



1Thermal Spec_159 JAMISON RD1

LEVEL 01 PLAN
@ A1 1:100

- 159 JAMISON RD-
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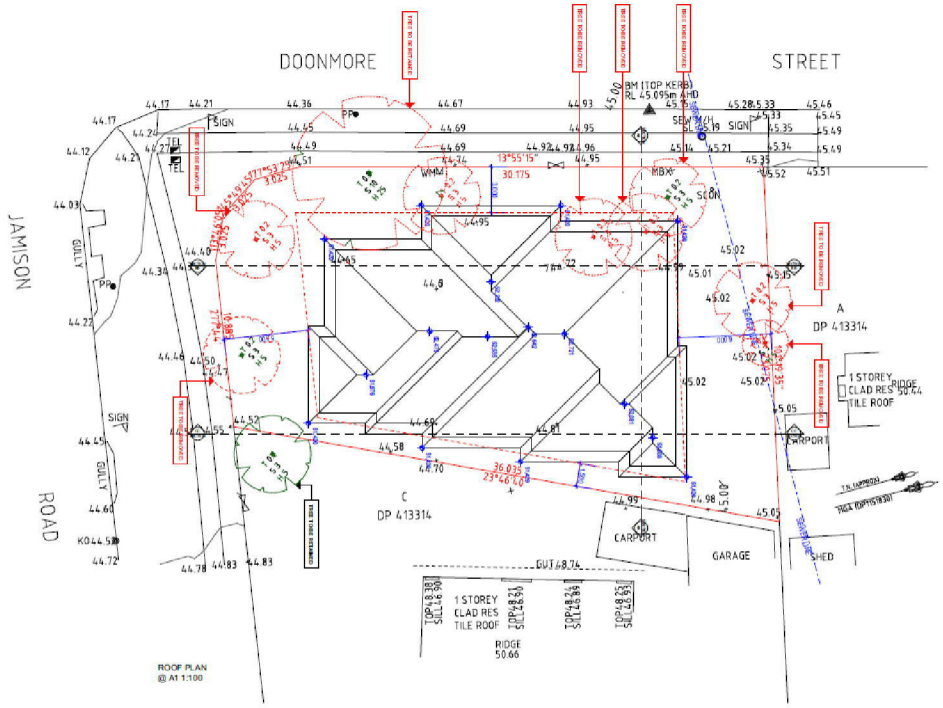
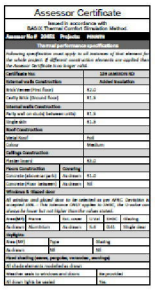
DEVELOPMENT APPLICATION TWO STOREY BOARDING HOUSE DEVELOPMENT

2000 FLOOR PLANS
LEVEL 1

DEVELOPMENT APPLICATION ISSUE A





1Thermal Spec_159 JAMISON RD1

ROOF PLAN
@ A1 1:100

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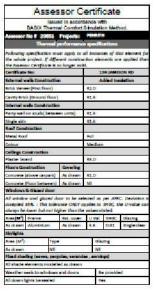
DEVELOPMENT APPLICATION TWO STOREY BOARDING HOUSE DEVELOPMENT

2100 ROOF PLANS
ROOF PLAN

DEVELOPMENT APPLICATION ISSUE A



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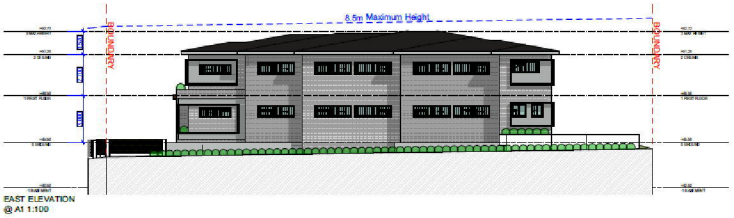

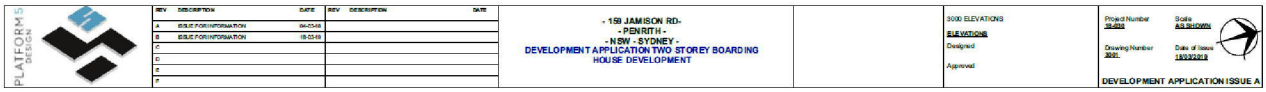

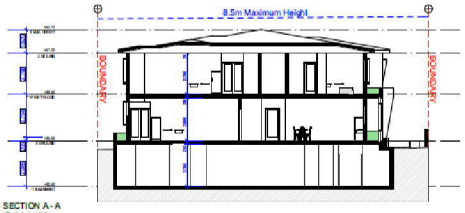

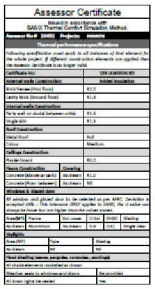

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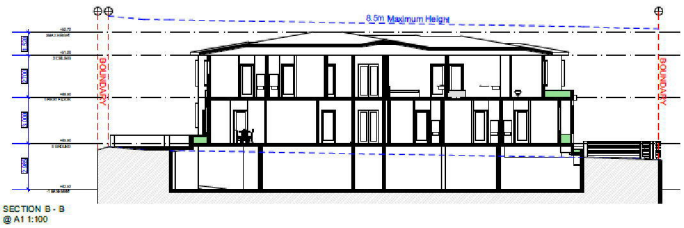

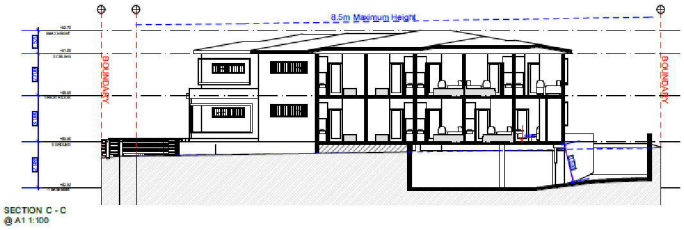

1 JUNE 21ST, 9AM 1:250

1 JUNE 21ST, 12PM 1:250

1 JUNE 21ST, 3PM 1:250

PLATFORMS DESIGN

REV	DESCRIPTION	DATE	REV	DESCRIPTION	DATE
A	ISSUE FOR INFORMATION	04-03-19			
B	ISSUE FOR INFORMATION	18-03-19			
C					
D					
E					
F					

- 159 JAMISON RD-
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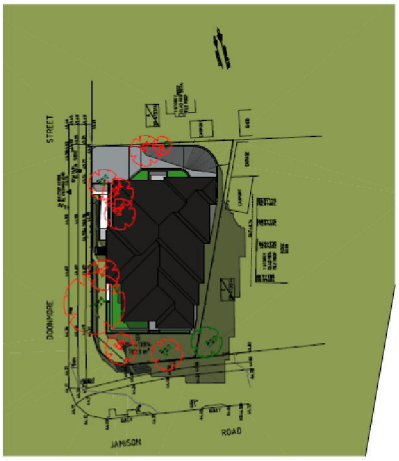
- NSW - SYDNEY -
DEVELOPMENT APPLICATION TWO STOREY BOARDING HOUSE DEVELOPMENT

3200 SHADOW DIAGRAMS
JUNE EQUINOX
Designed
Approved

Project Number 18-093
Scale A3 SHOWN
Drawing Number 3200
Date of Issue 18/03/2019

DEVELOPMENT APPLICATION ISSUE A



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1 JUNE 21ST, 2PM 1:250

1 JUNE 21ST, 3PM 1:250

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