



RESTAURANT

113 KAWINA ROAD, BICKLEY

ACOUSTIC ASSESSMENT

MAY 2018

OUR REFERENCE: 23049-3-18022



DOCUMENT CONTROL PAGE

**ACOUSTIC ASSESSMENT  
BICKLEY**

Job No: 18022

Document Reference: 23049-3-18022

FOR

**BLACKCAT NOMINEES**

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**DOCUMENT INFORMATION**

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<b>Date of Issue :</b>	2 May 2018		

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**REVISION HISTORY**

Revision	Description	Date	Author	Checked
1	Revised Plans	6/6/2018	PLD	
2	Revised Plans	15/6/2018	PLD	

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## 1. INTRODUCTION

Herring Storer Acoustics was commissioned by Blackcat Nominees to undertake an acoustic assessment of noise emissions from the proposed Restaurant located at 113 Kawina Road, Bickley.

This acoustic assessment considers noise associated with the following:

- Café / Restaurant operations 11:00 to 22:00 Wednesday to Sunday (including Public Holidays);
- Functions 17:00 to 00:00 Wednesday to Sunday (including Public Holidays);

Patron numbers would vary between 50 and 120, depending on peak periods of use, although expectations would be that the highest numbers would be on Saturday and Sunday.

For information, a locality plan and proposed site layout is shown in Appendix A.

## 2. SUMMARY

Assessment has been conducted on the proposed restaurant located at 113 Kawina Road, Bickley.

For noise associated with the restaurant and functions, given the proposed hours of operation (night period) the applicable criterion for this assessment is an  $L_{A10}$  35 dB(A) for the nearest residential locations. For these operating times, the highest noise level at the most critical receiver, in terms of distance and level is an  $L_{A10}$  of 31 dB(A) for the restaurant operations and including the applicable penalties, an  $L_{A10}$  of 34 dB(A) for functions.

The above noise levels have been assessed as to the likelihood of containing annoying characteristics in accordance with the regulations. For operations associated with the restaurant operations, noise levels are considered to not contain tonal characteristics, due to the ambient noise and that patron noise is generally broadband. The activities associated with the functions attract a +10 dB(A) penalty as the noise emission is music.

The above operating conditions have been assessed with the main doors of the restaurant being closed and limitations on the internal noise level. This is critical to the compliance during functions, however they can be open during restaurant activities. Additionally, it has been assumed that music will be played at background levels (i.e. not louder than conversations inside the restaurant) when the restaurant is in operations.

Given these operating parameters, noise levels received at the nearest premises has been determined to comply with the *Environmental Protection (Noise) Regulations 1997* for the operating times as outlined in this assessment.

Ongoing compliance is to be managed via the implementation of an operational (including noise) management plan which outlines procedures for the facility.

### 3. CRITERIA

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 residential premises, this is determined by the calculation of an influencing factor, which is then added to the base levels shown below. 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 types of premises (i.e. commercial, industrial and utilities), the allowable or assigned noise levels are fixed for different times of the day.

**TABLE 1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL**

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L <sub>A 10</sub>	L <sub>A 1</sub>	L <sub>A max</sub>
Noise sensitive premises	0700 - 1900 hours Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day Period)	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

Note: L<sub>A10</sub> is the noise level exceeded for 10% of the time.  
 L<sub>A1</sub> is the noise level exceeded for 1% of the time.  
 L<sub>Amax</sub> 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<sub>Apeak</sub> and L<sub>Amax Slow</sub> 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 3dB L<sub>A Fast</sub> or is more than 3 dB L<sub>A Fast</sub> 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  $L_{A\ Slow}$  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 2 below.

**TABLE 2 - ADJUSTMENTS TO MEASURED LEVELS**

Where <b>tonality</b> is present	Where <b>modulation</b> is present	Where <b>impulsiveness</b> is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

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

Where the noise emission is music, then any measured level is adjusted to Table 3 below.

**TABLE 3 - ADJUSTMENTS TO MEASURED MUSIC NOISE LEVELS**

Where <b>impulsiveness</b> is not present	Where <b>impulsiveness</b> is present
+10 dB(A)	+15 dB(A)

The nearest potential noise sensitive premises to the proposed development have been identified using the area map in Figure 1. Due to location of the premises the influencing factor has been assessed as 0 dB(A). Therefore, the assigned noise level are the baseline levels as per Table 1.

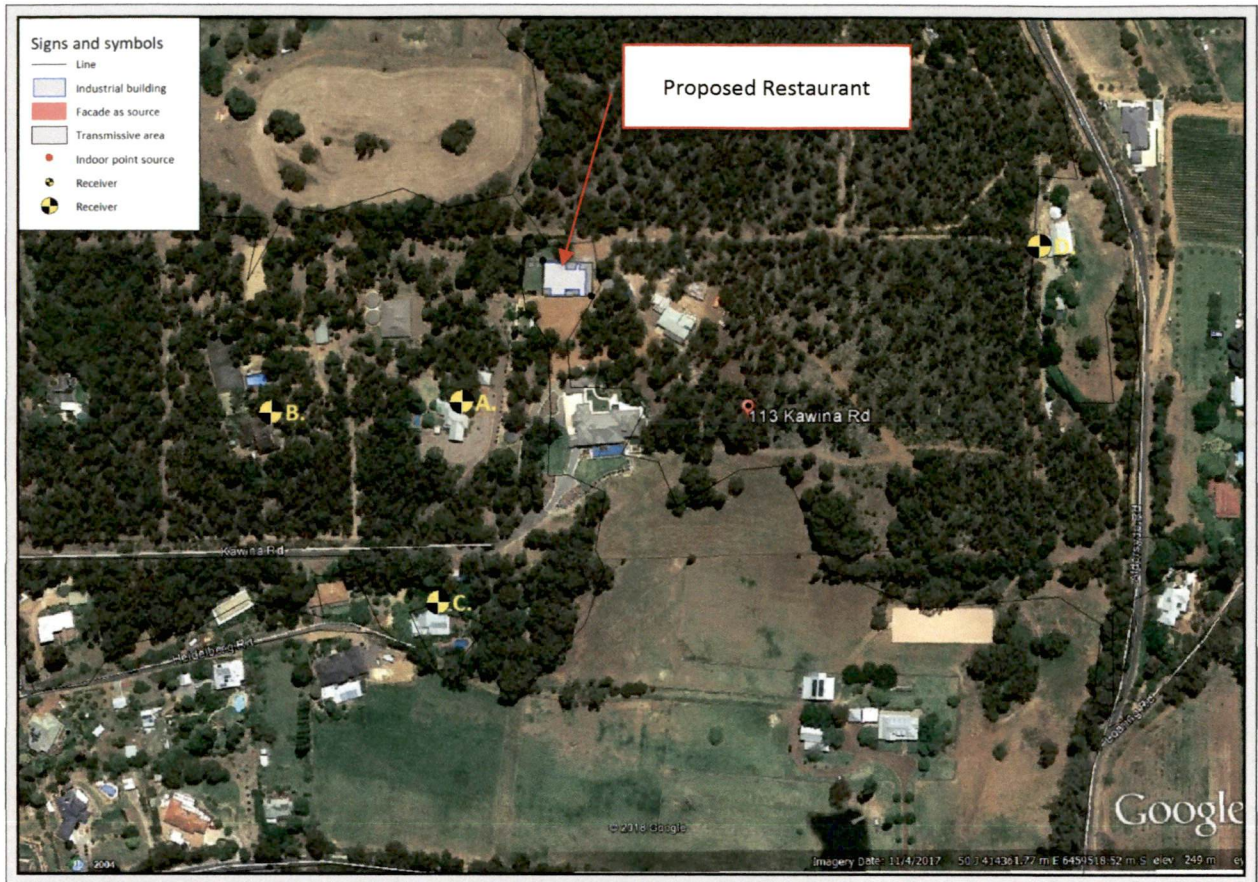


FIGURE 1 – RECEIVER LOCATIONS

#### 4. CALCULATED NOISE LEVELS

Noise immissions<sup>1</sup> at the nearest neighbouring residential premises, due to noise associated with the proposed operations, were modelled with the computer programme SoundPlan. Sound power levels used for the calculation of music played at functions are based on measured sound pressure levels of similar operations which have been previously measured by Herring Storer Acoustics.

The modelling of noise levels has been based on noise sources and sound power levels shown in Table 4.

TABLE 4 – NOISE SOURCES dB(A)

Element name	dB(A)
Patronage Noise Source (includes background music)	66 dB(A) / m <sup>2</sup>
Function Music	90 dB(A) at internal reference point

Based on noise emissions<sup>2</sup> from the above, the following operating scenarios have been developed:

Scenario 1 - Restaurant operations  
 Up to 50 patrons inside area, doors open.

Scenario 2 -Restaurant operations  
 Up to 50 patrons inside area, doors closed.

<sup>1</sup> Immissions – noise received at a source

<sup>2</sup> Emissions – noise emanating from a source and / or location

Scenario 3 – Function with Amplified Music  
Doors Closed

We note that the above scenarios would be representative of the maximum noise levels associated with the facility.

Modelling was undertaken using standard EPA weather conditions, as listed in Table 5.

**TABLE 5 – WEATHER CONDITIONS**

Condition	Night	Day
Temperature	15°C	20°C
Relative humidity	50%	50%
Pasquill Stability Class	F	E
Wind speed	3 m/s*	4 m/s*

\* From sources, towards receivers.

Notes : Although background music would be played in the restaurant/ café, it would be at such a level as to not interfere with speech. Hence, it would not be audible or contribute to the noise received at the neighbouring premises. Therefore, the music for this proposal is not of concern and only an assessment of patron noise is required.

The following assumptions (noise control) have been assumed to control noise level emissions associated with noise within the proposed development i.e. the restaurant construction;

- Windows (including bi-fold doors) are to consist of 6.38mm laminated glass (currently installed). The surrounding window frames are required to match the performance of the glazing itself. Therefore, based on the site visit the bifold door system requires the installation of a good quality seals such as the Raven product.
- Any airgaps or weak points in the existing building require addressing such that there are no potential air borne paths for which noise can escape. An example of the entrance door, that requires improvement has been included in Figure 2.





FIGURE 2 – AIR GAPS REQUIRING NOISE CONTROL

## 5. RESULTS

Calculated noise levels associated with noise emissions from the various scenarios are summarised below in Table 6. Appendix B contains the noise contour plots.

TABLE 6 – CALCULATED NOISE LEVEL

Receiver	Scenario 1	Scenario 2	Scenario 3
	Restaurant (Doors Open)	Restaurant (Doors Closed)	Function with Amplified Music
A	31	12	24
B	25	5	18
C	17	2	12
D	16	1	5

Additionally, noise contour plots for the above scenarios are included in Appendix B.

## 6. ASSESSMENT

The above noise levels have been assessed as to the likelihood of containing annoying characteristics in accordance with the regulations. For operations associated with the restaurant operations, noise levels are considered to not contain tonal characteristics, due to the ambient noise and that patron noise is generally broadband. The activities associated with the functions attract a +10 dB(A) penalty as the noise emission is music.

Hence, Tables 7 and 8 summarise the assessable noise level emissions, for the scenarios considered.

**TABLE 7 – RESTAURANT ASSESSMENT OF L<sub>A10</sub> NOISE LEVELS**

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable L <sub>A10</sub> Assigned Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
	Scenario 1 Restaurant Operation Doors Open			
A	31	Day	45	Complies
		Evening or Sunday / Public Holiday Day	40	Complies
		Night	35	Complies
B	25	Day	45	Complies
		Evening or Sunday / Public Holiday Day	40	Complies
		Night	35	Complies
C	17	Day	45	Complies
		Evening or Sunday / Public Holiday Day	40	Complies
		Night	35	Complies
D	16	Day	45	Complies
		Evening or Sunday / Public Holiday Day	40	Complies
		Night	35	Complies

**TABLE 8 – FUNCTION ASSESSMENT OF L<sub>A10</sub> NOISE LEVELS**

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable L <sub>A10</sub> Assigned Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
	Scenario 3 Functions with music			
A	24 (34)	Day	45	Complies
		Evening or Sunday / Public Holiday Day	40	Complies
			35	
B	18(28)	Day	45	Complies
		Evening or Sunday / Public Holiday Day	40	Complies
			35	
C	12(22)	Day	45	Complies
		Evening or Sunday / Public Holiday Day	40	Complies
			35	
D	5(15)	Day	45	Complies
		Evening or Sunday / Public Holiday Day	40	Complies
		Night	35	Complies

( ) denotes inclusion of +10 dB penalty for music

## 7. CONCLUSION

Assessment has been conducted on the proposed restaurant located at 113 Kawina Road, Bickley.

For noise associated with the restaurant and functions, the applicable criterion for this assessment is an  $L_{A10}$  35 dB(A) for the nearest residential locations given the proposed hours of operation (night period). For these operating times, the highest noise level at the most critical receiver, in terms of distance and level is an  $L_{A10}$  of 31 dB(A) for the restaurant operations and with the inclusion of a +10 dB penalty, an  $L_{A10}$  of 34 dB(A) for functions.

The above noise levels have been assessed as to the likelihood of containing annoying characteristics in accordance with the regulations. For operations associated with the restaurant operations, noise levels are considered to not contain tonal characteristics, due to the ambient noise and that patron noise is generally broadband. The activities associated with the functions attract a +10 dB(A) penalty as the noise emission is music.

The above operating conditions have been assessed with the main doors of the restaurant being closed and limitations on the internal noise level. This is critical to the compliance during functions, however they can be open during restaurant activities. Additionally, it has been assumed that music will be played at background levels (i.e. not louder than conversations inside the restaurant) when the restaurant is in operations.

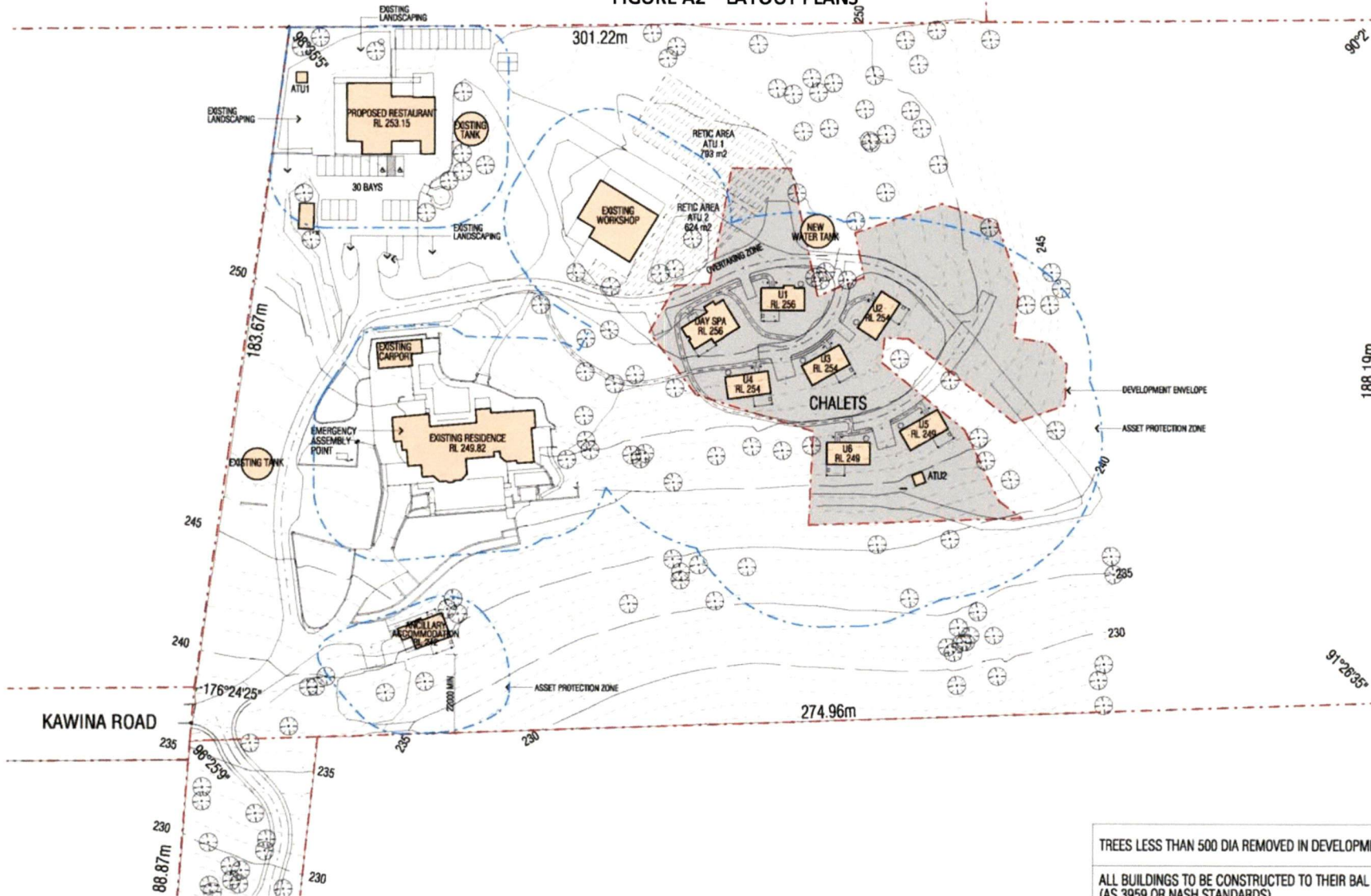
Given these operating parameters, noise levels received at the nearest premises has been determined to comply with the *Environmental Protection (Noise) Regulations 1997* for the operating times as outlined in this assessment.

Ongoing compliance is to be managed via the implementation of an operational (including noise) management plan which outlines procedures for the facility.

FIGURE A1 – LOCATION MAP



FIGURE A2 – LAYOUT PLANS

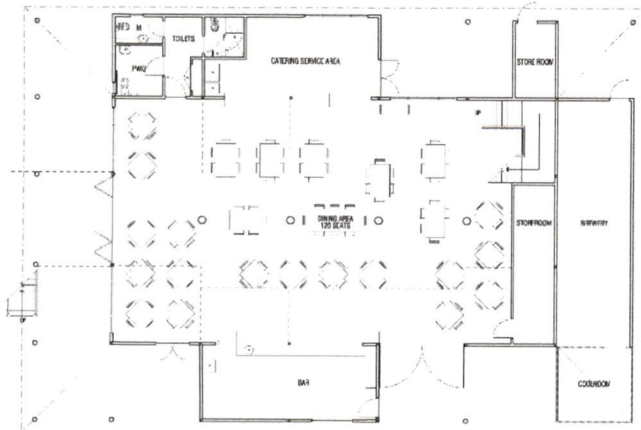


TREES LESS THAN 500 DIA REMOVED IN DEVELOPMENT ENVELOPE

ALL BUILDINGS TO BE CONSTRUCTED TO THEIR BAL RATINGS  
 (AS 3959 OR NASH STANDARDS)

rev	date	description	app	rev	date	description	app	project	issue
A	20.05.18	FIRST ISSUE						BICKLEY HEALTH RETREAT LOT 602 (HN 80) LAWNBROOK ROAD EAST, BICKLEY	DEVELOPMENT APPROVAL
B	11.07.18	ISSUE FOR DA							size A3
								drawing title	date MAY 2018
								PROPOSED SITE PLAN	scale 1:1000
								dwg no. SK-A03	rev B

FIGURE A2 (CONT) – LAYOUT PLANS



FLOOR PLAN  
 1:50

NOTE: BUILDING ALREADY EXISTS

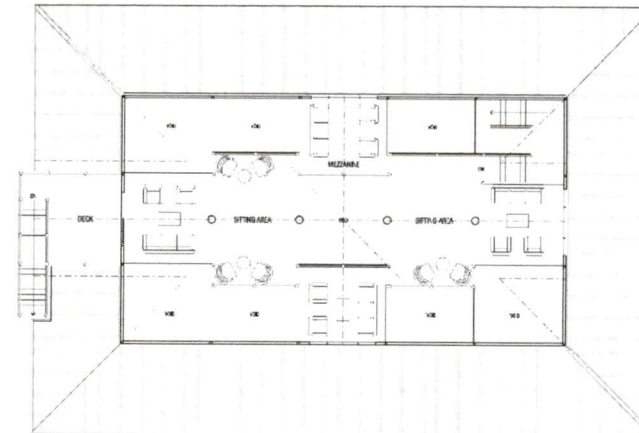
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1	20.02.18	PROJ. ISSUE									
2	03.03.18	REVISED									
3	11.02.18	REVISED									

APP	REV	DATE	DESCRIPTION	DATE	SCALE
A3		MAY 2018	DEVELOPMENT APPROVAL		1:100

PROJ. NO.	PROJ. NAME	DATE	SCALE
SK-A09	PROPOSED RESTAURANT GROUND FLOOR	MAY 2018	1:100



FLOOR PLAN  
 1:50

NOTE: BUILDING ALREADY EXISTS

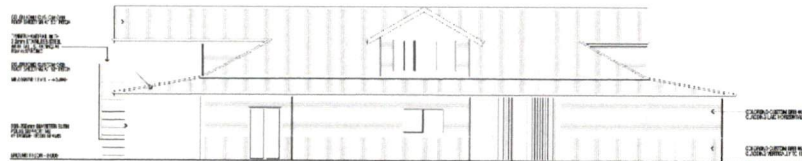
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2	03.03.18	REVISED									
3	11.02.18	REVISED									

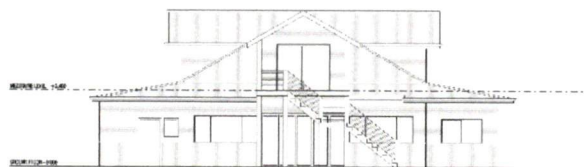
APP	REV	DATE	DESCRIPTION	DATE	SCALE
A3		MAY 2018	DEVELOPMENT APPROVAL		1:100

PROJ. NO.	PROJ. NAME	DATE	SCALE
SK-A10	PROPOSED RESTAURANT MEZZANINE	MAY 2018	1:100



SOUTH ELEVATION  
 1:50



WEST ELEVATION  
 1:50

NOTE: BUILDING ALREADY EXISTS

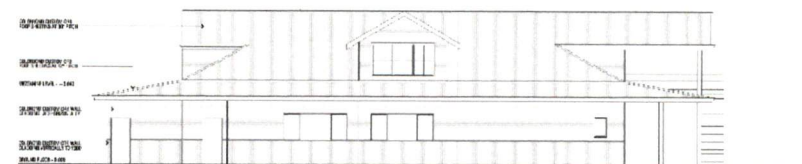
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1	20.02.18	PROJ. ISSUE									
2	03.03.18	REVISED									
3	11.02.18	REVISED									

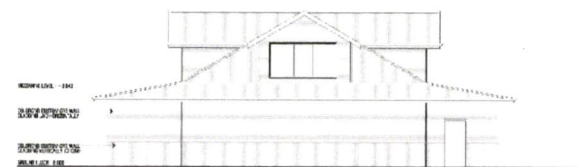
APP	REV	DATE	DESCRIPTION	DATE	SCALE
A3		MAY 2018	DEVELOPMENT APPROVAL		1:100

PROJ. NO.	PROJ. NAME	DATE	SCALE
SK-A11	PROPOSED RESTAURANT SOUTH & WEST ELEVATIONS	MAY 2018	1:100



NORTH ELEVATION  
 1:50



EAST ELEVATION  
 1:50

NOTE: BUILDING ALREADY EXISTS

REV	DATE	DESCRIPTION	APP	REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION	DATE	SCALE
1	20.02.18	PROJ. ISSUE									
2	03.03.18	REVISED									
3	11.02.18	REVISED									

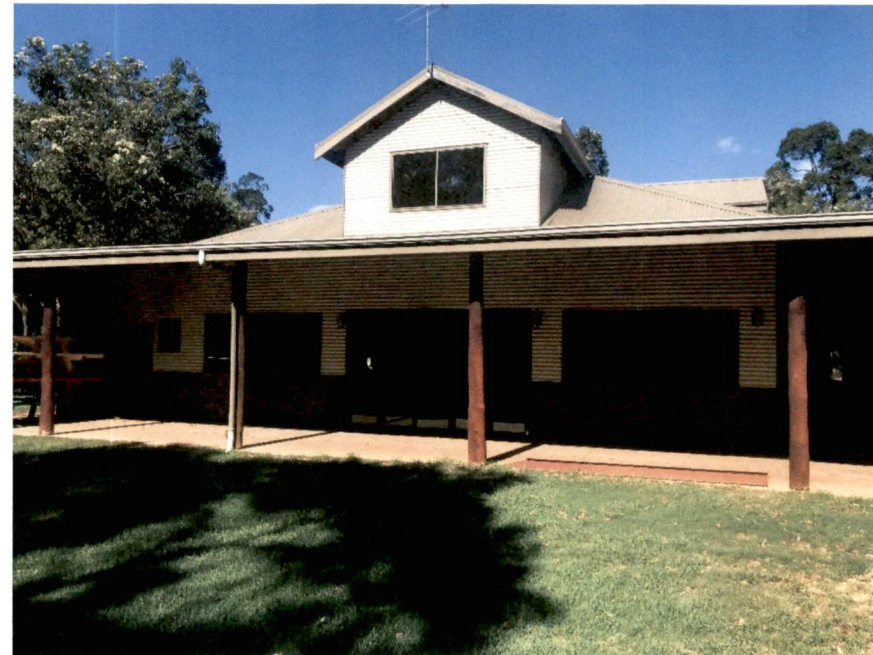
  

APP	REV	DATE	DESCRIPTION	DATE	SCALE
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PROJ. NO.	PROJ. NAME	DATE	SCALE
SK-A12	PROPOSED RESTAURANT NORTH & EAST ELEVATIONS	MAY 2018	1:100

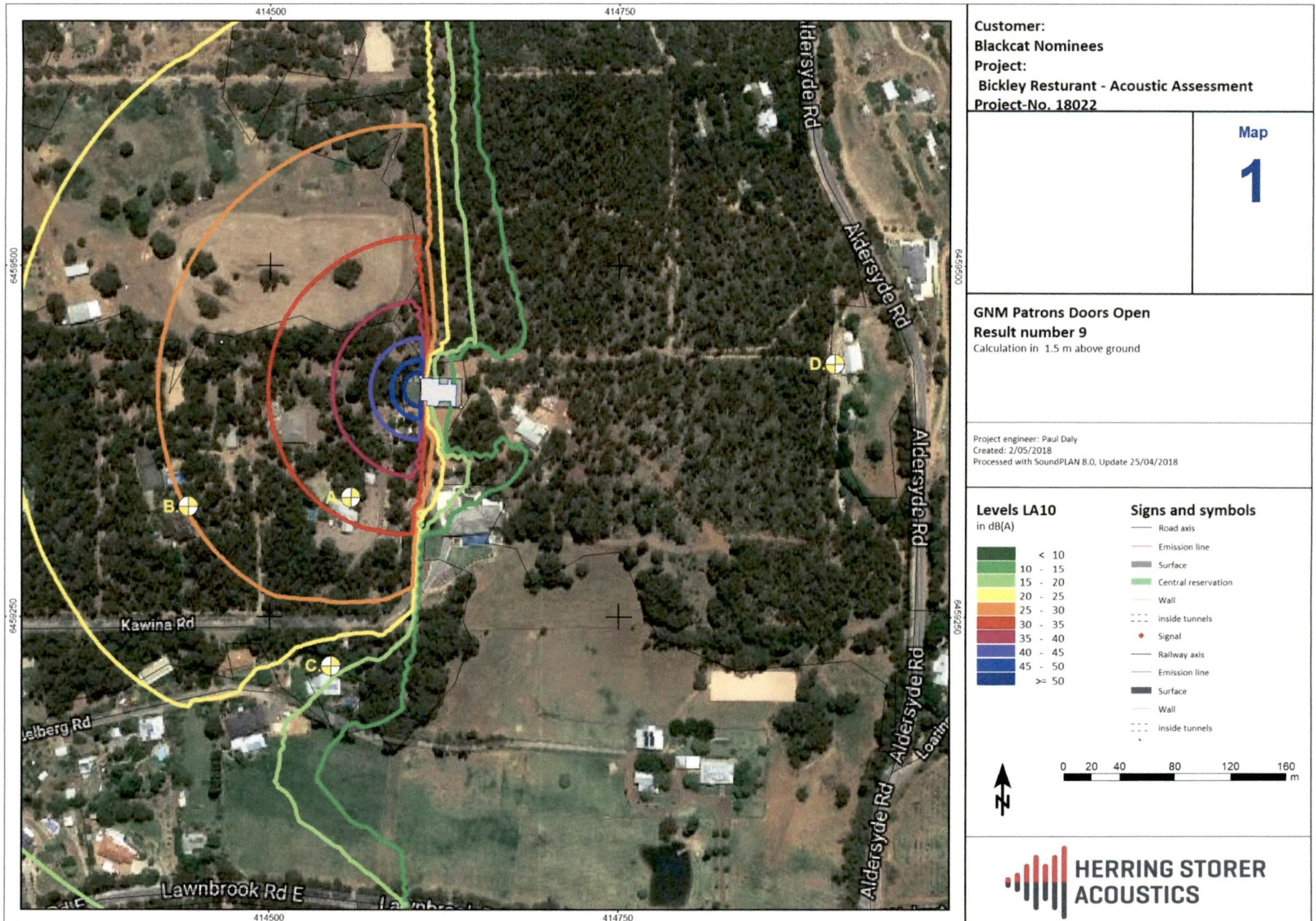
FIGURE A3 – PICTURES OF EXISTING BUILDING

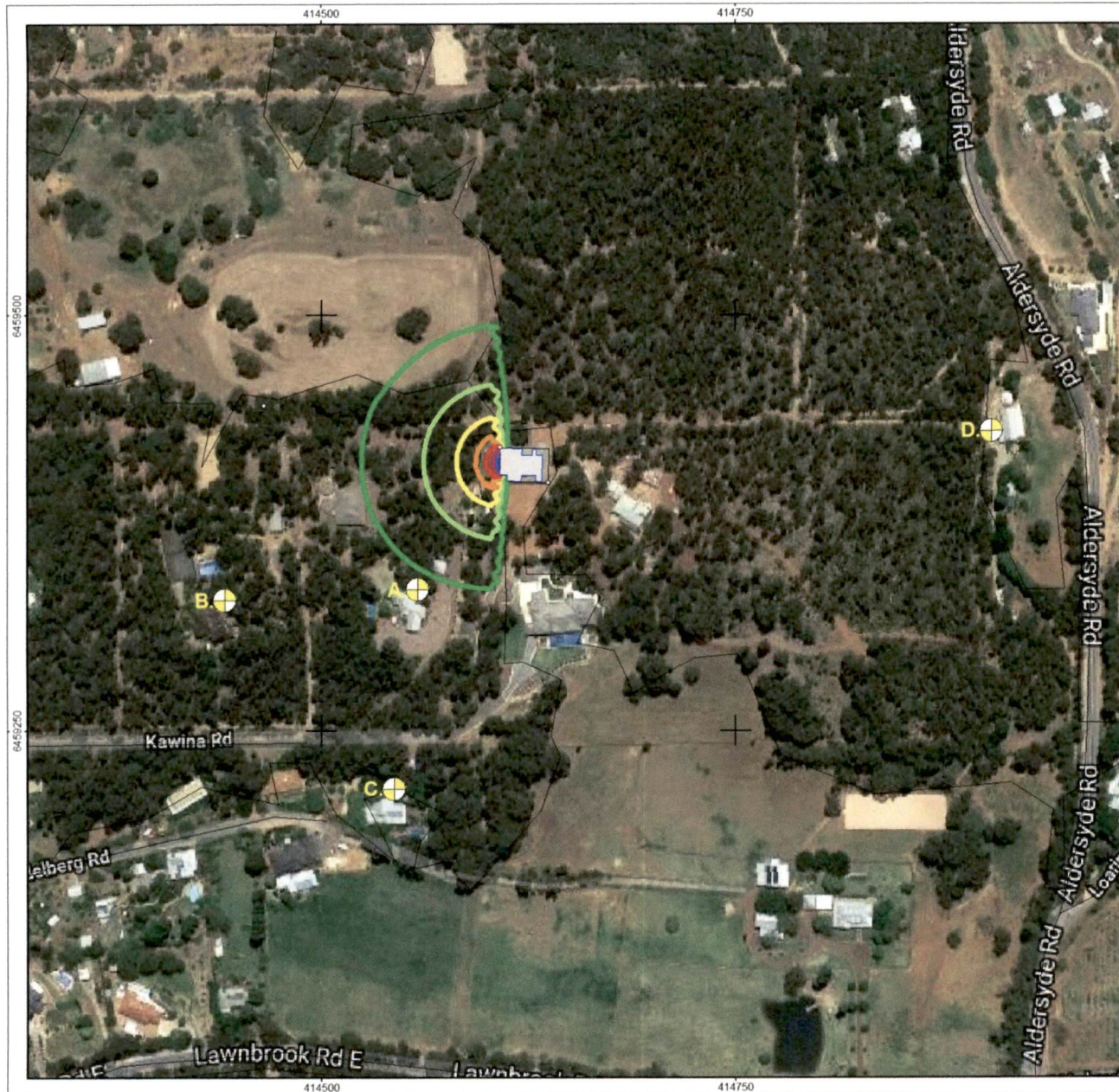


# **APPENDIX B**

## **NOISE CONTOURS**







**Customer:**  
 Blackcat Nominees  
**Project:**  
 Bickley Resturant - Acoustic Assessment  
 Project-No. 18022

**Map**  
**2**

**GNM Patrons Doors Closed**  
**Result number 13**  
 Calculation in 1.5 m above ground

Project engineer: Paul Daly  
 Created: 2/05/2018  
 Processed with SoundPLAN 8.0, Update 25/04/2018

<p><b>Levels LA10</b> in dB(A)</p> <table border="1"> <tr><td style="background-color: #006400; width: 15px;"></td><td>&lt; 10</td></tr> <tr><td style="background-color: #008000; width: 15px;"></td><td>10 - 15</td></tr> <tr><td style="background-color: #00FF00; width: 15px;"></td><td>15 - 20</td></tr> <tr><td style="background-color: #FFFF00; width: 15px;"></td><td>20 - 25</td></tr> <tr><td style="background-color: #FFA500; width: 15px;"></td><td>25 - 30</td></tr> <tr><td style="background-color: #FF4500; width: 15px;"></td><td>30 - 35</td></tr> <tr><td style="background-color: #FF0000; width: 15px;"></td><td>35 - 40</td></tr> <tr><td style="background-color: #800000; width: 15px;"></td><td>40 - 45</td></tr> <tr><td style="background-color: #0000FF; width: 15px;"></td><td>45 - 50</td></tr> <tr><td style="background-color: #000080; width: 15px;"></td><td>&gt;= 50</td></tr> </table>		< 10		10 - 15		15 - 20		20 - 25		25 - 30		30 - 35		35 - 40		40 - 45		45 - 50		>= 50	<p><b>Signs and symbols</b></p> <table border="0"> <tr><td></td><td>Road axis</td></tr> <tr><td></td><td>Emission line</td></tr> <tr><td></td><td>Surface</td></tr> <tr><td></td><td>Central reservation</td></tr> <tr><td></td><td>Wall</td></tr> <tr><td></td><td>inside tunnels</td></tr> <tr><td></td><td>Signal</td></tr> <tr><td></td><td>Railway axis</td></tr> <tr><td></td><td>Emission line</td></tr> <tr><td></td><td>Surface</td></tr> <tr><td></td><td>Wall</td></tr> <tr><td></td><td>inside tunnels</td></tr> </table>		Road axis		Emission line		Surface		Central reservation		Wall		inside tunnels		Signal		Railway axis		Emission line		Surface		Wall		inside tunnels
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## **APPENDIX A**

FIGURE A1 – LOCATION MAP

FIGURE A2 – BUILDING LAYOUT PLAN

FIGURE A3 – SITE PICTURES

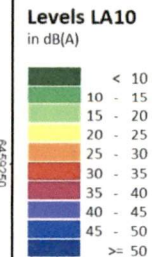


**Customer:**  
 Blackcat Nominees  
**Project:**  
 Bickley Resturant - Acoustic Assessment  
**Project-No.** 18022

Map  
**3**

**GNM Music Doors Closed**  
**Result number 3**  
 Calculation in 1.5 m above ground

Project engineer: Paul Daly  
 Created: 2/05/2018  
 Processed with SoundPLAN 8.0, Update 25/04/2018



- Signs and symbols**
- Road axis
  - Emission line
  - Surface
  - Central reservation
  - Wall
  - inside tunnels
  - Signal
  - Railway axis
  - Emission line
  - Surface
  - Wall
  - inside tunnels

