acousticdynamics

Operational Noise Emission Assessment

Proposed Trampolining Centre
Bounce, Cromer

Client:
Bounce Inc
C/o- Nash Management

9 March 2023

Association of Australasian Acoustical Consultants

Sydney Head Office
Suite 2
174 Willoughby Rd
St Leonards NSW 2065
T: 02 9908 1270

Melbourne Office
Suite 11
70 Racecourse Rd
Nth Melbourne VIC 3051
T: 03 7015 5112

ABN: 36 105 797 715
PO Box 270
Neutral Bay NSW 2089
E: info@acousticdynamics.com.au
W: www.acousticdynamics.com.au

Client	Bounce Inc
C/o	Nash Management
Contact	Ms Shaista Mason
Address	Level 10, 60 Albert Road SOUTH MELBOURNE VIC 3205
Phone	03 9866 7702
Email	smason@nashmanagement.com.au

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CONTENTS

GLOSSARY

NOISE

Noise is produced through rapid variations in air pressure at audible frequencies (20 Hz – 20 kHz). Most noise sources vary with time. The measurement of a variable noise source requires the ability to describe the sound over a particular duration of time. A series of industry standard statistical descriptors have been developed to describe variable noise, as outlined in **Section 2** below.

NOISE DESCRIPTORS

L_{eq} – The sound pressure level averaged over the measurement period. It can be considered as the equivalent continuous steady-state sound pressure level, which would have the same total acoustic energy as the real fluctuating noise over the same time period.

$L_{Aeq(15min)}$ – The A-weighted average equivalent sound level over a 15-minute period.

L_{A90} – The A-weighted noise level that has been exceeded for 90% of the measurement duration. This descriptor is used to describe the background noise level.

RBL – Rating Background Level. The overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period (as opposed to over each 24hr period used for assessment background level) This is the level used for assessment purposes.

dB – Decibels. The fundamental unit of sound, a Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell. Probably the most common usage of the Decibel in reference to sound loudness is dB sound pressure level (SPL), referenced to the nominal threshold of human hearing. For sound in air and other gases, dB(SPL) is relative to 20 micropascals (μPa) = 2×10^{-5} Pa, the quietest sound a human can hear.

A-WEIGHTING

"A-weighting" refers to a prescribed amplitude versus frequency curve used to "weight" noise measurements in order to represent the frequency response of the human ear. Simply, the human ear is less sensitive to noise at some frequencies and more sensitive to noise at other frequencies. The A-weighting is a method to present a measurement or calculation result with a number representing how humans subjectively hear different frequencies at different levels.

NOISE CHARACTER, NOISE LEVEL AND ANNOYANCE

The perception of a given sound to be deemed annoying or acceptable is greatly influenced by the character of the sound and how it contrasts with the character of the background noise. A noise source may be measured to have only a marginal difference to the background noise level but may be perceived as annoying due to the character of the noise.

Acoustic Dynamics' analysis of noise considers both the noise level and sound character in the assessment of annoyance and impact on amenity.

1 INTRODUCTION

1.1 EXECUTIVE SUMMARY

Acoustic Dynamics is engaged by **Nash Management** on behalf of **Bounce Inc** to conduct an acoustic assessment of operational noise emission associated with the proposed trampolining centre located at 4-8 Inman Road, Cromer.

This document provides an assessment of noise emission resulting from various noise sources associated with the operation of the proposed development at the potentially most affected sensitive receiver locations.

This assessment is prepared in accordance with the various acoustic requirements of:

(a) Northern Beaches Council;
(b) NSW Environment Protection Authority; and
(c) Australian Standards.

1.2 DESCRIPTION OF PROPOSAL

The development site is located at 4-8 Inman Road, Cromer, situated within an industrial (IN1) land zone in the Northern Beaches Council area of NSW. The site is specifically proposed at Warehouse 7 and 8 within the development. The development has road frontage direct to Inman Road and South Creek Road.

The proposal is seeking approval to operate an indoor trampolining centre. Various noise sources and operations associated with the proposal are predicted to include:

- Internal operations;
- Mechanical plant and equipment;
- Vehicle movements; and
- Patron and staff movements.

Acoustic Dynamics understands the maximum operation hours are to be 9am to 9pm, seven days a week.

Receivers potentially impacted by noise emission resulting from operations associated with the proposal are predicted to include:

- Proposed residential receivers located within 4-8 Inman Road (**east**);
- Residential receivers on Orlando Road (**north**); and
- Industrial receivers located within 4-8 Inman Road (**north/south**);

The subject site, adjacent receivers and surrounding area is shown in the Location Map, Aerial Image and Drawings presented within **Appendix A**.

1.3 SCOPE

Acoustic Dynamics has been engaged to provide an acoustic assessment suitable for submission to the relevant authorities.

The scope of the assessment is to include the following:

- Review local council planning and development control instruments, state guidelines, federal legislation and international standards relevant to noise emission at the subject site;
- Rely on existing noise data at the subject site to establish relevant noise emission criteria;
- Perform relevant calculations and noise modelling associated with the operations of the development to determine noise emission at nearby receiver locations; and
- Provide recommendations for design measures to be incorporated to achieve compliance with the relevant criteria and reduce potential noise impacts at nearby receiver locations.

2 ASSESSMENT CRITERIA AND STANDARDS

Acoustic Dynamics has conducted a review of the local council, state government and federal legislation that is applicable to noise emission assessment from the subject site. The relevant sections of the legislation are presented below. The most stringent criteria which have been used in this assessment of the subject development are summarised below.

2.1 NORTHERN BEACHES COUNCIL CRITERIA

2.1.1 LOCAL ENVIRONMENT PLAN

A review of Warringah *Local Environment Plan* (LEP) 2011 was conducted, yet did not yield specific acoustic information or criteria relating to this development.

2.1.2 DEVELOPMENT CONTROL PLAN

A review of Warringah *Development Control Plan (DCP) 2011* was conducted. References to acoustic requirements and relevant noise criteria are reproduced below:

"D3 Noise

Applies to Land

This control applies to land to which Warringah Local Environmental Plan 2011 applies.

Objectives

- *To encourage innovative design solutions to improve the urban environment.*
- *To ensure that noise emission does not unreasonably diminish the amenity of the area or result in noise intrusion which would be unreasonable for occupants, users or visitors.*

Requirements

1. *Noise from combined operation of all mechanical plant and equipment must not generate noise levels that exceed the ambient background noise by more than 5dB(A) when measured in accordance with the NSW Industrial Noise Policy at the receiving boundary of residential and other noise sensitive land uses.*
   See also NSW Industrial Noise Policy Appendices
2. *Development near existing noise generating activities, such as industry and roads, is to be designed to mitigate the effect of that noise.*
3. *Waste collection and delivery vehicles are not to operate in the vicinity of residential uses between 10pm and 6am.*
4. *Where possible, locate noise sensitive rooms such as bedrooms and private open space away from noise sources. For example, locate kitchens or service areas closer to busy road frontages and bedrooms away from road frontages.*
5. *Where possible, locate noise sources away from the bedroom areas of adjoining dwellings/properties to minimise impact."*

2.2 NSW ENVIRONMENT PROTECTION AUTHORITY

2.2.1 NSW EPA'S NOISE POLICY FOR INDUSTRY (NPFI) 2017

The NSW EPA, in its *Noise Policy for Industry (NPfI) 2017* document, outlines and establishes noise criteria for industrial or other noise sources in various zoning areas.

Acoustic Dynamics advise that the following criteria have been applied for the assessment of noise emission associated with the use and operation of the proposed development.

Project Intrusiveness Noise Level

The intrusiveness noise level is determined as follows:

$L_{Aeq, 15min}$ = rating background noise level + 5 dB	
where:	
$L_{Aeq, 15min}$	represents the equivalent continuous (energy average) A-weighted sound pressure level of the source over 15 minutes.
and	
Rating background noise level	represents the background level to be used for assessment purposes, as determined by the method outlined in Fact Sheets A and B.

Project Amenity Noise Level

The recommended amenity noise levels represent the objective for **total** industrial noise at a receiver location, whereas the **project amenity noise level** represents the objective for a noise from a **single** industrial development at a receiver location.

To ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area, a project amenity noise level applies for each new source of industrial noise as follows:

Project amenity noise level for industrial developments = recommended amenity noise level (Table 2.2) minus 5 dB(A)

To establish the acoustic environment at the subject site in accordance with the guidelines of the NSW EPA's NPfI, Acoustic Dynamics has relied upon previously performed noise logging at the subject development site between Friday 29 June 2018 and Friday 6 July 2018. The selected location, within the north eastern corner of the lot, shown in **Appendix A**, is likely to be representative of the existing noise environment of the nearest residential receivers. The prevailing weather conditions during the unattended noise monitoring were generally calm and did not influence the noise measurements taken.

Following the general procedures outlined in the EPA's NPfI, a summary of the established noise environment, and relevant environmental noise criteria is presented in **Table 2.1.**

Table 2.1 Measured Noise Levels and Project Noise Objectives – External Residential Receiver

Location	Assessment Period	Rating Background Noise Level (RBL) L_{A90} [dB]	Measured L_{Aeq} [dB]	Project Intrusiveness Noise Level L_{Aeq} [dB]	Project Amenity Noise Level L_{Aeq} [dB][1]	Project Noise Trigger Level L_{Aeq} [dB]
Nearest residential receiver(s)	Day (7am – 6pm)	40	58	45	53	**45**
	Evening (6pm – 10pm)	35	55	40	43	**40**
Nearest industrial receivers	When in Use	-	-	-	-	**70**

Note: 1) The site is to operate during day and evening periods only

2) Amenity adjustment based on "Suburban" receiver type. The noise emission objective has been modified in accordance with the recommendations detailed within the NPfI Section 2.2, for time period standardising of the intrusiveness and amenity noise levels (**$L_{Aeq,15min}$** will be taken to be equal to the **$L_{Aeq,period}$ + 3 dB)**.

NB: Project noise trigger level is the lowest value of project intrusiveness or project amenity noise level after conversion to the L_{Aeq} equivalent value.

The EPA's NPfI Table C1 specifies additional noise emission level corrections that should be applied when a noise source is determined to include "*modifying factors*" that can vary the perceived intrusiveness of a noise source. Such modifying factors include tonal, low frequency, or intermittent noise.

The modifying factor adjustments are summarised in **Table 2.2**.

Table 2.2 NPfI Modifying Factor Adjustments

Factor	***Assessment/ Measurement***	***When To Apply***	***Correction[1,2]***
Tonal noise	*One-third octave band analysis using the objective method for assessing the audibility of tones in noise – simplified method (ISO1996.2-2007 – Annex D).*	*Level of one-third octave band exceeds the level of the adjacent bands on both sides by:* *• 5 dB or more if the centre frequency of the band containing the tone is in the range 500–10,000 Hz* *• 8 dB or more if the centre frequency of the band containing the tone is in the range 160–400 Hz* *• 15 dB or more if the centre frequency of the band containing the tone is in the range 25–125 Hz.*	*5 dBA[2,3]*

Factor	Assessment/ Measurement	When To Apply	Correction[1,2]
Low Frequency Noise	*Measurement of source contribution C-weighted and A-weighted level and one-third octave measurements in the range 10–160 Hz*	*Measure/assess source contribution C- and A-weighted $L_{eq,T}$ levels over same time period. Correction to be applied where the C minus A level is 15 dB or more and:* *• where any of the one-third octave noise levels in Table C2 are exceeded by up to and including 5 dB and cannot be mitigated, a 2 dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period* *• where any of the one-third octave noise levels in Table C2 are exceeded by more than 5 dB and cannot be mitigated, a 5-dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period and a 2 dB(A) positive adjustment applies for the daytime period.*	*2 or 5 dBA[2]*
Intermittent Noise	*Subjectively assessed but should be assisted with measurement to gauge the extent of change in noise level.*	*The source noise heard at the receiver varies by more than 5 dB(A) and the intermittent nature of the noise is clearly audible.*	*5 dBA*
Duration	*Single-event noise duration may range from 1.5 min to 2.5 h.*	*One event in any assessment period.*	*0 to 20 dB(A)*
Maximum adjustment	*Refer to individual modifying factors.*	*Where two or more modifying factors are indicated.*	*Maximum correction of 10 dB(A)[2] (excluding duration correction).*

Note: 1) Corrections to be added to the measured or predicted levels, except in the case of duration where the adjustment is to be made to the criterion.

2) Where a source emits tonal and low-frequency noise, only one 5-dB correction should be applied if the tone is in the low-frequency range, that is, at or below 160 Hz.

Acoustic Dynamics advises that achieving compliance with the NPfI's noise emission objectives applicable at the boundaries of the nearest sensitive receivers will adequately protect the acoustic amenity of all nearby receivers.

2.2.2 NSW EPA'S ROAD NOISE POLICY (RNP) 2011

The NSW EPA presents guidelines for assessment of road traffic noise in its *Road Noise Policy (RNP) 2011*. The document provides road traffic noise criteria for proposed roads as well as other developments with the potential to have an impact in relation to traffic noise generation.

The noise criteria applicable to the subject site is presented below in **Table 2.3**.

Table 2.3 Road Traffic Noise Assessment Criteria for Residential Land Uses

Road category	Type of project / land use	Assessment Criteria [dB]	
		Day (7am – 10pm)	Night (10pm – 7am)
Local roads	6. Existing residences affected by **additional traffic** on existing local roads generated by land use developments	$L_{Aeq, (1\ hour)}$ 55 (external)	$L_{Aeq, (1\ hour)}$ 50 (external)

Accepted application of the Section 2.4 of the RNP is that where road traffic noise levels already exceed the assessment criteria, an increase of less than 2 dB represents a minor impact that is barely perceptible to the average person.

2.3 NSW PROTECTION OF THE ENVIRONMENT OPERATIONS LEGISLATION

2.3.1 PROTECTION OF THE ENVIRONMENT OPERATIONS (POEO) ACT 1997

Noise emission from any items of mechanical plant must comply with the requirements of the *Protection of the Environment Operations (POEO) Act 1997*. The POEO Act 1997 requires that the subject mechanical equipment must not generate *"offensive noise".*

"Offensive noise" is defined as follows:

> *"**"offensive noise"** means noise:*
>
> *(a) that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:*
> *(i) is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or*
> *(ii) interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or*
> *(b) that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances, prescribed by the regulations."*

2.4 RELEVANT AUSTRALIAN STANDARDS

2.4.1 AS 2107 – "ACOUSTICS – RECOMMENDED DESIGN SOUND LEVELS ...FOR BUILDINGS"

Australian Standard 2107-2016 recommends satisfactory and maximum design sound levels for various types of occupancy within buildings. AS 2107 recommends the following satisfactory and maximum design sound levels, detailed in **Table 2.4**, for the relevant types of occupancies and areas which are likely to be located adjacent to the trampolining centre.

Table 2.4 Recommended Design Sound Levels for Different Areas of Occupancy in Buildings (Extract from Australian Standard 2107:2016 Table 1)

Type of Occupancy / Activity	Design Sound Level ($L_{Aeq,t}$) range
3 INDUSTRIAL BUILDINGS	
Process control rooms	< 60
5 OFFICE BUILDINGS	
General office areas	40 to 45
Meeting room (small)	40 to 45

Acoustic Dynamics advises that any levels of airborne noise or regenerated noise transmitted into the tenancies adjacent to the proposed trampolining centre should not exceed the relevant maximum design sound levels presented in **Table 2.4** above. By ensuring the noise levels from the site received within the adjacent tenancies do not exceed the above recommended maximum internal design level, it is likely to ensure occupants of the adjacent tenancies are not adversely affected by the use and operation of the site.

3 ASSESSMENT METHODOLOGY

Acoustic modelling was undertaken using noise modelling software *(CadnaA Version 2023)* to predict operational noise levels generated by the development. CadnaA calculates environmental noise propagation according to the applicable international and ISO standards, including the ISO 9613 algorithm.

Within our calculations and acoustic modelling, noise emission contributions from the development have been considered taking the following factors into account:

- Airborne noise losses due to distance and ground topography;
- Losses due to direction and diffraction;
- Increases due to reflections; and
- Acoustic shielding.

3.1 NOISE SOURCES AND OPERATIONS

Acoustic Dynamics has established and assessed the following noise sources and operations associated with the development.

The noise data presented in **Table 3.1** has been established based on information provided by the proponent, short-term measurements and inspections conducted on-site, or referenced from our database of nearfield measurements at similar developments.

Table 3.1 Associated Noise Sources and Operations

Source	Quantity[1]	Sound Power Level L_w [dBA]
Patron Movements		
Patron ingress/egress, in groups of 2	65/hr	61
Mechanical Equipment[2]		
Kitchen Exhaust Fan	1	75
A/C Condenser Fan	4	75
Toilet Exhaust Fan	1	60
Internal Operations		
Internal Noise Level[3]	-	75

Note: 1) Values based on expected patronage, and configuration of similar facilities.
2) As mechanical specifications have not been determined at this stage, Acoustic Dynamics has conservatively assumed that this equipment will service the site.
3) Noise data based on operator-attended measurements performed at similar Bounce facility.

3.2 RECEIVERS

The cumulative noise impact has been assessed to the potentially most affected point at the adjacent sensitive receiver properties and presented in **Table 3.2** below.

Table 3.2 Nearest Sensitive Receiver Locations

Source	Location	Direction
Residential Receivers		
R_1	4-8 Inman Road	East
R_2	28 Orlando Rd	North
Industrial Receivers		
I_3	4-8 Inman Road	North/South

Acoustic Dynamics advises that by achieving compliance with the nearest sensitive receiver locations, compliance will also be achieved at all other sensitive receiver locations further away.

3.3 TENANCY CONSTRUCTION

Acoustic Dynamics has made the following assumptions regarding the construction of the tenancy:

- Roof: Galvanised sheet metal (minimum 15 kg/m^3) with insulated layer;
- Walls: Concrete; and
- Windows: None.

4 OPERATIONAL NOISE EMISSION ASSESSMENT

The calculated maximum noise emission levels at the nearest receiver locations against the relevant criteria are presented below. It is advised that by achieving compliance with the nearest sensitive receiver locations, compliance will also be achieved at all other receiver locations.

The assessment location for **external noise emission** is defined as the most affected point on or within any sensitive receiver property boundary. Examples of this location may be:

- 1.5m above ground level;
- On a balcony at 1.5m above floor level; and
- Outside a window on the ground or higher floors, at a height of 300mm below the head of the window.

4.1 EXTERNAL NOISE EMISSION

The calculated maximum **external** noise emission levels at the nearest receiver locations are presented against the relevant noise emission criteria below in **Table 4.1**.

Table 4.1 Calculated External Noise Emission Levels & Relevant Noise Criteria

Receiver	Assessment Period[1]	Noise Source[2]	Maximum $L_{Aeq(15min)}$ Noise Emission Level [dB][3]	Noise Emission L_{Aeq} Criterion [dB]	Complies?
R_1	Evening (6pm – 10pm)	Internal Operations	33	**40**	**Yes**
		Patron/Staff Movements	< 0		
		Mechanical Plant	37		
		Cumulative Total	**39**		
R_2		Internal Operations	18	**40**	**Yes**
		Patron/Staff Movements	< 0		
		Mechanical Plant	23		
		Cumulative Total	**24**		
I_3	When in Use	Internal Operations	34	**70**	**Yes**
		Patron/Staff Movements	19		
		Mechanical Plant	23		
		Cumulative Total	**35**		

Note: 1) Achieving compliance with the more stringent Evening criterion will ensure compliance during all periods.
2) Scenario operations and noise sources are detailed in **Section 3**.
3) Acoustic Dynamics assumes noise sources will operate continuously over the assessment period.

Acoustic Dynamics advises the calculated **external** noise emission levels are conservatively based on **maximum capacity** operations at the development. Acoustic Dynamics advises that such a scenario is unlikely to occur and noise levels are likely to be below those calculated for the majority of the time.

4.2 ROAD TRAFFIC NOISE

The calculated maximum noise emission levels due to the vehicle movements by patrons utilising the subject trampolining centre on South Creek Road and Inman Road are presented in **Table 4.2** below. It is advised that by achieving compliance with the nearest residential locations, compliance will also be achieved at all other residential and receiver locations further away.

Table 4.2 Maximum Road Traffic Noise Emission Levels & Criteria for Residential Receivers

Residential Receiver Location	Noise Source	Quietest Period Source Operates	Calculated Maximum $L_{Aeq(1\ hour)}$ Noise Level [dB]	Relevant Noise Criterion $L_{Aeq(1\ hour)}$ [dB]	Complies With Criteria?
Along South Creek Road	Off-site car movements	Day (7am to 6pm)	< 45	55	**Yes**

Based on the results of Acoustic Dynamics' noise modelling and calculations, we advise that the predicted maximum road traffic noise associated with the use and operation of the proposed development will comply with the relevant noise emission criteria.

4.3 INTERNAL NOISE TRANSMISSION

The calculated maximum **internal** noise emission levels at the nearest receiver locations and the relevant noise emission criteria are presented in **Table 4.3** below. It is advised that by achieving compliance with the nearest residential and commercial receiver locations, compliance will also be achieved at all other receiver locations further away.

Table 4.3 Noise Transmission Levels through Internal Partitions to Adjacent Internal Areas

Receiver Location	Noise Source	Maximum Cumulative $L_{Aeq(15min)}$ Noise Level [dB][1,2]	AS2107 $L_{Aeq(15min)}$ Criterion [dB][3]	Complies? (Yes/No)
Industrial Receivers Adjacent	Internal Operations	< 35	**45**	**Yes**

Note. 1) Denotes predicted maximum noise level from the tenancy inclusive of the sound transmission loss for the shared internal partition.

2) Calculated emission levels are based on the assumption that the recommendations presented in **Section 6** have been implemented.

3) As the use of adjacent tenancies is unknown at this stage, an assumed internal noise requirement has been applied.

5 DISCUSSION

The calculated noise emission levels associated with the operations of the proposed development indicate the following:

1. Noise emission resulting from the use and operations of the proposed development is **predicted to comply** with the relevant noise emission criteria of Northern Beaches Council, the NSW EPA and federal legislation during the proposed hours of operation when assessed at the nearest sensitive receivers;

2. Noise emission associated with additional traffic on surrounding local roads is **predicted to comply** with the NSW EPA's *Road Noise Policy (RNP) 2011* when assessed at the nearest sensitive receivers;

3. There is **low risk** of acoustic disturbance to the nearest sensitive residential, commercial and industrial receivers during the proposed hours of operation;

4. To ensure the assessment is conducted in a conservative manner, noise emission has been assessed as a **worst-case** scenario (i.e. all noise generating activities and noise sources occurring simultaneously and at maximum capacity). Generally, noise emission associated with the operation of the facility is **predicted to be lower** than the calculations presented; and

5. The noise calculations and operational assumptions should not be considered prescriptive. They are modelling assumptions that have been used to demonstrate typical noise sources and operations associated with the facility **can be designed to achieve compliance** with the relevant criteria.

6 RECOMMENDATIONS AND ADVICE

The following recommendations are provided to ensure noise emission associated with development operations is adequately managed and minimised during operation.

6.1 INTERNAL OPERATIONS

Implementation of the following is required to ensure compliance with the relevant guidelines:

1. Only openings on the west-facing façade are permitted to be open during operations. All other openings must remain shut;

2. Any air compressors used to inflate systems must be located internally within the warehouse;

3. Noise from music must not exceed $\mathbf{L_{Aeq(15min)}}$ **75 dB**. The maximum internal reverberant sound pressure level can be set to ensure the adjacent receivers are not

adversely affected by the operation of the subject gym, following the fit-out of the premises and the installation of the speaker system; and

4. Low frequency speakers (sub-woofers) should not be used, and all speakers are to be mechanically isolated from the building structure.

6.2 BEST MANAGEMENT PRACTICE AND NOISE MANAGEMENT PLAN

Acoustic Dynamics recommends the adoption of a management plan incorporating best management practice procedures to protect the acoustic amenity of the surrounding area. Such a management plan should outline policies and procedures to ensure noise emission from the development are kept to a minimum, including:

1. Heavy vehicle movements and deliveries must be received during day-time operational hours only;

2. Should trucks or other heavy vehicles be required to be on-site for longer than five minutes, engines should be switched off for the duration;

3. Mechanical equipment should be regularly maintained and serviced to maintain low mechanical noise emission levels;

4. At the cessation of trade, ensure staff leave the premises quietly and respectfully to minimise any potential impacts on the surrounding amenity, including signage reminding staff and patrons to be aware of their neighbours and to leave in a respectful manner; and

5. Implementation of an appropriate community liaison procedure, including a noise and vibration complaint procedure and means of ongoing communication with nearby potentially affected receivers once development operations begin.

6.3 MECHANICAL PLANT

Based on the results of Acoustic Dynamics' noise modelling and calculations presented **Section 5**, we advise that the predicted maximum noise emission associated with the operation of the proposed mechanical plant is likely to **comply** with the incorporation of the following recommendations:

- The mechanical units must be placed on the roof of the site on as shown in **Appendix A**;

- Mechanical units must be oriented to discharge west, away from residential receivers to the east; and

- All mechanical equipment should be regularly maintained and serviced to maintain low mechanical noise emission levels.

As the exact mechanical specifications are not to be confirmed until construction stage, Acoustic Dynamics has made assumptions regarding mechanical systems, provided within **Section 3**. Acoustic Dynamics recommends that we are consulted at the construction stage to verify the proposed mechanical systems and ensure that noise emission is mitigated as expected.

6.4 SITE CONSTRUCTION

As the exact construction of the site is unknown, Acoustic Dynamics has made assumptions regarding construction systems, provided within **Section 3**. Acoustic Dynamics recommends that we are consulted at the construction stage to verify construction systems and ensure that noise emission is mitigated as expected.

7 CONCLUSION

Acoustic Dynamics has conducted an acoustic assessment of operational noise emission associated with the proposed trampolining centre located at 4-8 Inman Road, Cromer.

A review of the applicable local council, state government, federal legislation and international standards was conducted. Noise levels were assessed in accordance with the requirements of:

(a) Northern Beaches Council;
(b) NSW Environment Protection Authority; and
(c) Australian Standards.

The assessment predicted noise impacts at nearby sensitive receiver locations. Noise modelling was conducted using assumed **worst-case** operational scenarios in **Section 4**. Recommendations are provided in **Section 6** detailing best management practices and design strategies minimise the impacts on the surrounding acoustic environment.

Acoustic Opinion

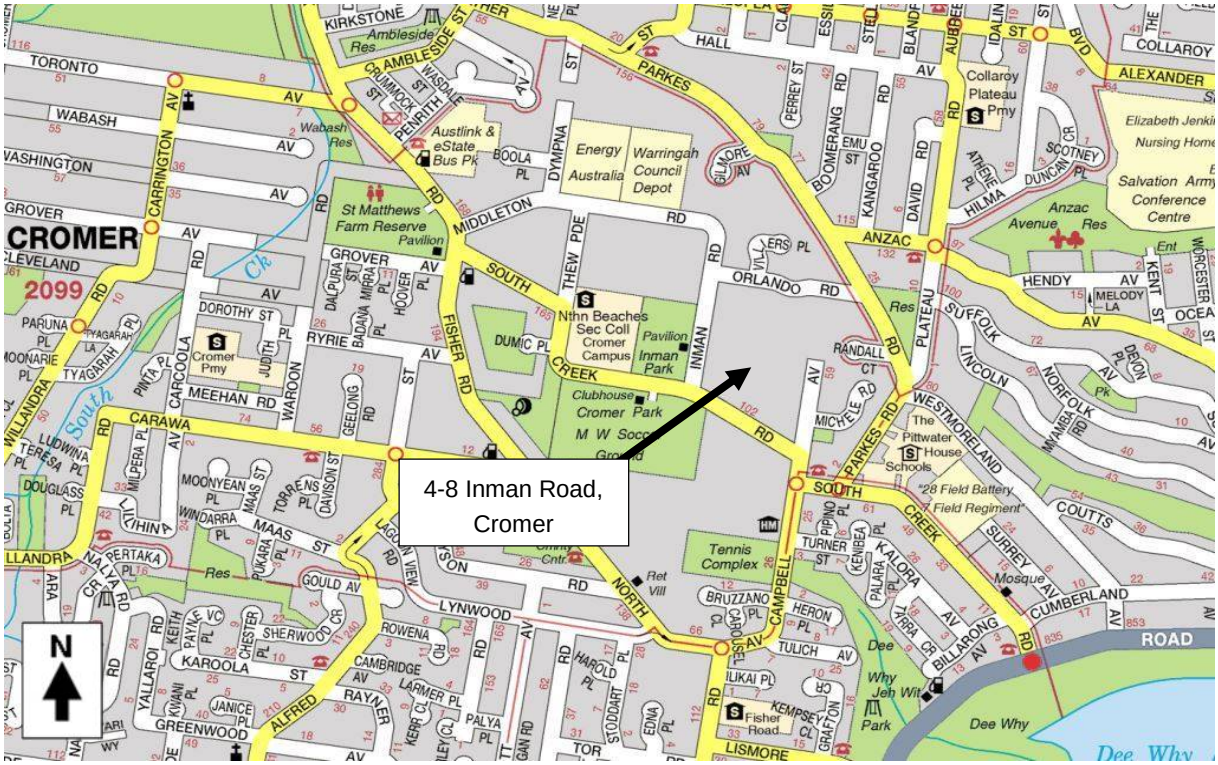
Further to our site survey, our review of the relevant acoustic criteria and requirements, and our calculations, Acoustic Dynamics advises that the proposed development can be designed to comply with the relevant acoustic criteria of Northern Beaches Council, the NSW POEO Act 1997 and the NSW EPA.

It is our opinion that the acoustic risks associated with the proposal can be adequately controlled and the amenity of neighbouring properties and residents can be satisfactorily protected.

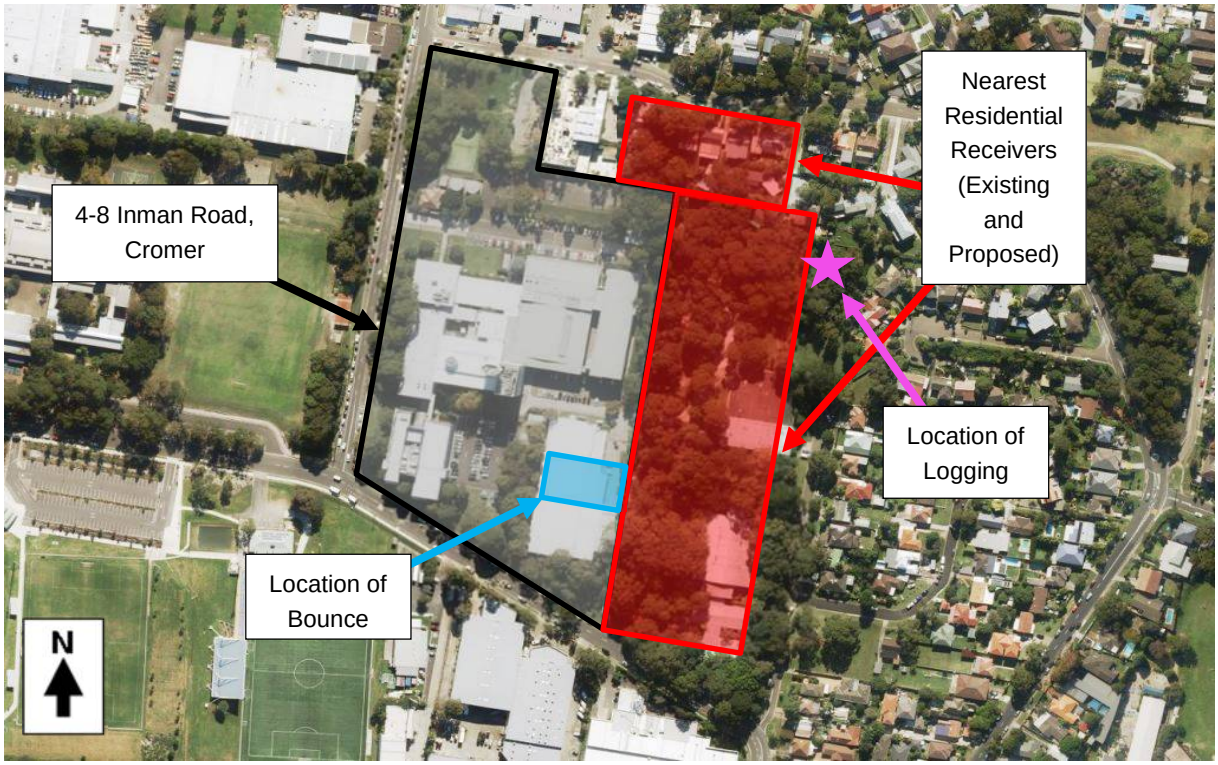
We trust that the above information meets with your present requirements and expectations. Please do not hesitate to contact us on 02 9908 1270 should you require more information.

APPENDIX A –LOCATION MAP, AERIAL IMAGE AND DRAWINGS

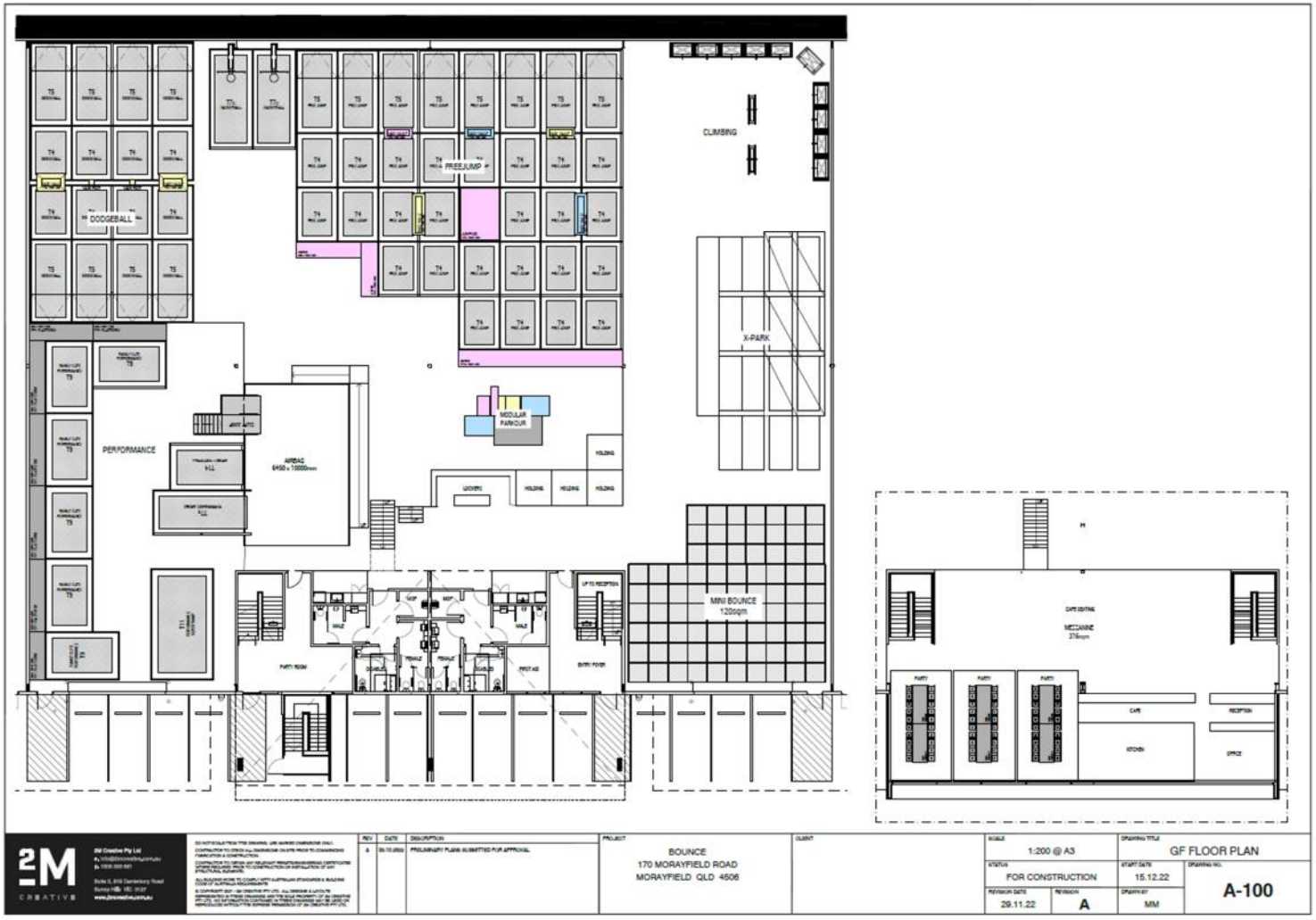
A.1 SITE LOCATION MAP



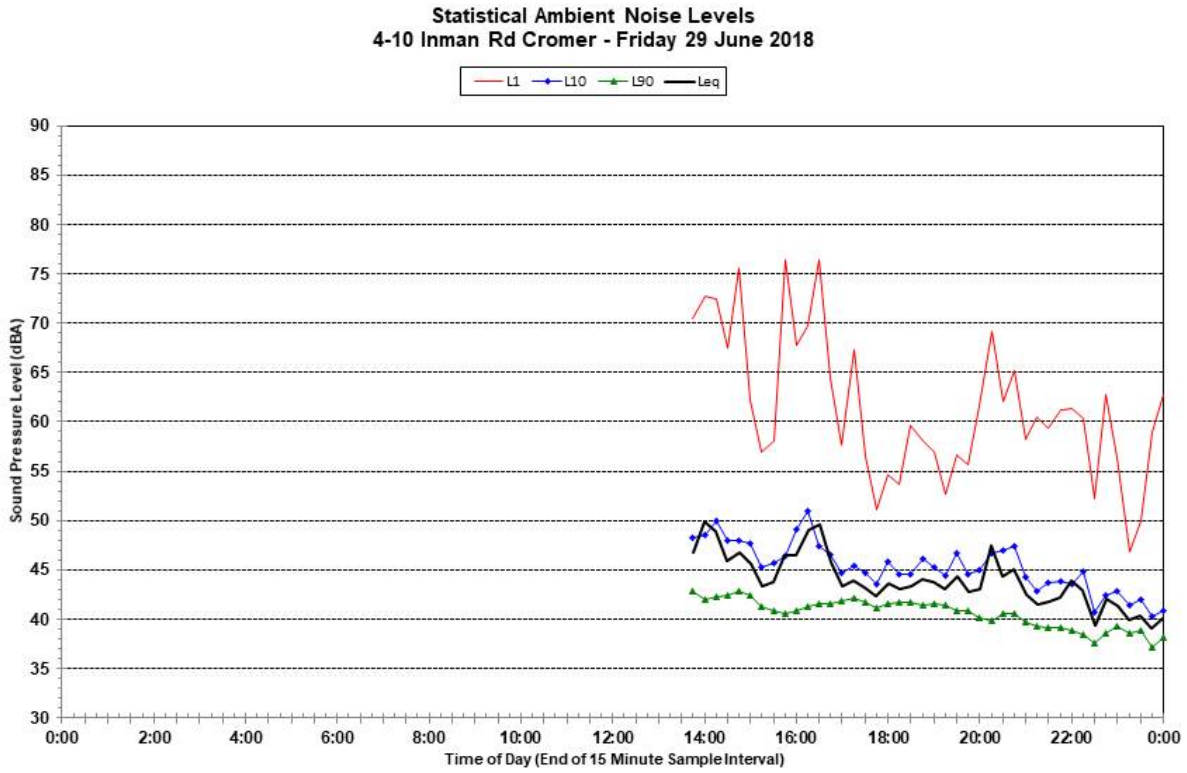
A.2 AERIAL IMAGE (COURTESY OF SIXMAPS.COM)

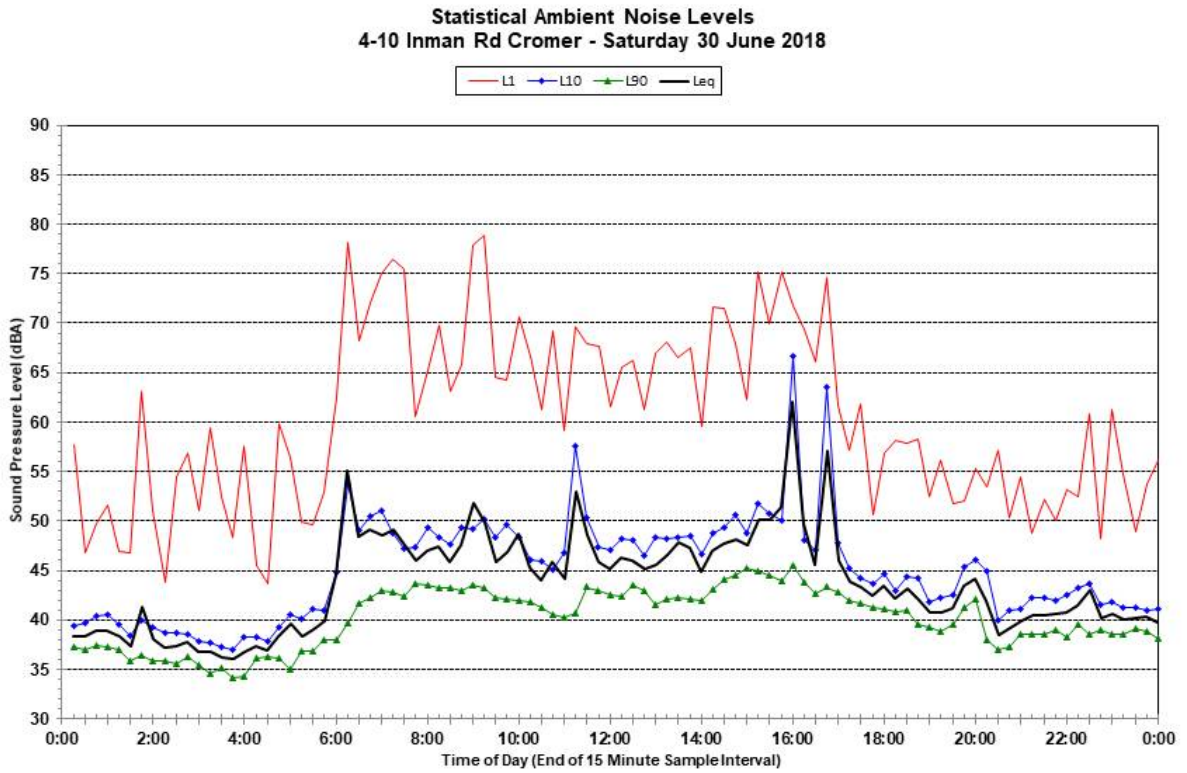


A.3 DRAWINGS

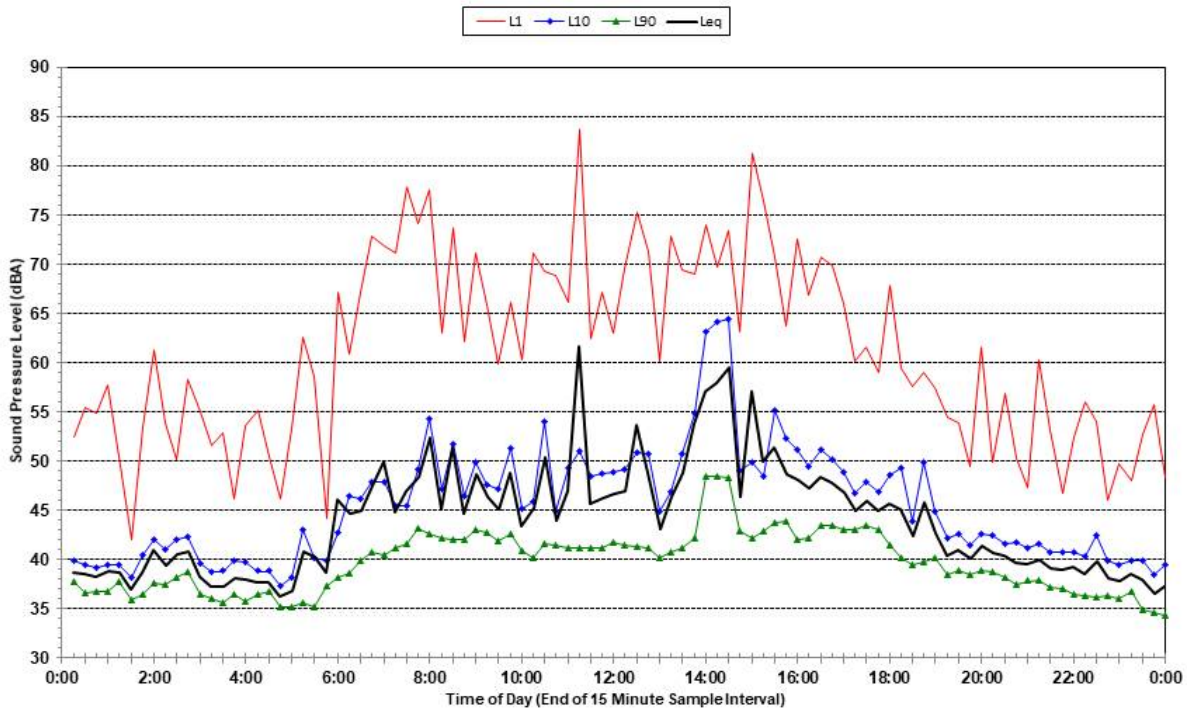

CLIMBING
FREEJUMP
DODGEBALL
X-PARK
MODULAR PARKOUR
PERFORMANCE
AIRBAG
6450 x 10000mm
LOCKERS
HOLDING
MINI BOUNCE
120sqm
PARTY ROOM
BIRTH FOYER
FIRST AID
UP TO RECEPTION
CAFE SEATING
MEZZANINE
376sqm
PARTY
CAFE
KITCHEN
RECEPTION
OFFICE
2M
CREATIVE
BOUNCE
170 MORAYFIELD ROAD
MORAYFIELD QLD 4506
1:200 @ A3
GF FLOOR PLAN
FOR CONSTRUCTION
15.12.22
29.11.22
A
MM
A-100

APPENDIX B – UNATTENDED NOISE MONITORING DATA

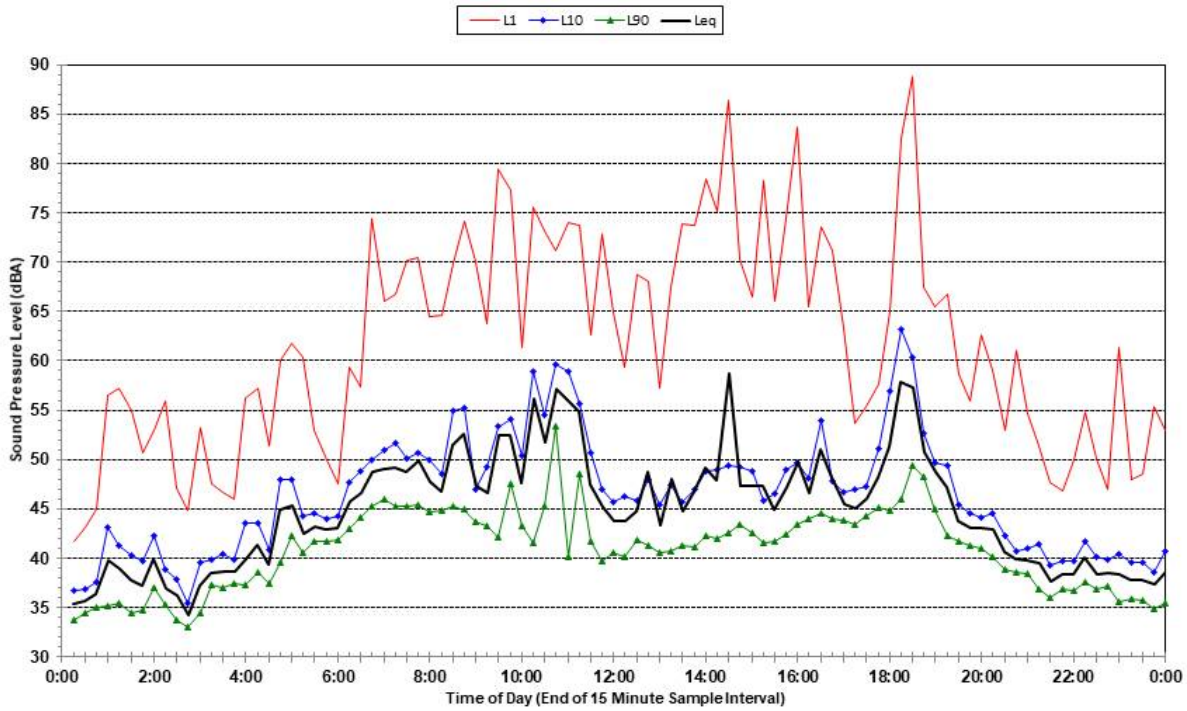




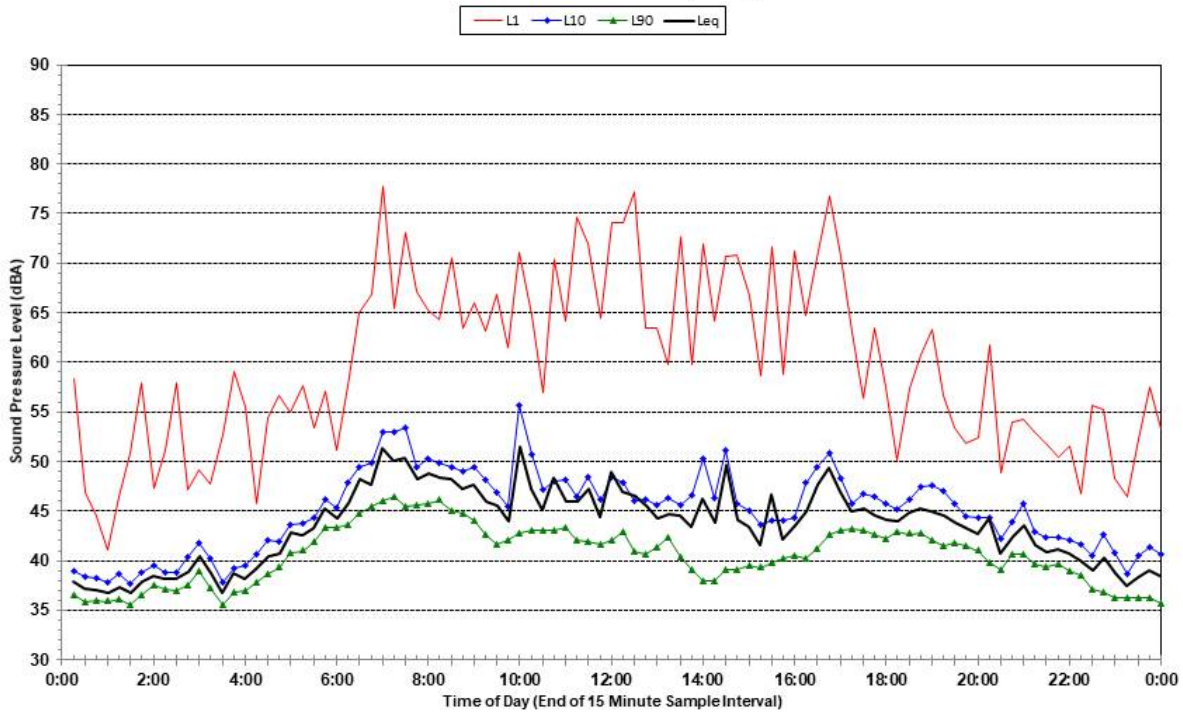
Statistical Ambient Noise Levels
4-10 Inman Rd Cromer - Sunday 1 July 2018



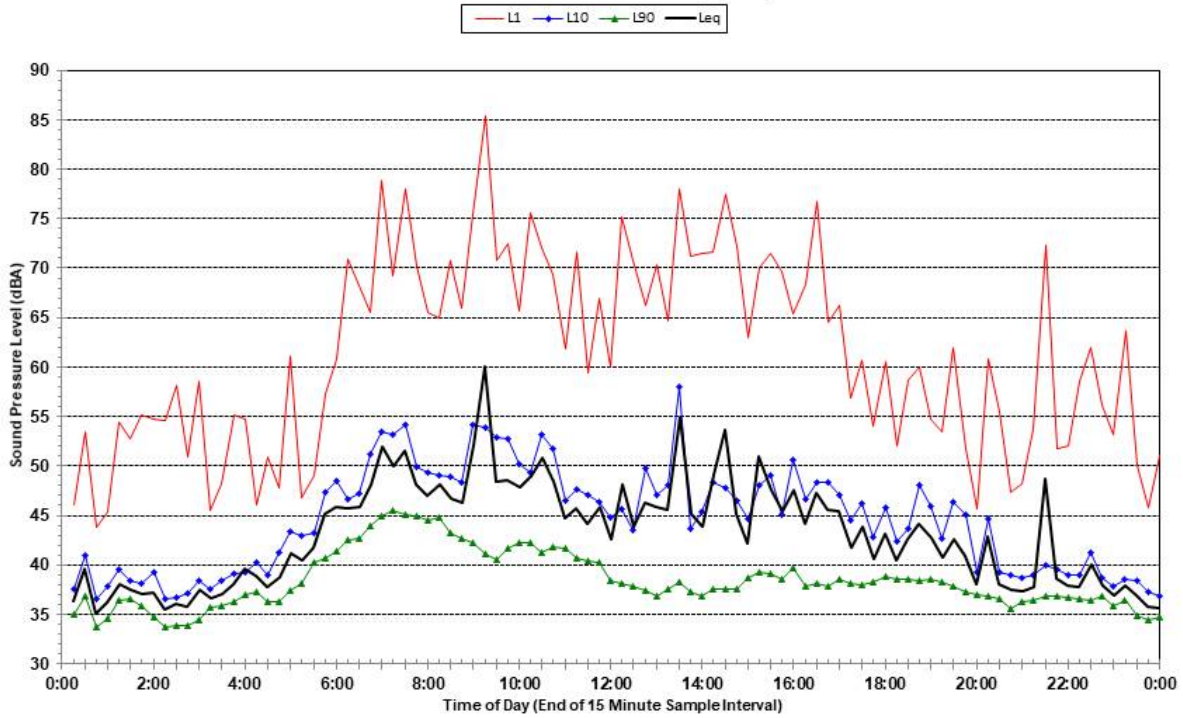
Statistical Ambient Noise Levels
4-10 Inman Rd Cromer - Monday 2 July 2018



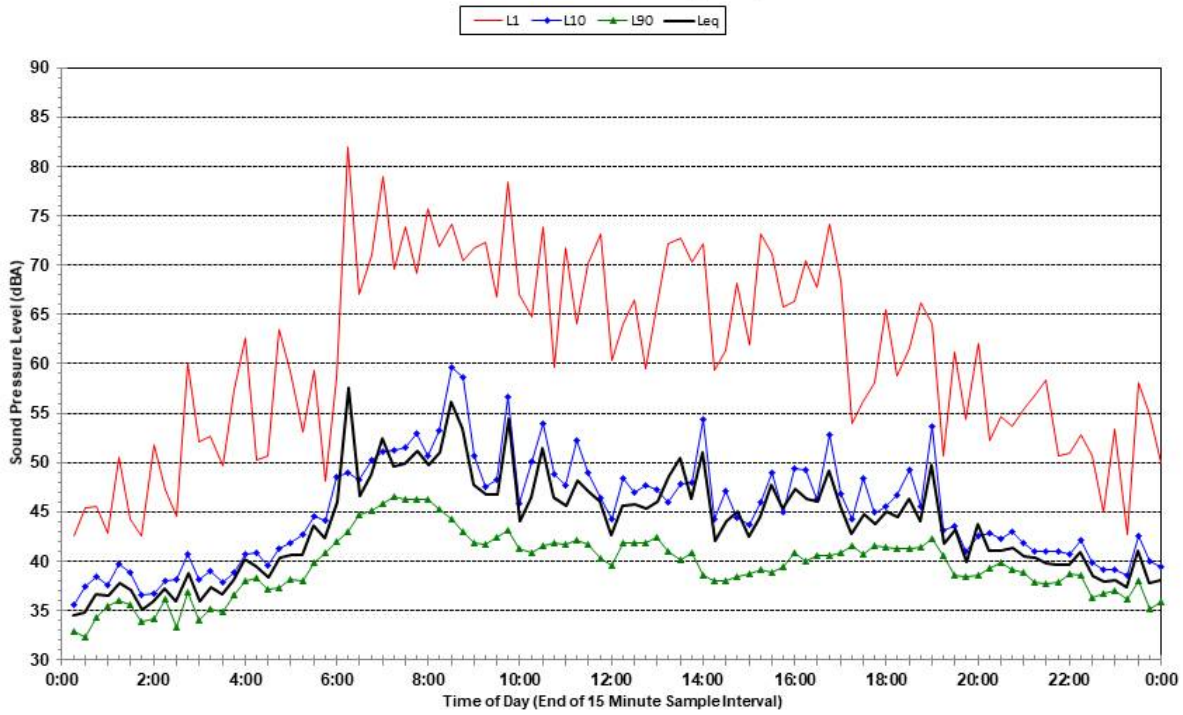
Statistical Ambient Noise Levels
4-10 Inman Rd Cromer - Tuesday 3 July 2018



Statistical Ambient Noise Levels
4-10 Inman Rd Cromer - Wednesday 4 July 2018



Statistical Ambient Noise Levels
4-10 Inman Rd Cromer - Thursday 5 July 2018



Statistical Ambient Noise Levels
4-10 Inman Rd Cromer - Friday 6 July 2018