



Acoustic Consultants Member Australian Acoustical Society

Proposed Animal Breeding Facility 2255 Hill End Road, Grattai NSW

Acoustical Assessment

REPORT R170448R2

Revision 2

Prepared for:

Hevs Haven Pty Ltd

c/- DF Planning Pty Ltd

11 Dartford Road

Thornleigh NSW

17 September 2018

PO Box 522 Wahroonga NSW 2076 P 02 9943 5057 F 02 9475 1019 mail@rodneystevensacoustics.com.au



Proposed Animal Breeding Facility

2255 Hill End Road, Grattai

Acoustical Assessment

PREPARED BY:

Rodney Stevens Acoustics Pty Ltd Telephone: 61 2 9943 5057 Facsimile 61 2 9475 1019

Telephone: 61 2 9943 5057 Facsimile 61 2 9475 1 Email: info@rodneystevensacoustics.com.au Web: www.rodneystevensacoustics.com.au

DISCLAIMER

Reports produced by Rodney Stevens Acoustics Pty Ltd are prepared for a particular Client's objective and are based on a specific scope, conditions and limitations, as agreed between Rodney Stevens Acoustics and the Client. Information and/or report(s) prepared by Rodney Stevens Acoustics may not be suitable for uses other than the original intended objective. No parties other than the Client should use any information and/or report(s) without first conferring with Rodney Stevens Acoustics.

The information and/or report(s) prepared by Rodney Stevens Acoustics should not be reproduced, presented or reviewed except in full. Before passing on to a third party any information and/or report(s) prepared by Rodney Stevens Acoustics, the Client is to fully inform the third party of the objective and scope and any limitations and conditions, including any other relevant information which applies to the material prepared by Rodney Stevens Acoustics. It is the responsibility of any third party to confirm whether information and/or report(s) prepared for others by Rodney Stevens Acoustics are suitable for their specific objectives.

DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
R170448R1	Revision 0	28 September 2017	Desmond Raymond	Camilo Castillo	Rodney Stevens
R170449R2	Revision 1	21 August 2018	Desmond Raymond	Thomas Carney	Rodney Stevens
R170449R2	Revision 2	17 September 2018	Desmond Raymond	Rodney Stevens	Rodney Stevens

TABLE OF CONTENTS

1	INTF	RODUCTION	4
2	PRC	JECT OVERVIEW	4
	2.1	Proposed Development	4
3	EXIS	STING NOISE ENVIRONMENT	5
	3.1	Noise Results	5
4	ASS	ESSMENT CRITERIA	6
	4.1	Operational Noise Criteria – <i>Noise Policy for Industry</i> 4.1.1 Intrusiveness Criterion 4.1.2 Amenity Criterion 4.1.3 Area Classification 4.1.4 Project Specific Noise Levels	6 6 6 6
	4.2	Sleep Disturbance Criteria	7
5	NOIS	SE ASSESSMENT	7
6	REC	OMMENDATIONS	8
	6.1	Building Recommendations	8
	6.2	Complaint Handling	8
7	CON	ICLUSION	9
Table Table Table	e 3-1 e 4-1 e 5-1	Measured Existing Noise Levels Corresponding Assessment Time Periods Operational Project Trigger Noise Levels Predicted Noise Levels at Sensitive Receivers	5 7 8
Figu	re 2-1	Project Area and Surrounding Environment	4

((((((©

)))

1 INTRODUCTION

Rodney Stevens Acoustics Pty Ltd (RSA) has been engaged to prepare a noise impact assessment for the proposed animal breeding facility to be at located at 2255 Hill End Road, Grattai NSW.

Hevs Haven requires a statement addressing noise to accompany the Development Application (DA) for the proposal. The primary purpose of the assessment is to determine the noise impact from the operation of the proposed animal breeding facility to the nearest residential dwellings and where required provide in-principle design advice to achieve the requirements of acoustic amenity.

Specific acoustic terminology is used in this report. An explanation of common acoustic terms is provided in Appendix C.

2 PROJECT OVERVIEW

2.1 Proposed Development

The proposed development is to be located at 2255 Hill End Road, Grattai NSW. The project area and its surrounding environment are presented in Figure 2-1 below.



Figure 2-1 Project Area and Surrounding Environment

Aerial image courtesy of © 2018 nearmap Itd



The nearest residential receiver to be affected by the noise emissions from the proposed animal breeding development is identified to be 2247 Hill End Road to the north of the site. Nearest residence to the west is identified as 479 Windeyer Road approximately 2.1km from the proposed site. Residences to the south and east are too far to be affected by the noise emissions from the proposed development.

3 EXISTING NOISE ENVIRONMENT

Unattended noise monitoring for the development was carried out between 3 August and 6 August 2018 at the location shown in Figure 2-1. Noise monitoring was conducted for a period of 3 days being primarily weekend, in order to avoid any influences to the measurement from any heavy machinery or nearby agricultural earth moving machinery. The operation of the nearby Quarry also has the potential of influencing the noise measurements. This has been conducted as per the guidelines within *Noise Policy for Industry* Section B1.

The location was selected after a detailed inspection of the project area giving consideration to other noise sources that may influence the readings, the proximity of noise-sensitive receivers and security issues for the noise monitoring device and gaining permission for access from the residents or landowners. The results of the ambient noise monitoring are shown in Table 3-1.

Instrumentation for the survey comprised of a RION NL-42 Environmental Noise Logger (serial number 710677) fitted with a microphone windshield. Calibration of the logger was checked prior to and following measurements. Drift in calibration did not exceed ± 0.5 dBA. All equipment carried appropriate and current NATA (or manufacturer) calibration certificates.

3.1 Noise Results

From the measured noise levels, the results have been summarised and presented in Table 3-1. These results represent the current Rated Background Noise Levels (RBL) at the monitoring location. The monitored baseline noise levels are detailed in Table 3-1.

Table 3-1 Measured Existing Noise Levels Corresponding Assessment Time Periods

Location	Measurement Descriptor	Measured Noise Level –	dBA re 20 µPa	
		Daytime 7.00 am – 6.00 pm	Evening 6.00 pm – 10.00 pm	Night Time 10.00 pm – 7.00 am
Location 1	LAeq ¹	45	41	38
	RBL (Background) ²	24	19	18

Note 1: The LAeq is essentially the average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.

Note 2: The RBL noise level is representative of the average minimum background sound level (in the absence of the source under consideration), or simply the background level.

4 ASSESSMENT CRITERIA

4.1 Operational Noise Criteria – Noise Policy for Industry

Responsibility for the control of noise emissions in New South Wales is vested in Local Government and the EPA. The EPA oversees the Noise Policy for Industry (NPfI) October 2017 which provides a framework and process for deriving noise criteria. The NPfI criteria for industrial noise sources have two (2) components:

- Controlling the intrusive noise impacts for residents and other sensitive receivers in the short term; and
- Maintaining noise level amenity for particular land uses for residents and sensitive receivers in other land uses.

4.1.1 Intrusiveness Criterion

For assessing intrusiveness, the background noise generally needs to be measured. The intrusiveness criterion essentially means that the equivalent continuous noise level (LAeq) of the source should not be more than 5 dB(A) above the measured Rated Background Level (RBL), over any 15 minute period.

4.1.2 Amenity Criterion

The amenity criterion is based on land use and associated activities (and their sensitivity to noise emission). The cumulative effect of noise from industrial sources needs to be considered in assessing the impact. The criteria relate only to other industrial-type noise sources and do not include road, rail or community noise. The existing noise level from industry is measured.

If it approaches the criterion value, then noise levels from new industrial-type noise sources, (including airconditioning mechanical plant) need to be designed so that the cumulative effect does not produce total noise levels that would significantly exceed the criterion.

4.1.3 Area Classification

The NPfI characterises the site area as Rural – an area with an acoustical environment that is dominated by natural sounds, having little or no road traffic noise and generally characterized by low background noise levels. Settlement patterns would be typically sparse.

The area surrounding the proposed development falls under the "Rural" area classification.

4.1.4 Project Specific Noise Levels

Having defined the area type, the processed results of the attended noise monitoring have been used to determine project specific noise criteria. The intrusive and amenity criteria for nearby residential premises are presented in Table 4-1. These criteria are nominated for the purpose of assessing potential noise impacts from the proposed development.

In this case, the ambient noise environment is not controlled by industrial noise sources and therefore the project amenity noise level are assigned as per Table 2.2 of the NPfI (Recommended Amenity Noise Levels). For each assessment period, the lower (i.e. the more stringent) of the amenity or intrusive criteria are adopted.

These are shown in bold text in Table 4-1.



			Measu	red	Project Trigge	r Noise Levels
Receiver	Time of Day	ANL ¹ LAeq(15min)	Actual Measured Background (RBL) ^{2,3} L _{A90(15min)}	L _{Aeq} Noise Level)	Intrusive (as per policy) L _{Aeq(15min)}	Amenity (as per policy) L _{Aeq(15min)}
	Day	50	35 ³	45	40	47
Residential	Evening	45	30 ³	41	35	42
_	Night	40	30 ³	38	35	37

Table 4-1 Operational Project Trigger Noise Levels

Note 1: ANL = "Amenity Noise Level" for residences in rural Areas.

Note 2: RBL = "Rating Background Level".

Note 3: RBL adjusted as per the requirements of NPfI Table 2.1

4.2 Sleep Disturbance Criteria

The potential for sleep disturbance from maximum noise level events from premises during the night-time period needs to be considered. Sleep disturbance is considered to be both awakenings and disturbance to sleep stages.

Noise Policy for Industry provides the following guidelines on the project trigger noise levels:

Where the subject development/premises night-time noise levels at a residential location exceed:

- LAeq,15min 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or
- LAFmax 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater,

For planning purposes the assumed level of background noise for the night-time period is taken to be the night-time Rating Background Level, as given in Table 4-1 resulting in a sleep disturbance criterion of:

- L_{Aeq(15min)} 40 dBA (as per NPfI minimum requirements)
- L_{AFmax} 52 dBA (as per NPfI minimum requirements)

5 NOISE ASSESSMENT

The following section summaries the results of animal noise predicted levels at the surrounding residential receivers due to the operation of the proposed breeding facility.

It is understood that the proposed breeding facility will breed dogs on site. As this is a breeding facility, it is envisaged that the dogs will be in a comfortable environmental without barking excessively. With behavioral training for the dogs and constant supervision the dogs can be controlled allowing the dogs to sleep throughout the night and be engaged in activities during the daytime.

Calculations of the amount of noise transmitted to the identified sensitive receiver from the proposed kennel have been made based on previous measurements and noise data collected by Rodney Stevens Acoustics.

Rodney Stevens Acoustics personnel had conducted noise measurements of the 68 dogs barking on site. The noise data was recorded using a Bruel & Kjaer Model 2250 Type I Sound Level Meter (Serial Number



3011625). Calibration for the equipment was checked prior to and following the measurements. Drift in calibration did not exceed 0.5dBA.

With all 68 dogs barking, sound pressure level of 97 dBA at 1m.

The calculated noise impact from the use of the development including the dogs engaged in outdoor activities and minimal activities at night are presented in Table 5-1 below.

Table 5-1	Predicted Noise Le	evels at Sensitive	Receivers
-----------	--------------------	--------------------	-----------

Receiver Location	(Calculated) Predicted L _{Aeq(15min)} Noise Level – dB(A)	Noise Criterion as per policy at Receiver Location – dB(A)	Compliance (Yes/No)
	2247 Hill End F	Road	
Day Time	32	40	Yes
Evening	32	35	Yes
Night Time	22	35	Yes
Sleep Disturbance	49	L _{Amax} 52	Yes
	479 Windeyer F	Road	
Day Time	6	40	Yes
Evening	6	35	Yes
Night Time	0	35	Yes
Sleep Disturbance	0	L _{Amax} 52	Yes

The predicted noise levels at the residential receivers shows compliance to the established noise criteria. It should be noted that there have been noise complaints regarding the noise emissions at night. RSA personnel observed the dogs reacting to wild life especially during the night. This could potentially cause sleep disturbance to the residents at 2247 Hill End Road.

6 RECOMMENDATIONS

6.1 Building Recommendations

Based on the potential for sleep disturbance, RSA recommends semi-enclosing the kennels for the night period (10pm to 7am). This can include installing an acoustically constructed colourbond fence on the north and eastern sides surrounding the kennels to allow the dogs outside access at night and still easily achieve sleep arousal criteria.

6.2 Complaint Handling

To maintain good community relationship with the neighboring properties, RSA recommends a complaint handling procedure established. This protocol is intended to ensure that noise complaint issues are addressed and that appropriate corrective action is identified and implemented as necessary. The complaint handling procedure is to include:

• The manager will record all verbal and telephone complaints in writing including details of the circumstance leading to the complaint and all subsequent actions.



- The manager and owner will investigate the complaint in order to determine whether a criterion exceedance has occurred or whether noise have occurred unnecessarily.
- If excessive or unnecessary noise have been caused, corrective action will be planned and implemented by the project manager.
- Complainants will be informed by the manager that their complaints are being addressed, and (if appropriate) that corrective action is being taken.

Complainants will be informed of the implementation of the corrective action that has been taken to mitigate the adverse effects.

7 CONCLUSION

Rodney Stevens Acoustics has conducted noise impact assessment for the proposed animal breeding facility located at 2255 Hill End Road, Grattai NSW. The assessment has predicted the noise impact to the nearest residential dwellings. The noise modelling resulted in compliance to the NSW EPA NPfI requirements. Recommendations have been made above to mitigate noise emissions during night time operations. RSA recommends planning approval be granted on the basis of acoustics.

Approved:-

odney O. Stermo.

Rodney Stevens - MAAS

 \bigcirc

Appendix A – Acoustic Terminology

A-weighted sound pressure	The human ear is not equally sensitive to sound at different frequencies. People are more sensitive to sound in the range of 1 to 4 kHz ($1000 - 4000$ vibrations per second) and less sensitive to lower and higher frequency sound. During noise measurement an electronic ' <i>A-weighting</i> ' frequency filter is applied to the measured sound level $dB(A)$ to account for these sensitivities. Other frequency weightings (B, C and D) are less commonly used. Sound measured without a filter is denoted as linear weighted dB(linear).
Ambient noise	The total noise in a given situation, inclusive of all noise source contributions in the near and far field.
Community annoyance	Includes noise annoyance due to:
	 character of the noise (e.g. sound pressure level, tonality, impulsiveness, low-frequency content)
	 character of the environment (e.g. very quiet suburban, suburban, urban, near industry)
	 miscellaneous circumstances (e.g. noise avoidance possibilities, cognitive noise, unpleasant associations)
	 human activity being interrupted (e.g. sleep, communicating, reading, working, listening to radio/TV, recreation).
Compliance	The process of checking that source noise levels meet with the noise limits in a statutory context.
Cumulative noise level	The total level of noise from all sources.
Extraneous noise	Noise resulting from activities that are not typical to the area. Atypical activities may include construction, and traffic generated by holiday periods and by special events such as concerts or sporting events. Normal daily traffic is not considered to be extraneous.
Feasible and reasonable measures	Feasibility relates to engineering considerations and what is practical to build; reasonableness relates to the application of judgement in arriving at a decision, taking into account the following factors:
	 Noise mitigation benefits (amount of noise reduction provided, number of people protected).
	 Cost of mitigation (cost of mitigation versus benefit provided).
	 Community views (aesthetic impacts and community wishes).



	 Noise levels for affected land uses (existing and future levels, and changes in noise levels).
Impulsiveness	Impulsive noise is noise with a high peak of short duration or a sequence of these peaks. Impulsive noise is also considered annoying.
Low frequency	Noise containing major components in the low-frequency range (20 to 250 Hz) of the frequency spectrum.
Noise criteria	The general set of non-mandatory noise levels for protecting against intrusive noise (for example, background noise plus 5 dB) and loss of amenity (e.g. noise levels for various land use).
Noise level (goal)	A noise level that should be adopted for planning purposes as the highest acceptable noise level for the specific area, land use and time of day.
Noise limits	Enforceable noise levels that appear in conditions on consents and licences. The noise limits are based on achievable noise levels, which the proponent has predicted can be met during the environmental assessment. Exceedance of the noise limits can result in the requirement for either the development of noise management plans or legal action.
Performance-based goals	Goals specified in terms of the outcomes/performance to be achieved, but not in terms of the means of achieving them.
Rating Background Level (RBL)	The rating background level is the overall single figure background level representing each day, evening and night time period. The rating background level is the 10^{th} percentile min L _{A90} noise level measured over all day, evening and night time monitoring periods.
Receptor	The noise-sensitive land use at which noise from a development can be heard.
Sleep disturbance	Awakenings and disturbance of sleep stages.
Sound and decibels (dB)	Sound (or noise) is caused by minute changes in atmospheric pressure that are detected by the human ear. The ratio between the quietest noise audible and that which should cause permanent hearing damage is a million times the change in sound pressure. To simplify this range the sound pressures are logarithmically converted to decibels from a reference level of 2 x 10-5 Pa.
	The picture below indicates typical noise levels from common noise sources.





dB is the abbreviation for decibel – a unit of sound measurement. It is equivalent to 10 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure.

Sound Power LevelThe sound power level of a noise source is the sound energy emitted by the
source. Notated as SWL, sound power levels are typically presented in dB(A).

Sound Pressure Level (SPL)

The level of noise, usually expressed as SPL in dB(A), as measured by a standard sound level meter with a pressure microphone. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise.

Statistical noise levels Noise lev

Noise levels varying over time (e.g. community noise, traffic noise, construction noise) are described in terms of the statistical exceedance level.

A hypothetical example of A weighted noise levels over a 15 minute measurement period is indicated in the following figure:



Key descriptor

LAmax Maximum recorded noise level.



	 LA1 The noise level exceeded for 1% of the 15 minute interval.
	 LA10 Noise level present for 10% of the 15 minute interval. Commonly referred to the average maximum noise level.
	 LAeq Equivalent continuous (energy average) A-weighted sound pressure level. It is defined as the steady sound level that contains the same amount of acoustic energy as the corresponding time-varying sound.
	 LA90 Noise level exceeded for 90% of time (background level). The average minimum background sound level (in the absence of the source under consideration).
Threshold	The lowest sound pressure level that produces a detectable response (in an instrument/person).
Tonality	Tonal noise contains one or more prominent tones (and characterised by a distinct frequency components) and is considered more annoying. A 2 to 5 dBA penalty is typically applied to noise sources with tonal characteristics.

((((((((

Appendix B – Calibration Certificates

6	Research Labs Pty Lto Soun	Penr Ph: + d ww	nant Hills NSW A 61294840800 A.B w.acousticrese vel Meter 2-3 2013	USTRALIA 21: .N. 65 160 399 1: arch.com.au	20 19
	Calibra	tion	Certificate	e	
	Calibration Num	ber C	16717		
	Client Deta	ails Ro 1 N St 1	dney Stevens Acoustic Iajura Close Ives Chase NSW 2075	s Pty Ltd	
Equipr	nent Tested/ Model Numbe Instrument Serial Numbe Microphone Serial Numbe re-amplifier Serial Numbe	er: Ric er: 003 er: 152 er: 460	n NL-42EX 546394 2908 506		
Pre-Test At	mospheric Conditions		Post-Test Att	nospheric Condit	tions
Relative	Humidity: 50.3%		Rela	ative Humidity :	45.3%
Calibration Techn	ician : Vicky Jaiswal		Secondary Chec	k: Riley Cooper	r
Calibration	Date: 09/01/2017	-v ·	Report Issue Dat	e: 10/01/2017	Juan Aguero
Clause and Charact	eristic Tested	y . Result	Clause and Chara	cteristic Tested	Result
12: Acoustical Sig. test 13: Electrical Sig. tests 14: Frequency and time 15: Long Term Stabilit 16: Level linearity on th	s of a frequency weighting of frequency weightings weightings at 1 kHz weightings at 1 kHz he reference level range	Pass Pass Pass Pass Pass	17: Level linearity ind 18: Toneburst respons 19: C Weighted Peak 20: Overload Indicati 21: High Level Stabil	el. the level range co se Sound Level on ity	ntrol Pass Pass Pass Pass Pass Pass
The sound level meter sul	omitted for testing has successfully conditions und	completed er which th	the class 2 periodic tests of e tests were performed.	IEC 61672-3:2006, for	the environmental
However, no general state 1:2002 because evid demonstrate that the mod	ment or conclusion can be made ab ence was not publicly available, fr el of sound level meter fully confor IEC 61672-3:2006 cover only a lin	oout conform om an indep rmed to the nited subset	nance of the sound level mo endent testing organisation requirements in IEC 61672 of the specifications in IEC	ter to the full requirem responsible for pattern -1:2002 and because th 61672-1:2002.	nents of IEC 61672- approvals, to ne periodic tests of
Acoustic Tests	Least Un	certainties Env	of Measurement - ironmental Conditions		
31.5 Hz to 8kHz 12.5kHz 16kHz	±0.12dB ±0.18dB ±0.31dB		Temperature Relative Humidity Barometric Pressure	±0.05°C ±0.46% ±0.017kPa	
Electrical Tests 31.5 Hz to 20 kHz	±0.12dB				
T contraction of the	All uncertainties are derived at t	he 95% cor	fidence level with a coverage	ge factor of 2.	
~	This calibration certificate is to b	is NATA	onjunction with the calibrati	on test report.	
NATA	Accredited for compliance with	ISO/IEC 17	025.		
WORLD RECOONISED	The results of the tests, calibratic Australian/national standards.	ons and/or r	neasurements included in th	is document are tracea	ble to
ACCREDITATION	NATA is a signatory to the ILAC equivalence of testing, medical to	C Mutual R esting, calib	ecognition Arrangement for pration and inspection report	the mutual recognition s.	n of the
					PAGE 1 OF 1

Appendix C – Unattended Noise Monitoring Results





Ambient

2255 Hill End Road Grattai





Ambient 2255 Hill End Road Grattai

Monday 06/08/18

