HILLTOPS FREE RANGE EGGS

NOISE IMPACT ASSESSMENT

REPORT NO. 17219
VERSION 1.0

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PREPARED FOR

PSA CONSULTING PTY LTD
LEVEL 11, 270 ADELAIDE STREET
BRISBANE QLD 4000

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GLOSSARY OF ACOUSTIC TERMS

Most environments are affected by environmental noise which continuously varies. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. The most common of these noise descriptors are defined below.

L_{Amax} The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

L_{A1} The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.

L_{A10} The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time.

L_{A90} The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

L_{Aeq} The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This descriptor is a common measure of environmental noise.

ABL The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and night time) for each day.

RBL The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night time.

1 INTRODUCTION

SoundIN Pty Ltd (SoundIN) has been engaged by PSA Consulting Pty Ltd (PSA) to undertake a noise impact assessment of the existing operations of the Hilltops Free Range Egg farm (the Proposal) at 1056 Lachlan Valley Way, Boorowa (the Site). The locality of the Proposal is shown in **Figure 1-1**.

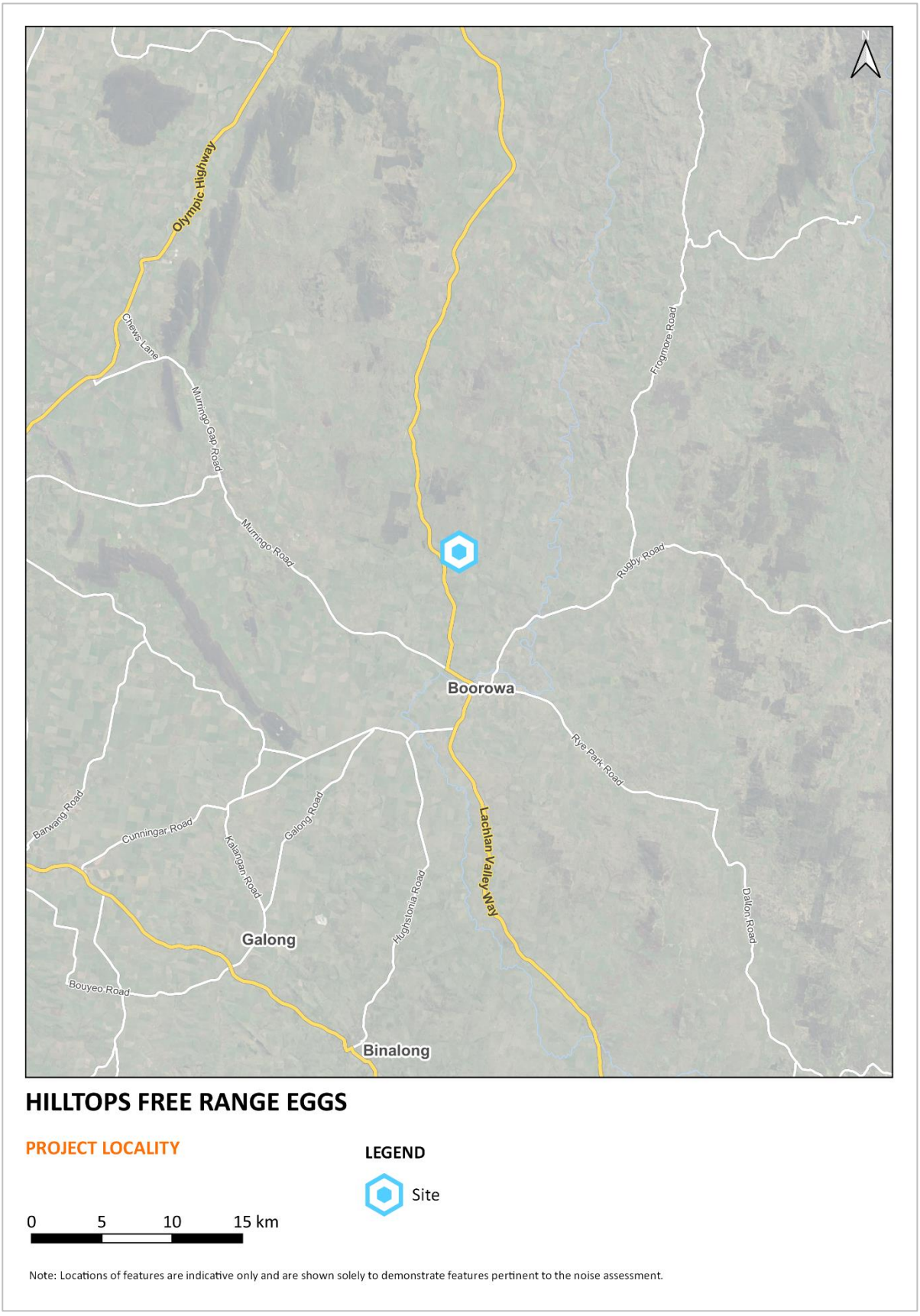
This report presents an assessment of potential noise impacts associated with the operation of the Proposal at nearby sensitive receivers. The assessment has been conducted in general accordance with the *Noise Policy for Industry* (NPfI).

This report has been prepared to address the following Secretary's Environmental Assessment Requirements (SEARs) issued by the Department of Planning and Environment (DPE):

The Proposal would generate a very small number of additional traffic movements (~5 per day) on the public road network. Accordingly, road noise impacts associated with the Proposal would be negligible and no detailed assessment is considered necessary.

Construction works do not form part of the Proposal.

Figure 1-1 Site Locality



2 THE PROPOSAL

2.1 Site Location

The Site is located at 1056 Lachlan Valley Way, Boorowa. The Site location is shown in **Figure 2-1**.

2.2 Surrounding Land Use and Sensitive Receivers

Land use immediately surrounding the Site is rural. Residential receivers located within approximately 1,000 metres of the Site boundary have been identified, as presented in **Table 2-1** and shown in **Figure 2-1**.

Table 2-1 Sensitive Receivers

Receiver ID	Address [1]
R1	1134 Lachlan Valley Way
R2	887 Kenyu Road
R3	758 Kenyu Road
R4	719 Kenyu Road
R5	115 Rugby Road
R6	115 Rugby Road

1. Receiver addresses identified using NSW Planning Portal "Find a Property" online tool.

2.3 Proposal Description

Hilltops Free Range Eggs (HFRE) is a pasture-raised, free range egg production farm using portable, mobile roosting and laying 'caravans' with portable water and feeding stations, in paddocks that are rotated between wool-producing sheep and chickens. There are no permanent poultry sheds used for poultry accommodation on the Site. Mobile caravans have an open floor with manure deposited on the land. Regular, scheduled movement of mobile caravans provides even distribution of nutrients from manure across the egg production paddocks. Groundcover in egg production paddocks is maintained at 80 -100%. There is no collection, storage, stockpiling and/or composting of manure on Site.

The maximum bird population on Site is 30,000 laying birds. Small flocks of birds occupy sub-divisions within 13 paddocks on the Site, with flocks protected by Maremma dogs. The size of each flock of birds is kept small, and the mobile caravans and feeders and mobile water stations are spread out, minimising bird density in each paddock.

Eggs are laid in the mobile caravans by hens that have unrestricted daytime access to pastures that are suitable for grazing with water, feed, shade and shelter. The distance between mobile caravans is a minimum of 150 metres. At night, birds return to the mobile caravans which are moved weekly to provide fresh pasture and groundcover recovery.

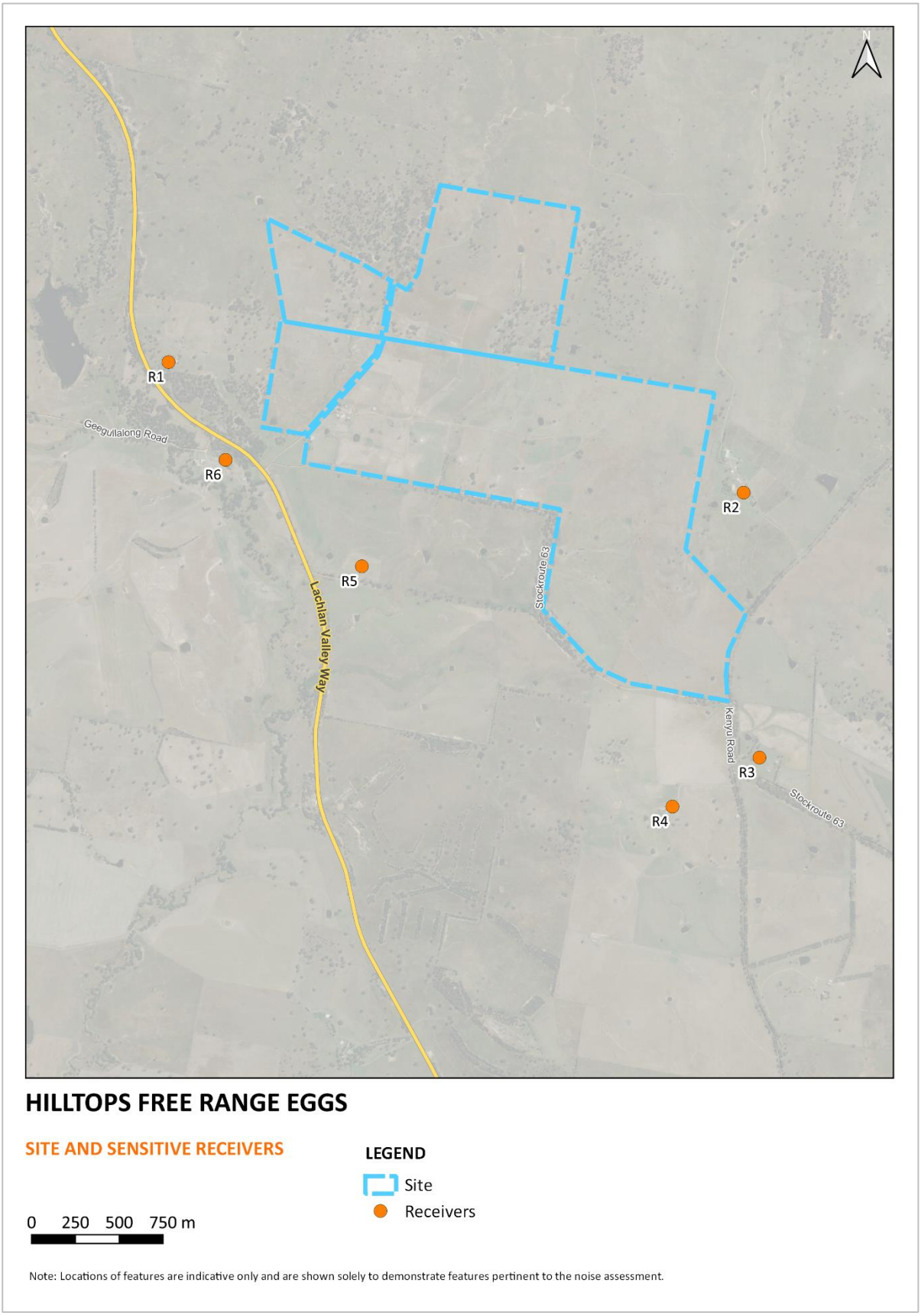
Key elements of HFRE, relevant to this assessment, are summarised in **Table 2-2**.

Table 2-2 Key Proposal Elements

Element	Description
Number of mobile, portable roosting houses	Small flocks occupy sub-divisions within 13 paddocks on the Site. • There are two to three mobile caravans for each flock, with less than 50 mobile caravans in total on the Site
Maximum bird population per mobile roosting house	There is a maximum of 900 birds per mobile caravan.
Maximum bird population on farm	30,000 laying birds. The farming method used for HFRE poultry is similar to the free-range grazing of sheep which is undertaken in the surrounding properties and the Boorowa area. According to Elders' Dry Sheep Equivalent calculations for the Boorowa area, the carrying capacity of Reynoldsale at 90kg / sheep, is 5,000 sheep (i.e. 450,000kg total sheep weight). In comparison, based on an average maximum weight of 3kg / chicken, and the current maximum bird population at HFRE (30,000 chickens), the current total chicken weight on Site is 90,000kg, which is considerably less than the maximum sheep weight carrying capacity of 450,000kg.
Maximum bird density on farm	45 birds / hectare
Number of permanent poultry sheds	Zero. There are no permanent poultry sheds on the Site
Traffic and transportation	Access to and from the Site is via Lachlan Valley Way and approx. 500m of council-maintained stockroad from Lachlan Valley Way to the HFRE farm gate. Weekly traffic movements are limited to: • Eggs are transported twice a week, in two trucks owned by the Applicant, directly from the farm to customers and markets in Sydney and Canberra.

Element	Description
	• Feed is delivered twice a week in a truck owned by the Applicant, directly from the mill to the farm. • Supplier services are picked up on the way back from Sydney and Canberra egg deliveries in the same trucks, and brought to the farm. • Waste products are removed from the site by tipper truck owned by the Applicant once every two to three weeks. The existing intersection with the Site (near Stockroute 63) and Lachlan Valley Way provides clear access and egress for the low volume of traffic accessing and egressing the site. No additional intersection treatments or access upgrades are proposed for the low traffic impact of the development. No traffic incidents have been recorded relating to HFRE operations since egg production commenced on the Site in 2017.
Construction	HFRE is seeking Planning Approval to continue current low density, pasture-raised, free range egg production on the Site. No construction is proposed

Figure 2-1 Proposal Site and Sensitive Receivers



3 NOISE CRITERIA

3.1 Operational Noise Trigger Levels

The *Noise Policy for Industry* (NPfI) (EPA, 2017) provides a framework for assessing environmental noise impacts from industrial premises and industrial development proposals in New South Wales.

The NPfI recommends the development of project noise trigger levels, which provide a benchmark for assessing a proposal or site. The project noise trigger levels should not be interpreted as mandatory noise criteria but, rather, as noise levels that, if exceeded, would indicate a potential noise impact on the community.

The project noise trigger level is the lower value of the project intrusiveness noise level and the project amenity noise level. The project intrusiveness noise level assesses the likelihood of noise being intrusive above the ambient noise level and is applied to residential receivers only. The project amenity noise level ensures the total industrial noise from all sources in the area does not rise above a maximum acceptable level.

The NPfI stipulates that project noise trigger levels are determined for the daytime (7am – 6pm), evening (6pm – 10pm) and night time (10pm – 7am) periods, as relevant. The determined trigger levels typically apply at the most affected point on or within the receiver property boundary.

3.1.1 Project Intrusiveness Noise Level

The intrusiveness noise level is the noise level 5 dBA above the rating background noise level (RBL) for each time period (daytime, evening or night time) of interest at a residential receiver. The RBL is derived from the measured L_{A90} noise levels.

The NPfI stipulates that project intrusiveness noise levels should not be set below 40 dBA during the daytime and 35 dBA in the evening and night time. Additionally, the NPfI recommends that the project intrusiveness noise level for evening is set at no greater than that for the daytime, and that the project intrusiveness level for night time is set at no greater than that for the evening and daytime.

A conservative approach has been adopted in this assessment whereby the minimum project intrusive noise levels recommended in the NPfI have been adopted. Intrusiveness noise levels for the project are summarised in **Table 3-1**.

Table 3-1 Project Intrusiveness Noise Levels

Receiver	Time of day [1]	RBL (dBA)	Project Intrusiveness noise level – $L_{Aeq,15min}$ (dBA)
R1 – R6	Day	35	40
	Evening	30	35
	Night	30	35

1. Day – 7am – 6pm; Evening = 6pm – 10pm; Night = 10pm – 7am.

3.1.2 Project Amenity Noise Levels

Project amenity noise levels aim to set a limit on continuing increases in noise levels from all industrial noise sources affecting a variety of receiver types; that is, the ambient noise level in an area from all industrial noise sources remains below recommended amenity noise levels.

The amenity assessment is based on noise criteria specific to land use and associated activities. The criteria relate only to industrial-type noise and do not include transportation noise (when on public transport corridors), noise from motor sport, construction noise, community noise, blasting, shooting ranges, occupational workplace noise, wind farms, amplified music/patron noise.

The amenity noise level aims to limit continuing increases in noise levels which may occur if the intrusiveness level alone is applied to successive development within an area.

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

To prevent increases in industrial noise due to the cumulative effect of several developments, the project amenity noise level for each new source of industrial noise is set at 5dBA below the recommended amenity noise level.

The following exceptions apply to determining the project amenity noise level:

- For high-traffic areas the amenity criterion for industrial noise becomes the $L_{Aeq,period(traffic)}$ minus 15dBA.
- In proposed developments in major industrial clusters.
- If the resulting project amenity noise level is at least 10 dB lower than the existing industrial noise level, the project amenity noise level can be set at 10 dB below existing industrial noise levels if it can be demonstrated that existing industrial noise levels are unlikely to reduce over time.
- Where cumulative industrial noise is not a consideration because no other industries are present in, or likely to be introduced into the area, the relevant amenity noise level is assigned as the project amenity noise level for the development.

Amenity noise levels are not used directly as regulatory limits. They are used in combination with the project intrusiveness noise level to assess the potential impact of noise, assess mitigation options and determine achievable noise requirements.

The project amenity noise levels are calculated from the recommended amenity noise levels presented in **Table 3-2**.

Table 3-2 Recommended Amenity Noise Levels

Receiver	Noise amenity area	Time of day [1]	Recommended amenity noise level – $L_{Aeq,period}$ (dBA)
Residential	Rural	Day	50
		Evening	45
		Night	40
	Urban	Day	55
		Evening	45
		Night	40
	Suburban	Day	60
		Evening	50
		Night	45
Hotels, motels, caretaker's quarters, holiday accommodation, permanent resident caravan parks	See column 4	See column 4	5 dBA above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day.
School classroom (internal)	All	Noisiest 1-hour period when in use	35
Hospital ward:			
Internal	All	Noisiest 1-hour	35
External	All	Noisiest 1-hour	50
Place of worship (internal)	All	When in use	40
Area specifically reserved for passive recreation (e.g., national park)	All	When in use	50

Receiver	Noise amenity area	Time of day [1]	Recommended amenity noise level – $L_{Aeq,period}$ (dBA)
Active recreation area (e.g., school playground, golf course)	All	When in use	55
Commercial premises	All	When in use	65
Industrial premises	All	When in use	70
Industrial interface (applicable only to residential noise amenity areas)	All	All	Add 5 dBA to recommended noise amenity area

1. Day – 7am – 6pm; Evening = 6pm – 10pm; Night = 10pm – 7am.

Recommended amenity noise levels presented in **Table 3-2** represent the objective for total industrial noise at a receiver location. In the case of a single new noise source being proposed, the project amenity noise level represents the objective for noise from a single industrial development at the receiver location. This is typically calculated as the recommended amenity noise level minus 5 dBA.

Due to different averaging periods for the $L_{Aeq,15min}$ and $L_{Aeq,period}$ noise descriptors, the values of project intrusiveness and amenity noise levels cannot be compared directly when identifying noise trigger levels i.e. the most stringent values of each category. To make a comparison between descriptors, the NPfI assumes that the $L_{Aeq,15min}$ equivalent of an $L_{Aeq,period}$ noise level is equal to the $L_{Aeq,15min}$ level plus 3dB.

Residential receivers near the Proposal are classified as being in a “rural” noise amenity area.

The project amenity noise levels for the Proposal are presented in **Table 3-3**.

Table 3-3 Project Amenity Noise Levels

Receiver	Time of day [1]	Recommended amenity noise level – $L_{Aeq,period}$ (dBA)	Project amenity noise level – $L_{Aeq,15min}$ (dBA)
R1 & R2	Day	50	48
	Evening	45	43
	Night	40	38

1. Day – 7am – 6pm; Evening = 6pm – 10pm; Night = 10pm – 7am.

3.1.3 Project Noise Trigger Levels

The project intrusiveness noise levels and project amenity noise levels for sensitive receivers are summarised in **Table 3-4**. The project noise trigger levels (PNTL) – which are the lower values of the project intrusiveness noise levels and the project amenity noise levels – are highlighted in bold.

Table 3-4 Project Noise Trigger Levels

Receiver	Time of day [1]	Project intrusiveness noise level – $L_{Aeq,15min}$ (dBA)	Project amenity noise level – $L_{Aeq,15min}$ (dBA)
R1 & R2	Day	**40**	48
	Evening	**35**	43
	Night	**35**	38

1. Day – 7am – 6pm; Evening = 6pm – 10pm; Night = 10pm – 7am.

4 OPERATIONAL NOISE ASSESSMENT

4.1 Noise Modelling Methodology and Assumptions

Operational noise emissions from the Proposal have been modelled using SoundPLAN v8.2. The selected noise calculation method is International Standard ISO 9613-2:1996 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General Method of Calculation* (ISO 9613-2).

Factors accounted for by ISO 9613-2 are:

- Noise source sound power and locations
- Shielding from ground topography and structures
- Noise attenuation due to geometric spreading
- Ground absorption
- Atmospheric absorption.

ISO 9613-2 is a "downwind" model, which conservatively assumes that each receiver is downwind from all noise sources.

4.2 Operational Noise Sources and Assessment Scenarios

Truck movements are the only significant noise sources identified for the operation of the Proposal. A typical worst-case operating scenario has been developed whereby, in any 15-minute period, a single truck could enter the site, deliver and/or collect goods and leave the site. The truck could travel on any part of the Site where eggs are produced.

4.3 Predicted Noise Levels

The predicted $L_{Aeq,15min}$ noise levels at nearby residential receivers associated with the scenario outlined above are presented in **Table 4-1**.

Table 4-1 Predicted $L_{Aeq,15min}$ Noise Levels

Receiver	Predicted $L_{Aeq,15min}$ noise level (dBA)	Project noise trigger level (dBA)			Complies?
		Day	Evening	Night	
R1	28	40	35	35	Yes
R2	29				Yes
R3	<20				Yes
R4	<20				Yes
R5	34				Yes
R6	35				Yes

The results in **Table 4-1** indicate that predicted noise levels at all nearby receivers comply with the noise trigger levels at all times.

5 CONCLUSION

SoundIN has been engaged to undertake a noise impact assessment of the existing operations of the HFRE farm at 1056 Lachlan Valley Way, Boorowa.

Potential noise impacts associated with the operation of the Proposal at nearby sensitive receivers were modelled using SoundPLAN. The assessment has been conducted in general accordance with the *Noise Policy for Industry* (NPfI).

Noise modelling indicates that noise levels at nearby receivers would comply with the noise trigger levels at all times. Accordingly, the proposed development complies with the NPfI.