Appendix F

Noise Impact Assessment

(Global Acoustics, 2015)



ProTen Euroley Poultry Production Complex

Noise Impact Assessment

April 2015

Prepared for

SLR Consulting Australia Pty Ltd

Global Acoustics

Noise and Vibration Analysis and Solutions

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ProTen Euroley Poultry Production Complex

Noise Impact Assessment
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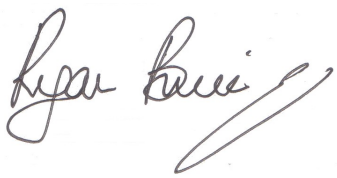

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Global Acoustics Pty Ltd ~ Environmental noise modelling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation Courts ~ Architectural acoustics ~ Blasting assessments and monitoring ~ Noise management plans (NMP) ~ Sound level meter and noise logger sales and hire

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1 INTRODUCTION

1.1 Background

Global Acoustics were engaged by SLR Consulting Australia (SLR), on behalf of ProTen, to carry out a noise impact assessment for the proposed Euroley Poultry Production Complex (the Project), which is located 26 kilometres north-west of Narrandera, NSW. The proposal comprises the development of five poultry production units (PPU) each comprising 16 tunnel-ventilated poultry sheds with a capacity to accommodate a total farm population of 3,920,000 broiler birds.

The primary purpose of this assessment is to determine potential noise and vibration impacts at the nearest residential receptors to the site, as per the Secretary's Environmental Assessment Requirements (EAR). The relevant section of the EAR relating to noise and vibration have been reproduced in Appendix A. This assessment has been based on plans and information provided by SLR.

All residential receptors considered in this assessment are 300 metres or further from any construction or operational activities. Given the nature of the operation it is considered highly unlikely that any vibration impacts would be noted over this distance. As such, this assessment will focus on potential noise impacts.

1.2 Site Layout

The proposed development is to be located on a rural property off the Sturt Highway, approximately 26km to the north-west of Narrandera. The development site and the nearest sensitive receptors (NSR) are shown in Figure 1.1. The proposed site layout is shown in Figure 1.2. The dominant land use in the area is agriculture and farming.

1.3 Project Overview

The proposal comprises the development of five PPUs each comprising 16 tunnel-ventilated poultry sheds with a capacity to accommodate 3,920,000 broiler birds. The production cycle comprises a maximum bird occupancy of 8 weeks and a 1 week cleaning phase with approximately 5.7 production cycles per year. The Project will operate 24 hours per day, with all deliveries and maintenance generally scheduled during the hours of 7am to 7pm. Bird collection and removal would typically occur between 8pm and 2pm when it is cooler to minimise stress to the birds.

The development will include:

Five PPUs each comprising 16 sheds of dimensions 160m x 17m x 4.2m high. Each shed includes:

- Capacity for 49,000 birds/shed;
- Steel framed building;
- Cool room sandwich panel walls (two metal faces with a fully insulated core);
- Corrugated iron roof; and
- Fully-sealed concrete flooring.

The sheds will be fully-enclosed climate-controlled and tunnel-ventilated.

Each shed will include:

- 22 Eurome ventilation fans;
- Automatic feed and water lines with feed pans and water nipple drinkers spaced along the length of the shed; and
- External feed silos and water tanks to supply each shed.

Additional support infrastructure will include:

- A new intersection from the Sturt Highway to the production complex;
- New access road into the Poultry Production Complex (standard rural all-weather property access road);
- Ten dwellings to house the farm managers and assistant managers;
- An amenities facility encompassing office space, toilets and staff change rooms;
- Servicing infrastructure;
- An engineered surface water drainage system;
- Dead bird chiller room;
- Chemical storage;
- Generator shed;
- Workshop and vehicle storage;
- Wheel wash facility at the PPU entrance;
- Feed Silos and water storage tanks;
- Poultry shed floor bedding material storage shed; and
- Pump shed.

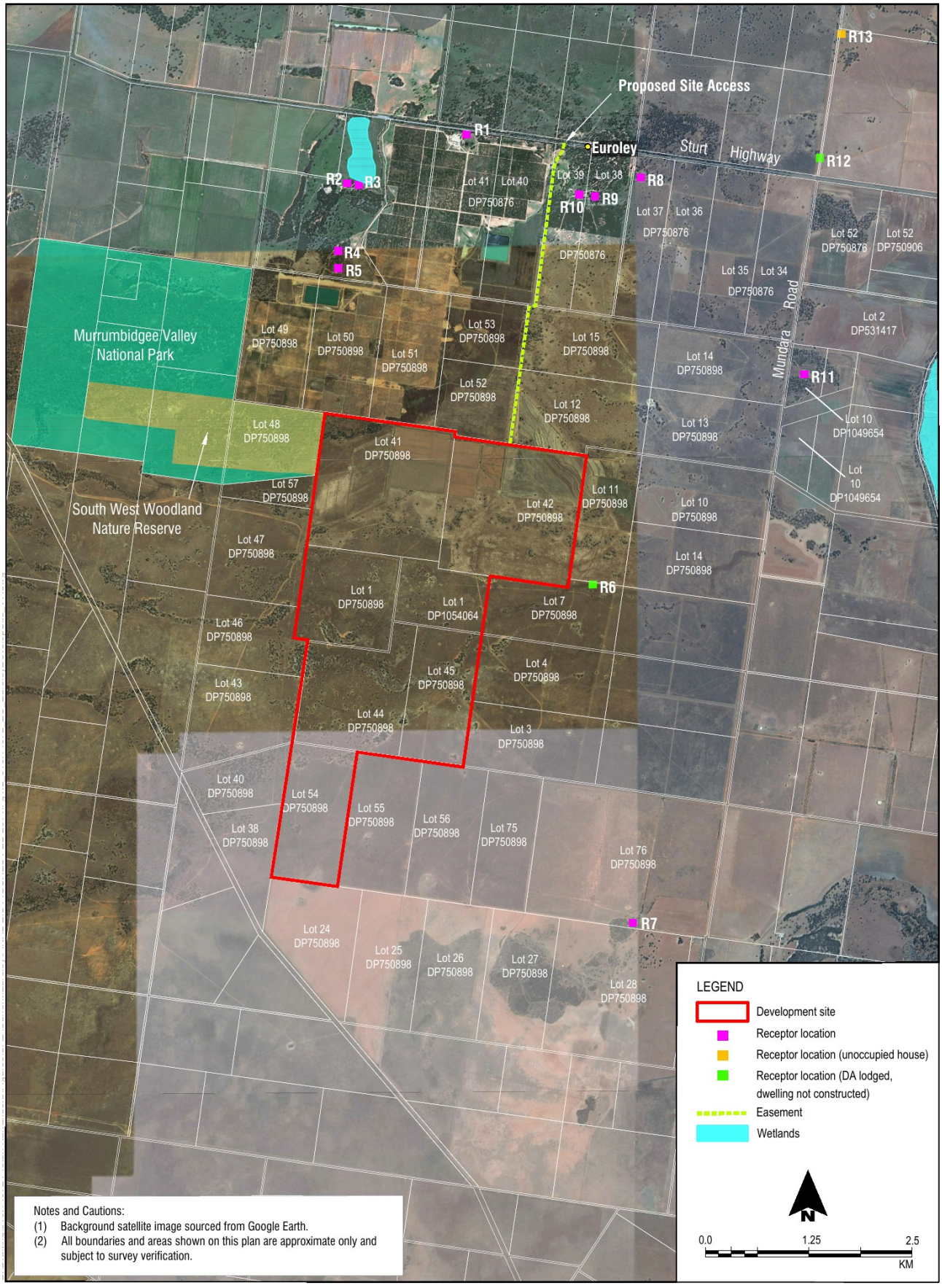

Figure 1.1: Development Site and NSR

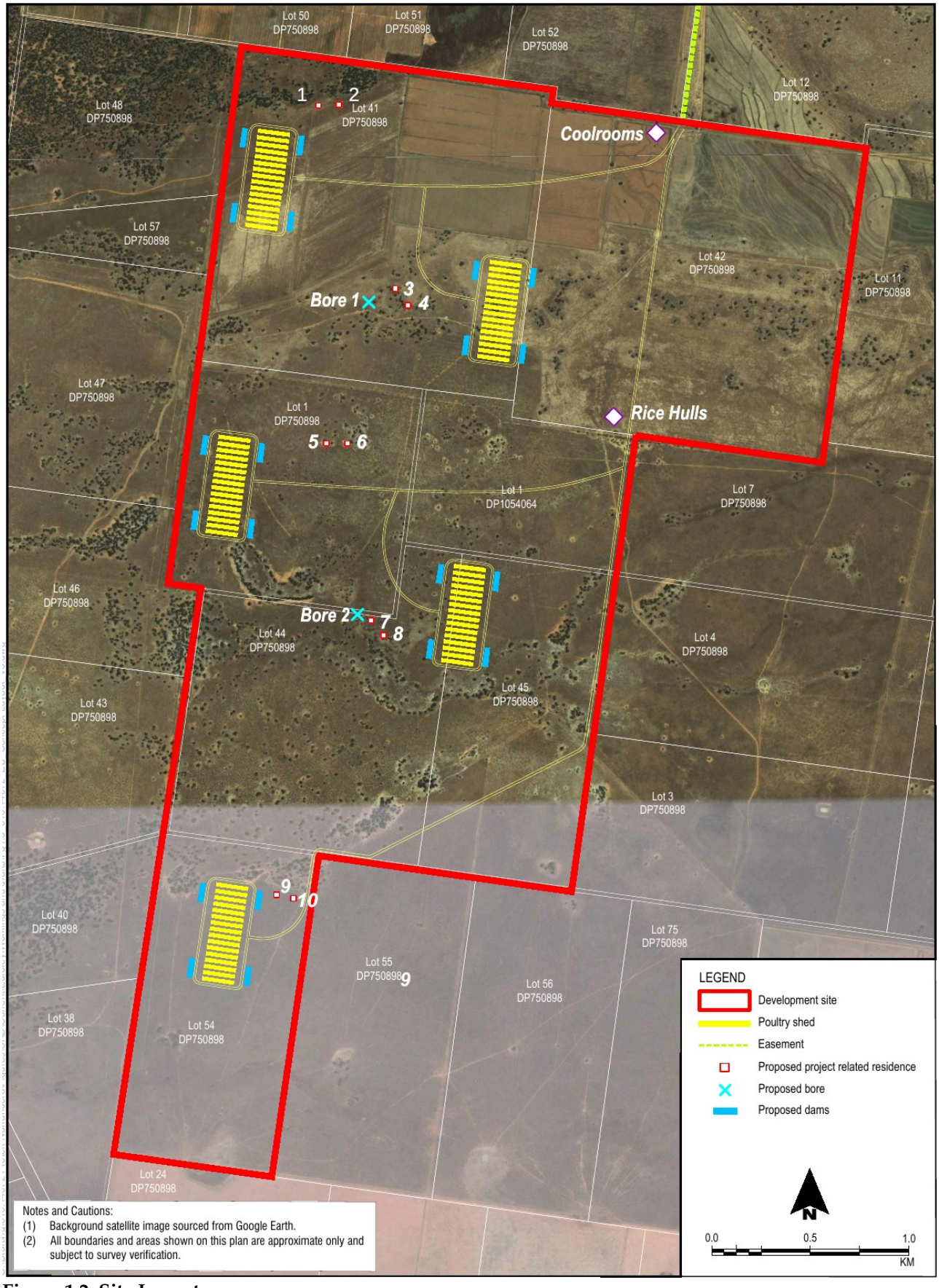

Figure 1.2: Site Layout

1.4 Terminology & Abbreviations

Some definitions of terms and abbreviations, which may be used in this report, are provided in Table 1.1.

Table 1.1: TERMINOLOGY & ABBREVIATIONS

Descriptor	Definition
L_A	The A-weighted root mean squared (RMS) noise level at any instant
L_{A10}	The noise level which is exceeded for 10 percent of the time, which is approximately the average of the maximum noise levels
L_{A90}	The level exceeded for 90 percent of the time, which is approximately the average of the minimum noise levels. The L_{A90} level is often referred to as the "background" noise level and is commonly used to determine noise criteria for assessment purposes
L_{Aeq}	The average noise energy during a measurement period
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to describe human response to noise
SPL	Sound pressure level (SPL), fluctuations in pressure measured as 10 times a logarithmic scale, the reference pressure being 20 micropascals
SEL	Sound exposure level (SEL), the A-weighted noise energy during a measurement period normalised to one second
ABL	Assessment background level (ABL), the 10^{th} percentile background noise level for a single period (day, evening or night) of a 24 hour monitoring period
RBL	Rating background level (RBL), the background noise level for a period (day, evening or night) determined from ABL data
Hertz (Hz)	Cycles per second, the frequency of fluctuations in pressure, sound is usually a combination of many frequencies together
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude. Estimated from wind speed and sigma theta data
SC	Stability Class. Estimated from wind speed and sigma theta data
Day	This is the period 7:00am to 6:00pm
Evening	This is the period 6:00pm to 10:00pm
Night	This is the period 10:00pm to 7:00am

2 CRITERIA

2.1 Operational Criteria

The Environment Protection Authority (EPA) NSW Industrial Noise Policy (INP) was published in 2000. The INP states that objectives for environmental noise are *'to account for intrusive noise and … to protect the amenity of particular land uses'*. To achieve these objectives, limits are specified where the *'intrusiveness criterion essentially means that the equivalent continuous (energy-average) noise level of the source should not be more than 5 decibels (dB) above the measured background level'*. Amenity is protected by '*noise criteria specific to land use and associated activities*'.

Applicable intrusiveness and amenity limits are derived independently. These are then compared to determine project specific criteria.

The intrusiveness criterion is expressed as:

$$L_{Aeq,15minute} \leq RBL + 5$$

where the $L_{Aeq,15minute}$ is the L_{Aeq} noise level from the source, measured over 15 minutes and RBL is the rating background level. Where the RBL is less that L_{A90} 30 dB, a value of L_{A90} 30 dB can be adopted. The development is in a quiet rural area with road traffic noise as the only real noise source. Because of this an L_{A90} of 30 dB has been assumed, which results in an $L_{Aeq,15\ minute}$ intrusiveness criterion of 35 dB.

An amenity criterion caps industrial noise levels. The subject site is characterised as "rural" in accordance with definitions in the INP. Recommended amenity limits from the INP for residences in a rural area are shown in Table 2.1. It should be noted that these criteria apply for the energy average noise level over the entire period.

Table 2.1: STANDARD RURAL AMENITY CRITERIA

Period	Acceptable LAeq dB	Maximum L_{Aeq} dB
Day (7:00 am to 6:00pm)	50	55
Evening (6:00 pm to 10:00 pm)	45	50
Night (10:00 pm to 7:00 am)	40	45

2.2 Project Specific Noise Levels

Table 2.2 summarises intrusiveness and amenity criteria that apply for day, evening and night periods. The lower of the two (intrusiveness or amenity) apply, where applicable, and is adopted as the project specific noise level (PSNL).

Table 2.2: STANDARD RURAL AMENITY CRITERIA

Period[1]	RBL[2]	Intrusiveness Criterion L_{Aeq} dB	Acceptable Amenity Criterion L_{Aeq} dB	Project Specific Noise Level L_{Aeq} dB
Day	30	35	50	35
Evening	30	35	45	35
Night	30	35	40	35

Notes:

1. *Day: 7:00 am 6:00 pm ~ Evening: 6:00 pm to 10:00 pm ~ Night: 10:00pm to 7:00 am; and*
2. *An RBL of 30 dB has been assumed for a rural environment.*

2.3 Construction Criteria

The EPA 'Interim Construction Noise Guideline' (July 2009) specifically relates to construction, maintenance and renewal activities.

The guideline specifies standard construction hours as:

- Monday to Friday, 7.00 am to 6.00 pm;
- Saturday, 8:00 am to 1:00 pm; and
- No construction work on Sunday and public holidays.

There are no specific criteria applicable to a qualitative assessment and calculation of construction related noise levels is not required. Instead, a check list should be completed which considers (but is not limited to) work practices, community consultation, alternative plant and equipment, on-site considerations, work scheduling and barriers.

For major construction projects, a quantitative assessment is required, with comparison to relevant criteria. With a proposed 18 month construction timeline this project would be considered a major construction project. The criteria for work undertaken in the standard construction hours are:

- $L_{Aeq,15min}$ equal to background plus 10 dB; or
- $L_{Aeq,15min}$ 75 dB.

An L_{Aeq} criterion of background plus 5 dB is specified for work outside the standard construction hours.

Background noise monitoring was not undertaken as part of this assessment. It has been assumed that background levels may be less than L_{A90} 30 dB during all time periods, which is typical of a rural environment. In accordance with the INP, where background levels are less than 30 dB, a default minimum RBL of 30 dB is adopted. On this basis, the construction noise criterion becomes $L_{Aeq,15minute}$ 40 dB for construction work undertaken during standard construction hours. This is a conservative daytime construction criterion.

2.4 Sleep Disturbance

EPA INP application notes provide guidance on setting sleep disturbance criteria. The application notes state that a review of sleep disturbance research included in the 'NSW Road Noise Policy' (RNP) concludes, "the range of results is sufficiently diverse that it was not reasonable to issue new noise criteria for sleep disturbance".

The EPA recognises that a sleep disturbance criterion based on the $L_{A1,1minute}$ not exceeding background noise levels by more than 15 dB(A) is not ideal. However, as there is insufficient evidence to determine an alternate criterion, the EPA continues to use it as a guide to identify the likelihood of sleep disturbance. This means that where this criterion is met, sleep disturbance is not likely, but where it is not met, a more detailed analysis is required. The detailed analysis should cover the maximum noise level, and, the number of occurrences during the night period.

As an initial assessment of sleep disturbance, a criterion of background (RBL) plus 15 dB has been adopted. Night period background noise levels are likely to be less than or equal to L_{A90} 30 dB. Therefore, a sleep disturbance criterion of $L_{A1,1minute}$ 45 dB has been adopted for all NSR.

2.5 Road Traffic Noise

An assessment of additional traffic associated with the operational activities has been considered. There will be additional vehicle movements resulting from the transport of various inputs and outputs to and from site.

In 2011 the NSW state government department responsible for the environment (the Department of Environment, Climate Change and Water) released the '*NSW Road Noise Policy*' (RNP). The RNP outlines traffic noise criteria applicable to this project. The policy applies different noise limits dependent upon the road category and type of project/ land use.

The criteria detailed in Table 2.3 are from the RNP and considered the most suitable for the proposed development, which relies on the Sturt Highway for access. Direct access to site will occur via an access road which will be constructed as part of the development, however vehicles travelling on the site access road are assessed as an operational noise impact against a more conservative operational criterion. Only potential noise impacts for residents along the Sturt Highway have been assessed against road traffic noise criteria.

Table 2.3: NSW GOVERNMENT TRAFFIC NOISE CRITERIA

Road Category	Type of Project/Land use	Day $L_{Aeq,15hr}$ dB	Night $L_{Aeq,9hr}$ dB
Freeway/arterial/sub-arterial roads	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	60	55

A secondary objective of the RNP is to protect against excessive decreases in amenity as the result of a project by applying the relative increase criteria. In assessing feasible and reasonable mitigation measures, an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person. A relative increase in road traffic noise levels has been considered in this assessment.

3 METHODOLOGY

Acoustic modelling for operational noise sources was undertaken using CadnaA, noise prediction software developed by DataKustic. A FHWA model was used to determine operational impact of traffic on the site access road during the most intensive traffic generating activities.

Thirteen NSR were assessed for operational and construction noise impact. The NSR locations are shown in Figure 1.1. These NSR have been selected because they are the nearest to the noise generating activities and equipment on site during the construction and operational stages of the Project. It is noted that of the thirteen NSW, two receptors (R6 and R12) represent properties for which development applications (DAs) have been lodged with Council, however it is understood that these DAs have not been determined by Council and as such residential dwellings have not been constructed. These locations have however been conservatively assessed as possible receptors.

Of these thirteen NSR, two locations (R12 and R13) were found to have a noise impact of <20 dB for all construction and operational conditions assessed. Noise impacts at these locations are unlikely to be audible to residents and results have not been included in this report. Noise impact for the eleven most affected residents have been included.

3.1 Meteorology

Meteorological effects were calculated using the CONCAWE calculation methodology within the CadnaA software.

The INP states that meteorological conditions with an occurrence of 30% or more in any time period, within any season need to be included in noise prediction calculations as prevailing meteorological conditions.

Meteorological data was provided by Pacific Environment for the area for 2010. Analysis of the data indicates that north-east and south-west winds are the most common prevailing wind directions. Daytime meteorological data showed no wind directions with an occurrence of 30% or more so neutral atmospheric conditions only have been assessed for daytime operations. Evening meteorological data showed that south-west wind direction with wind speed in the range 0.5-2.25m/s has an occurrence of more than 30%; therefore a wind speed of 2.25m/s from the south-west has been included in this assessment. Night time data showed that east-north-east wind direction with wind speed in the range 0.5-3m/s occurs more than 30% of time within a season. The INP default wind speed of 3m/s was adopted for this wind direction.

It has been assumed that temperature inversion conditions are a feature of the area. Stability class F, combined with calm winds was included as a model parameter to represent inversion conditions. Stability class D has been assumed for all non-inversion meteorological conditions.

Wind and temperature inversion meteorological conditions provide an assessment of impact under worst-case prevailing conditions. However, it is prudent to understand likely noise emission during non-adverse meteorological conditions as well. Therefore, still isothermal conditions (neutral atmosphere) were also assessed to provide an indication of noise impact during non-noise enhancing conditions.

On this basis, the range of meteorological conditions listed in Table 3.1 have been included in this assessment.

Table 3.1: PREVAILING METEOROLOGICAL CONDITIONS

ID	Temperature ^{0}C	Humidity %	Wind Speed m/s	Wind Direction degrees	Stability Class
Day					
Neutral	30	70	0.0	-	D
Evening/Night					
Neutral	10	70	0.0	-	D
SW wind	10	70	2.25	225	D
ENE wind	10	70	3.0	67.5	D
Inversion	10	70	0.0	-	F

3.2 Operational Noise

3.2.1 Operational Noise Sources

Potential noise sources associated with the Project include:

- Heaters;
- Feed silo refill pump and auger;
- Mechanical feed delivery system;
- Water pump;
- Ventilation fans; and
- Bird delivery and collection using transport truck and forklift.

Ventilation fans have been identified as the primary continuous noise generating activity. Feed silo refill and bird delivery/collection have been identified as the primary intermittent noise generating activities. All of these sources have been modelled in this assessment.

Based on a site inspection and attended noise measurements at a similarly designed broiler production complex (ProTen Bective Complex) water pumps, feed augers and heaters have not been included in modelling. These sources were not audible above the ventilation fans and would not contribute to overall noise levels measured off site. As such they have not been included in this assessment.

Each broiler shed will have 22 Eurome ventilation fans installed. 4 fans are distributed along the length of the shed and operate early in the production cycle when the birds are young. Each shed in the development is aligned east-west and the remaining 18 fans are on the eastern end of the sheds in the eastern PPUs and the western end of the sheds in the western PPUs. Later in the production cycle the 4 distributed fans switch off and tunnel ventilation begins. At this point the 18 fans operate to draw air in along the sides of the shed and over the birds. The fans operate automatically as required with more fans operating during warm weather and later in the production cycle when the birds require more cooling. 18 fans on each shed is the maximum that will operate at one time.

The worst-case continuous operation for the complex would be with 18 ventilation fans running on each shed in the 5 PPU's. This amount of ventilation is likely to only be the case late in the production cycle during hot weather. Due to the staggering of the production cycle it is unlikely all sheds will require 18 fans running at the same time, however this has been modelled as a worst-case scenario.

According to the estimated traffic volumes for the proposed development outlined in the project briefing paper, delivery of feed and removal of birds comprise the vast majority of heavy vehicle movements to site.

Feed silo refilling is an activity that would be evenly spread throughout the entire production cycle. This activity was assessed by considering two delivery trucks and silo refill augers operating on site simultaneously. Each feed truck was assessed filling two feed silos in a 15 minute period. A number of silo locations were considered and the maximum result at the nearest NSR to site was adopted as worst-case.

Bird collection is expected to be the most intensive traffic generating activity as all vehicle movements occur in the last 4 weeks of the production cycle during the hours of 8pm to 2pm. Transport trucks would arrive and depart site regularly during that period until bird collection is complete. Other operational noise sources such as ventilation fans, heat circulating fans, feed and water delivery systems for the sheds in question would not operate during bird collection.

A series of operational scenarios were developed to assess the various combinations of noise sources that would occur. Plant inclusions for each scenario are described in the following section.

3.2.2 Model Scenarios

Scenario 1 – Worst-case continuous operation

This scenario models all 18 ventilation fans running continuously on each shed. During the production cycle the ventilation fans turn on automatically as required to maintain the required temperature. Only a few fans will be required early in the production cycle or during cooler conditions with all fans only typically being required late in the production cycle. This scenario therefore represents the worst case continuous operation. Daytime and evening/night-time meteorological conditions have been considered in this assessment.

Scenario 2 – Feed silo refilling

This scenario includes the continuous noise sources in Scenario 1, and, the maximum result from the assessed feed silo refilling scenarios. Feed deliveries will occur during daytime delivery hours only so only daytime meteorological conditions have been considered.

Scenario 3 – Site access road

Due to the close proximity of NSR R10 to the access road the largest potential impact from transport would be road traffic on the access road to site. Bird Collection is the most traffic intensive activity associated with this development and will occur predominantly at night time when noise impact is the greatest. A FHWA road traffic model was used to determine impact for traffic noise on the site access road at the most affected residence (R10). To conservatively assess site access road impacts all continuous noise sources in Scenario 1 have been included.

3.2.3 Sound Power Levels

Sound power data for noise sources were typically sourced from the Global Acoustics database of representative sound powers. Where possible, sound power data from plant measured at similar facilities was adopted. Sound power for ventilation fans and feed silo refill pumps were measured at an existing ProTen Poultry Complex in Bective NSW.

Sound power totals used in the noise models are shown in Table 3.2.

Table 3.2: SOUND POWER DATA FOR OPERATIONAL AND CONSTRUCTION SOURCES – $L_{Aeq,15minute}$ (dB)

Plant Item	L_W	L_{WA}
Operational Sources		
Ventilation fans (each)	100	87
Feed silo refill pump (5mins operation out of 15mins)	112	106
Delivery truck	106	97
Forklift	113	103
Construction Sources		
Grader	110	104
Dump truck	106	100
Excavator	108	105

3.3 Construction Noise

The construction period for the Project is is expected to take 18 months in total with work potentially starting in May 2015. Construction activities during this time period include:

- Site Preparation;
- Earthworks;
- Foundation and slab construction;
- Superstructure construction including portal frames, roofing, and cladding;
- Electrical installation and installation of equipment and silos;
- Construction of a new intersection with the Sturt Highway;
- Construction of a new access road and one-way circulating ring roads around the perimeter of each PPU (standard rural all-weather property access road);
- Construction of ten dwellings to house farm managers and farm assistant managers as well as an amenities facility encompassing office space, toilets and staff change rooms;
- Construction of a workshop and other storage facilities;
- Construction of storm water management systems; and
- Landscaping.

Of these tasks, site preparation/earthworks and road construction are considered to represent the worst case for noise impact. These activities would likely involve use of the greatest amount of noise generating equipment.

Construction of the Sturt Highway intersection and site access road has been modelled to represent the worst case construction impact for this project due to the close proximity to the nearest NSR.

Whilst these tasks represent the worst case scenario for noise impact, it is important to note that they will not take place for the entire construction period. It is expected that construction of the new Sturt Highway intersection will take 2 to 3 weeks, with the access road taking a further 4 weeks. As all construction would occur during the day period only, the daytime meteorological conditions listed in Table 3.1 were used for assessment.

3.4 Sleep Disturbance

Sleep disturbance criteria typically only apply to the night period, which is defined in the INP as 10pm to 7am. Sleep disturbance is generally caused by short duration noise sources that give rise to a significant increase to noise emission over and above general operational noise.

The primary noise generating activity that may cause sleep disturbance is bird collection, which is scheduled to occur when it is dark (during evening/night hours).

Trucks on the site access road are the closest noise source to NSR and the most likely to cause a sleep disturbance impact. Short duration increases to engine and exhaust noise may occur as trucks accelerate after slowing to enter site. An engine/exhaust surge has been modelled with an L_{max} sound power of 110 dB. Two truck surges were modelled occurring simultaneously near the two most affected NSR. These sources have been added in addition to the regular operational noise sources modelled in operational scenario 1.

3.5 Road Traffic Noise

SLR Consulting Australia have provided predicted traffic volumes to be generated by the proposed development in the project briefing paper. Traffic volumes for use in the road traffic noise assessment have been sourced from that document. Existing traffic volumes were sourced from the SLR Traffic Impact Assessment for the proposed development.

This data has been used to calculate the predicted increase to existing road traffic noise levels from additional traffic generated by the development. The impact from increased road traffic on the Sturt Highway has been considered in this assessment. Traffic on the site access road has been assessed in Scenario 3 against the more conservative operational noise criterion.

4 RESULTS

4.1 Operational Noise

4.1.1 Scenario 1 – Worst-case Continuous Operation

Table 4.1 presents operational Scenario 1 model predictions for neutral atmospheric conditions, and, for each of the assessed prevailing meteorological conditions.

These levels represent worst-case impact for continuously operating noise sources, and are indicative of day to day operational noise impact. No exceedance of the PSNL is predicted.

Table 4.1: CALCULATED $L_{Aeq,15minute}$ OPERATIONAL NOISE LEVELS SCENARIO 1(dB)

Receptor ID	Neutral	Inversion	East-north-east Wind	South-west Wind	Maximum
R1	<20	21	<20	20	21
R2	<20	22	<20	21	22
R3	<20	22	<20	21	22
R4	20	26	<20	25	26
R5	21	27	<20	26	27
R6	28	32	24	32	32
R7	<20	22	<20	<20	22
R8	<20	<20	<20	<20	<20
R9	<20	21	<20	21	21
R10	<20	21	<20	21	21
R11	<20	<20	<20	<20	<20

Note:

1. *Results in bold type exceed PSNL (if applicable).*

4.1.2 Scenario 2 – Feed Silo Refilling

Table 4.2 presents operational Scenario 2 model predictions for neutral atmospheric conditions.

These levels represent worst-case impact due to feed silo refilling, combined with worst-case continuous noise source operations. No exceedance of PSNL is predicted.

Table 4.2: CALCULATED $L_{Aeq,15minute}$ OPERATIONAL NOISE LEVELS SCENARIO 2 (dB)

Receptor ID	Neutral
R1	<20
R2	<20
R3	<20
R4	21
R5	22
R6	29
R7	<20
R8	<20
R9	<20
R10	<20
R11	<20

Note:

1. *Results in bold type exceed PSNL (if applicable).*

4.1.3 Scenario 3 – Bird Collection

Bird Collection is the most traffic intensive impact associated with the operations. Table 4.3 presents the maximum number of total vehicle movements per hour on the access road that will not cause an exceedance of the PSNL at the most affected NSR (R10). The cumulative effect of continuous operational noise sources outlined in scenario 1 has been conservatively considered in this scenario, however in reality some of the ventilation fans will be turned off during collection.

Table 4.3: CALCULATED ALLOWED HEAVY VEHICLE MOVEMENTS, R10

Access Road Speed Limit (km/h)	Maximum Allowed Heavy Vehicle Movements (per hour)
40	25
60	10
80	5

Table 3 of the project briefing paper outlines that 745 trucks (1490 movements) will be required for the removal of birds per production cycle with movements occurring each night during the last 4 weeks of the cycle. Proten have advised that removal of birds will be between 8pm and 2pm with truck arrivals and departures spread out over that period. This would be an average of 54 vehicle movements per day, or approximately 3 movements per hour.

If a 60 km/h speed limit was adopted on site the noise impact from traffic on the access road would be well below the operational PSNL.

4.2 Construction Noise

Table 4.4 presents construction model predictions for neutral atmospheric conditions. All construction activities are scheduled to be undertaken during standard daytime construction hours.

These levels represent worst-case impact for the roadworks construction scenario. No exceedance of the construction noise criterion is predicted.

Table 4.4: CALCULATED $L_{Aeq,15minute}$ CONSTRUCTION NOISE LEVELS (dB)

Receptor ID	Neutral
R1	27
R2	<20
R3	<20
R4	<20
R5	<20
R6	<20
R7	<20
R8	28
R9	33
R10	36
R11	<20

Note:

1. *Results in bold type exceed the construction noise criterion (if applicable).*

4.3 Sleep Disturbance

Table 4.5 presents sleep disturbance model predictions for neutral atmospheric conditions, and, for each of the assessed prevailing meteorological conditions.

These levels represent worst-case sleep disturbance during bird collection. No exceedance of the sleep disturbance criterion is predicted.

Table 4.5: CALCULATED $L_{A1,1minute}$ SLEEP DISTURBANCE NOISE LEVELS (dB)

Receptor ID	Neutral	Inversion	East-north-east Wind	South-west Wind	Maximum
R1	21	24	22	22	24
R2	<20	23	<20	22	23
R3	<20	23	<20	22	23
R4	21	26	<20	25	26
R5	22	27	20	26	27
R6	29	33	24	32	33
R7	<20	22	<20	<20	22
R8	21	25	<20	25	25
R9	28	32	23	32	32
R10	33	36	27	36	36
R11	<20	20	<20	20	20

Note:

1. *Results in bold type exceed sleep disturbance criterion (if applicable).*

4.4 Road Traffic Noise

As discussed in Section 3.5 of this report, road traffic data contained in the project briefing paper supplied by SLR has been used for this assessment.

Table 3 of the project briefing paper indicates that the proposed development would create approximately an additional 100 vehicle movements (including 60 heavy vehicle movements) daily on the Sturt Highway. Existing traffic flow data has been sourced from Table 5.1 of the Traffic Impact Assessment for the project which has been undertaken by RoadNet.

Existing vehicle trips include 565 vehicle movements (including 171 heavy vehicle movements) daily on the Sturt Highway. Traffic generated by the development would account for a 17% increase in total traffic volume and a 36% increase in heavy vehicle traffic. The project briefing paper also states that heavy vehicle trips will be mostly spread over the nine week production cycle and will be distributed relatively evenly over the predicted delivery hours.

Heavy vehicle movements are likely to result in the most significant impact from the proposed development. An increase of 36% represents an increase of 1.3 dB to existing road traffic noise levels. This increase is unlikely to be perceptible to the human ear.

A goal of the NSW Road Noise policy is to protect against excessive decreases in amenity as the result of a project by applying the relative increase criteria. The policy recognises an increase of up to 2 dB as a minor impact that is considered barely perceptible to the average person. Given this an increase of 1.3 dB is considered acceptable.

5 DISCUSSION

5.1 Operational Noise

Model predictions presented in Section 4.1 indicate general day to day operations from continuous noise sources would be less than the PSNL of 35 dB for daytime operations, and, night time operations with enhancing meteorological conditions.

Event noise from feed silo refilling was shown to increase noise predictions at NSR, but as this activity will only occur during daytime delivery hours there is no predicted exceedance of the PSNL.

Event noise from road traffic on the access road will occur, with the most intensive period coinciding with bird collection in the evening and night periods. If a 60km/h speed limit is adopted on site then noise impact from traffic on the site access road will be well below the PSNL, even during the most intensive traffic generating periods.

5.2 Construction Noise

Model predictions presented in Section 4.2 indicate construction noise impacts due to roadworks would comply with the construction noise criterion. As this activity is considered to represent the highest impact in the vicinity of the nearest NSR, all construction activities are predicted to comply with the construction noise criterion if they are undertaken during the daytime period.

While generally low levels of construction noise are predicted, it is recommended the proponent undertake a program of consultation with the neighbours to notify them in advance of noise generating work, including location, activity type and duration. Construction personnel should be aware of the requirement to minimise noise impact, and to implement best practice operating techniques to minimise noise. Consideration should be given to operating low noise emission plant where possible.

5.3 Sleep Disturbance

Model predictions presented in Section4.3 indicate sleep disturbance noise impacts due to engine/exhaust noise surges from traffic on the site access road complies with the adopted sleep disturbance criterion.

5.4 Road Traffic Noise

Traffic generated by the project is predicted to cause an increase of 36% to existing heavy vehicle traffic volumes and represents an increase of 1.3 dB. This slight increase would be neither measurable, nor perceptible to the human ear and is considered insignificant. A change of up to 2 dB is a barely perceptible increase to the average person and unlikely to result in any significant impact.

It is also worth noting that heavy vehicle traffic on the site access road has been considered against more stringent operational noise criteria in Section 4.1.3. If traffic movements are managed such that there is no exceedance of the operational noise criteria for traffic on the site access road it is unlikely that road traffic noise impact will be significant.

6 CONCLUSION

6.1 Summary

A noise impact assessment has been undertaken to assess a proposed ProTen poultry operation at Euroley, NSW. The assessment considered operational noise, construction noise, sleep disturbance, and road traffic noise.

Operation, construction and sleep disturbance noise levels are predicted to comply with relevant noise criteria at all NSR.

Road traffic generated by the project is predicted to result in an increase of 36% to existing heavy vehicle volumes, which represents an increase of 1.3 dB. A change of up to 2 dB is a barely perceptible increase to the average person and unlikely to result in any significant impact.

6.2 Recommendations

Calculations show that received levels from construction and operational noise will meet the relevant guidelines. Attended monitoring is only recommended to address any noise complaints resulting from construction or operation of the facility.

Global Acoustics Pty Ltd

APPENDIX

A SECTRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

Key issues	The EIS must include an assessment of the potential impacts of the proposal (including cumulative impacts) and develop appropriate measures to avoid, mitigate, manage and/or offset these impacts. The EIS must address the following specific matters:
	• **noise and vibration** – including: – a description of all potential noise and vibration sources during construction and operational, including traffic noise; – a noise and vibration impact assessment in accordance with the relevant Environment Protection Authority guidelines; and – a description of noise and vibration monitoring and mitigation measures.