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PROPOSED FERTILISER MANUFACTURING FACILITY

445 CARRS ROAD ANAKIE

Assessment of Noise Emission

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EXECUTIVE SUMMARY

Watson Moss Growcott Acoustics (WMG) has undertaken a noise emission assessment for the proposed Fertiliser Manufacturing Facility at 445 Carrs Rd Anakie, Victoria.

A noise assessment is required as part of the environmental approvals application.

Operation of the fertiliser production and power generation will be continuous including during the night period (10pm to 7am all nights), but general site operations including operation of trucks to and from the site will be during the day period (7am to 6pm Monday to Saturday).

The purpose of the assessment has been to consider off-site noise emission from the proposed facility in terms of the Environment Protection Act 2017 and subordinate legislation, and to determine appropriate noise control measures, if necessary, to achieve compliance with relevant noise limits applicable under the legislation at noise sensitive locations.

This report covers the following aspects:

- Monitoring of existing ambient noise environment as part of establishing noise targets for the project.
- Determination of noise limits in accordance with EPA Publication EPA Publication 1826.4 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* (Noise Protocol)
- Modelling of noise levels at potentially affected existing residential locations resulting from the proposed facility, using a three-dimensional noise modelling software package
- Consideration of modelled noise levels in conjunction with existing industrial noise in the area in terms of project noise targets and other guidance under the Act

Noise limits have been determined in accordance with the Noise Protocol under the Environment Protection Act and noise emission from the proposed facility has been modelled in conjunction with noise emission from the existing broiler farms on the site.

It has been concluded that resultant noise levels at noise sensitive areas resulting from operation of the proposed facility, in conjunction with operation of the ventilation fans at the existing broiler sheds on the site, will be below the relevant noise limits by a sufficient margin to allow for noise contributions from other sources in the area while remaining below the overall noise limits at all noise sensitive areas during all time periods.

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1. INTRODUCTION

Watson Moss Growcott Acoustics (WMG) has undertaken a noise emission assessment for a proposed Fertiliser Manufacturing Facility at 445 Carrs Rd Anakie, Victoria. The plant is to be a merchant facility that will be co-located with existing broiler farms at the site.

The facility will process approximately 19,700 tonnes per annum of Chicken Litter (sourced from the broiler farms) and 10,000 tonnes of other carbon rich organic waste. It will produce approximately 8,000,000+ m³ of biogas (60-65% methane) which will be converted to ~21,000MWh of electricity. The generated power will power the plant itself and surrounding chicken farms. Excess power will be exported to the grid. The majority of the heat produced will be used on site to heat the process and dry the digestate.

A noise assessment is required as part of the environmental approvals application.

Operation of the facility and power generation will be continuous including during the night period, but general site operations including operation of trucks to and from the site will be during the day period.

The purpose of the assessment has been to consider off-site noise emission from the proposed facility in terms of the Environment Protection Act 2017 (the Act) and subordinate legislation, and to determine appropriate noise control measures, if necessary, to achieve compliance with relevant noise limits applicable under the legislation at noise sensitive locations.

This report covers the following aspects:

- Monitoring of existing ambient noise environment as part of establishing noise targets for the project.
- Determination of noise limits in accordance with EPA Publication EPA Publication 1826.4 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* (Noise Protocol)
- Modelling of noise levels at potentially affected existing residential locations resulting from the proposed facility, using a three-dimensional noise modelling software package
- Consideration of modelled noise levels in conjunction with existing industrial noise in the area in terms of project noise targets and other guidance under the Act

This report presents a summary of the assessment methodology, findings and recommendations.

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2. NOISE ASSESSMENT TERMINOLOGY

Noise assessment terminology used within this report is defined within Table 1 below.

Table 1: Noise Assessment Terminology

Terminology	Definition
dB(A)	Decibels recorded on a sound level meter, which has had its frequency response modified electronically to an international standard, to quantify the average human loudness response to sounds of different character
L_{eq}	The equivalent continuous level that would have the same total acoustic energy over the measurement period as the actual varying noise level under consideration. It is the noise measure defined by the EPA as the measure of the noise to use in assessing compliance with noise limits.
Sound Power Level (L_w)	The sound power level of a noise source is amount of energy in the form of sound emitted from the source. Therefore, sound power level does not vary with distance from the source or with a different acoustic environment. $L_w = L_p + 10 \log_{10} A$ dB, re: 1pW, (10^{-12} Watts) where A is the measurement surface area (m^2) in a free field.
Sound Pressure Level (L_p)	The level of sound measured on a sound level meter and expressed in decibels (dB). Where $L_p = 10 \log_{10} (P_a/P_o)^2$ dB (or $20 \log_{10} (P_a/ P_o)$ dB) where P_a is the rms sound pressure in Pascal and P_o is a reference sound pressure conventionally chosen is $20 \mu Pa$ (20×10^{-6} Pa) for airborne sound. L_p varies with distance from a noise source.

3. SUBJECT SITE, PROPOSED EXTENSION AND SURROUNDING ENVIRONMENT

The aerial photo shown in Appendix One identifies the subject site under consideration and the noise sensitive areas considered relevant for this assessment.

The plans in Appendices Two to Four show the proposal in more detail.

4. AMBIENT NOISE MONITORING

Ambient noise monitoring was conducted to confirm if the proposal is located in a background relevant area.

Unattended noise logging was conducted at two locations, as indicated below.

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Figure 1: Noise logger locations

Logger 1 was situated to be representative of the ambient background environment of 420 Carrs Rd and the location of logger 2 was chosen to be representative of 345 Carrs Rd. These are the nearest noise sensitive areas to the proposed facility.

The monitoring results are graphed in Appendix Five.

The noise loggers used include the capability to record a high-resolution audio soundtrack, which allows for identification of noise contributors and post-processing for frequency analysis.

Review of the audio soundtrack identified that insects were significant noise contributors at times, which is consistent with the logging being conducted during the summer. As insects are not always as active at other times of the year, frequency analysis was used to exclude the high frequency range that contains the majority of the insect noise contribution.

Appendix Five includes both the 'raw' results and the results excluding the high frequency range significantly influenced by insect noise.

These results show that in the absence of the insect noise contribution the ambient background level was below 30 dB(A) L₉₀ for much of the night period on a regular basis, which would be the case at times of the year less affected by insect noise.

This finding confirms that the noise sensitive areas relevant to consideration of noise emission from the proposed facility are not located in a background relevant area, and noise limits are therefore dependent only on the planning scheme zonings as discussed below.

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5. NOISE EMISSION ASSESSMENT CRITERIA

Noise emissions within the State of Victoria are governed by the legislative framework contained within the Environment Protection Act 2017 (the Act) and subordinate legislation.

The approach within the Act focuses on prevention of pollution impacts rather than managing the impacts after they have occurred and is based on a person or entity's General Environmental Duty (GED) for the protection of human health and the environment from pollution, waste and emissions, including noise.

The GED is explained within Part 3.2 of the Act and stipulates that 'a person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste must minimise those risks, so far as reasonably practicable'.

Determining what is deemed 'reasonably practicable' is explained within EPA Publication 1856 and relates to the implementation of controls that are proportionate to the potential risk. It relates to the potential for harm to occur, the potential impacts on the environment, and considers what controls are available to reduce the risk, and their associated costs.

Under the Act it is the responsibility of the operator to understand and assess the risks which their operations may pose on human health or the environment and once understood, to implement proportionate controls to mitigate or minimise the risk of harm.

The definition of harm within the Act introduces the concept of what is deemed 'unreasonable' generally, and in particular 'unreasonable noise'. For noise emitted from commercial, industrial or trade premises to noise sensitive areas, the Regulations under the Act essentially define unreasonable noise as noise that exceeds the noise limit that applies under the Noise Protocol (EPA Publication 1826.4) at the time the noise is emitted.

Methodologies, specific criteria, and guidance regarding unreasonable noise emissions are included within the following Regulations and guideline documentation referred to within the Act and provided by the Environment Protection Authority (EPA):

- Environment Protection Regulations 2021 (the Regulations).
- EPA Publication 1826.4 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* (the Noise Protocol).
- Environmental Reference Standard (ERS).
- EPA Publication 1996 *Noise Guideline – assessing low frequency noise*.
- EPA Publication 1856 *Reasonably practicable*.

With the above considered, whilst evaluating risks and implementing reasonably practicable measures are considered as a necessity to comply with the GED, the basis for any noise emission assessment will be ensuring that noise emissions are not deemed unreasonable, discussed further below.

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5.1 ENVIRONMENT PROTECTION REGULATIONS AND NOISE PROTOCOL

Implementation of the general concepts within the Act rely on the Regulations. The objectives of the Regulations are to further the purposes of and give effect to the Act by imposing obligations in relation to environmental protection through providing a basis for addressing potential emissions.

The Regulations further define the concepts of 'unreasonable' and 'aggravated' noise and introduce the Noise Protocol as a tool for quantitatively addressing noise emissions from commercial premises within 'noise sensitive areas' including residential and accommodation type premises as well as childcare, kindergarten, primary school and secondary school facilities.

Within the Regulations, a person who conducts a prediction, measurement, assessment, or analysis of noise within a noise sensitive area for the purpose of the Act or the Regulations must conduct the relevant works in accordance with the Noise Protocol.

The main focus of the noise assessment has therefore been consideration of noise emission in terms of noise limits determined in accordance with the Noise Protocol.

5.1.1 General methodologies

The noise sensitive areas potentially affected by noise emission from the proposed facility at the subject site are not located within a Major Urban Area and therefore assessment in accordance with the rural area method under the Noise Protocol needs to be undertaken.

The relevant day, evening, and night Noise Protocol assessment periods are shown in Table 2 below.

Table 2: Details of EPA Noise Protocol Assessment Periods

EPA Assessment Period	Relevant Days	Relevant Time Periods
Day	Monday to Saturday	7:00am to 6:00pm
Evening	Monday to Saturday	6:00pm to 10:00pm
	Sunday, Public Holidays	7:00am to 10:00pm
Night	All Days	10:00pm to 7:00am

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RURAL AREA METHOD

For noise sensitive areas outside Major Urban Areas, noise limits for site operations are determined as set out in Part I, A2 of the Noise Protocol document referenced as the Rural Area Method, noise limits in rural areas for commercial, industrial and trade premises other than utilities and earth resources.

Using the rural area method, relevant zone levels for noise emission from the subject site are determined based on the source and receiver zonings in Annex B of the Noise Protocol as referenced in Clause 19.

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Where relevant, a distance correction is applied in accordance with Clause 20 of the Noise Protocol, but a distance correction is not required in this instance as the source and receivers are all located in the Farming Zone.

Where the noise sensitive area is located within a background relevant area, typically near a major highway or the coast where there are non-typical sources of background noise, further derivation of noise limits applicable for commercial, industrial and trade noise emissions are based on measurement of the existing ambient background noise level at nearby relevant sensitive receptors in accordance with Clauses 21-24 of the Noise Protocol.

If the background noise level plus 8 during the day or 5 during the evening or night exceeds the zone level, then noise limits for site operations are based on the following:

- The day background noise level plus 8dB.
- The evening background noise level plus 5dB
- The night background noise level plus 5dB.

For the night period, the noise criterion is limited to 55 dB(A) as a maximum applicable value.

The noise monitoring results have confirmed that the noise sensitive areas are not located in a background relevant area.

NOISE ASSESSMENT

Assessment of noise emission under the Noise Protocol is made using the L_{eq} noise measure, assessed over a 30-minute period. The noise limit is to be complied with at all locations within the boundaries of residential property, which are also within 10 m of the external walls of a residential dwelling.

The measured L_{eq} level is subject to adjustments to account for characteristics such as tonality (concentration of acoustic energy in a narrow frequency range), intermittency (noises repetitively changing significantly in level) and impulsiveness (noise levels increasing very rapidly). These adjustments are added to the measured level. A negative 'duration adjustment' can also be applicable if industrial noise does not operate for 100% of the assessment period.

The Noise Protocol noise limit applies to the total of all noise emissions from commercial, trade and industrial premises, not just the subject site.

Therefore, the target noise limits for the subject are less than the overall Noise Protocol limits to allow for other industrial noise contributions while remaining below the noise limits. There is a quarry to the northeast of the proposed facility, and other broiler farms with the potential to contribute to the resultant overall level at the noise sensitive area.

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5.1.2 Noise Protocol Assessment Adjustments

When considering noise impacts on residential receptors, the Noise Protocol methodology includes relevant adjustment factors which account for the potential for the noise source to impact on the acoustic amenity of the noise sensitive receptor. The relevant adjustments include:

- Tonal Adjustment
- Impulsive adjustment.
- Intermittency adjustment.
- Reflection Adjustment.
- Duration Adjustment.

Clarification regarding each of the adjustments is shown below in Table 4

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Table 3: Noise Protocol Assessment Adjustments

Relevant Adjustment	Description
Tonal Adjustment	When the noise is tonal in character then an adjustment shall be made as follows: <ul style="list-style-type: none"> ▪ When the tonal character of the noise is just detectable then + 2 dB(A). ▪ When the tonal character of the noise is prominent then + 5 dB(A). A common cause of tonal adjustments is conventional tonal reversing beepers, an unnecessary source of potential annoyance to residents.
Impulsive Adjustment	When the noise is impulsive in character then an adjustment shall be made as follows: <ul style="list-style-type: none"> ▪ When the impulsive character of the noise is just detectable then + 2 dB(A). ▪ When the impulsive character of the noise is prominent then + 5 dB(A).
Intermittency Adjustment	An intermittency adjustment applies when the noise increases in level rapidly by at least 5 dB, on at least two occasions during a 30-minute period and maintains the higher level for at least one minute duration. The relevant intermittency adjustments applicable include: <ul style="list-style-type: none"> ▪ When the level increase is >10 dB during the day period, then apply an adjustment of +3 dB(A). ▪ When the level increase is 5-10 dB during the night period, then apply an adjustment of +3 dB(A). ▪ When the level increase is >10 dB during the night period, then apply an adjustment of +5 dB(A).
Reflection Adjustment	When the measurement point is located outdoors and the microphone is located from 1 to 2 metres from an acoustically reflecting surface, an adjustment of -2.5 dB shall be made.
Duration Adjustment	If noise emissions from the commercial, industrial or trade premises investigated do not occur over the whole continuous 30-minute period, the duration adjustment applies. This is the only one of the adjustments that is negative, reducing the effective level compared with the 'raw' measured level. The duration adjustment equals $10 \times \log_{10}(\text{total time source operating}/\text{measurement period})$.



The above adjustments are applied to the measured/predicted values at residential receptors to determine the 'effective' noise level impacting on the residential receptor, which is what is compared with the noise limits.

The only adjustment likely to be applicable for this project would be a tonal adjustment if conventional tonal reversing beepers were to be used on the site.

5.2 ENVIRONMENT REFERENCE STANDARD

The ERS provides environmental values which have been developed to reflect the ambient soundscape associated with different land use settings, from highly urbanised areas to natural environments.

Through consideration of land zoning types, and varying assessment periods for the day and night, it is understood that the ERS intends to provide consideration of noise levels which may impact on:

- Sleep during the night.
- Domestic and recreational activities.
- Normal conversation.
- Child learning and development.
- Human tranquillity and enjoyment outdoors in natural areas.
- Musical entertainment.

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Whilst being included within The Act, the ERS is not a compliance standard and clearly states that 'the objectives for each land use category are typical ambient sound level values and are neither noise limits nor noise design criteria'.

It's understood that the primary function of the ERS is to provide an environmental assessment benchmark to assist 'decision makers' with evaluating noise emissions within areas not captured within The Regulations and Noise Protocol.

The assessment has considered noise emissions from the site at existing residential receptors as well as within currently vacant farm zone land which may be developed for residential use at a later stage.

Given the proximity of the noise sensitive residential receptors to the site, and the fact that the focus of the noise emission assessment is based on the Noise Protocol, it is understood that consideration of the ERS will not impact on the findings of the assessment and has therefore not been considered further.

5.3 EPA NOISE GUIDELINE – ASSESSING LOW FREQUENCY NOISE

As defined within The Act, a person must not, from a place or premises that are not residential premises emit an unreasonable noise or permit an unreasonable noise to be emitted.

Within the Regulations, unreasonable noise is based on exceedances determined in accordance with the Noise Protocol, however, the Regulations also include consideration of the sound frequency spectrum associated with a noise emission.

To provide some basis for addressing low frequency noise emissions and determining whether the noise emission is deemed 'unreasonable', the EPA released Publication 1996 *Noise Guideline – assessing low frequency noise*.

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The guideline document provides 'threshold levels for assessing low frequency noise' which are not set limits, but levels that indicate a potential risk of problematic low frequency noise. The guideline notes that disturbance from low frequency noise depends on the:

- noise level
- characteristics that can increase annoyance with the noise, for example, tonality, frequency modulation
- baseline noise levels in the absence of the noise of concern.

The threshold levels for indoor and outdoor measurements are included in the Table below.

Table 4: Indoor and outdoor measurement one-third octave band noise level thresholds

Measurement Location	One-third octave band noise levels Hz												
	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
Indoor noise dB L _{eq}	92	87	83	74	64	56	49	43	42	40	38	36	34
Outdoor noise dB L _{eq}	92	89	86	77	69	61	54	50	50	48	48	46	44

The low frequency noise guideline notes that:

Predicting expected noise levels at noise sensitive receivers may be compared against the relevant low frequency threshold levels.

However, noise level calculations in the low frequency range can be problematic and of limited accuracy. The use of noise calculations should be restricted to indicative estimations only. Due to this, calculations should only be used as a screening tool to assess the risk of low frequency noise from the proposed development and/or extension of existing commercial, industrial and trade premises.

Therefore, the predicted low frequency noise levels can only be considered indicative at this stage of the project.

5.4 DETERMINATION OF RELEVANT NOISE LIMITS – RURAL AREA METHOD

The Planning Scheme zoning map in Appendix Six indicates that the subject site and all relevant rural receivers are zoned FZ1.

For this combination of generating zone and receiving zone, the Noise Protocol Zone Levels are 46, 41 and 36 dB(A) for the day, evening and night periods respectively.

No distance correction or background level adjustment is applicable, so the Zone Levels apply as the noise limits.

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6. CALCULATED RESULTANT NOISE LEVELS AT NOISE SENSITIVE AREAS

6.1 NOISE CALCULATION METHODOLOGY

Modelling of operational noise emissions associated with the proposal has been conducted using DataKustik CadnaA 2021 environmental noise modelling software.

Relevant information regarding site elevations has been provided by the client and the surrounding environment topography has been sourced from online databases including 'ELVIS' - Elevation and Depth - Foundation Spatial Data and VicMaps.

The model has been developed and configured with sufficient detail for appropriate noise emission calculations to be undertaken.

The modelling software implements the calculation procedures defined within International Standard ISO 9613-2: 1996 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation* (ISO 9613).

The ISO 9613-2 method aims to determine the average sound level under meteorological conditions favourable to propagation, that is, moderately downwind propagation or propagation under a well-developed, but moderate, ground-based temperature inversion, such as can occur at night.

Environment Protection Authority assessment methodology indicates that residual noise levels at noise sensitive receivers should be considered when weather conditions assist propagation of noise emissions in the direction of the receivers. This condition is implemented by the noise modelling software.

The noise modelling has allowed for the effects of light breezes from the noise sources to the residential locations enhancing sound propagation. For much of the time, the resultant noise levels would be lower than predicted on this basis.

Through implementation of ISO 9613-2 within CadnaA 2020, the noise emission modelling considers the following attenuation measures:

- Geometrical spreading.
- Atmospheric absorption.
- Ground attenuation.
- Meteorological effects.
- Source/Receiver height effects.
- Attenuation due to the surrounding environment including existing buildings/structures.

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Apart from the reduction of sound due to distance, ground attenuation and atmospheric effects, noise attenuation results from acoustic shielding due to intervening natural topography and substantial buildings that are in place.

6.2 NOISE MODELLING INPUT PARAMETERS

The noise level that is to be assessed in terms of the noise limits at off-site residential premises is the L_{eq} over a 30-minute period, adjusted as discussed in section 4.1 above.

Therefore, the objective of noise modelling to calculate resultant off-site noise levels is to capture the mix of mobile equipment operating during a 30-minute period, in combination with operation of the facility fixed components.

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The noise modelling has allowed for operation of the following:

- Deliveries to and from the site during the period only.
- Operation of the digester and electricity generation continuously day, evening and night.
- Operation of mobile equipment at the site during the day only.
- Allowance has also been made for the facility to operate in conjunction with the ventilation fans at the existing broiler farm sheds.

Sound power levels to use in the noise emission modelling were derived from sound pressure level at 1 m and dimensional information provided by the client for the sources that comprise the facility. Sound power levels for mobile equipment operating as part of the process were obtained from manufacturer's data and WMG file data for generic equipment.

Early advice was provided to the project team to adopt optional acoustic enclosures for the gas mixers, which reduce noise emissions from these sources by 7 dB(A). This is consistent with the General Environmental Duty to minimise risks, so far as reasonably practicable.

The noise reduction benefit of these acoustic enclosures has been allowed for in the noise emission modelling. These enclosures make the difference between the proposed facility and existing sources at the subject site just complying with the night noise limits, and complying with a margin for other sources in the area to contribute to the overall resultant level at noise sensitive areas while remaining within the night noise limit.

Allowance has also been made in the noise emission modelling for the noise contribution due to the ventilation fans at the broiler sheds already located on the site.

Overall sound power levels used in the noise emission modelling are summarised in the table below. Modelling was conducted using octave band and one-third octave band data corresponding to these overall dB(A) values.

Table 5: Source Sound Power Levels and elevations used in the noise modelling

Noise Source	Source elevation, m	Sound Power Level, dB(A)
N1: Combined Heat and Power (CHP) plant, each of two units in attenuated containers, based on 75 dB(A) @ 1 m, total sound power level distributed over the surfaces of the unit and exhaust	2 nominal for radiation from the units, 5.15 m for the exhaust outlets	99
N2: Boiler, based on 64 dB(A) @ 1 m	5.15	79
N3 Flare, based on 65 dB(A) @ 1 m	8.2	80
N4 Feeder, based on 75 dB(A) @ 1 m	4.8	95
N5 Separators, each of three separators, based on 75 dB(A) @ 1 m	7.8	90
N6 Gas Holder Support Blowers, each of six based on 73 dB(A) @ 1 m	1	88
N7 Dryer, based on 75 dB(A) @ 1 m from each of four exhausts, sound power level for each of 4 exhausts	4.4	89
N8 Gas Mixers, each of eight gas mixers based on 73 dB(A) @ 1 m with acoustic enclosures	2	93
N9 Pumping containers and Ekogea Systems, each of two units based on 65 dB(A) @ 1 m	2.85	85



Noise Source	Source elevation, m	Sound Power Level, dB(A)
Each of two JCB Telehandlers operation during the day period only, see notes below	2	103
Road truck accessing the site during the day period only	2.5	104
Broiler farm shed ventilation fans, 14 fans per shed, total sound power level for 14 fans	2	87

Other site operational factors relevant to the noise modelling and assessment of noise emission:

- Truck movements to deliver feedstocks and remove fertiliser produced will be approximately 3 per day.
- Mobile plant, JCB telehandlers, will be used to:
 - unload feedstock - telehandlers for unloading broiler manure into clamps
 - feed the facility - moving broiler manure from clamps to walking floor feeding bin
 - transfer digestate - for loading dried fertiliser into trucks for delivery to customers.

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6.3 NOISE MODELLING RESULTS AND DISCUSSION

The modelled noise level at relevant noise sensitive areas based on the modelling parameters set out above are set out in the table, together with the noise limits that apply at those locations.

Table 6: Noise modelling results and noise limits

Noise sensitive area	Modelled noise level, dB(A)			Noise Limit, dB(A)		
	Day	Evening	Night	Day	Evening	Night
345 Carrs Rd	34	33	33	46	41	36
420 Carrs Rd	36	32	32	46	41	36
610 Carrs Rd	31	31	31	46	41	36
230 Carrs Rd	27	27	27	46	41	36
705 Carrs Rd	27	27	27	46	41	36
1360 Ballan Rd	27	27	27	46	41	36
35 Pringles Rd	27	26	26	46	41	36

No allowance has been made for any character adjustments on the basis that one of the recommendations is to ensure that no tonal reversing beepers operate at the site, there is no indication that any of the sources are particularly tonal and, in a situation where there are a number of sources contributing similar resultant levels, it is unlikely that any one source will be dominant.

Use of mobile equipment fitted with tonal reversing beepers has the potential to cause annoyance to residents and introduce a tonal adjustment. Use of broadband reverse alarms at the site has been recommended to avoid this possibility.

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The modelled noise levels meet the relevant project noise targets during the day, evening and night periods at all existing residential locations.

The modelled levels are below the noise limits by at least 3 dB(A) for all noise sensitive areas during all assessment periods. This allows a margin for contributions from other sources in the area while remaining below the noise limits overall.

It is not possible to comment with respect to the low frequency threshold levels at frequencies below 63 Hz, as low frequency data has not been available, as is invariably the case. Down to 63 Hz, the modelled resultant noise levels at noise sensitive areas were found to be below the low frequency threshold levels.

7. RECOMMENDED NOISE CONTROL STRATEGIES

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7.1 OPTIONAL ACOUSTIC ENCLOSURES FOR THE GAS MIXERS

Installation of optional acoustic enclosures for the gas mixers that reduce the noise level from 80 dB(A) at 1 m to 73 dB(A) at 1 m is required to achieve the objective of a margin for compliance to allow for other noise contributors in the area.

7.2 REVERSE ALARMS

Conventional tonal reversing beepers have the potential to cause annoyance to residents and contribute to exceedance of noise limits at the residential locations around the site, particularly during the night period when the ambient background levels and noise limits are the lowest, due to the highly distinctive character and on-off nature of the noise.

All mobile equipment operating at the site should be fitted with broadband reverse alarms, which vary their noise output according to the ambient noise level. These reversing alarms should be selected for the lowest noise level consistent with safe operation.

8. CONCLUSIONS

Watson Moss Growcott Acoustics (WMG) has undertaken a noise emission assessment for the proposed Fertiliser Manufacturing Facility at 445 Carrs Rd Anakie, Victoria.

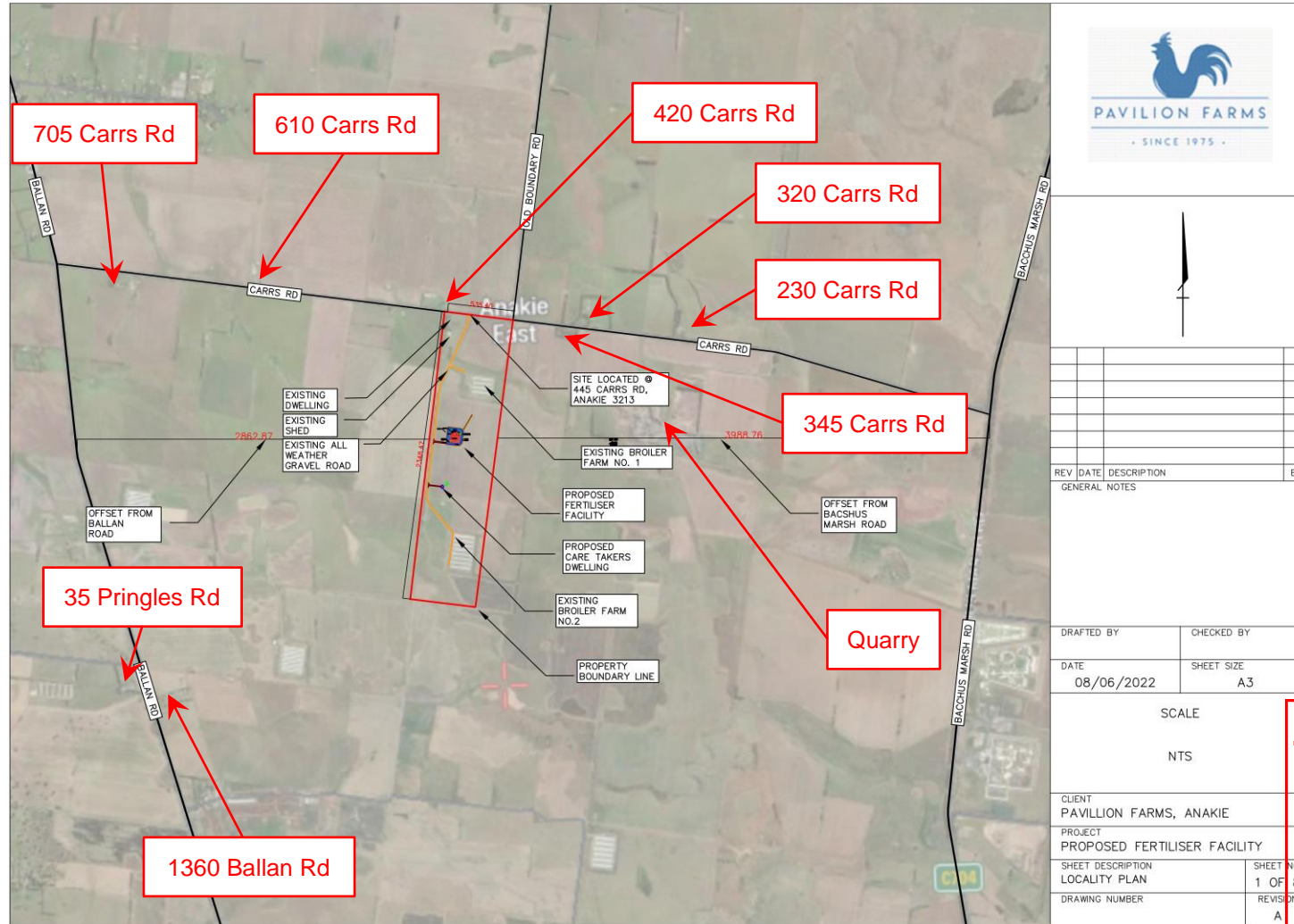
Noise limits have been determined in accordance with the Noise Protocol under the Environment Protection Act and noise emission from the proposed facility has been modelled in conjunction with noise emission from the existing broiler farms on the site.

It has been concluded that resultant noise levels at noise sensitive areas resulting from operation of the proposed facility, in conjunction with operation of the ventilation fans at the existing broiler sheds on the site, will be below the relevant noise limits by a sufficient margin to allow for noise contributions from other sources in the area while remaining below the overall noise limits at all noise sensitive areas during all time periods.

NEVILLE GODDARD
WATSON MOSS GROWCOTT
acoustics pty ltd

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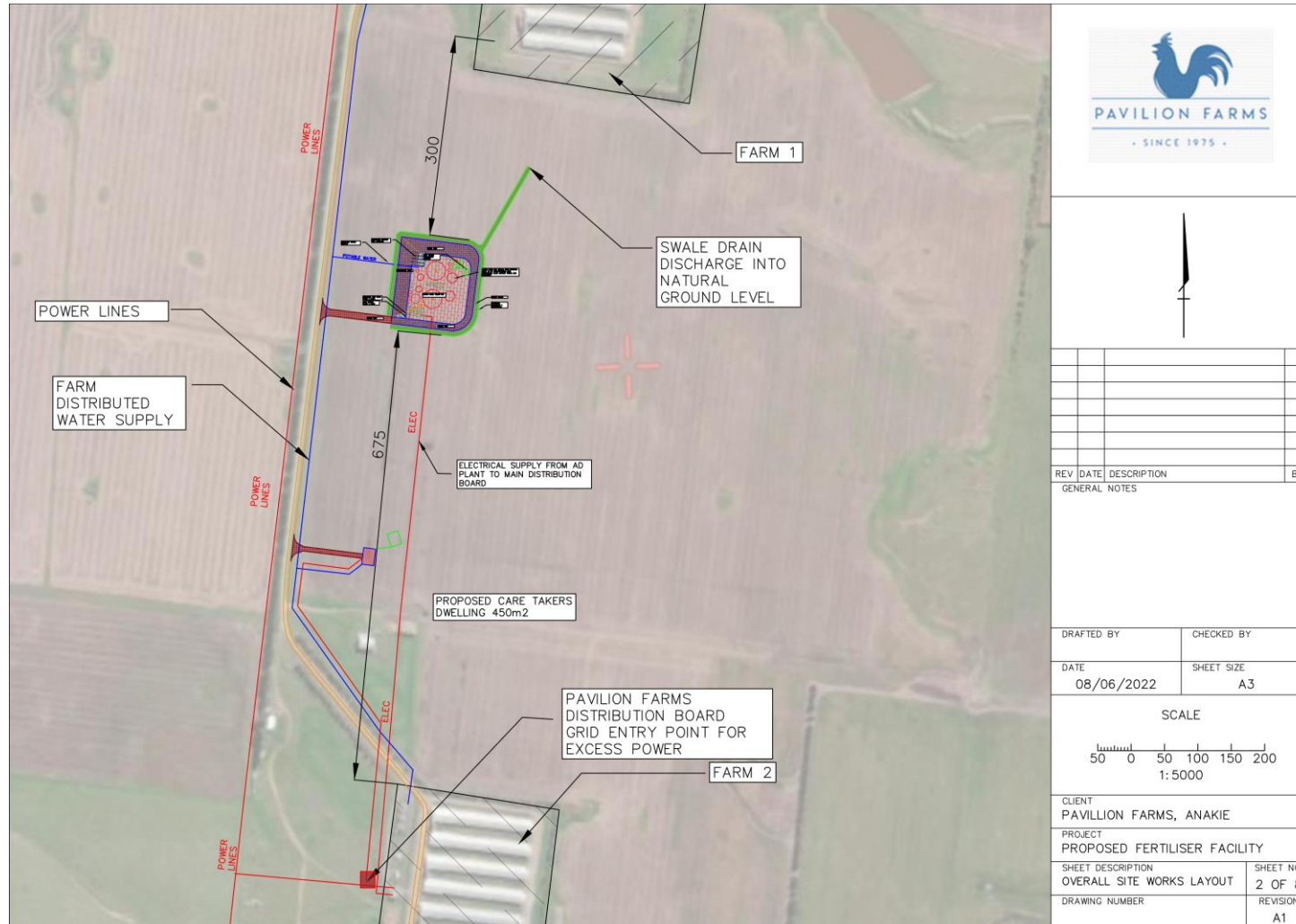
APPENDIX ONE: LOCALITY PLAN ILLUSTRATING SUBJECT SITE AND RELEVANT RESIDENTIAL AREAS



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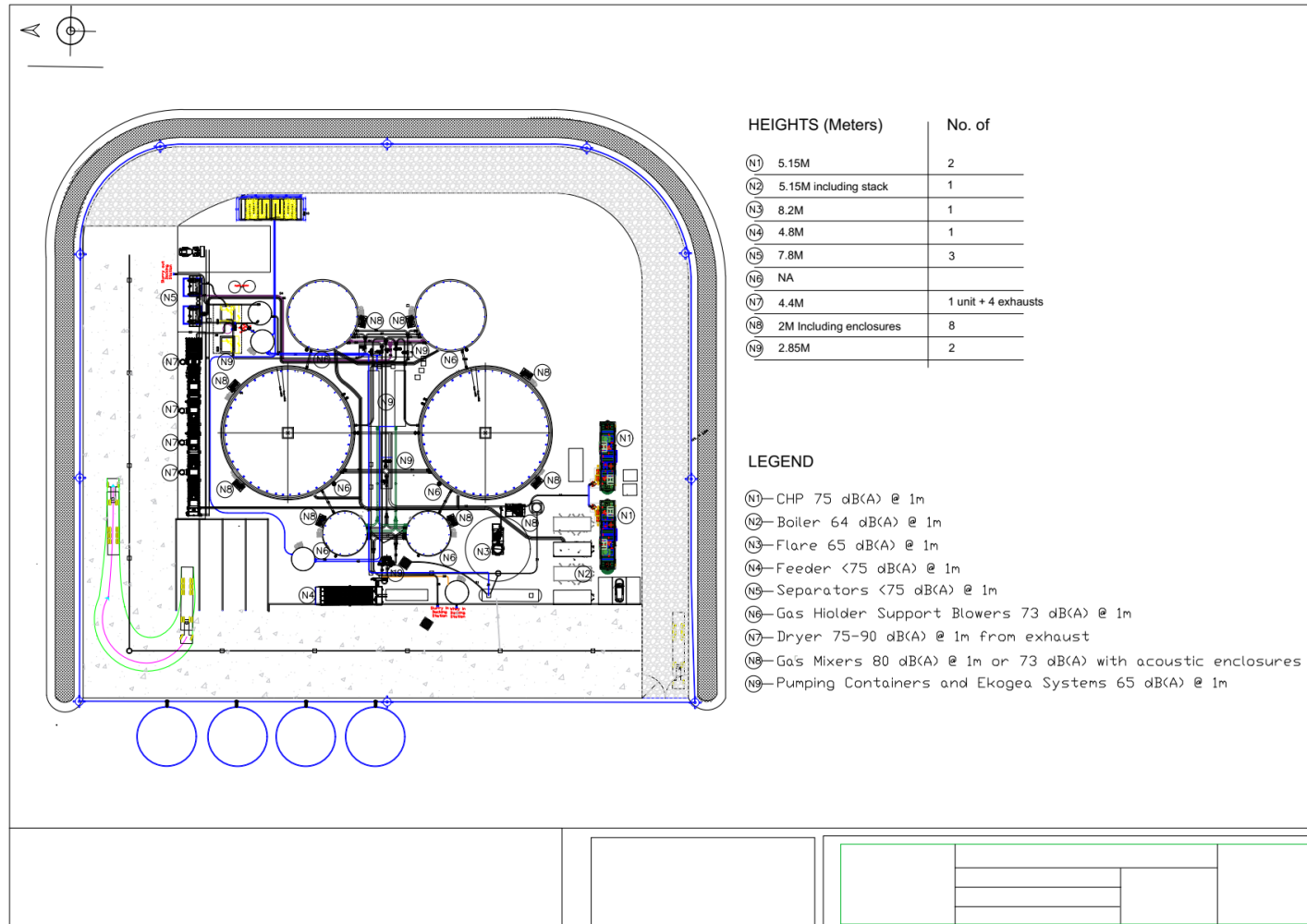
APPENDIX TWO: OVERALL SITE WORKS LAYOUT PLAN



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APPENDIX THREE: NOISE SOURCE LOCATIONS AND HEIGHTS

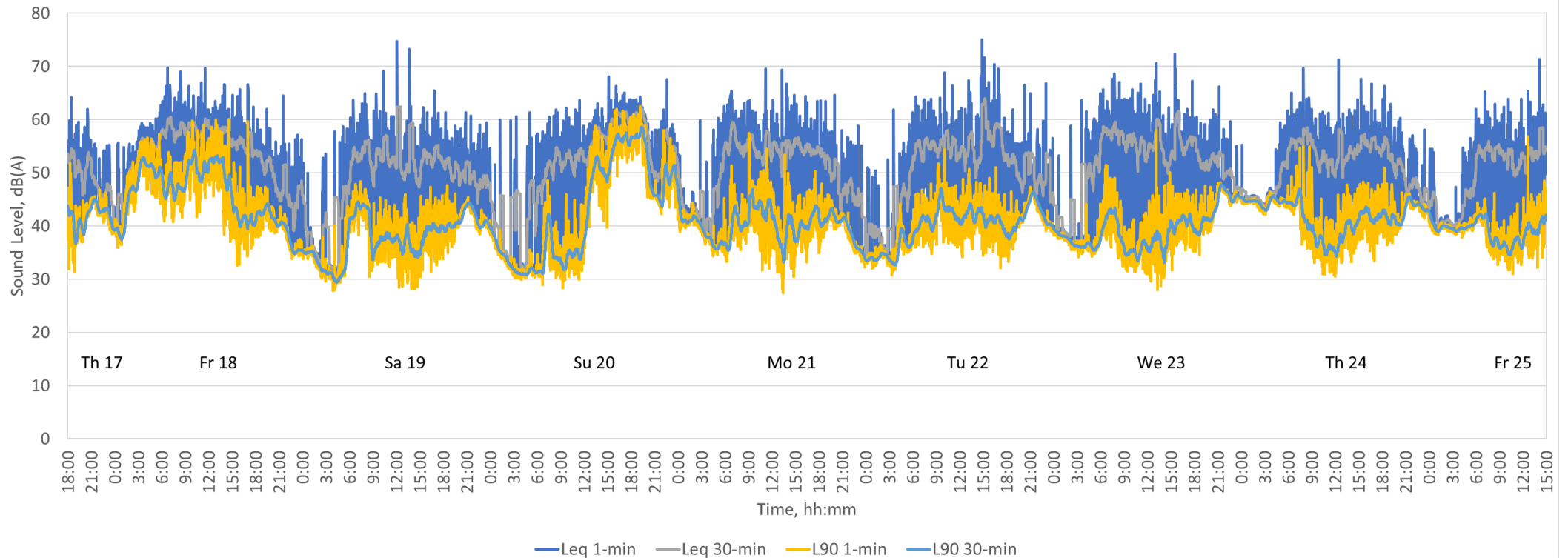


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APPENDIX FOUR: NOISE MONITORING RESULTS

Location 1 noise monitoring results, western logger near 420 Carrs Rd, Th 17 to Fr 25 February 2022



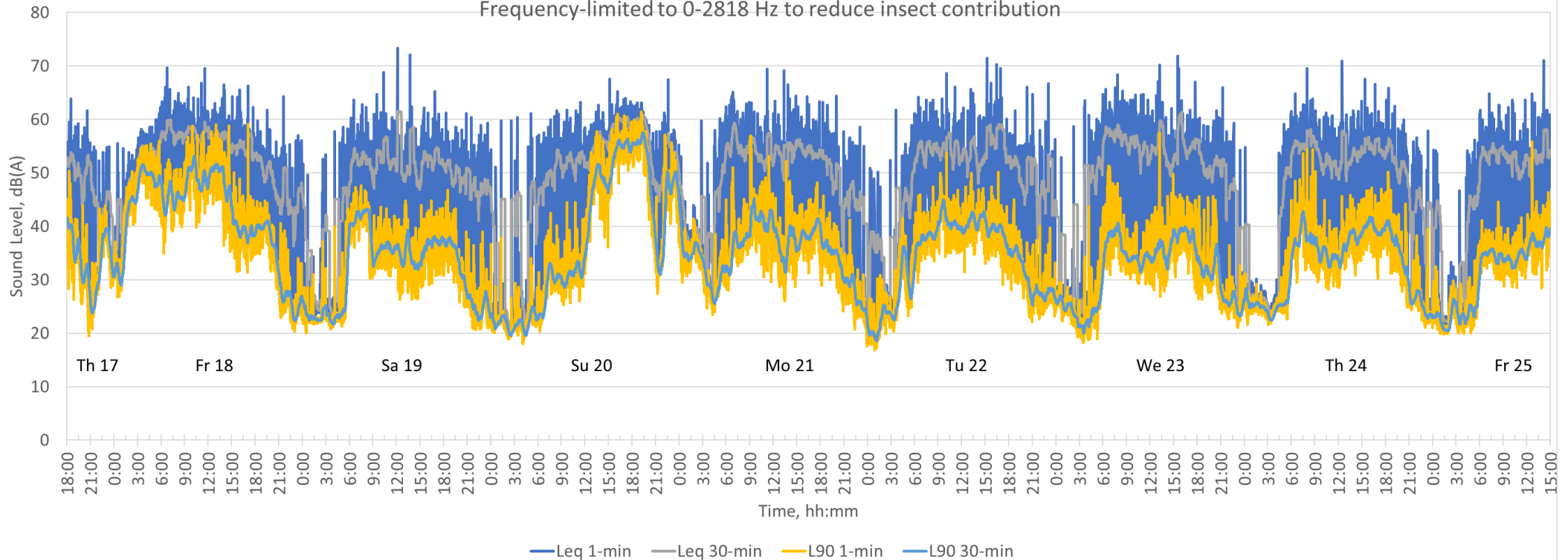
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Location 1 noise monitoring results, western logger near 420 Carrs Rd, Th 17 to Fr 25 February 2022

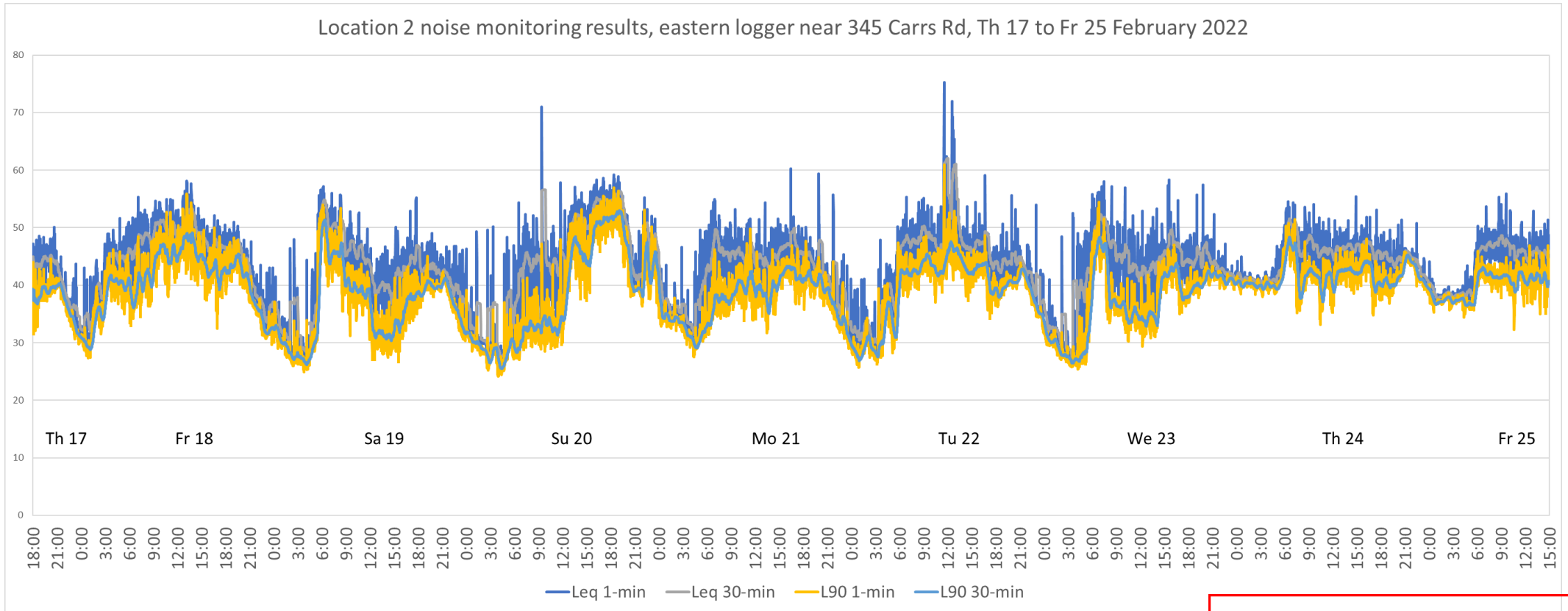
Frequency-limited to 0-2818 Hz to reduce insect contribution



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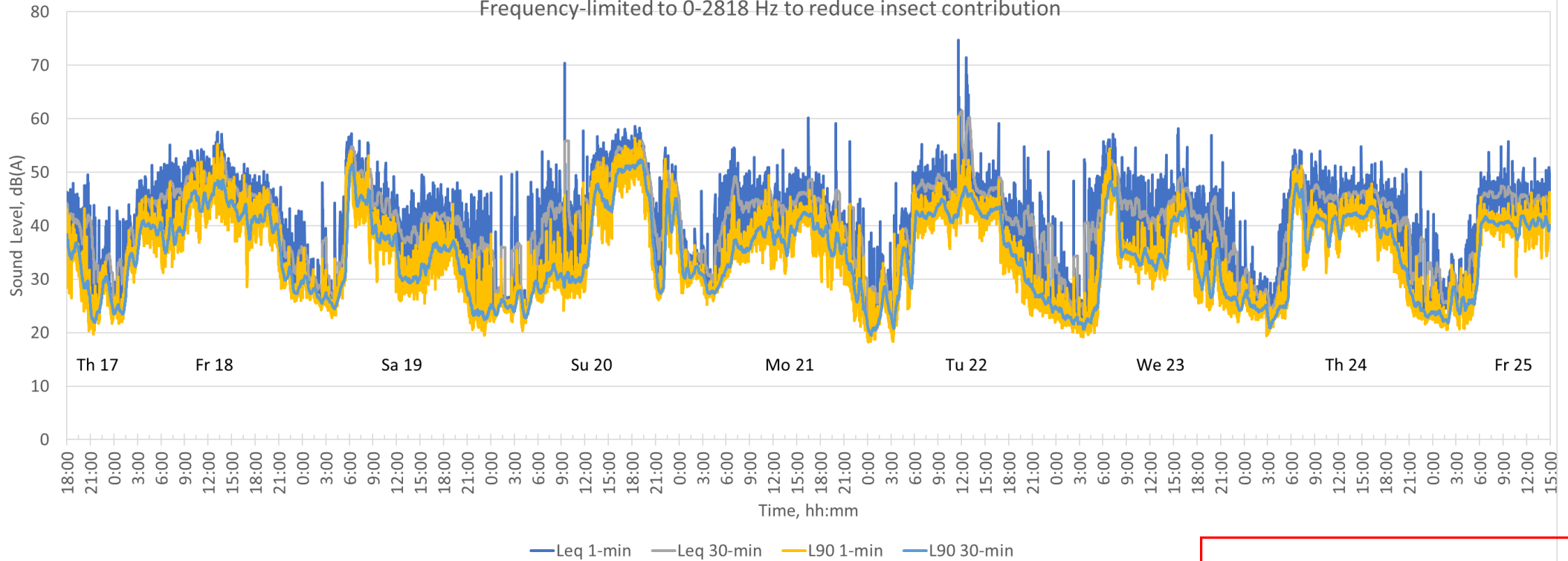
Location 2 noise monitoring results, eastern logger near 345 Carrs Rd, Th 17 to Fr 25 February 2022



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Location 2 noise monitoring results, eastern logger near 345 Carrs Rd, Th 17 to Fr 25 February 2022
Frequency-limited to 0-2818 Hz to reduce insect contribution



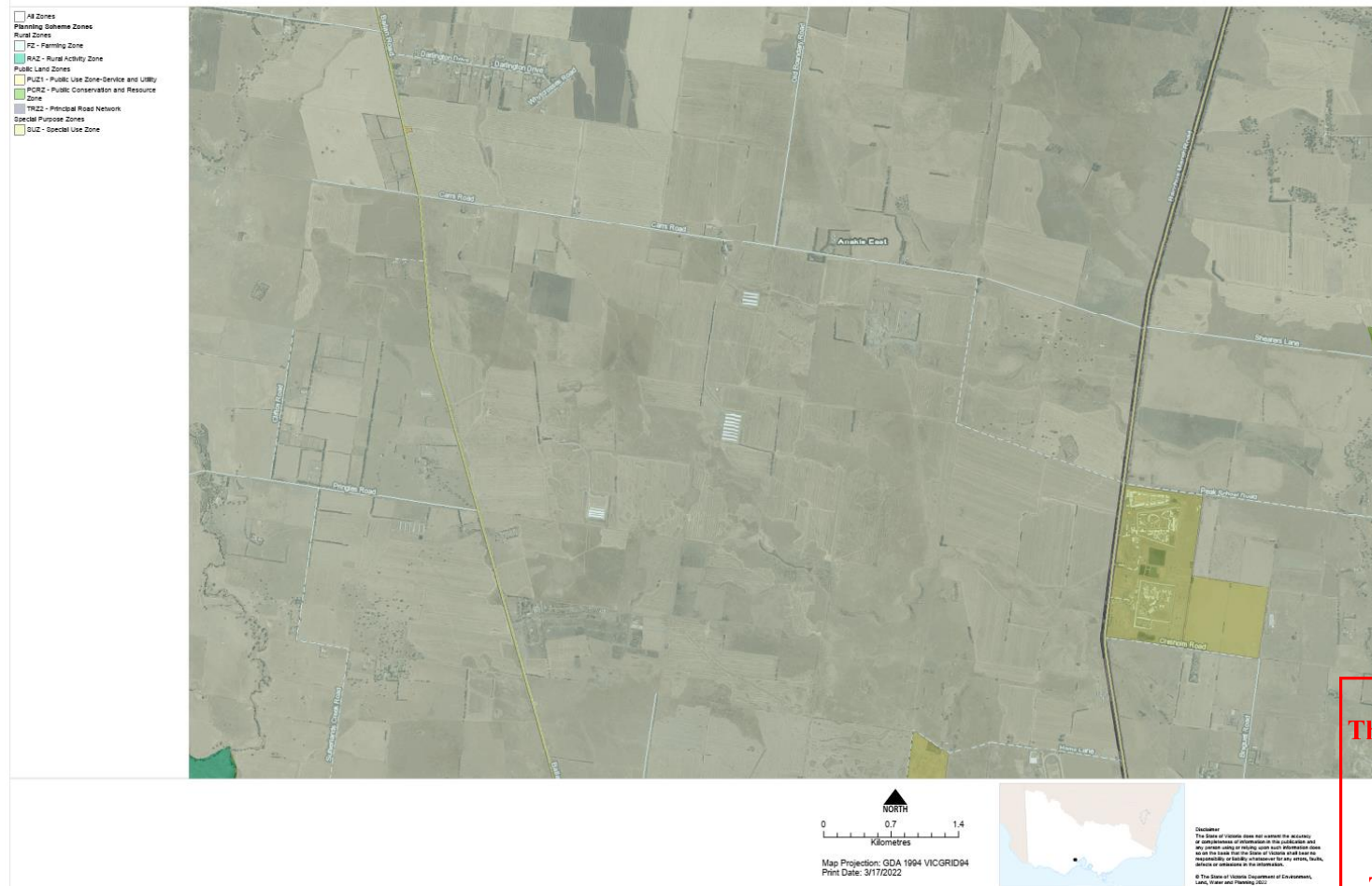
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APPENDIX FIVE: PLANNING SCHEME MAP

Planning Map



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