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NOVEMBER 2022

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LANCEFIELD SOLAR FARM

NOISE IMPACT ASSESSMENT

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Lancefield Solar Farm
Noise Impact Assessment

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GLOSSARY

Sound, Noise	The terms “sound” and “noise” are often used interchangeably, however, in common usage “noise” is often used to refer to unwanted sound.
Sound Pressure Level	Sound consists of minute fluctuations in atmospheric pressure capable of evoking the sense of hearing. The symbols SPL, L or L_P are commonly used to represent the Sound Pressure Level, measured in decibels, dB
dB	The human ear responds to changes in sound pressure over an extremely wide range, with the loudest (at the threshold of pain) ten million times greater than the softest (at the threshold of hearing). The decibel scale reduces this ratio to a more manageable size expressed as the logarithmic ratio of the sound pressure P, relative to the threshold of hearing P_{Ref} = 20 µPa, i.e. dB = 20 Log (P/P_{Ref})
A-weighting	The overall level of sound is usually expressed in terms of dB(A), which is measured using a sound level meter with an ‘A-weighting’ filter that has a frequency response corresponding approximately to that of human hearing. Peoples hearing is most sensitive to sounds at mid frequencies (500 Hz to 4 kHz), and less sensitive at lower and higher frequencies. Thus, the level of sound in dB(A) is a good measure of its loudness, with different sources having the same noise level in dB(A) generally sounding about equally loud.
dB(A)	A-weighted decibels. A single number descriptor of the overall sound pressure level.
Sound Power Level	The sound power of a source is the rate at which it emits acoustic energy. As with Sound Pressure, Sound Power Levels are measured in decibel units (dB or dB(A)) commonly identified by the symbols SWL or L_W. The reference sound power unit is 1 pW (or 10^{-12} W).
$L_{eq,T}$	The equivalent continuous noise level (basically the average noise level). It is defined as the steady sound level that contains the same amount of acoustic energy as the corresponding time-varying signal over the measurement period, T.
Frequency Analysis	Frequency analysis is the process used to examine the frequency components which make up the overall noise or vibration signal. The units of frequency are measured in cycles per second or Hertz (Hz).
1/3 Octave Band	Provides more resolution across the frequency spectrum by dividing each octave band into three (i.e. 25 Hz, 31.5 Hz, 40 Hz, 50 Hz, 63 Hz, 80 Hz and so on).

EXECUTIVE SUMMARY

WSP Australia Pty Ltd (WSP) has been engaged by Urbis to undertake a noise impact assessment for the proposed BNRG Renewables Solar Farm located at 313 Collivers Road, Lancefield (the Project).

Operational noise criteria for the Project, in the form of statutory noise limits, have been determined in accordance with Part 2: *Noise limits – Rural area method* of EPA Publication 1826.4 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues*, dated May 202 (the Noise Protocol)

To assess operational noise from the facility, a predictive noise model was prepared based on supplied manufacturer data for all acoustically significant plant associated with the Project, which will include:

- Inverter/s
- A battery pack system, and;
- Medium Voltage (MV) Switchgear.

The predictive noise modelling results indicate that noise from the operational Solar Farm site will comply with the operational noise limit at all noise sensitive receiver locations. As such, the residual risk that noise from the operational facility will cause adverse noise impacts is minimal.

1 INTRODUCTION

WSP Australia Pty Ltd (WSP) has been engaged by Urbis to undertake a noise impact assessment for the proposed BNRG Renewables Solar Farm located at 313 Collivers Road, Lancefield (the Project).

1.1 OBJECTIVES

The objectives of the study were to:

- Establish noise level noise limits in accordance with relevant Victorian legislation applicable at existing noise sensitive receivers surrounding the Project site
- Identify and quantify acoustically significant plant for the project, and relevant assumptions relating to operational noise levels (including limitations with the available provided data)
- Predict and assess noise from the operational Solar Farm to surrounding dwellings
- Provide conceptual noise control advice to achieve compliance where the predicted noise levels are likely to exceed the relevant noise criteria (if required).

1.2 PROJECT SITE AND SURROUNDING ENVIRONS

The Project site is located on the triangular Lot 1\TP168495 at 313 Collivers Road, Lancefield generally bounded by the following transport networks and premises:

- Rochford Road, located to the north and west which carries approximately 1,100 vehicles per day, Annual Average Daily Traffic (AADT) comprised of roughly 9% Heavy Vehicles
- Cullys Road, located to the south, and;
- Curly Flat Vineyard, located to the east.

The site and surrounding land are situated on undulating terrain designated for Farming Zone (FZ) type usage dominated by grazing land and scattered residential properties. The closest residential areas to the development site have been identified as shown in Table 1.1. Compliance with the operational noise criteria at the identified dwellings will also result in compliance at all other dwellings due to the increased distance.

Table 1.1 Distance from Solar Farm Infrastructure to closest Noise Sensitive Areas

NOISE SENSITIVE AREA	APPROXIMATE DISTANCE TO SOLAR FARM SITE
117 Cullys Road	80 m east
118 Cullys Road	130m southeast
50 Cullys Road	260m southwest
252 -270 Rochford Road	Min. 290m to the west/northwest

1.3 SOLAR FARM INFRASTRUCTURE

It is understood that the key infrastructure components associated with the proposed solar farm will include:

- Approximately 11,200 Talesun 580 W photovoltaic (PV) solar panel modules standing up to 2 m high with a tilt angle of ±60° with a NEXTracker single axis tracking system
- One (1x) Sungrow SG4950HV-MV inverter system (to allow for a total capacity of 4.95 MW) to convert direct current (DC) electricity produced by the solar panel modules into alternative current (AC)
- Medium Voltage (MV) Switchgear in the form of one (1x) Sungrow MCS6300-LV prefabricated substation to match the supply voltage of the local power distribution network, and;
- Four (4x) Sungrow 2.752 MWh Battery Energy Storage System (BESS) modular units to allow for on-site energy storage and network supply depending on supply/demand as dictated by the National Energy Market.

Figure 1.1 provides an aerial photograph showing the location of the proposed solar farm relative to the closest identified noise sensitive areas.

Source 1: Site layout per BNRG Renewables drawing *Lancefield high Level Design*, dated 19/04/2022.
Source 2: Aerial photograph taken 29 December 2021. Imagery courtesy Nearmap ©

Figure 1.1 Aerial photograph showing Project layout and closest receiver locations.

2 LEGISLATION & GUIDELINES

The Department of Environment, Land, Water and Planning (DELWP) recently released the *Solar Energy Facilities – Design and Development Guideline* (DELWP Guideline), dated October 2022. This guideline provides an overview of the policy, legislative and statutory planning arrangements for solar energy facility projects in Victoria.

The DELWP Guideline recommends expert support and advice is considered in support of the planning permit application to identify potential risks that could potentially impact surrounding sensitive uses.

The DELWP Guideline states the following in relation to noise:

> *A facility should manage noise impacts in accordance with the Environment Protection Regulations under the Environment Protection Act 2017. More information about the laws that control noise is available on the EPA Victoria website.*
>
> *Noise attenuation measures could include:*
>
> - *ensuring any components operate to relevant standards*
> - *acoustic housing or baffles at the noise source*
> - *conducting maintenance and other operational activity during the daytime*
> - *using landscaping or locating noisier components centrally within a site.*

A summary of the relevant legislation and guidelines as managed by the Victorian Environment Protection Authority (EPA) applicable to this Project as referenced in the DELWP Guideline is provided in Table 2.1.

Table 2.1 Relevant Victorian Legislation and Guidelines

DOCUMENT	SUMMARY
Environment Protection Act 2017 No. 51 of 207, dated 1 October 2022 (The Act)	The Act (as amended by the *Environment Protection Act* 2018) provides the overarching legislative framework for the protection of human health and the environment from pollution or waste in Victoria. The Act gives the EPA enhanced powers and tools to prevent and minimise the risks of harm to human health and the environment from pollution and waste. It also provides the EPA with the ability to pursue stronger sanctions and penalties to hold environmental polluters to account. While the Act does not prescribe noise limits, it does prohibit the emission of *unreasonable noise*[1] from non-residential premises. It includes environmental obligations and protections for all Victorians focusing on preventing waste and pollution impacts rather than managing those impacts after they have occurred. The General Environmental Duty (GED) as defined in Part 3.2 of the Act requires anyone engaging in an activity posing a risk of harm to human health and/or the environment to minimise those risks to prevent harm as far as reasonably practicable. Further to the above the Act includes subordinate legislation which are discussed below.

[1] *Unreasonable noise* is defined in Section 3(1) of the Act as 'Noise that is unreasonable having regard to the following:
(i) its volume, intensity, or duration
(ii) its character
(iii) the time, place, and other circumstances in which it is emitted
(iv) how often it is emitted
(v) any prescribed factors

DOCUMENT	SUMMARY
Environment Protection Regulations 2021 (the Regulations)	The Regulations aim to further the purpose of and give effect to the Act. Part 1.2, Section 4 includes definitions of the terminology used in other subordinate policy documents, including the Noise Protocol used to assess environmental noise from commercial and industrial operations in Victoria (see below). Part 5.3 of the Regulations includes requirements specific to environmental noise, with Division 1, Section 113 stating *'a person who conducts a prediction, measurement, assessment or analysis of noise within a noise sensitive area for the purposes of the Act or these Regulations, must conduct the prediction, measurement, assessment or analysis in accordance with the Noise Protocol'.* Division 3 includes definitions and general requirements that are specific to commercial, industrial and trade premises. In accordance with Section 118 noise from these types of premises is prescribed as unreasonable if it exceeds a noise limit or alternative criterion determined in accordance with the Noise Protocol. Additional matters addressed in Divisions 3 and 4 include assessment time periods, minimum noise limit values, management of cumulative noise from multiple premises, noise sensitive areas where assessment requirements apply, definition of frequency spectrum as a prescribed factor, and a definition for aggravated noise.
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)	The Noise Protocol defines the method for setting noise limits for new and existing commercial, industrial and trade premises and entertainment venues in Victoria. It also outlines the steps that must be followed to undertake an assessment (either measurement or prediction based) of the effective noise level within a noise sensitive area or alternative assessment location. A comparison between the effective noise level and the relevant noise limit or alternative assessment criterion will determine whether the noise that is emitted from the premises is unreasonable under the Regulations. The noise limits are determined based on the land use zoning of the area as defined by the relevant planning scheme, and measured background noise levels, with different limits applicable during the day, evening, and night periods.
General Environmental Duty (GED)	The General Environmental Duty (GED) is outlined in Part 3.2 of the Act. The GED requires anyone engaging in an activity posing a risk of harm to human health and/or the environment from pollution (including noise), to minimise those risks to prevent harm as far as reasonably practicable. Commercial premises are therefore required to continue to review and eliminate or reduce the risk of harm from noise as far as reasonably practicable, even if compliant with the Noise Protocol. It is applied to eliminate or reduce the risk of harm to human health and the environment. This means that proportionate controls should be applied to mitigate or minimise the risk of harm accounting for the likelihood of the risk, degree of harm, current state of knowledge, and available noise mitigation controls, and their associated costs.

DOCUMENT	SUMMARY
Environment Reference Standard (ERS)	The ERS as provided under Section 93 of the Act may be used as a reference tool in the assessment of planning proposals and provision of advice and recommendations to decision makers where a proposal involves significant risks to human health or the environment. Outside 'natural areas', the ERS makes use of outdoor L_{Aeq} noise levels as indicators. Different objectives are associated with different land use categories, recognising the reality of current ambient sound levels that can reasonably be expected in developed areas. The noise levels specified in the ERS objectives are neither compliance limits, nor design criteria, but they can be used to facilitate assessing whether the environmental values are being achieved, maintained, or threatened.

2.1 NOISE LIMITS

Noise from the proposed Lancefield Solar Farm must comply with the Noise Protocol which defines mandatory noise limits for commercial, industrial and trade premises.

As the Project site and surrounding noise sensitive areas are located well outside of the Melbourne Urban Growth Boundary (UGB) and any identified Major Urban Areas (i.e. UGB identified in the planning scheme where the population is greater than 7,000 people), environmental noise limits have been derived in accordance with Part 2: *Noise limits – Rural area method* of the Noise Protocol.

The method uses land use zoning of the industry and receiver as the basis for establishing noise limits. Where the receiver is in a background relevant area (for example, where the ambient noise environment is dominated by high levels of road traffic/Freeway noise) adjustments can be applied to increase the noise limits. Other adjustments can be included where there are multiple industries, based on the distance to the industry/boundary, or where the noise source under assessment is classified as an extractive industry.

In the context of the proposed Lancefield Solar Farm, there are no obvious major sources of existing industry or background noise. Accordingly, unattended noise monitoring was not deemed necessary and therefore not undertaken, with conservative noise limits adopted based on the existing land use zoning.

Table 2.2 details the noise limits derived for the surrounding identified noise sensitive areas based on the existing land use zoning.

Table 2.2 Environmental Noise Limits

PERIOD	DAY OF WEEK	START TIME	END TIME	NOISE LIMIT, dB(A)
Day	Mon-Sat	0700 hrs	1800 hrs	46
Evening/Weekend	Mon-Sat	1800 hrs	2200 hrs	41
	Sun, Pub hol.	0700 hrs	2200 hrs	41
Night	Mon-Sun	2200 hrs	0700 hrs	36

Noise from the industry is measured and assessed in accordance with the methodology provided in the Noise Protocol. To determine if noise is unreasonable per the Regulations, the effective noise level (L_{eff}) from the industry is compared with the Noise Protocol limits.

The effective noise level is the level due to the industry measured or predicted at a residential dwelling or noise sensitive location, which has had adjustments applied to account for certain characteristics such as tonality, impulsiveness, duration, intermittency, etc. which may make the noise more, or less annoying to residents than the measured level alone would indicate.

3 OPERATIONAL NOISE ASSESSMENT

The Project includes noise generating plant associated with the proposed Solar Farm, introducing a risk of generating unreasonable noise to surrounding noise sensitive areas. A predictive noise assessment has been undertaken to quantify potential noise impacts and provide mitigation recommendations where required.

3.1 NOISE MODELLING METHODOLOGY

To predict noise from the Project to the surrounding noise sensitive receptor locations, a digital noise model was developed using the latest available version of the SoundPLAN (v8.2) noise modelling package. The package enables the compilation of a sophisticated 3-dimensional computer model comprising:

- The amount of noise generated by acoustically significant plant at the Project site
- Distance between the sources and receivers (i.e. distance attenuation or divergence loss)
- The presence of obstacles such as buildings, or barriers/screens that obstruct the noise transmission path
- The presence of hard reflective surfaces that may enable additional noise paths (including a reflection order of three)
- The hardness of the ground between the source and receiver
- Absorption of sound by the air
- Meteorological influences such as wind or temperature gradients.

3.1.1 ISO 9613 NOISE PREDICTION MODEL

Noise modelling of the Project was undertaken using the methodology provided in International Standard ISO9613-2:1996 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation* (ISO 9613-2:1996).

This internationally recognised standard was designed to assume conditions that favour the propagation of noise from meteorological effects, described as a slight wind (1 to 5 m/s) blowing from source to receiver, or a well-developed moderate ground-based temperature inversion. As such, there are no user inputs for weather, with the standard always assuming results slightly higher in noise level relative to calm or neutral propagation conditions.

The ISO9613-2:1996 standard describes three distinct ground surface types, namely hard, porous, and mixed ground and states the following:

> *Hard ground includes paving, water, ice, concrete and all other ground surfaces having a low porosity. Porous ground includes ground covered by grass, trees and other vegetation, and all other ground surfaces suitable for growth of vegetables, such as farming land. Mixed ground consists of both hard and porous ground*.

Our experience is that, in rural areas, it is generally appropriate to assume that the ground is 50 % hard / 50 % porous. This assumption is also more conservative than using 100 % porous ground.

3.1.2 INPUT DATA AND ASSUMPTIONS

Inputs to the computer noise model include the following:

- A topographic map in 1 m intervals for the surrounding area extending from the Project site to the surrounding sensitive receptors was provided by the end client.
- The agricultural land surrounding the site has been conservatively modelled with a ground absorption factor of 0.5 representative of 'mixed' ground. For roads, hardstand areas, and water bodies the ground has been modelled using an absorption factor of 0 for 'hard' ground.
- The assessment has been based on the conservative assumption that all plant has is required to operate 100 % of the time including during the critical night period.
- Plant siting as indicated by BNRG Renewables Ltd Drawing *Lancefield High Level Design*, dated 19 April 2022 (see Figure 1.1).
- Receiver locations and geometry data have been identified and sourced from public aerial photography. The geometries in the model are simplified representations of the built environment that have been configured to a level of detail that is appropriate for noise calculation purposes.
- Sound power levels (SWLs) for acoustically significant plant associated with the proposed Solar Farm are provided in Table 3.1. Details regarding the derivation of these numbers are provided in Section 3.1.2.1 through 3.1.2.3 below.

Table 3.1 Lancefield Solar Farm – acoustically significant plant and equipment

EQUIPMENT	MAKE	NO.	SOUND POWER LEVEL, L_W
Inverters	SG4950HV-MV	1	95 dB(A)[2]
Battery Pack System	2.752 MWh battery energy storage container	4	87 dB(A)[3]
MV Switchgear	MCS6300-LV prefabricated substation	1	67 dB(A)[4]

Notes:

- While there will be some noise associated with the tracking motors used to rotate the PV panels throughout the day period, the supplied manufacturer data indicates that the relative contribution (estimated at 50 dB(A) L_W) will be negligible compared to the plant and equipment identified above.
- The derivation of sound power levels, which is essential for accurate environmental noise modelling, has been undertaken by WSP based on the overall levels summarised in Table 3.1 and detailed in the following sections. It is important to note that deriving 1/3 octave band noise data introduces some inherent uncertainty as equipment can generate different noise spectra, while still producing the same overall noise levels. These changes can have additive effects on the overall noise levels at the receiver location which can make the noise appear more annoying than the level alone would indicate (i.e. where the noise includes a prominent tone).

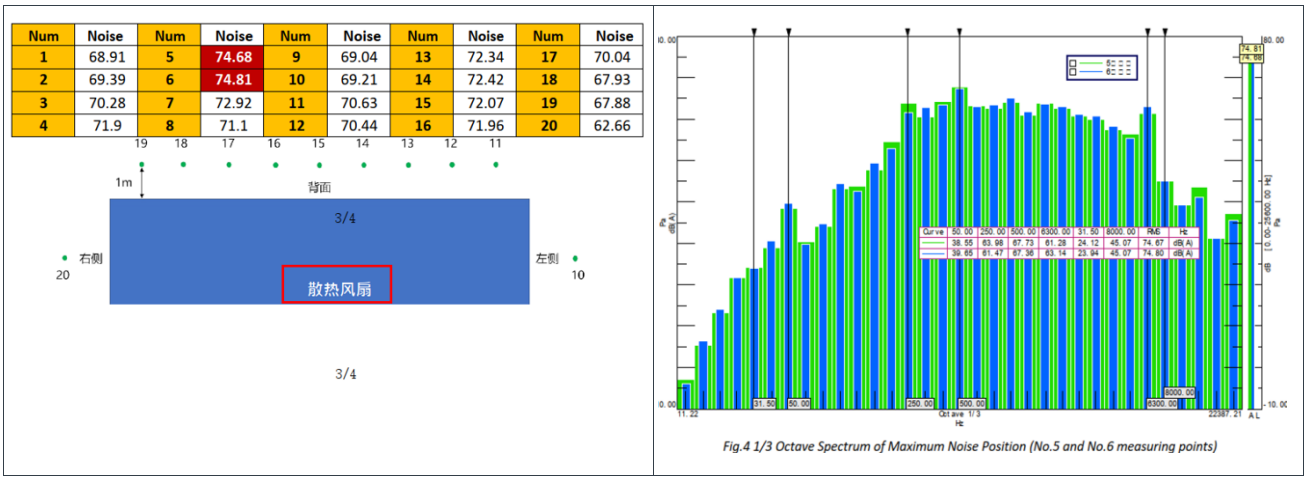
[2] Inverter sound power data evaluated from supplied manufacturer noise test report for smaller SG2475HV inverters.

[3] BESS sound power data evaluated from Sungrow acoustic report *'Noise test report of liquid cooled CATL energy storage container'* which indicates that most of the noise is coming from a fan located on one side of the BESS cabinet.

[4] MV Switchgear sound power data per Annex B of DEKRA Type Test Report No.: 2600305.02-MHV 21-0009 *'Type test on a MVS6300-LV High-voltage/Low-voltage prefabricated substation'*, dated 24 February 2011 for Sungrow Power Supply Co. Ltd.

3.1.2.1 BATTERY PACK SYSTEM

Sound power levels for the BESS cabinets have been estimated from the assumed dimensions (LxWxH = 9.3m x 1.7m x 2.5m), with sound pressure levels of 1 m from each radiating face ranging between 69 and 75 dB(A) per the Sungrow acoustic report *'Noise test report of liquid cooled CATL energy storage container'* from which an extract is shown in Figure 3.1 below.



Num	Noise	Num	Noise	Num	Noise	Num	Noise	Num	Noise
1	68.91	5	74.68	9	69.04	13	72.34	17	70.04
2	69.39	6	74.81	10	69.21	14	72.42	18	67.93
3	70.28	7	72.92	11	70.63	15	72.07	19	67.88
4	71.9	8	71.1	12	70.44	16	71.96	20	62.66

Fig.4 1/3 Octave Spectrum of Maximum Noise Position (No.5 and No.6 measuring points)

Figure 3.1 Extract from test report - measured sound pressure levels and 1/3 octave band spectrum from fan

The BESS cabinets have been modelled as industrial buildings with dimensions and 1/3 octave band spectrum as indicated in Figure 3.1. It is worth noting that due to the location of the fans, it is recommended that some consideration is made in relation to potential noise impacts at the closest noise sensitive areas. To assess potential noise from the Project, we have assumed that the fans are located on the west side of the BESS cabinets, representing worst-case conditions to the nearest noise sensitive areas.

3.1.2.2 INVERTER

Noise levels for the proposed SG4950HV-MV inverter have been based off the available noise test report for the smaller SG2475HV inverter unit, which indicates sound pressure levels ranging between 73 dB(A) at 1 m from the side and up to a maximum of 77 to 79 dB(A) measured 1m from the front and rear. This data was used in conjunction with the assumed dimensions of the inverter to estimate an overall sound power level for the proposed inverter of 95 dB(A), L_W. The inverter has been modelled as a point source at a height 2.3 m above ground with the 1/3 octave band spectrum based on available SMA Solar data for the SC2200 inverter which includes a prominent tone at 3.15 kHz.

The inverters will only generate noise during daylight hours, which during summer could extend from 0600 hrs through to around 2100 hrs. Accordingly, there is a chance that the inverters could generate noise during the early morning night period as defined in the Noise Protocol (i.e. before 0700 hrs).

3.1.2.3 MV SWITCHGEAR

Sound power data for the proposed MV Switchgear has been sourced from Annex B of DEKRA Type Test Report No.: 2600305.02-MHV 21-0009 *'Type test on a MVS6300-LV High-voltage/Low-voltage prefabricated substation'*, dated 24 February 2011 for Sungrow Power Supply Co. Ltd.

The test report indicates that during testing of the enclosure, which includes the ONAN transformer and LV cabinets (including air cooling), the guaranteed sound power level was 58 dB(A) L_W from inside the prefabricated substation. Where the testing was undertaken with the doors open the guaranteed sound power level went up to 67 dB(A) L_W, the latter being used for the purposes of noise predictions.

The MV Switchgear was included as a point source at 2.3 m above ground. A generic spectrum has been adopted based on WSP measurement data for similar equipment which includes slight tones at 100 Hz and 315 Hz.

3.2 PREDICTED NOISE LEVELS

Noise from the operational solar farm was predicted to the surrounding noise sensitive areas based on the anticipated 'worst case' conditions, assuming the inverter banks and BESS infrastructure are operating simultaneously at maximum load during all periods. A summary of the predicted noise levels is provided in Table 3.2 which shows the predicted noise levels at each receiver for the day, evening, and night periods, with a noise contour plot provided in Appendix A.

Results are displayed without mitigation controls in place.

Table 3.2 Predicted operational noise levels and assessment

LOCATION	NOISE LIMIT, dB(A) $L_{eq(30\ min)}$			PREDICTED NOISE LEVEL[(1)], dB(A) L_{eff}			COMPLIES?		
	DAY	EVENING	NIGHT	DAY	EVENING	NIGHT	DAY	EVENING	NIGHT
UNMITIGATED RESULTS									
252 Rochford Rd	46	41	36	30	30	30	Yes	Yes	Yes
270 Rochford Rd				29	29	29	Yes	Yes	Yes
117 Cullys Rd				35	35	35	Yes	Yes	Yes
118 Cullys Rd				30	30	30	Yes	Yes	Yes
50 Cullys Rd				34	34	34	Yes	Yes	Yes
68 Cullys Rd				30	30	30	Yes	Yes	Yes

Note 1: As the proposed plant and equipment (primarily the inverters, and to a lesser extent the BESS cabinets and transformers) includes tonal characteristics which can make the noise appear more annoying than the level along would indicate, the results presented include an A_{tone} penalty of +2 dB(A) in accordance with the Noise Protocol.

3.3 DISCUSSION AND RECOMMENDATIONS

The noise modelling results presented in Table 3.2 indicate that the predicted noise from the operational solar farm will comply with the operational noise limits at all locations.

The highest noise levels were predicted at 117 Cullys Road where the level of noise was dominated by the Sungrow SG4950HV-MV inverter. As previously noted, the inverter will only generate noise during daylight conditions. However, during the summer months, there is a potential one-hour window during which noise from the inverters should be assessed against the more onerous noise limit applicable during the night period (i.e. from 0600 hrs through 0700 hrs).

Based on previous project experience and data released by other inverter manufacturers it is understood that the noise output can vary by as much as 12 dB while under reduced 50% load conditions. Considering he above, it is envisaged that the margin of compliance at 117 Cullys Road will be noticeably larger than that shown.

It is recommended that once the Solar Farm is operational, commissioning noise measurements are undertaken to validate the noise modelling assumptions and ensure compliance with the Noise Protocol. Where noise is found to exceed the operational noise limits, additional noise mitigation measures will need to be considered, such as the inclusion of noise barriers around the battery units or local acoustic enclosures.

4 CONCLUSION

WSP has been retained by Urbis to assess noise from the proposed BNRG Renewables Solar Farm located at 313 Colliver's Road, Lancefield.

The noise assessment has been based on supplied noise data provided by the manufacturer, the limitations of which have been discussed throughout the report.

By developing land that will introduce new sources of noise that could potentially impact surrounding land uses, the developer is required under the General Environmental Duty to minimise those risks of harm so far as reasonably practicable.

To this extent, a noise modelling assessment has been undertaken with noise from the operational solar farm found to meet the relevant EPA Publication 1826 noise limits as nominated in the DELWP Guideline.

The predictive noise modelling results indicate that noise from the operational Solar Farm site will comply with the operational night-time noise limit. As such, the residual risk that noise from the operational facility will cause adverse noise impacts is minimal. However, it is nonetheless recommended that a compliance survey is undertaken once the facility is operational for verification purposes.

5 LIMITATIONS

This Report is provided by WSP Australia Pty Limited (*WSP*) for Urbis in response to specific instructions from the Client and in accordance with WSP's proposal PP139842 entitled *"4x BNRG Renewables VIC Solar Farm Projects – Noise Impact Assessment Proposal"*, dated 19 July 2022 with email confirmation provided 4 October 2022.

5.1 PERMITTED PURPOSE

This Report is provided by WSP for the purpose described in the Agreement and no responsibility is accepted by WSP for the use of the Report in whole or in part, for any other purpose (*Permitted Purpose*).

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The services undertaken by WSP in preparing this Report were limited to those specifically detailed in the Report and are subject to the scope, qualifications, assumptions and limitations set out in the Report or otherwise communicated to the Client.

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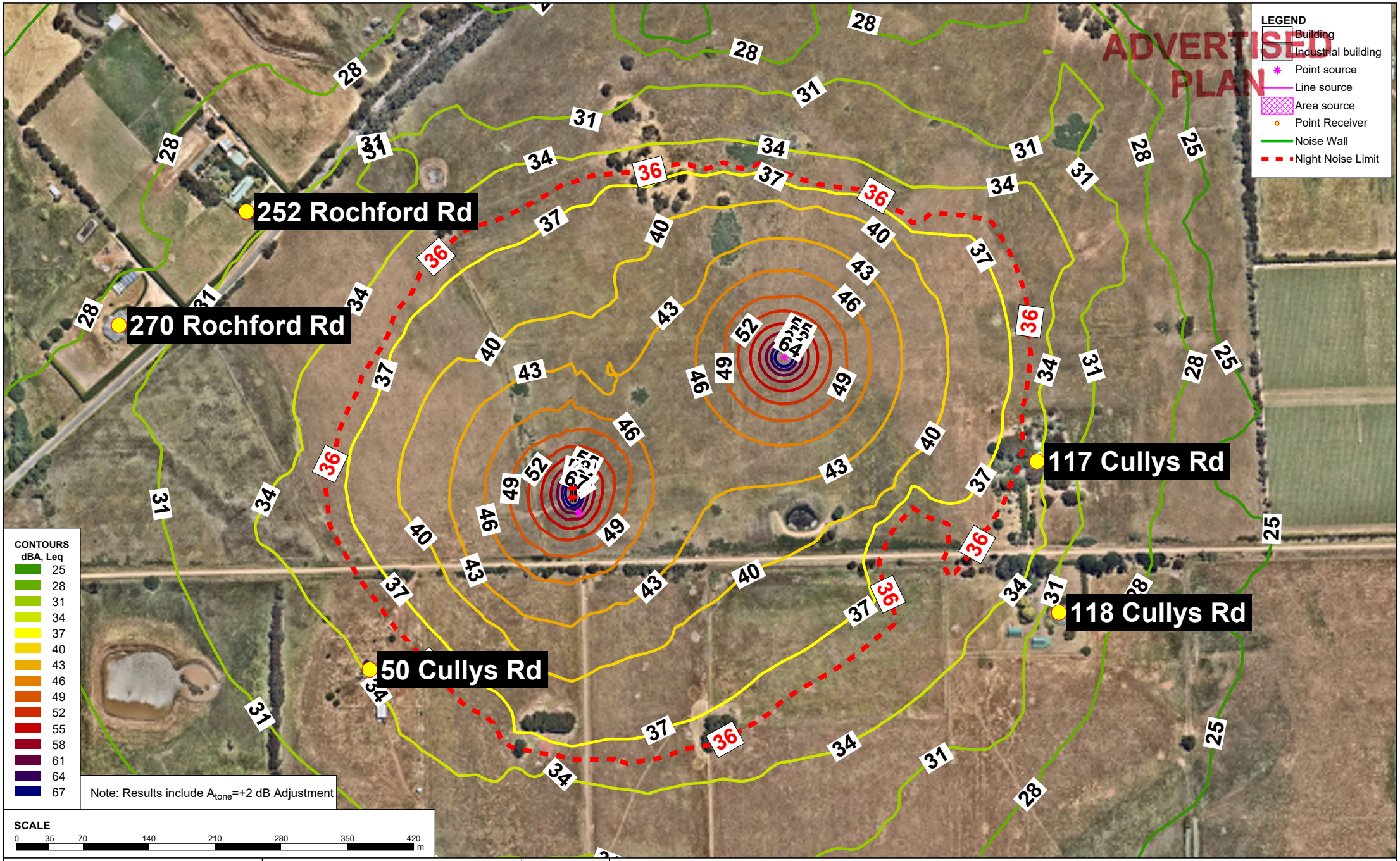
APPENDIX A

NOISE MODELLING RESULTS



Date: 10/11/2022	Prediction Algorithm: ISO9613-2:1996
Appendix: A	Prediction Height:
Map Number: 1	Coordinate System: UTM Zone 55 WGS84
Client: Urbis	Author: Ima Fricker

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