TAIYO
POWER AND STORAGE

Parc Solar Caenewydd, Swansea

Noise Assessment

Development of National Significance in the Renewable Energy Sector
Application Submission

On behalf of **Taiyo Power & Storage Limited**

December 2023 | P21-2998

PARC SOLAR CAENEWYDD

NOISE ASSESSMENT

Acoustics Report A1861 R02G

19th December 2023

Report for:	Taiyo Power Storage Limited
Report issued to:	Pegasus Planning Group Attention: Gareth Roberts Low Carbon Alliance Attention: Claudia Dietz
Prepared by: Tony James BSc(Hons) MIOA Senior Acoustic Consultant	Checked by: Gavin Irvine BSc(Hons) MIOA Director

Issue/Revision number:	Date:
~~A1861 R02~~	~~17/01/2023~~
~~A1861 R02A~~	~~19/01/2023~~
~~A1861 R02B~~	~~30/03/2023~~
~~A1861 R02C~~	~~05/10/2023~~
~~A1861 R02D~~	~~05/12/2023~~
~~A1861 R02E~~	~~07/12/2023~~
~~A1861 R02F~~	~~12/12/2023~~
A1861 R02G	19/12/2023

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Contents

1 Introduction

This noise assessment has been prepared by Ion Acoustics on behalf of Taiyo Power & Storage Limited (herein referred to as "the applicant") and forms part of a suite of documents supporting a planning application for Development of National Significance for the construction, operation, management and subsequent decommissioning of a co-located solar farm and battery storage facility on land fronting the A484 and Swansea Road (B4560) at Gowerton, Swansea ("the application site").

The development is called 'Parc Solar Caenewydd'. The development area does not have any residential receptors within it except Penyfodau Fawr Farm, however there are some noise sensitive receptors beyond the boundary of the development which will need to be considered to determine the impact of operational noise from the scheme.

As the scheme is a development of national significance (DNS) planning permission is decided by the Welsh Government Planning & Environment Decisions (PEDW), with the local authority acting as a consulting body to the PEDW. The local authority is Swansea Council.

Solar farms and battery schemes are not inherently noisy. However, various electrical components such as inverters and transformers emit low levels of noise. Therefore, a noise assessment is required. This report contains the details of the assessment and discusses appropriate plant noise limits for operational noise along with predicted operational noise levels from the proposed plant. A baseline noise survey to determine existing conditions has been completed and is documented in Ion Acoustics Report A1861 R01.

2 Local Authority Consultation

The local authority was contacted to discuss appropriate plant noise limits to use for assessment. It was proposed to set the limit as a rating level, L_{Ar}, at parity with the typical background noise levels as set out in the previous Ion Acoustics report A1861 R01. Lucy Kelly of Swansea Council confirmed this approach via email on the 29th November 2022, and indicated that the Council's pollution control officer had deemed the approach acceptable. This correspondence is attached in Appendix A.

3 Proposed Scheme Details

The site is located to the north-east of Gowerton on agricultural land south of the A484 and B4560 and north of the train lines running in/out of Swansea. To the west of site is a large Welsh Water treatment works facility beyond which is Gowerton itself. The Battery Energy Storage System (BESS) area to the east of the site is expected to be the focus of noise generation from site, and the closest receptors to this area are on Swansea Road/B4560.

The closest properties to the west are on Alder Way, however this is at a great distance from the BESS area. To the east is agricultural land, beyond which lies Fforestfach, a suburban district of Swansea. As the BESS area is at the east of the development the noise at Fforestfach will be carefully considered. The closest noise sensitive receptors to the east are located on Swansea Road/ B4560. To the south is a large industrial estate accessed off Titanium Road, with residential properties on the far side beyond the train tracks. To the north is the busy A484, beyond which are residential properties on the outskirts of Gorseinon on Swansea Road/B4620.

This report is prepared based upon the 'Proposed Layout Plan Rev V13' dated 01.12.2023. The proposed layout has been superimposed on satellite image along with the assessment positions

considered in this report. The assessment positions do not include every residential property, however all the closest, or most exposed addresses are included. All other receptor locations not included either are at a greater distance or benefit from greater screening and therefore would be less affected than those considered in this assessment.

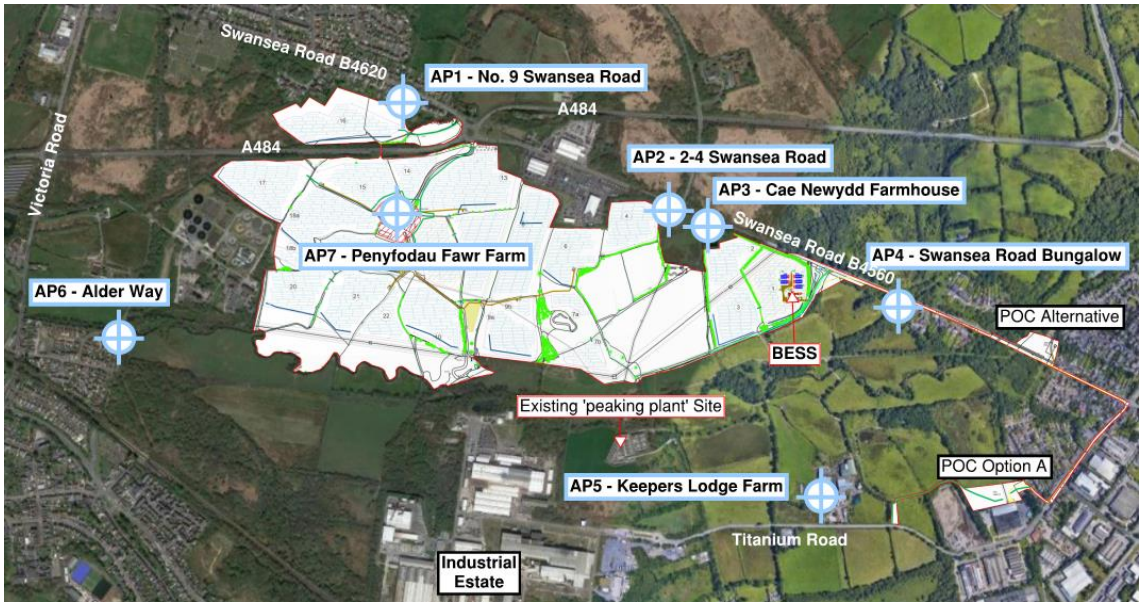

Figure 1 – Satellite image with proposed layout overlaid © Google

The background noise across the area is affected by road noise to the north from continuous traffic on the A484 and Swansea Road. These roads are generally fast-moving with the national speed limit in place on the A484 and 40mph limits on B4560 and 30mph limit on the B4620. There are further noise contributions from industrial activity at existing businesses in the industrial estate south of the proposals and adjacent to Titanium Road. There is an existing gas-powered "peaking plant" to the east of the industrial estate, but this only operates during periods of peak demand for electricity.

The proposed site in Figure 1 above illustrates the current red-line boundary and expected layout. With the BESS to the east of the development area as shown, receptors AP3 and AP4 are the closest and the impact at these locations has been carefully considered. There are two point of connection (POC) options to the east however there is no noise generating equipment at either and therefore neither location has an impact on noise or amenity during the operational phase of the site.

4 Report Scope and Planning Guidance relating to Noise

This report is prepared to provide full details of the assessment of operational noise emitted from the proposed development site, with clear summary of the calculated impact. The previous baseline survey A1861 R01 has been used to inform a BS 4142:2014 assessment to comply with criteria agreed with the local authority.

There will also be a noise impact during the construction phase including noise from construction plant and machinery such as directional drilling and noise from the transportation of construction materials and the proposed infrastructure. However, any effect is temporary and generally occurs during the daytime working hours. Construction noise will be controlled via a Construction

Environmental Management Plan (CEMP) which will be agreed with the Swansea Council. A specific construction noise assessment has not been carried out, however this can be provided along with decommissioning should this be necessary.

4.1 Technical Advice Note 11: Noise (1997) (TAN 11)

The current Welsh planning guidance in respect of planning and noise in Wales is TAN 11. With regards to a noise generating development, such as the case here, the document states:

"Local planning authorities must ensure that noise generating development does not cause an unacceptable degree of disturbance. They should also bear in mind that if subsequent intensification or change of use results in greater intrusion, consideration should be given to the use of appropriate conditions.

Noise characteristics and levels can vary substantially according to their source and the type of activity involved. In the case of industrial development, for example, the character of the noise should be taken into account as well as its level. Sudden impulses, irregular noise or noise which contains a distinguishable continuous tone will require special consideration. In addition to noise from aircraft landing and taking off, noise from aerodromes is likely to result from engine testing as well as ground movements. The impact of noise from sport, recreation and entertainment will depend to a large extent on frequency of use and the design of facilities. Advice on assessing noise and on factors to consider in relation to the major noise sources including roads, railways, airports, industrial and recreational noise and their measurement is given in Annex B."

The principles set out above, such as considering the character of the noise as well as its absolute level, are broadly in line with the assessment principles of BS 4142:2014 +A1: 2019, which is discussed below. The link to BS 4142 is explicitly made in Section B17 of TAN 11, although it is noted that the version of the standard being referred to is now outdated. Section B17 is set out below.

"B17. The likelihood of complaints about noise from industrial development can be assessed, where the Standard is appropriate, using guidance in BS 4142: 1990. Tonal or impulsive characteristics of the noise are likely to increase the scope for complaints and this is taken into account by the "rating level" defined in BS 4142. This "rating level" should be used when stipulating the level of noise that can be permitted. The likelihood of complaints is indicated by the difference between the noise from the new development (expressed in terms of the rating level) and the existing background noise. The Standard states that, 'A difference of around 10 dB or higher indicates that complaints are likely. A difference of around 5 dB is of marginal significance'. Since background noise levels vary throughout a 24 hour period it will usually be necessary to assess the acceptability of noise levels for separate periods (e.g. day and night) chosen to suit the hours of operation of the proposed development. Similar considerations apply to developments that will emit significant noise at the weekend as well as during the week. In addition, general guidance on acceptable noise levels within buildings can be found in BS 8233: 1987."

TAN11 is currently under consultation with the most recent consultation period ending 20th January 2023. At issue of this report no update to TAN11 has been adopted. In the instance of this development and the proposed changes to TAN11 good acoustic design has already been used to control noise emissions to nearby residential receptor and therefore overall conclusions of this report would be expected to remain unchanged.

4.2 BS 4142:2014+A1: 2019

This standard contains a method for assessing noise of an industrial nature affecting people who may be inside or outside a dwelling or premises used for residential purposes. A BS 4142:2014 assessment is made by determining the difference between the plant noise under consideration and the background sound level as represented by the L_{A90} parameter, determined in the absence of the intrusive noise. The L_{A90} statistical parameter is the level exceeded for 90% of the measurement time. Therefore, it represents the underlying noise in the absence of short-term events.

The plant noise under consideration is assessed in terms of the ambient noise level, L_{Aeq}, but a character correction penalty can be applied where the noise exhibits certain characteristics such as distinguishable tones, impulsiveness or, if the noise is distinctively intermittent. The ambient noise level, L_{Aeq} is defined as the steady-state noise level with the same energy as the actual fluctuating sound over the same time period. It is effectively the energy average noise level during the period. The plant noise level (L_{Aeq}) with the character correction (if necessary) is known as rating level, L_{Ar}, and the difference between the background noise and the rating level is determined to make the BS 4142 assessment. The standard then states:

- *"Typically, the greater the difference, the greater the magnitude of the impact.*
- *A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- *A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context*
- *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."*

BS 4142: 2014 states: *'In using the background sound level in the method for rating and assessing industrial and commercial sound it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the*

objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods'.

The standard outlines a number of methods for defining appropriate 'character corrections' to determine the rating level to account for tonal qualities, impulsive qualities, other sound characteristics and/or intermittency.

The standard also highlights the importance of considering the context in which a sound occurs. The standard indicates that factors including the absolute sound level, the character of the sound, the sensitivity of the receptor and the existing acoustic character of the area should be considered when assessing the noise impact.

Importantly the current BS 4142:2014 requires the rating level to be compared with the typical background and very specifically not the lowest.

4.3 Local Authority Consultation

The local authority was contacted to discuss appropriate plant noise limits to use for assessment. It was proposed to set the limit as a rating level, L_{Ar}, at parity with the typical background noise levels as set out in the previous Ion Acoustics report A1861 R01. Lucy Kelly of Swansea Council confirmed this approach via email on the 29th November 2022, and indicated that the Council's pollution control officer had deemed the approach acceptable.

5 Proposed Plant Noise Limits

A baseline noise survey was carried out in August 2022 to determine the existing noise levels at four locations around the proposed development. Full details of the baseline survey are given in our Noise Survey Report A1861 R01 25th August 2022. The typical background noise levels have been taken from the report and have been used to derive plant noise limits by the methodology agreed with the local authority. The typical daytime and night-time background noise levels and the proposed plant noise limits are given in Table 1 below.

Table 1: Typical Background Noise Levels and Proposed Plant Noise Limits

Measurement Position	Typical Background Noise, dB L_{A90}		Relative Limit, dB	Proposed Plant Noise Limit, dB L_{Ar}		Used at Assessment Position
	Day	Night		Day	Night	
MP1	40	38	+/- 0	40	38	AP6
MP2	46	35	+/- 0	46	35	AP1
MP3	40	34	+/- 0	40	34	AP7
MP4	38	34	+/- 0	38	34	AP2, AP3, AP4, AP5

6 Plant Assessment

6.1 Assessment Methodology and Details

The noise assessment has considered the following positions given in Table 2 below. These positions represent the closest and most exposed properties, and therefore if plant noise limits are met at these locations they will also be met at all other locations at a greater distance. Whilst there is plant across the site the BESS compound to the east is the main concentration of sound energy and the distance between the receptors and compound perimeter has been given in Table 2 below.

Table 2: Assessment Positions

Assessment Position	northing, easting	Assessment Height (m)	Distance to BESS Compound (m)
AP1 – No 9 Swansea Road	260064, 197382	4.0	1180
AP2 – No. 2 to 4 Swansea Road	260808, 197040	4.0	370
AP3 – Cae Newydd Farmhouse	260926, 196999	4.0	250
AP4 – Swansea Road Bungalow	261454, 196758	1.5	270
AP5 – Keepers Lodge Farm	261198, 196252	4.0	500
AP6 – Alder Way	259250, 196736	4.0	1080
AP7 – Penyfodau Fawr Farm	260036, 197076	4.0	1850

Our assessment has used computer modelling software IMMI[1] to implement appropriate losses for atmosphere, topography, ground absorption, and screening. The results are calculated in accordance with ISO 9613-2[2] with the following input parameters:

- Downwind propagation (noise levels under crosswind and upwind conditions will be less);
- Soft ground between the noise source and the receiver locations (G = 1.0),
- Ambient air temperature of 10°C and 70% Relative Humidity; and,
- Screening influence calculated in accordance with ISO 9613-2.
- An elevated assessment height representative of 1st floor windows to avoid overpredicting screening attenuation.
- Topographical data for the calculation area

The input source data for the model is described below. Manufacturer's noise data from typical equipment has been provided for the units on site, however not all data has been provided in octave band format. To more accurately model losses where octave band levels have not been provided, representative values have been used based on Ion Acoustics' library data. The data used for assessment is given in full below.

6.2 Noise Data

The noise data as used in calculations is provided below for all noise sources in the model. In the event that different equipment is used it will be necessary to check that noise levels can meet the same noise limits.

Distributed Smart Transformers

There seven smart transformers proposed across the site. These are understood to be Huawei STS-6000k-H1 units. Manufacturers data for the transformer unit within the smart transformer indicates a sound pressure level at one meter of 46.6 dB L_{pA} with an equivalent sound power level of 62.2 dB L_{WA} (23.4 dB from pressure at 1m to L_{WA}). The equipment has a 'Guaranteed' A-weighted sound power level of 70 dB L_{WA}.

It is therefore assumed that during the day the power level with full load could be up to 70 dB L_{WA}, however during the night a lower duty is expected and therefore 62.2 dB L_{WA} has been considered.

1 IMMI noise mapping https://www.immi.eu/en/noise-mapping-with-immi.html
2 ISO 9613-2: Acoustics – Attenuation of sound during propagation outdoors: Part 2: General method of calculation

No octave band data is provided and therefore a typical spectrum has been considered and is given below in Table 3.

Table 3: Transformers Spectrum correction

Noise Source	Spectrum Correction (dB) in Octave Bands, Hz							Overall, dB L_{WA}
	63	125	250	500	1000	2000	4000	
Assumed Transformer Unit	-3.7	-1.1	-0.8	-1.2	-6.8	-9.5	-9.1	70.0 day 62.2 night

Distributed String Inverters

There are understood to be 165 string inverters, and these have been distributed equally across the site. The model considered is Huawei SUN2000-215 units with a manufacturer sound pressure level at 1m of 63 dBA. This pressure level at 1m has been input to the model as an equivalent sound power level of 71 dBA L_W as a broadband value.

BESS Battery Containers

Within the BESS area to the east Trina Elementa battery containers are considered with a total of 42 units within the modelling. At the time of writing, noise tests for this unit are currently being completed, and in the meantime assumptions have been made based on a pressure level of 75 dB L_{pA} at 1m from the front of the battery container units. This have been input to the model as an equivalent sound power level of 83 dB L_{WA}. We are informed noise from the Trina battery units is expected from the chiller and therefore a typical spectrum has been considered and is given below.

Table 4: Battery Units

Noise Source	Spectrum Correction (dB) in Octave Bands, Hz							Overall, dB L_{WA}
	63	125	250	500	1000	2000	4000	
Trina Spectrum used	2.6	2.0	-1.6	-2.1	-5.7	-8.7	-10.6	83

BESS Inverters

There are 10 Inverter units within the BESS compound. The inverters within the BESS area are understood to be Power Electronics HEMK Gen 3 units, and a data sheet from the manufacturer provided the sound pressure levels at 1m on each side of the units (DC Input side, Ventilation side, and Power Modules side) for operation at 80% duty and 50% duty.

The 80% and 50% duty levels are understood to be typical of day and night operation respectively for inverters in a BESS area. A simple correction has been used for each side of the unit, accounting 8dB difference from the sound pressure level at 1m to the sound power level, with a point source applied to each façade of the inverter in the model. The same spectrum has been used for each side of the unit and the spectrum was taken from manufacturer's data for the Gen 2 unit as no spectral information is available for the Gen 3 unit. The spectrum correction used is given below along with the overall sound power level for 80% and 50% duty on each side of the inverter.

Table 5: Power Electronics Inverters

Noise Source	Spectrum Correction (dB) in Octave Bands, Hz							Overall, dB L_{WA}
	63	125	250	500	1000	2000	4000	
Power Electronics HEMK Gen 3 Inverter	-5.1	-13.5	-6.3	-7.2	-5.1	-4.3	-12.5	DC Input 82.8/72.3
								Ventilation 87.3/74.4
								Power Modules 87.8/77.6

132 kV substation

Ion Acoustic measured library data of a 132kV DNO transformer has been considered for assessment of the 132 kV substation. An overall sound power level of 85 dB L_{WA} is expected for such a substation.

Table 6: DNO Noise levels

Noise Source	Spectrum Correction (dB) in Octave Bands, Hz							Overall, dB L_{WA}
	63	125	250	500	1000	2000	4000	
DNO	2.8	-1.0	4.8	0.3	-14.3	-23.8	-24.9	85

POC Locations

No noise generating equipment related to POC locations.

6.3 Noise Contours

The noise predictions, with the details as given above, are presented in the first instance as a noise contour plot in Figures 2 and 3 below for day and night, showing the predicted noise levels (dB L_{Aeq}) at 4.0m relative height which is representative of first floor windows. Noise contours are provided at first floor height only in order to demonstrate the typical propagation across the wider area. With the propagation effects so similar at 1.5m and 4.0m only one height has been provided for day and night conditions. The contours are shown at 4.0m as this is the worst case, with marginally higher noise levels calculated at 4.0 than 1.5m typically.

It should be noted the noise levels calculated at each receptor as used in the BS 4142:2014 assessment are not derived from the contours. The contours calculate grids and demonstrate how noise energy propagates across a wide area.

The point calculations to specific locations are fully discussed in section 6.4 below, however to help digestion of the results a simple table of the point receptor calculations has been included within the noise contour Figures for day and night.

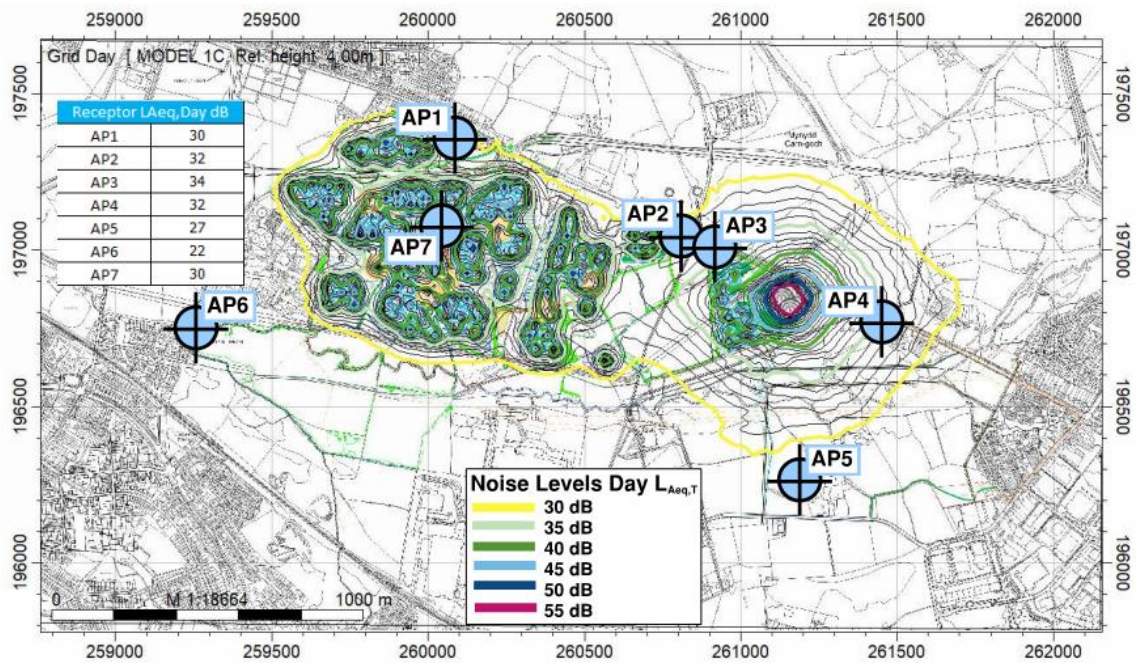

Figure 2: Indicative Noise Contour Plot for the day at 4.0m height dB L_{Aeq}

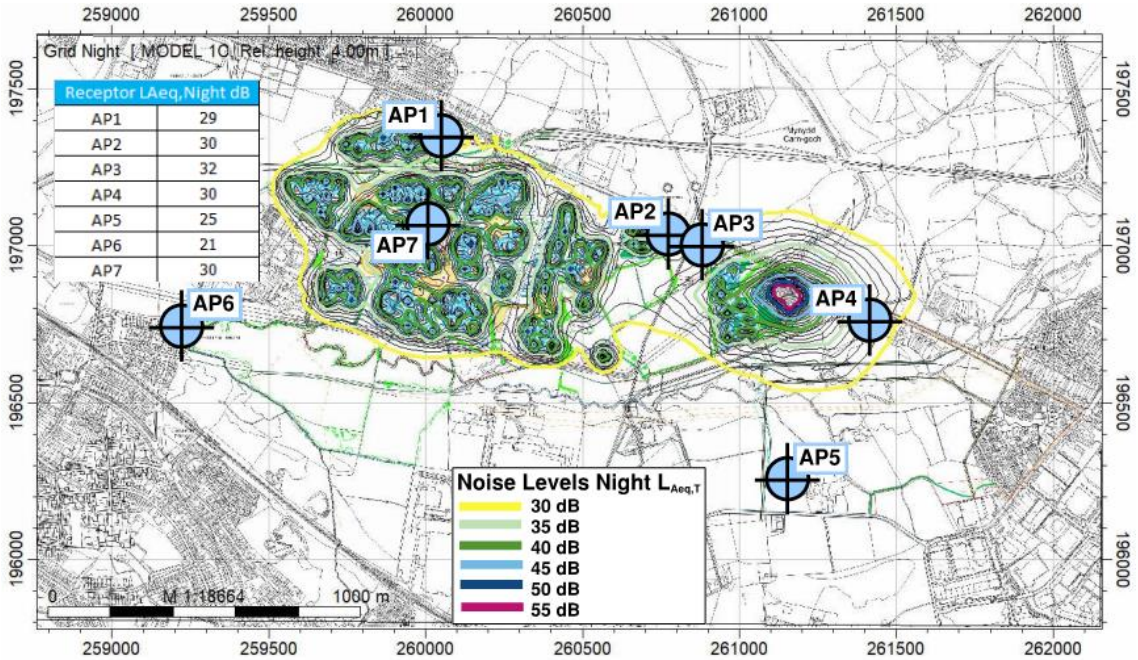

Figure 3: Indicative Noise Contour Plot for the night at 4.0m height dB L_{Aeq}

The lowest contour shown on the Figures above (yellow) is the 30dB(A) contour.

6.4 Predicted Noise Levels at Receptors

In addition to the noise contours, the model has been used to calculate specific noise levels at the third-party receptor locations shown in Figures above. The noise levels calculated at point receptors have been used to evaluate the noise impact in accordance with the methodology detailed in BS 4142.

Some of the equipment has the potential to generate some tonality which may be just audible at receptors, and therefore a tonality correction of +2dB has been considered to determine a BS 4142:2014 rating level. Separate Tables are given for the day and the night below as Table 7 and 8.

Table 7: BS 4142:2014 Impact Assessment Day

Assessment Position	Predicted (Specific) level, dB L_{Aeq}	BS 4142:2014 Correction, dB	Rating Level dB L_{Ar}	Existing Background Noise Level, dB L_{A90}	Difference Rating Level to Background, dB
AP1 – No 9 Swansea Road	30	+2	32	46	-14
AP2 – No. 2 to 4 Swansea Road	32	+2	34	38	-4
AP3 – Cae Newydd Farmhouse	34	+2	36	38	-2
AP4 – Swansea Road Bungalow	32	+2	34	38	-4
AP5 – Keepers Lodge Farm	27	+2	29	38	-9
AP6 – Alder Way	22	+2	24	40	-16
AP7 – Penyfodau Fawr Farm	30	+2	32	40	-8

Table 8: BS 4142:2014 Impact Assessment Night

Assessment Position	Predicted (Specific) level, dB L_{Aeq}	BS 4142:2014 Correction, dB	Rating Level dB L_{Ar}	Existing Background Noise Level, dB L_{A90}	Difference Rating Level to Background, dB
AP1 – No 9 Swansea Road	29	+2	31	35	-4
AP2 – No. 2 to 4 Swansea Road	30	+2	32	34	-2
AP3 – Cae Newydd Farmhouse	32	+2	34	34	-0
AP4 – Swansea Road Bungalow	30	+2	32	34	-2
AP5 – Keepers Lodge Farm	25	+2	27	34	-7
AP6 – Alder Way	21	+2	23	38	-15
AP7 – Penyfodau Fawr Farm	30	+2	32	34	-2

Tables 7 and 8 above indicate that noise generated by the site would not exceed a rating level value above the existing typical background noise level and therefore noise from the site would not cause an adverse effect to amenity and meets the limit agreed with the local authority. This

limit is met by a margin of at least 2dB during the day. The limit is met during the night even with the worst case noise level assumptions made within this assessment, with lower noise levels that we have predicted typically expected during the night.

6.5 Uncertainty

BS 4142 requires an assessment of uncertainty. The prediction methodology in ISO 9613-2 is thought to be accurate to ±3dB but further uncertainty can occur in the source noise levels. That said, the predicted noise levels are low in absolute terms and would remain relatively low even if uncertainty is considered. The noise source data used is conservative and therefore actual noise from the facility is expected to be less than calculated much of the time when the facility is not operating at full capacity. The noise survey was carried out over several days to assess the variation in noise. To that end, uncertainty in the calculations and noise survey is not considered to have a significant impact on the assessment outcomes.

7 Summary

An operational noise assessment has been carried out for the proposed Parc Solar Caenewydd development. Limits have been set based on discussion with the local authority. These limits are set at parity with the existing background noise levels. Existing background noise levels were quantified via a survey and full details can be found in Ion Acoustics report A1861 R01 25th August 2022. The noise assessment has considered typical worst case source noise values of expected equipment to provide robust calculations of the proposed facility operating at 100% capacity except where stated otherwise. It is expected that during most of the time the facility will be operating far below the calculated values for day and night. Overall, the calculations indicate that operational noise from the facility would be low in absolute terms and would comply with proposed plant noise limits as agreed with the local authority. Given the above, it is considered that there are no noise-related issues associated with the Parc Solar Caenewydd so long as noise from the equipment installed does not exceed the values given in section 6.2.

Glossary of Acoustic Terms

Decibel (dB) – The bel is the logarithm of the ratio of two powers, and decibel is 1/10 bel. The human ear responds logarithmically, and it is there expedient to deal in logarithmic units for acoustic values such as sound intensity.

A Weighting – A frequency weighted applied to the measured sound spectrum which corrects the level to simulate the frequency response of the hearing system to sound levels of varying frequencies.

L_{eq}– This is a quasi-average noise level which includes all the sound energy during the measurement period averaged out across the period. It is typically used to describe the ambient noise level. The A weighted value is the L_{Aeq}.

L_{90} – This is the level exceeded for 90% of the measurement period and indicates the steady underlying background noise level. The A weighted Level is the L_{A90}.

L_{pA} – This is an A-weighted sound pressure level.

L_{WA} – This is an A-weighted sound power level, which is the theoretical sum of energy of a noise source. A sound power level cannot be directly measured, only derived through measurements of sound pressure level.

From: Lucy Kelly <Lucy.Kelly@swansea.gov.uk>
Sent: Tuesday, November 29, 2022 9:56 AM
To: Tony James <tony@ionacoustics.co.uk>
Subject: RE: Suitable Plant noise Limits for assessment of 2022/2298/PRE - Parc Solar Caenewydd Development

Hi Tony,
Our pollution control officer has responded, commenting that the proposal to setting plant noise limits as a rating level (LAr) equal to the derived background noise level (LA90) representative of each receptor - agree this approach is acceptable.

Thank you
Kind Regards
Lucy

Cyngor Abertawe
Swansea Council

Lucy Kelly MRTPI *Prif Swyddog Cynllunio / Principal Planning Officer –*

☎Mob 07970 680533 ✉ lucy.kelly@swansea.gov.uk ✉ lucy.kelly@abertawe.gov.uk *Croesewir gohebiaeth yn y Gymraeg a byddwn yn ymdrin â gohebiaeth Gymraeg a Saesneg i'r un safonau ac amserlenni. We welcome correspondence in Welsh and will deal with Welsh and English correspondence to the same standards and timescales*

[APPENDIX B – NOISE SURVEY REPORT]

PARC SOLAR CAENEWYDD

NOISE SURVEY REPORT

Acoustics Report A1861 R01

25th August 2022

Report for:	Taiyo Power Storage Limited
Report issued to:	Pegasus Planning Attention: Gareth Roberts Low Carbon Alliance Attention: Phil Cookson
Prepared by: Tony James BSc Hons AMIOA Consultant	Checked by: Gavin Irvine BSc MIOA Director
Issue/Revision number: A1861 R01	Date: 25/08/2022

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Contents

1 Introduction

Ion Acoustics is appointed by Taiyo Power Storage Limited (herein referred to as "the Applicant") to complete a noise survey for a proposed utility-scale solar and battery storage facility on land fronting the A484 and Swansea Road (B4560) at Gowerton, near Swansea. The development is called 'Parc Solar Caenewydd'.

The development area does not have any residential receptors within it except Penyfodau Fawr Farm itself, however there are some noise sensitive receptors beyond the boundary of the development which will need to be considered for the assessment of operational noise. This noise survey has considered four locations to quantify existing baseline noise levels prior to the solar development. Noise limits can be set on the basis of the existing background noise levels.

The scheme is a development of national significance (DNS) therefore planning permission is decided by the Welsh Government Planning & Environment Decisions (PEDW), with the local authority acting as a consulting body to the PEDW. The local authority is Swansea Council.

This report contains the full details of the noise survey undertaken at the site and discusses appropriate plant noise limits for operational noise from the development.

2 Proposed Scheme Details

The site is located to the north-east of Gowerton on agricultural land south of the A484 and B4560 and north of the train lines running in/out of Swansea. To the west of site is a large Welsh Water treatment works facility beyond which is Gowerton itself with the closest properties on Alder Way. To the east is agricultural land, beyond which at a great distance lies Fforestfach suburban district of Swansea. The closest noise sensitive receptors to the east are located on Swansea Road/ B4560. To the south is a large industrial estate accessed off Titanium Road, with residential properties on the far side beyond the train tracks. To the north is the busy A484, beyond which are residential properties on the outskirts of Gorseinon on Swansea Road/B4620.

At the point of writing this report the layout of the solar farm had not been finalised, however the boundary is not expected to alter drastically, and therefore the closest sensitive receptors are not expected to change. The current site boundary and measurement positions are illustrated on Figure 1 below

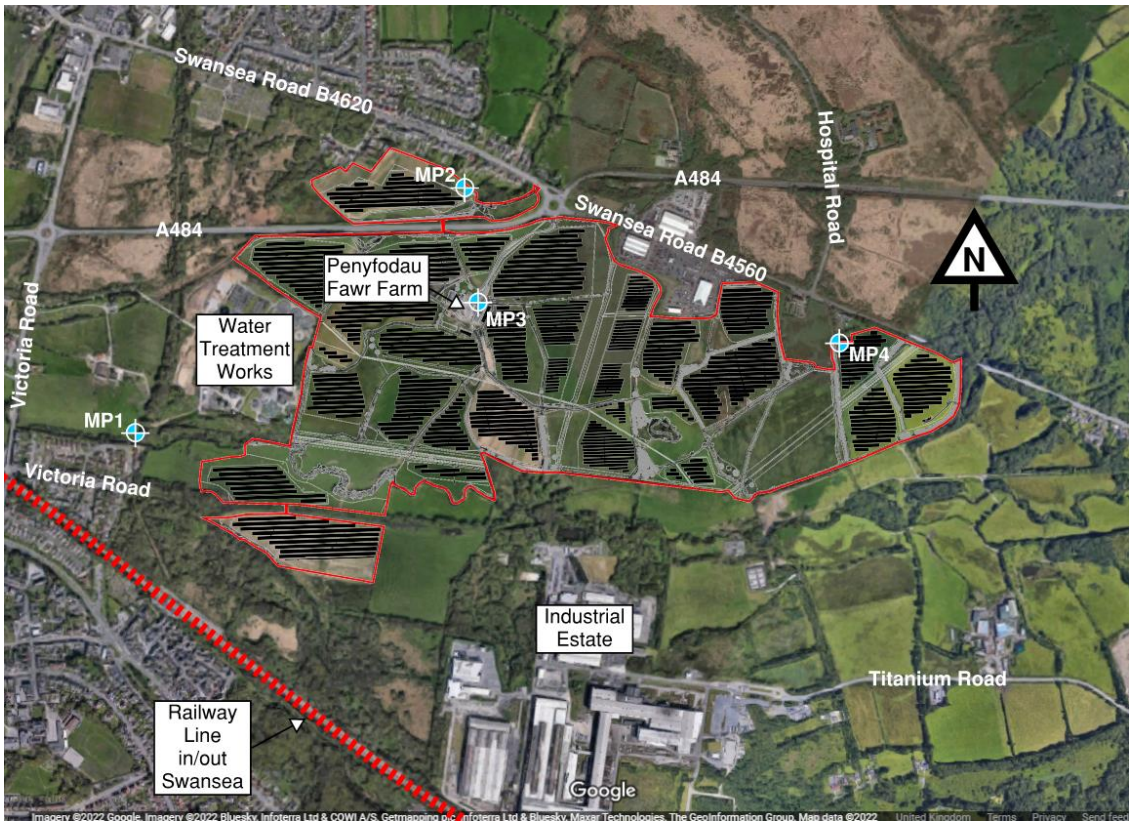


Figure 1 – Google Maps Satellite image with Measurement Positions and Site Superimposed

The site is affected by road noise to the north from continuous fast-moving traffic on the A484 and Swansea Road. These roads are generally fast-moving with the national speed limit in place on the A484 and 40mph limits on B4560 and 30mph limit on the B4620. There are further noise contributions from industrial activity from existing businesses in the industrial estate and adjacent to Titanium Road to the south, with impact noise from hammering noted during the survey set-up and collection. There is also a gas-powered "peaking plant" to the east of the industrial estate but this only operates during periods of peak demand for electricity. Additionally, the Railway line provides access in/out of Swansea, and local roads are used for access to residential properties to the southwest where the outskirts of Gowerton can be seen.

The proposed site arrangement is not yet finalised however figure 1 above illustrates the current red-line boundary and typical site layout. This has been used to decide on measurement positions with the greatest potential for impact so that baseline noise levels can be quantified.

3 Report Scope and Planning

This report is prepared to provide details of the noise survey work completed on site, with clear summary of the baseline values found. The baseline survey will be used to inform a BS 4142:2014 assessment, and therefore survey work should comply with the requirements of this standard. A description of BS 4142 is provided below.

4 BS 4142:2014

This British standard contains a method for assessing noise of an industrial nature affecting people who may be inside or outside a dwelling or premises used for residential purposes. A BS 4142:2014 assessment is made by determining the difference between the plant noise under

consideration and the background sound level as represented by the L_{A90} parameter, determined in the absence of the intrusive noise. The L_{A90} statistical parameter is the level exceeded for 90% of the measurement time. Therefore, it represents the underlying noise in the absence of short-term events.

The plant noise under consideration is assessed in terms of the ambient noise level, L_{Aeq}, but a character correction penalty can be applied where the noise exhibits certain characteristics such as distinguishable tones, impulsiveness or, if the noise is distinctively intermittent. The ambient noise level, L_{Aeq} is defined as the steady-state noise level with the same energy as the actual fluctuating sound over the same time period. It is effectively the energy average noise level during the period. The plant noise level (L_{Aeq}) with the character correction (if necessary) is known as rating level, L_{Ar}, and the difference between the background noise and the rating level is determined to make the BS 4142 assessment. The standard then states:

- *"Typically, the greater the difference, the greater the magnitude of the impact.*
- *A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- *A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context*
- *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."*

BS 4142: 2014 states: *'In using the background sound level in the method for rating and assessing industrial and commercial sound it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the*

objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods'.

The standard outlines a number of methods for defining appropriate 'character corrections' to determine the rating level to account for tonal qualities, impulsive qualities, other sound characteristics and/or intermittency.

The standard also highlights the importance of considering the context in which a sound occurs. The standard indicates that factors including the absolute sound level, the character of the sound, the sensitivity of the receptor and the existing acoustic character of the area should be considered when assessing the noise impact.

Importantly the current BS 4142:2014 requires the rating level to be compared with the typical background and very specifically not the lowest.

5 Noise Survey

5.1 Methodology and Equipment

A baseline noise survey has been undertaken at site to quantify existing noise levels. The noise survey included four positions representative of the positions most exposed to the development. The noise monitor was set up and collected by Tony James of Ion Acoustics. Who is a suitably qualified acoustician and associate member of the Institute of Acoustics. The location of the measurement positions has been given below in Table 1, as well as illustrated on Figure 1 above.

Table 1 – Measurement Positions

Position	northing, easting	Description
MP1	259233, 196776	North of Alder Way Gowerton
MP2	260041, 197343	South of residential on Swansea Road B4620
MP3	260092, 197065	Penyfodau Fawr Farm
MP4	260912, 196938	South of Residential on Swansea Road B4560

Table 2 – Photos of Measurement Positions

MP1	MP2
	
Photo looking south towards Alder Way with meter at 1.5m height above ground. Footpath passes meter on other side of black fencing left of image.	*Photo Looking north towards gardens of properties on Swansea Road B4620 with meter at 1.5m height above ground*
MP3	**MP4**
	
Photo looking north with Penyfodau Farm on	*Photo looking north towards properties south*

Left of image. Meter set at height 1.5m above ground	*of Swansea Road. Meter set at height 1.5m above ground level*

- MP1 was selected to represent receptors on the outskirts of Gowerton closest to the development on Alder Way. These positions are further away from the fast-moving roads to the north of the development.
- MP2 was selected to represent receptors to the north of the development on Swansea Road/B4620. These receptors are affected by local traffic on the B4620 and the fast-moving A484.
- MP3 was selected to represent receptors at a greater distance from the fast-moving roads to the north, specifically the residential buildings of Penyfodau Fawr Farm itself.
- MP4 was selected to represent the receptors to the north-east of the development on Swansea Road B4560.

The survey was carried out over 8-10th August 2022, covering part of the Monday and Wednesday, and full day on Tuesday. The equipment used at all positions were Rion NL52 logging meters set to quantify various octave band noise indices L_{Aeq}, L_{A90}, L_{AFmax} during sequential 15-minute measurement periods. The microphones were fitted with a type WS-15 windshields. The microphones were in a freefield positions more than 3.5m from all surfaces except the ground at all locations. All sound level meters were calibration checked using a Brüel and Kjær 4231 calibrator at the start and end of the survey and no significant drift was observed at any position.

Weather conditions during the survey were suitable for noise measurement, with warm and dry conditions, generally clear skies, and wind speed below acceptable levels. A weather station was installed at Penyfodau Fawr Farm for the duration of the survey monitoring wind speed and direction, rainfall, and temperature. Wind speed never exceeded 1.8m/s as a 15minute average, or 4.9m/s as a gust and was generally from the north, northwest, or west. High temperature was 28°C and low was 10°C. Full weather logging data can be provided on request.

5.2 Measurement Results and Discussion

All broadband measurements are tabulated in Appendix A. A time history graph for each positions covering the entire survey period are given as Figure 2-5 below.

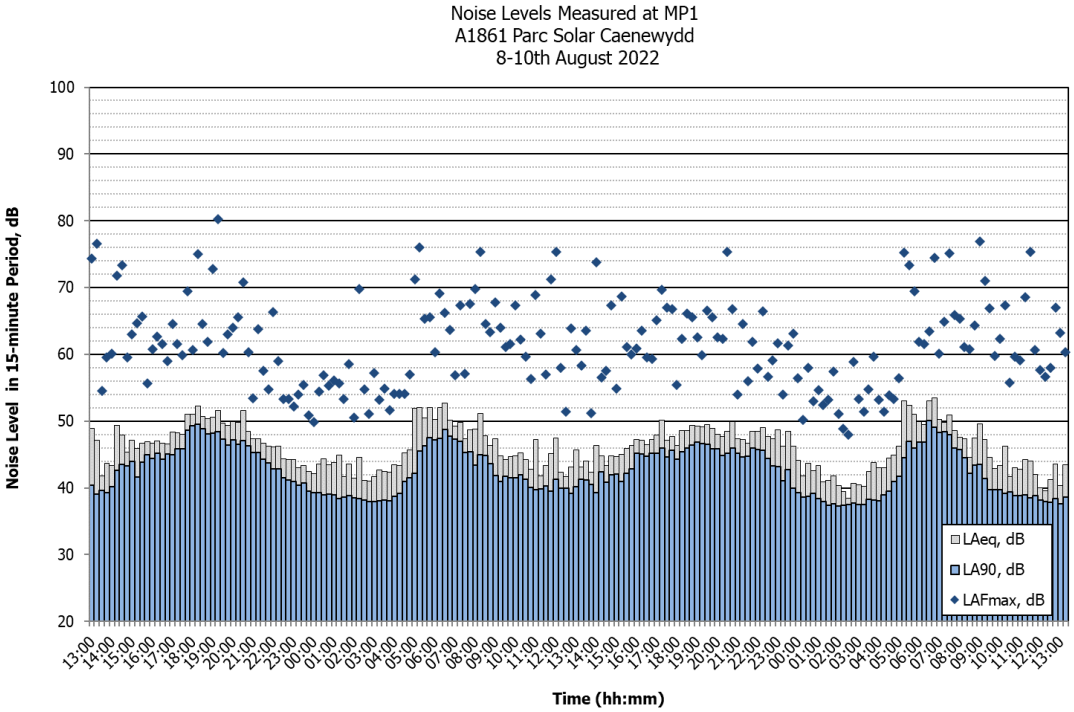


Figure 2 – Time history graph of measurements at MP1

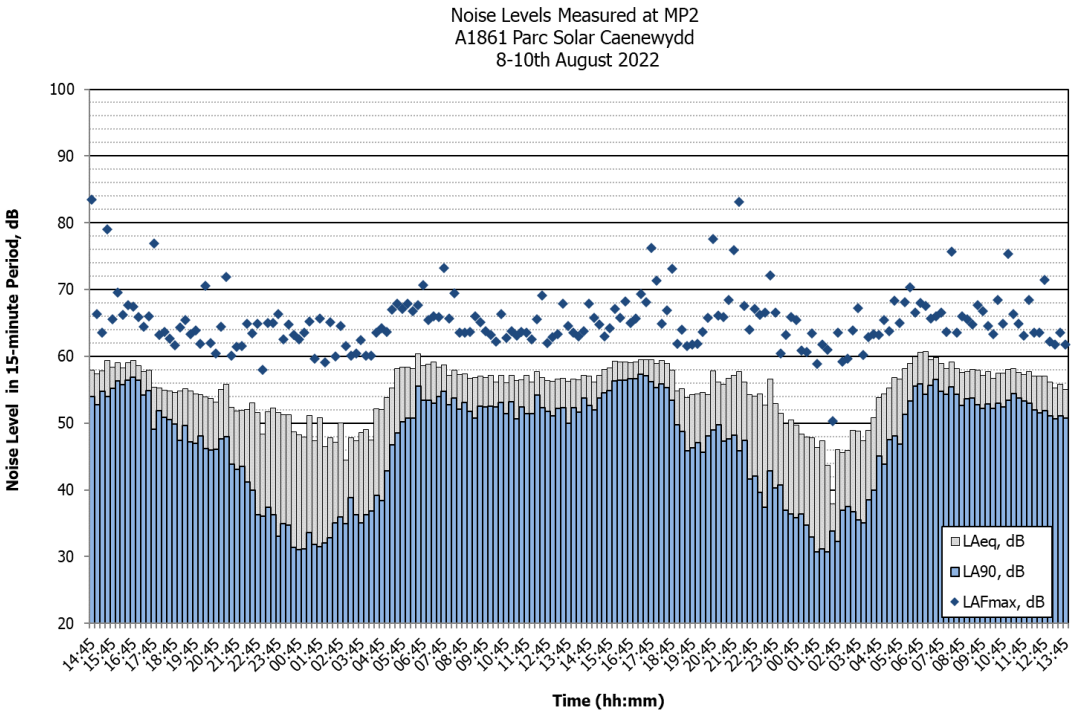


Figure 3 – Time history graph of measurements at MP2

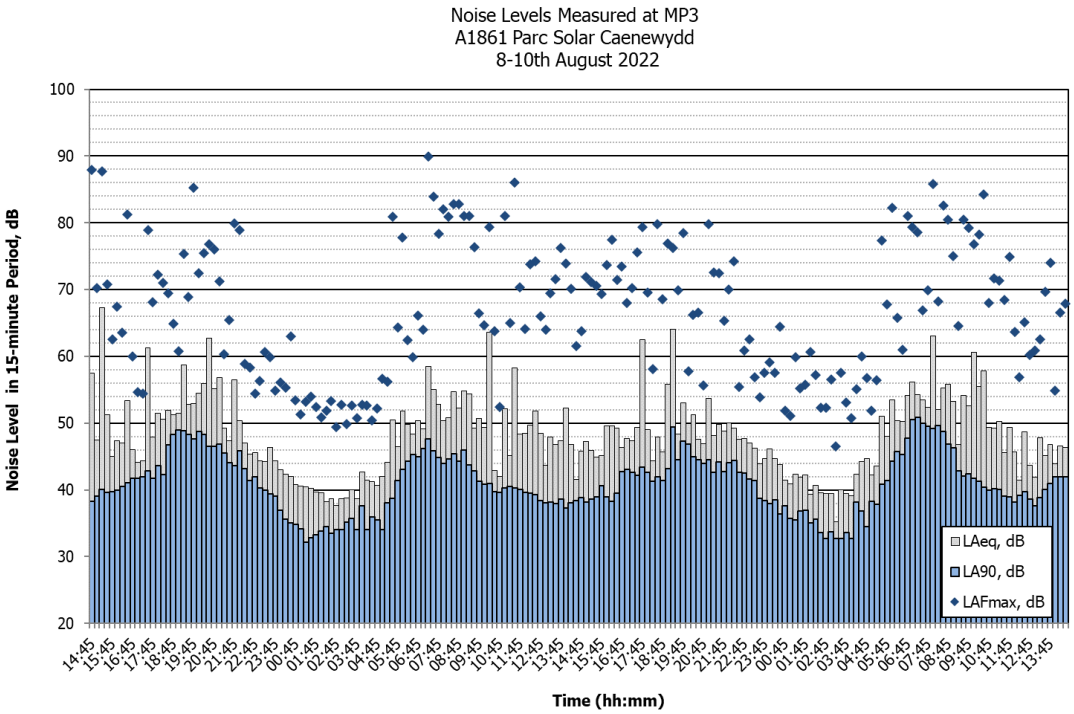


Figure 4 – Time history graph of measurements at MP3

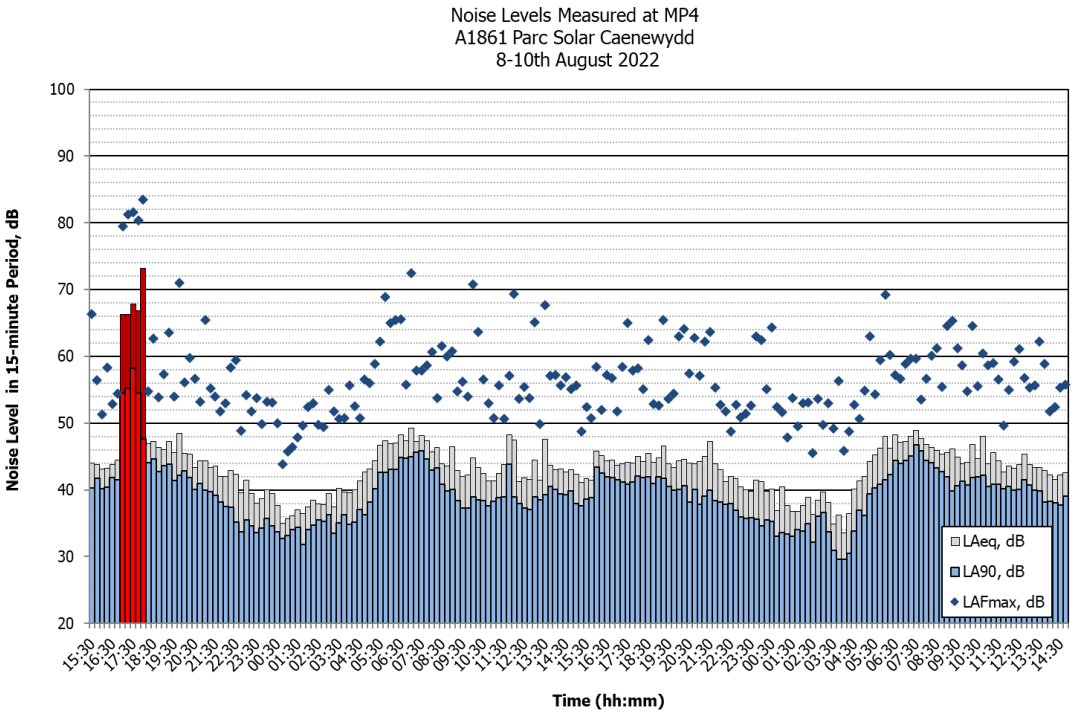


Figure 5 – Time history graph of measurements at MP4

Noise levels at all positions follow roughly the same shape/trend across 48 hours, and therefore it is expected that the same noise source was affecting all positions, this being local roads and traffic flows. This trend generally caused peak noise levels at all positions during morning and

evening rush hours when people are commuting to work, and lowest levels during the night when traffic flows are at their lowest.

The noise levels at MP1 are higher than at MP3 and MP4, with frequent passers-by on the adjacent foot/cyclepath, noise from short term events such as local vehicles, the train line approx. 250m south-east, or overhear aircraft, and during the night, the nearby river 'Afon Llan' maintains the background L_{A90} value through the night. It should be noted that the survey was completed after many very dry months, so the level of the Afon Llan is suspected to be lower than typical. With greater water flow higher background noise levels could be expected, and therefore the values quantified are expected to form a robust approach when noise limits are set.

The noise levels at MP2 are greater than at any other positions during the day, since this position is closest to the roads and therefore affected by traffic on the A484 predominantly, and to a lesser extent the B4620. Noise levels fall drastically during the night when traffic is at the lowest flow rate, and return to high levels again once traffic resumes.

Noise levels at MP3 were affected by short term noise events on the farm such as animal calls, customers visiting the farm shop, or farm operator activity, however these events did not control the background noise levels which were controlled by road noise from traffic to the north.

At MP4 activity nearby the meter raised noise levels for approximately an hour on the first evening, which is shaded red in Figure 5. This has been excluded from the survey, as it is not expected to be typical or representative of the normal environment. The activity could be identified from the audio recordings as some form of mower or cutting tool. At all other times the background noise was typically controlled by road traffic on Swansea Road to the north.

5.3 Measurements Summary

A summary of the noise levels measured at MP1-4 has been presented in Table 3 below. The LAeq value is an energy average across the day and night period at each position. The typical LA90 has been derived from the survey data through statistical analysis and the distribution graphs for each position are given in Appendix A. BS 4142:2014 specifically discusses how the minimum L_{A90} value is not the most appropriate value for assessment of plant noise, and the typical value derived through statistical analysis is generally preferred.

Table 3 – Summary of Measurement at MP1-MP4

Position	Logarithmic Average $L_{Aeq,T}$		Typical Background L_{A90}	
	Day[1]	Night[2]	Day[1]	Night[2]
MP1	47	47	40	38
MP2	57	54	46	35
MP3	54	48	40	34
MP4	45	42	38	34

[1]Day is considered 07:00-23:00
[2]Night is considered 23:00-07:00

5.4 Discussion

The solar farm will operate when there is sunlight and not during the hours of darkness. Therefore the typical operation is during the daytime but this can include evenings during the summer and early mornings from 5am.

The early morning periods would be considered part of the night. However typical background noise levels are low during the night, especially at MP2-4. BS 4142:2014 suggests that where background noise levels are low, an absolute noise limit may be more appropriate than relative limits and that the periods when people might be trying to get to sleep are more important than the quietest time of night. In this case, the period from 5am is when background noise levels start increasing again and therefore it would not be appropriate to set limits based on the lowest period of the night.

Survey results and plant noise emission limits will be discussed with the local authority/PEDW. The plant noise limits will be set in terms of the BS 4142:2014 rating level so that characteristics such as tonality, intermittency, impulsivity, can be controlled.

6 Conclusion

This report documents the baseline noise survey for receptors adjacent to Parc Solar Caenewydd Development. The survey included four positions representative of the noise sensitive receptors closest to the solar development. A summary of the baseline noise levels prior to the development is provided in Table 3 above. The values in this report will be used to inform an assessment of operational noise from the proposed development, with appropriate plant noise limits agreed with the local authority/PEDW.

Glossary of Acoustic Terms

Decibel (dB) – The bel is the logarithm of the ratio of two powers, and decibel is 1/10 bel. The human ear responds logarithmically, and it is there expedient to deal in logarithmic units for acoustic values such as sound intensity.

A Weighting – A frequency weighted applied to the measured sound spectrum which corrects the level to simulate the frequency response of the hearing system to sound levels of varying frequencies.

L_{eq}– This is a quasi-average noise level which includes all the sound energy during the measurement period averaged out across the period. It is typically used to describe the ambient noise level. The A weighted value is the L_{Aeq}.

L_{90} – This is the level exceeded for 90% of the measurement period and indicates the steady underlying background noise level. The A weighted Level is the L_{A90}.

R_w - Weighted sound reduction index of a single element only: dB. This is generally tested in a laboratory and does not account for any flanking or other sound paths.

D_w - Weighted level difference: dB. This is the sound level difference between two rooms and also includes the effect of flanking, other sound paths, workmanship, on site construction and absorption in the receiver room.

RT - Reverberation Time: seconds. This is the time taken for reverberant sound in the room to decay by 60 dB. A dead space with many soft finishes would have a short RT whereas a lively space, comprising mainly hard surfaces, would have a long RT.

NR - The Noise Rating, NR, is used to describe steady noise levels such as mechanical services noise. A family of curves is defined in octave frequency bands and the NR rating for a particular noise is the lowest NR curve which is entirely above the spectrum of the noise under consideration.

MP1

Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB	Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB
08/08/2022 13:00	48.9	74.4	40.4	09/08/2022 01:00	43.8	56.1	38.9
08/08/2022 13:15	47.1	76.6	39.1	09/08/2022 01:15	44.9	55.6	38.4
08/08/2022 13:30	41.8	54.5	39.6	09/08/2022 01:30	41.7	53.3	38.6
08/08/2022 13:45	43.7	59.5	39.3	09/08/2022 01:45	43.6	58.5	38.8
08/08/2022 14:00	43.3	60.1	40.2	09/08/2022 02:00	41.4	50.5	38.5
08/08/2022 14:15	49.4	71.8	42.6	09/08/2022 02:15	44.6	69.8	38.4
08/08/2022 14:30	47.9	73.3	43.5	09/08/2022 02:30	41.1	54.7	38.2
08/08/2022 14:45	45.3	59.5	43.3	09/08/2022 02:45	41.0	51.1	38.0
08/08/2022 15:00	47.1	63.0	44.0	09/08/2022 03:00	41.7	57.2	37.9
08/08/2022 15:15	45.9	64.7	41.6	09/08/2022 03:15	42.7	53.2	38.1
08/08/2022 15:30	46.7	65.7	43.9	09/08/2022 03:30	42.5	54.9	38.2
08/08/2022 15:45	46.9	55.6	45.0	09/08/2022 03:45	42.4	51.6	38.1
08/08/2022 16:00	46.7	60.8	44.4	09/08/2022 04:00	43.5	54.1	38.7
08/08/2022 16:15	47.0	62.7	45.2	09/08/2022 04:15	43.3	54.1	39.2
08/08/2022 16:30	46.7	61.6	44.3	09/08/2022 04:30	45.2	54.1	40.9
08/08/2022 16:45	46.6	59.0	45.1	09/08/2022 04:45	45.7	57.0	41.5
08/08/2022 17:00	48.4	64.5	45.0	09/08/2022 05:00	51.9	71.2	42.2
08/08/2022 17:15	48.2	61.6	45.9	09/08/2022 05:15	52.0	76.0	45.5
08/08/2022 17:30	48.0	59.9	45.8	09/08/2022 05:30	50.5	65.3	46.3
08/08/2022 17:45	51.0	69.5	48.6	09/08/2022 05:45	52.0	65.6	47.5
08/08/2022 18:00	51.0	60.7	49.3	09/08/2022 06:00	50.2	60.3	47.2
08/08/2022 18:15	52.2	75.0	49.5	09/08/2022 06:15	52.0	69.1	47.4
08/08/2022 18:30	50.7	64.5	48.9	09/08/2022 06:30	52.7	66.2	48.8
08/08/2022 18:45	50.4	61.9	48.1	09/08/2022 06:45	50.1	63.7	47.7
08/08/2022 19:00	50.6	72.8	48.2	09/08/2022 07:00	49.3	56.9	47.3
08/08/2022 19:15	51.6	80.2	48.4	09/08/2022 07:15	49.8	67.3	47.0
08/08/2022 19:30	49.7	60.2	47.3	09/08/2022 07:30	47.4	57.1	45.3
08/08/2022 19:45	49.4	63.0	46.4	09/08/2022 07:45	48.7	67.5	45.4
08/08/2022 20:00	49.9	64.0	47.2	09/08/2022 08:00	48.8	69.8	43.4
08/08/2022 20:15	49.8	65.5	46.5	09/08/2022 08:15	51.1	75.3	45.0
08/08/2022 20:30	51.6	70.8	47.1	09/08/2022 08:30	47.8	64.6	44.9
08/08/2022 20:45	48.5	60.3	46.3	09/08/2022 08:45	46.3	63.3	43.6
08/08/2022 21:00	47.3	53.4	45.3	09/08/2022 09:00	47.3	67.8	41.8
08/08/2022 21:15	47.3	63.8	45.3	09/08/2022 09:15	44.8	64.0	41.0
08/08/2022 21:30	46.7	57.5	44.3	09/08/2022 09:30	44.2	61.1	41.7
08/08/2022 21:45	46.2	54.7	43.7	09/08/2022 09:45	44.7	61.5	41.5
08/08/2022 22:00	46.1	66.3	42.9	09/08/2022 10:00	44.8	67.3	41.5
08/08/2022 22:15	46.2	59.0	42.9	09/08/2022 10:15	45.2	62.2	41.9
08/08/2022 22:30	44.4	53.3	41.5	09/08/2022 10:30	44.2	59.7	41.3
08/08/2022 22:45	44.2	53.3	41.2	09/08/2022 10:45	42.8	56.3	40.1
08/08/2022 23:00	44.2	52.2	41.0	09/08/2022 11:00	47.2	68.9	39.7
08/08/2022 23:15	43.0	54.0	40.4	09/08/2022 11:15	41.8	63.1	39.8
08/08/2022 23:30	43.4	55.4	40.7	09/08/2022 11:30	43.4	57.0	40.3
08/08/2022 23:45	42.5	50.9	39.5	09/08/2022 11:45	45.1	71.2	39.5
09/08/2022 00:00	42.1	49.9	39.3	09/08/2022 12:00	47.5	75.4	41.3
09/08/2022 00:15	43.6	54.4	39.3	09/08/2022 12:15	42.4	58.0	40.0
09/08/2022 00:30	44.3	56.9	39.0	09/08/2022 12:30	41.7	51.4	40.0
09/08/2022 00:45	43.5	55.3	39.1	09/08/2022 12:45	43.1	63.9	39.2

Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB	Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB
09/08/2022 13:00	45.7	60.7	40.2	10/08/2022 01:00	43.4	54.6	38.4
09/08/2022 13:15	43.1	58.3	41.3	10/08/2022 01:15	40.9	52.4	37.9
09/08/2022 13:30	44.0	63.5	41.2	10/08/2022 01:30	41.1	53.2	37.4
09/08/2022 13:45	42.4	51.2	40.5	10/08/2022 01:45	41.8	57.4	37.6
09/08/2022 14:00	46.4	73.8	39.3	10/08/2022 02:00	40.3	51.1	37.3
09/08/2022 14:15	44.8	56.5	42.4	10/08/2022 02:15	39.5	48.9	37.4
09/08/2022 14:30	43.3	57.5	40.8	10/08/2022 02:30	38.4	48.0	37.5
09/08/2022 14:45	44.8	67.3	42.0	10/08/2022 02:45	40.7	58.9	37.7
09/08/2022 15:00	44.7	54.9	42.1	10/08/2022 03:00	40.4	53.3	37.5
09/08/2022 15:15	45.0	68.7	41.0	10/08/2022 03:15	40.2	51.4	37.5
09/08/2022 15:30	45.9	61.1	42.2	10/08/2022 03:30	42.5	54.7	38.3
09/08/2022 15:45	46.4	60.0	42.9	10/08/2022 03:45	43.8	59.6	38.2
09/08/2022 16:00	47.2	60.9	45.2	10/08/2022 04:00	43.0	53.2	38.1
09/08/2022 16:15	47.1	63.5	45.1	10/08/2022 04:15	43.0	51.4	38.9
09/08/2022 16:30	46.5	59.5	44.7	10/08/2022 04:30	44.5	53.9	39.5
09/08/2022 16:45	47.2	59.3	45.2	10/08/2022 04:45	44.9	53.3	41.0
09/08/2022 17:00	47.9	65.1	45.2	10/08/2022 05:00	46.2	56.4	41.7
09/08/2022 17:15	50.1	69.7	46.0	10/08/2022 05:15	53.0	75.2	44.5
09/08/2022 17:30	47.1	67.0	44.6	10/08/2022 05:30	52.4	73.3	47.0
09/08/2022 17:45	47.7	66.8	45.6	10/08/2022 05:45	51.0	69.4	46.0
09/08/2022 18:00	46.4	55.4	44.3	10/08/2022 06:00	49.9	61.9	46.9
09/08/2022 18:15	48.6	62.3	45.4	10/08/2022 06:15	49.5	61.5	46.8
09/08/2022 18:30	48.6	66.1	46.0	10/08/2022 06:30	53.0	63.4	50.1
09/08/2022 18:45	49.4	65.6	46.4	10/08/2022 06:45	53.5	74.5	49.1
09/08/2022 19:00	49.2	62.6	46.9	10/08/2022 07:00	50.2	60.1	48.3
09/08/2022 19:15	49.1	59.9	46.6	10/08/2022 07:15	49.8	64.9	48.4
09/08/2022 19:30	49.5	66.6	46.5	10/08/2022 07:30	50.9	75.1	48.0
09/08/2022 19:45	48.9	65.5	45.9	10/08/2022 07:45	48.6	65.9	46.0
09/08/2022 20:00	48.0	62.5	45.8	10/08/2022 08:00	47.6	65.3	45.7
09/08/2022 20:15	47.7	62.3	44.9	10/08/2022 08:15	47.3	61.1	44.5
09/08/2022 20:30	48.5	75.4	45.2	10/08/2022 08:30	44.6	60.8	42.2
09/08/2022 20:45	49.9	66.8	46.0	10/08/2022 08:45	47.5	64.3	43.4
09/08/2022 21:00	47.4	54.0	45.2	10/08/2022 09:00	49.6	76.9	43.5
09/08/2022 21:15	47.2	64.5	44.6	10/08/2022 09:15	47.2	71.0	41.4
09/08/2022 21:30	46.7	56.0	44.7	10/08/2022 09:30	44.6	66.9	39.7
09/08/2022 21:45	48.5	61.9	46.0	10/08/2022 09:45	42.9	59.8	39.7
09/08/2022 22:00	48.5	57.9	45.7	10/08/2022 10:00	43.3	62.3	39.7
09/08/2022 22:15	49.0	66.4	45.6	10/08/2022 10:15	46.2	67.3	39.2
09/08/2022 22:30	47.7	56.6	44.4	10/08/2022 10:30	41.7	55.8	39.4
09/08/2022 22:45	47.4	59.1	43.3	10/08/2022 10:45	43.0	59.6	38.8
09/08/2022 23:00	48.7	61.7	43.2	10/08/2022 11:00	42.8	59.1	38.8
09/08/2022 23:15	46.2	54.0	41.1	10/08/2022 11:15	44.2	68.6	38.9
09/08/2022 23:30	48.5	61.3	42.7	10/08/2022 11:30	44.0	75.3	38.5
09/08/2022 23:45	46.2	63.1	40.0	10/08/2022 11:45	42.0	60.7	38.8
10/08/2022 00:00	44.1	56.4	39.3	10/08/2022 12:00	40.0	57.7	38.2
10/08/2022 00:15	41.8	50.2	38.6	10/08/2022 12:15	39.6	56.6	37.9
10/08/2022 00:30	43.7	58.0	38.7	10/08/2022 12:30	41.2	58.0	37.8
10/08/2022 00:45	42.6	53.0	39.2	10/08/2022 12:45	43.6	67.0	38.4

MP2

Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB	Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB
08/08/2022 14:45	57.9	83.5	54.0	09/08/2022 02:45	50.0	64.6	35.9
08/08/2022 15:00	57.4	66.3	52.8	09/08/2022 03:00	44.5	61.5	34.9
08/08/2022 15:15	57.8	63.6	54.7	09/08/2022 03:15	47.8	60.1	38.8
08/08/2022 15:30	59.4	79.0	54.0	09/08/2022 03:30	47.3	60.4	36.3
08/08/2022 15:45	58.4	65.6	55.2	09/08/2022 03:45	48.6	62.4	35.1
08/08/2022 16:00	59.0	69.6	56.3	09/08/2022 04:00	49.0	60.1	36.3
08/08/2022 16:15	58.3	66.2	55.8	09/08/2022 04:15	47.5	60.1	36.8
08/08/2022 16:30	59.0	67.7	56.4	09/08/2022 04:30	52.1	63.6	39.2
08/08/2022 16:45	59.4	67.4	56.9	09/08/2022 04:45	52.0	64.2	38.4
08/08/2022 17:00	58.6	65.9	56.4	09/08/2022 05:00	53.8	63.7	42.8
08/08/2022 17:15	57.7	64.4	54.2	09/08/2022 05:15	55.3	67.0	46.7
08/08/2022 17:30	57.9	66.0	54.9	09/08/2022 05:30	58.2	67.9	48.5
08/08/2022 17:45	55.4	76.9	49.1	09/08/2022 05:45	58.4	67.1	50.2
08/08/2022 18:00	55.3	63.2	51.9	09/08/2022 06:00	58.4	67.9	50.7
08/08/2022 18:15	54.9	63.7	50.9	09/08/2022 06:15	58.2	66.8	50.7
08/08/2022 18:30	54.8	62.7	50.5	09/08/2022 06:30	60.4	67.7	55.5
08/08/2022 18:45	54.6	61.7	49.9	09/08/2022 06:45	58.6	70.7	53.4
08/08/2022 19:00	54.8	64.3	47.4	09/08/2022 07:00	58.8	65.4	53.4
08/08/2022 19:15	55.1	65.4	49.6	09/08/2022 07:15	59.2	66.0	53.0
08/08/2022 19:30	54.8	63.3	47.2	09/08/2022 07:30	58.4	65.9	54.0
08/08/2022 19:45	54.4	63.9	47.0	09/08/2022 07:45	58.7	73.2	54.8
08/08/2022 20:00	54.2	61.9	48.1	09/08/2022 08:00	57.2	65.7	52.8
08/08/2022 20:15	53.9	70.6	46.2	09/08/2022 08:15	57.9	69.4	53.7
08/08/2022 20:30	53.7	62.0	46.0	09/08/2022 08:30	57.3	63.6	52.1
08/08/2022 20:45	53.1	60.4	46.1	09/08/2022 08:45	57.4	63.6	53.1
08/08/2022 21:00	55.0	64.4	47.6	09/08/2022 09:00	56.7	63.7	51.8
08/08/2022 21:15	55.8	71.9	48.0	09/08/2022 09:15	56.8	66.0	50.7
08/08/2022 21:30	52.4	60.1	43.9	09/08/2022 09:30	57.0	65.1	52.5
08/08/2022 21:45	51.8	61.4	43.1	09/08/2022 09:45	56.8	63.8	52.4
08/08/2022 22:00	51.9	61.5	43.5	09/08/2022 10:00	57.2	63.2	52.5
08/08/2022 22:15	52.0	64.9	41.2	09/08/2022 10:15	56.2	62.2	52.4
08/08/2022 22:30	53.0	63.4	40.0	09/08/2022 10:30	57.2	66.3	53.1
08/08/2022 22:45	51.6	64.9	36.3	09/08/2022 10:45	56.0	62.8	51.4
08/08/2022 23:00	48.4	58.0	36.1	09/08/2022 11:00	57.1	63.8	53.2
08/08/2022 23:15	51.7	65.0	37.4	09/08/2022 11:15	56.4	63.1	50.6
08/08/2022 23:30	52.3	65.0	36.3	09/08/2022 11:30	56.5	63.7	52.4
08/08/2022 23:45	51.6	66.3	33.0	09/08/2022 11:45	57.2	63.6	51.4
09/08/2022 00:00	51.2	62.5	34.9	09/08/2022 12:00	56.1	62.6	51.4
09/08/2022 00:15	51.3	64.8	34.7	09/08/2022 12:15	57.7	65.6	54.2
09/08/2022 00:30	48.7	63.2	31.4	09/08/2022 12:30	56.8	69.1	52.3
09/08/2022 00:45	48.2	62.6	31.1	09/08/2022 12:45	56.4	62.0	51.7
09/08/2022 01:00	47.9	63.5	31.2	09/08/2022 13:00	56.3	62.9	51.1
09/08/2022 01:15	51.1	65.2	33.6	09/08/2022 13:15	56.6	63.3	52.2
09/08/2022 01:30	47.3	59.6	31.8	09/08/2022 13:30	56.7	67.9	52.3
09/08/2022 01:45	50.8	65.7	31.5	09/08/2022 13:45	56.3	64.6	50.0
09/08/2022 02:00	46.5	59.1	32.1	09/08/2022 14:00	56.6	63.6	52.3
09/08/2022 02:15	47.8	65.1	32.8	09/08/2022 14:15	56.5	63.0	51.6
09/08/2022 02:30	47.1	60.0	35.0	09/08/2022 14:30	57.1	63.8	53.8

Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB	Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB
09/08/2022 14:45	57.0	67.9	52.6	10/08/2022 02:45	46.0	63.5	32.3
09/08/2022 15:00	56.1	65.8	52.0	10/08/2022 03:00	45.6	59.2	36.9
09/08/2022 15:15	57.2	64.8	53.8	10/08/2022 03:15	45.9	59.7	37.5
09/08/2022 15:30	58.0	63.0	54.5	10/08/2022 03:30	48.9	63.9	36.7
09/08/2022 15:45	58.3	64.2	54.9	10/08/2022 03:45	48.8	67.2	35.5
09/08/2022 16:00	59.3	67.1	56.3	10/08/2022 04:00	47.4	60.2	35.1
09/08/2022 16:15	59.2	65.8	56.4	10/08/2022 04:15	48.9	62.9	38.5
09/08/2022 16:30	59.2	68.2	56.4	10/08/2022 04:30	50.8	63.3	40.0
09/08/2022 16:45	59.0	65.0	56.6	10/08/2022 04:45	53.8	63.2	45.1
09/08/2022 17:00	59.2	65.7	56.6	10/08/2022 05:00	54.4	65.4	43.8
09/08/2022 17:15	59.5	69.3	57.3	10/08/2022 05:15	55.3	63.8	47.5
09/08/2022 17:30	59.5	68.1	57.1	10/08/2022 05:30	56.8	68.3	48.1
09/08/2022 17:45	59.5	76.2	56.2	10/08/2022 05:45	56.6	65.0	46.8
09/08/2022 18:00	58.9	71.3	55.3	10/08/2022 06:00	58.2	68.1	51.3
09/08/2022 18:15	59.4	64.9	55.9	10/08/2022 06:15	58.9	70.3	53.3
09/08/2022 18:30	58.9	66.9	55.3	10/08/2022 06:30	59.9	66.5	55.5
09/08/2022 18:45	57.9	73.1	53.4	10/08/2022 06:45	60.6	68.0	55.9
09/08/2022 19:00	54.8	61.9	49.8	10/08/2022 07:00	60.7	67.6	54.3
09/08/2022 19:15	55.2	64.0	48.7	10/08/2022 07:15	59.5	65.7	55.6
09/08/2022 19:30	53.8	61.6	45.9	10/08/2022 07:30	59.8	66.0	56.5
09/08/2022 19:45	54.2	61.8	46.3	10/08/2022 07:45	58.9	66.6	54.8
09/08/2022 20:00	54.4	61.9	47.1	10/08/2022 08:00	58.2	63.7	54.3
09/08/2022 20:15	54.6	63.7	45.6	10/08/2022 08:15	59.1	75.7	55.4
09/08/2022 20:30	54.2	65.8	48.1	10/08/2022 08:30	58.2	63.5	54.3
09/08/2022 20:45	57.8	77.6	49.0	10/08/2022 08:45	57.6	66.0	52.6
09/08/2022 21:00	56.2	66.1	49.8	10/08/2022 09:00	57.7	65.5	53.6
09/08/2022 21:15	55.8	65.9	47.3	10/08/2022 09:15	58.0	64.8	53.7
09/08/2022 21:30	56.7	68.5	47.6	10/08/2022 09:30	57.9	67.7	52.8
09/08/2022 21:45	57.1	75.9	48.2	10/08/2022 09:45	57.2	66.8	52.2
09/08/2022 22:00	57.7	83.1	45.8	10/08/2022 10:00	57.7	64.6	52.9
09/08/2022 22:15	56.2	67.6	47.4	10/08/2022 10:15	56.7	63.3	52.2
09/08/2022 22:30	54.2	64.0	41.6	10/08/2022 10:30	57.5	68.4	53.0
09/08/2022 22:45	54.0	67.1	42.1	10/08/2022 10:45	57.5	64.9	52.4
09/08/2022 23:00	54.4	66.2	39.6	10/08/2022 11:00	58.0	75.4	53.4
09/08/2022 23:15	52.7	66.5	37.4	10/08/2022 11:15	58.1	66.3	54.4
09/08/2022 23:30	56.6	72.1	42.9	10/08/2022 11:30	57.6	64.9	53.7
09/08/2022 23:45	52.9	66.6	40.3	10/08/2022 11:45	57.3	63.1	53.3
10/08/2022 00:00	51.5	60.4	40.7	10/08/2022 12:00	57.7	68.4	53.0
10/08/2022 00:15	49.9	63.2	36.9	10/08/2022 12:15	57.0	63.6	52.0
10/08/2022 00:30	50.5	65.9	36.4	10/08/2022 12:30	57.0	63.5	51.5
10/08/2022 00:45	49.7	65.4	35.8	10/08/2022 12:45	57.0	71.4	51.9
10/08/2022 01:00	48.3	60.9	36.4	10/08/2022 13:00	56.2	62.2	51.1
10/08/2022 01:15	47.9	60.7	34.7	10/08/2022 13:15	55.3	61.8	50.6
10/08/2022 01:30	47.8	63.4	32.9	10/08/2022 13:30	55.8	63.6	51.1
10/08/2022 01:45	46.3	58.9	30.7	10/08/2022 13:45	55.0	61.8	50.8
10/08/2022 02:00	47.4	61.8	31.2	10/08/2022 14:00	0.0	0.0	0.0
10/08/2022 02:15	43.7	61.0	30.7	10/08/2022 14:15	0.0	0.0	0.0
10/08/2022 02:30	37.9	50.3	33.8	10/08/2022 14:30	0.0	0.0	0.0

MP3

Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB	Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB
08/08/2022 14:00	57.5	87.9	38.3	09/08/2022 02:00	37.7	49.4	34.0
08/08/2022 14:15	47.5	70.2	39.1	09/08/2022 02:15	38.7	52.7	34.1
08/08/2022 14:30	67.3	87.7	40.1	09/08/2022 02:30	38.8	49.9	35.2
08/08/2022 14:45	51.3	70.8	39.6	09/08/2022 02:45	40.0	52.6	35.7
08/08/2022 15:00	45.0	62.5	39.7	09/08/2022 03:00	38.7	50.8	34.0
08/08/2022 15:15	47.4	67.4	39.9	09/08/2022 03:15	42.7	52.8	37.6
08/08/2022 15:30	47.0	63.5	40.5	09/08/2022 03:30	41.4	52.6	34.0
08/08/2022 15:45	53.4	81.2	41.1	09/08/2022 03:45	41.2	50.4	35.9
08/08/2022 16:00	46.0	60.0	41.7	09/08/2022 04:00	40.7	52.2	35.5
08/08/2022 16:15	44.1	54.6	41.7	09/08/2022 04:15	42.0	56.7	34.1
08/08/2022 16:30	44.3	54.4	41.9	09/08/2022 04:30	44.1	56.2	38.1
08/08/2022 16:45	61.3	78.9	42.9	09/08/2022 04:45	50.5	80.9	38.7
08/08/2022 17:00	47.9	68.1	41.7	09/08/2022 05:00	46.5	64.3	41.4
08/08/2022 17:15	51.5	72.2	43.6	09/08/2022 05:15	51.8	77.8	43.1
08/08/2022 17:30	50.6	71.0	42.3	09/08/2022 05:30	49.8	62.4	44.3
08/08/2022 17:45	51.9	69.4	46.7	09/08/2022 05:45	48.3	59.9	45.3
08/08/2022 18:00	51.3	64.9	48.3	09/08/2022 06:00	50.4	66.1	45.0
08/08/2022 18:15	51.5	60.8	49.0	09/08/2022 06:15	49.1	64.0	46.2
08/08/2022 18:30	58.7	75.4	48.9	09/08/2022 06:30	58.5	89.9	47.6
08/08/2022 18:45	52.8	68.9	48.3	09/08/2022 06:45	55.0	83.9	45.8
08/08/2022 19:00	52.9	85.3	47.6	09/08/2022 07:00	52.8	78.3	44.8
08/08/2022 19:15	54.5	72.5	48.7	09/08/2022 07:15	50.4	82.0	44.0
08/08/2022 19:30	55.9	75.5	48.3	09/08/2022 07:30	50.8	80.9	44.6
08/08/2022 19:45	62.7	76.8	46.5	09/08/2022 07:45	54.7	82.8	45.4
08/08/2022 20:00	55.1	76.0	46.5	09/08/2022 08:00	52.3	82.8	44.3
08/08/2022 20:15	56.8	71.2	46.9	09/08/2022 08:15	54.8	81.0	46.0
08/08/2022 20:30	49.2	60.3	45.5	09/08/2022 08:30	54.4	81.0	43.7
08/08/2022 20:45	47.3	65.4	44.1	09/08/2022 08:45	49.3	76.4	42.9
08/08/2022 21:00	56.5	79.9	43.6	09/08/2022 09:00	50.7	66.4	41.3
08/08/2022 21:15	50.4	78.9	45.9	09/08/2022 09:15	49.4	64.7	40.8
08/08/2022 21:30	47.0	58.9	43.2	09/08/2022 09:30	63.6	79.3	41.0
08/08/2022 21:45	45.4	58.3	41.4	09/08/2022 09:45	42.9	63.8	39.7
08/08/2022 22:00	45.6	54.4	41.9	09/08/2022 10:00	42.0	52.4	39.6
08/08/2022 22:15	44.4	56.3	40.3	09/08/2022 10:15	52.1	81.0	40.3
08/08/2022 22:30	44.2	60.6	39.9	09/08/2022 10:30	45.1	65.0	40.5
08/08/2022 22:45	46.4	59.9	39.4	09/08/2022 10:45	58.3	86.0	40.3
08/08/2022 23:00	44.3	54.9	39.1	09/08/2022 11:00	48.4	70.3	40.1
08/08/2022 23:15	43.0	56.1	37.0	09/08/2022 11:15	48.5	64.1	39.6
08/08/2022 23:30	42.3	55.3	35.6	09/08/2022 11:30	49.7	73.8	39.5
08/08/2022 23:45	42.0	63.0	35.1	09/08/2022 11:45	51.8	74.2	39.3
09/08/2022 00:00	40.8	53.4	34.8	09/08/2022 12:00	48.5	66.0	38.4
09/08/2022 00:15	40.6	51.3	34.2	09/08/2022 12:15	43.7	64.0	38.1
09/08/2022 00:30	40.5	53.2	32.2	09/08/2022 12:30	47.9	69.4	38.2
09/08/2022 00:45	40.2	54.0	32.8	09/08/2022 12:45	46.8	71.6	38.0
09/08/2022 01:00	39.7	52.4	33.3	09/08/2022 13:00	47.4	76.2	38.6
09/08/2022 01:15	39.6	50.9	33.8	09/08/2022 13:15	52.2	73.9	37.3
09/08/2022 01:30	38.2	51.9	34.5	09/08/2022 13:30	46.8	70.1	38.1
09/08/2022 01:45	38.7	53.3	33.5	09/08/2022 13:45	41.6	61.6	38.4

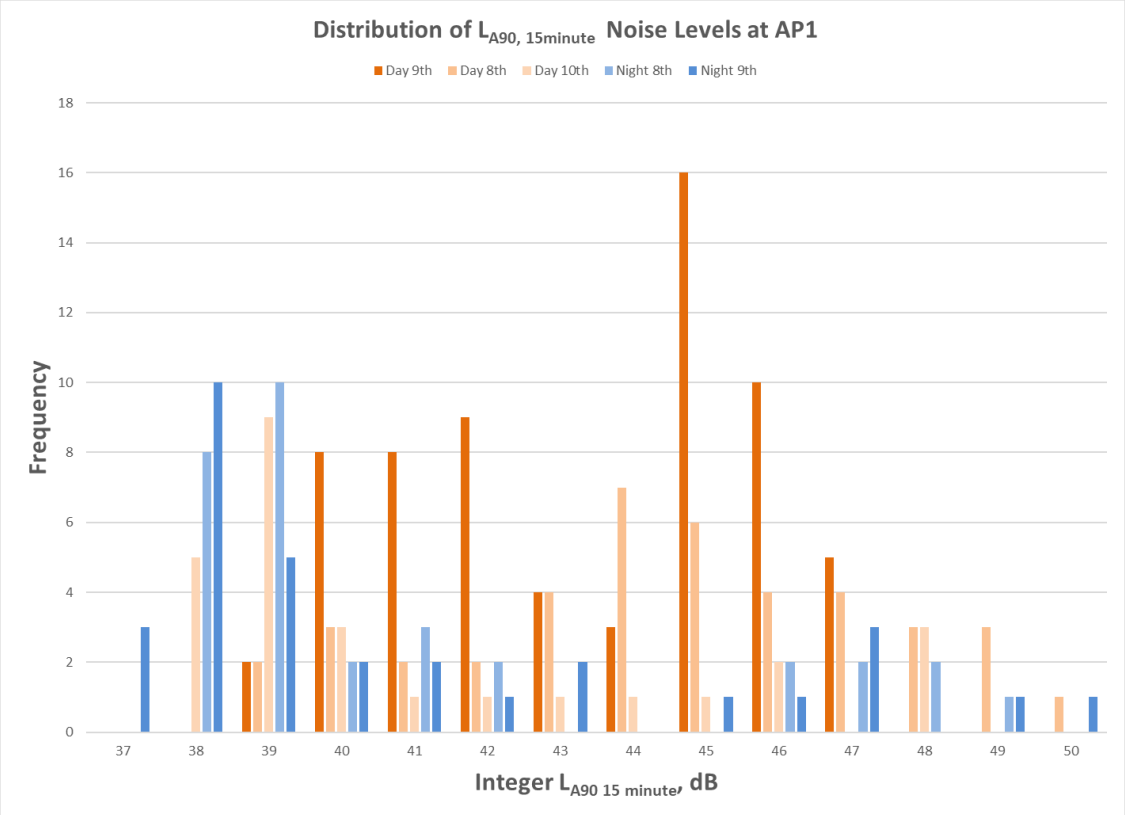
Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB	Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB
09/08/2022 14:00	45.8	63.8	38.8	10/08/2022 02:00	39.4	52.3	32.7
09/08/2022 14:15	47.2	71.9	38.2	10/08/2022 02:15	39.4	56.5	33.7
09/08/2022 14:30	45.9	71.1	38.6	10/08/2022 02:30	35.2	46.5	32.7
09/08/2022 14:45	44.9	70.6	38.9	10/08/2022 02:45	40.0	57.5	32.7
09/08/2022 15:00	45.1	69.3	40.6	10/08/2022 03:00	39.4	53.1	33.6
09/08/2022 15:15	49.6	73.7	38.9	10/08/2022 03:15	39.1	50.7	32.7
09/08/2022 15:30	49.6	77.5	38.3	10/08/2022 03:30	42.4	55.1	38.2
09/08/2022 15:45	49.2	71.4	39.5	10/08/2022 03:45	44.2	60.0	36.8
09/08/2022 16:00	46.3	73.5	42.7	10/08/2022 04:00	44.7	56.8	34.5
09/08/2022 16:15	47.7	68.0	43.1	10/08/2022 04:15	42.2	51.9	38.3
09/08/2022 16:30	47.4	70.2	42.6	10/08/2022 04:30	43.6	56.4	37.8
09/08/2022 16:45	49.4	75.6	42.2	10/08/2022 04:45	51.0	77.4	40.8
09/08/2022 17:00	62.5	79.4	43.4	10/08/2022 05:00	48.0	67.8	41.4
09/08/2022 17:15	49.0	69.6	42.6	10/08/2022 05:15	53.5	82.2	44.3
09/08/2022 17:30	44.3	58.1	41.3	10/08/2022 05:30	50.4	65.8	45.7
09/08/2022 17:45	47.9	79.8	42.0	10/08/2022 05:45	50.2	61.0	45.3
09/08/2022 18:00	45.7	68.6	41.4	10/08/2022 06:00	54.1	81.0	47.7
09/08/2022 18:15	55.8	76.9	43.2	10/08/2022 06:15	56.1	79.3	50.5
09/08/2022 18:30	64.0	76.2	49.4	10/08/2022 06:30	54.3	78.6	50.9
09/08/2022 18:45	48.4	69.9	44.5	10/08/2022 06:45	53.5	66.9	50.0
09/08/2022 19:00	53.0	78.5	47.3	10/08/2022 07:00	52.4	69.9	49.5
09/08/2022 19:15	49.9	57.8	46.8	10/08/2022 07:15	63.1	85.8	49.2
09/08/2022 19:30	51.3	66.2	45.0	10/08/2022 07:30	52.0	68.2	49.6
09/08/2022 19:45	47.6	66.6	44.5	10/08/2022 07:45	55.3	82.6	48.7
09/08/2022 20:00	46.9	55.6	44.0	10/08/2022 08:00	55.8	80.5	46.9
09/08/2022 20:15	53.7	79.8	44.5	10/08/2022 08:15	53.2	75.0	46.3
09/08/2022 20:30	48.1	72.6	42.6	10/08/2022 08:30	46.8	64.6	42.8
09/08/2022 20:45	49.8	72.4	44.2	10/08/2022 08:45	54.1	80.5	42.1
09/08/2022 21:00	48.8	65.3	42.7	10/08/2022 09:00	52.6	79.2	42.4
09/08/2022 21:15	50.0	70.0	44.1	10/08/2022 09:15	60.6	76.8	41.7
09/08/2022 21:30	49.2	74.2	44.4	10/08/2022 09:30	55.5	78.2	41.3
09/08/2022 21:45	47.6	55.4	42.6	10/08/2022 09:45	57.8	84.2	40.4
09/08/2022 22:00	47.7	60.9	42.5	10/08/2022 10:00	49.4	68.0	40.0
09/08/2022 22:15	47.0	62.6	41.6	10/08/2022 10:15	49.3	71.7	40.2
09/08/2022 22:30	46.2	56.9	41.4	10/08/2022 10:30	50.3	71.3	40.1
09/08/2022 22:45	43.9	53.9	38.7	10/08/2022 10:45	45.6	68.5	39.1
09/08/2022 23:00	44.7	57.5	38.4	10/08/2022 11:00	49.4	74.9	39.0
09/08/2022 23:15	46.1	59.1	38.0	10/08/2022 11:15	45.7	63.7	38.2
09/08/2022 23:30	44.7	57.5	38.5	10/08/2022 11:30	41.5	56.9	39.2
09/08/2022 23:45	43.8	64.4	36.4	10/08/2022 11:45	48.7	65.1	39.7
10/08/2022 00:00	41.4	51.9	37.6	10/08/2022 12:00	43.7	60.2	38.6
10/08/2022 00:15	40.9	51.1	35.7	10/08/2022 12:15	41.9	60.9	37.6
10/08/2022 00:30	42.3	59.9	35.5	10/08/2022 12:30	47.8	62.5	38.8
10/08/2022 00:45	41.9	55.2	36.8	10/08/2022 12:45	45.1	69.7	40.1
10/08/2022 01:00	42.2	55.8	36.9	10/08/2022 13:00	46.8	74.0	40.9
10/08/2022 01:15	39.3	60.7	35.1	10/08/2022 13:15	43.9	54.9	42.0
10/08/2022 01:30	40.7	57.2	35.6	10/08/2022 13:30	46.6	66.5	41.9
10/08/2022 01:45	39.6	52.3	33.6	10/08/2022 13:45	46.3	67.9	42.0

MP4

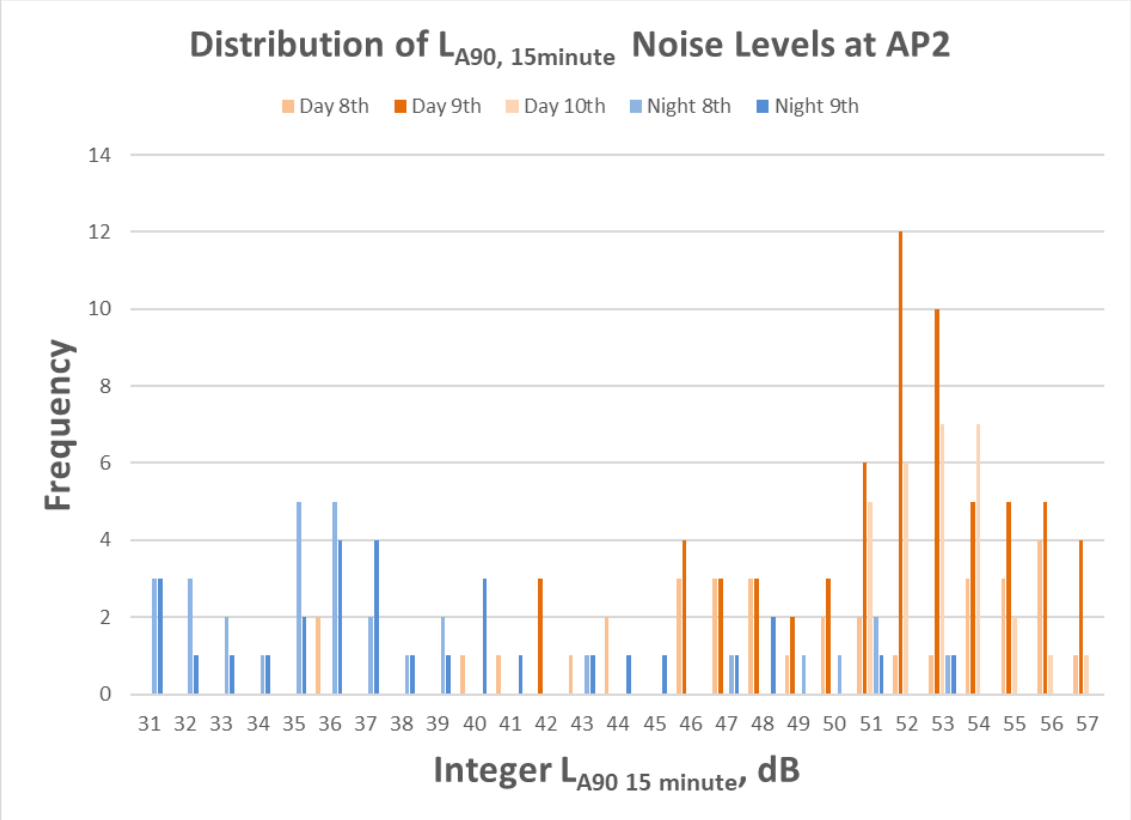
Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB	Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB
08/08/2022 15:30	44.0	66.3	40.3	09/08/2022 03:30	40.2	50.6	35.0
08/08/2022 15:45	43.8	56.4	41.7	09/08/2022 03:45	39.7	50.7	36.3
08/08/2022 16:00	43.1	51.3	40.2	09/08/2022 04:00	39.6	55.6	34.8
08/08/2022 16:15	43.2	58.3	40.4	09/08/2022 04:15	40.0	52.5	35.2
08/08/2022 16:30	43.8	52.9	41.8	09/08/2022 04:30	41.3	50.8	37.1
08/08/2022 16:45	44.5	54.4	41.5	09/08/2022 04:45	42.7	56.5	36.3
08/08/2022 17:00	66.3	79.5	54.5	09/08/2022 05:00	43.1	56.0	38.2
08/08/2022 17:15	66.3	81.3	55.2	09/08/2022 05:15	44.4	58.9	40.2
08/08/2022 17:30	67.8	81.6	58.2	09/08/2022 05:30	46.7	62.2	42.6
08/08/2022 17:45	66.8	80.3	54.5	09/08/2022 05:45	47.3	68.9	42.6
08/08/2022 18:00	73.2	83.5	47.6	09/08/2022 06:00	46.9	65.0	43.1
08/08/2022 18:15	46.9	54.7	44.1	09/08/2022 06:15	47.0	65.4	43.1
08/08/2022 18:30	47.2	62.7	44.6	09/08/2022 06:30	48.2	65.5	44.8
08/08/2022 18:45	46.4	53.9	42.7	09/08/2022 06:45	47.4	55.8	44.7
08/08/2022 19:00	46.0	57.3	43.6	09/08/2022 07:00	49.2	72.4	45.0
08/08/2022 19:15	47.2	63.5	43.8	09/08/2022 07:15	47.2	57.9	45.6
08/08/2022 19:30	45.6	54.0	41.4	09/08/2022 07:30	48.1	57.9	45.9
08/08/2022 19:45	48.5	71.0	42.2	09/08/2022 07:45	47.4	58.6	44.6
08/08/2022 20:00	45.5	56.1	42.9	09/08/2022 08:00	45.7	60.7	43.0
08/08/2022 20:15	45.3	59.8	41.8	09/08/2022 08:15	46.3	53.7	43.3
08/08/2022 20:30	43.4	56.6	40.1	09/08/2022 08:30	43.9	61.5	40.8
08/08/2022 20:45	44.3	53.2	40.9	09/08/2022 08:45	43.6	60.0	39.8
08/08/2022 21:00	44.4	65.4	39.9	09/08/2022 09:00	46.5	60.8	40.1
08/08/2022 21:15	43.3	55.2	39.7	09/08/2022 09:15	42.9	54.8	38.4
08/08/2022 21:30	43.6	54.0	39.2	09/08/2022 09:30	42.0	56.2	37.3
08/08/2022 21:45	42.0	51.7	38.2	09/08/2022 09:45	42.2	54.0	37.3
08/08/2022 22:00	42.0	53.0	37.5	09/08/2022 10:00	44.8	70.8	38.9
08/08/2022 22:15	42.9	58.3	37.4	09/08/2022 10:15	43.3	63.7	38.5
08/08/2022 22:30	42.4	59.4	35.2	09/08/2022 10:30	42.5	56.5	38.4
08/08/2022 22:45	39.6	48.9	33.7	09/08/2022 10:45	41.3	53.0	37.6
08/08/2022 23:00	41.4	54.2	35.5	09/08/2022 11:00	41.3	50.8	38.3
08/08/2022 23:15	39.5	51.7	34.6	09/08/2022 11:15	42.5	55.7	38.8
08/08/2022 23:30	38.0	53.8	33.6	09/08/2022 11:30	43.8	50.6	38.9
08/08/2022 23:45	38.7	49.9	34.3	09/08/2022 11:45	48.2	57.1	43.9
09/08/2022 00:00	40.0	53.2	35.7	09/08/2022 12:00	47.5	69.3	39.0
09/08/2022 00:15	39.5	53.1	34.6	09/08/2022 12:15	41.2	53.6	38.0
09/08/2022 00:30	37.7	50.0	33.7	09/08/2022 12:30	41.8	55.4	37.3
09/08/2022 00:45	35.0	43.9	32.7	09/08/2022 12:45	41.6	53.7	37.1
09/08/2022 01:00	35.7	45.7	33.2	09/08/2022 13:00	44.5	65.1	39.0
09/08/2022 01:15	36.1	46.4	34.0	09/08/2022 13:15	41.4	49.9	38.5
09/08/2022 01:30	37.0	47.9	34.4	09/08/2022 13:30	47.6	67.7	39.3
09/08/2022 01:45	36.5	49.6	31.8	09/08/2022 13:45	43.7	57.1	40.5
09/08/2022 02:00	37.4	52.4	34.0	09/08/2022 14:00	43.0	57.2	40.1
09/08/2022 02:15	38.5	53.0	34.7	09/08/2022 14:15	43.1	55.7	39.4
09/08/2022 02:30	37.9	49.8	35.5	09/08/2022 14:30	42.7	56.9	39.3
09/08/2022 02:45	37.8	49.4	35.3	09/08/2022 14:45	43.0	55.1	39.8
09/08/2022 03:00	39.4	55.0	36.3	09/08/2022 15:00	42.4	55.6	38.0
09/08/2022 03:15	37.4	51.8	33.5	09/08/2022 15:15	41.1	48.8	37.6

Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB	Time	L_{Aeq} dB	$L_{Amax,F}$ dB	L_{AF90} dB
09/08/2022 15:30	41.7	52.4	38.6	10/08/2022 03:30	34.9	49.2	30.9
09/08/2022 15:45	41.5	50.8	38.8	10/08/2022 03:45	36.2	56.3	29.6
09/08/2022 16:00	45.8	58.4	43.4	10/08/2022 04:00	33.6	45.9	29.6
09/08/2022 16:15	45.1	52.0	42.5	10/08/2022 04:15	36.4	48.7	30.5
09/08/2022 16:30	44.3	57.2	41.9	10/08/2022 04:30	40.1	52.7	33.8
09/08/2022 16:45	44.5	56.8	41.8	10/08/2022 04:45	41.3	50.6	37.0
09/08/2022 17:00	43.7	51.8	41.5	10/08/2022 05:00	42.0	54.9	36.2
09/08/2022 17:15	43.9	58.4	41.2	10/08/2022 05:15	44.2	63.0	39.4
09/08/2022 17:30	44.1	65.0	40.8	10/08/2022 05:30	45.2	54.3	40.3
09/08/2022 17:45	44.0	57.9	41.2	10/08/2022 05:45	46.2	59.4	40.8
09/08/2022 18:00	45.0	58.2	42.1	10/08/2022 06:00	48.0	69.2	41.5
09/08/2022 18:15	44.2	55.1	41.8	10/08/2022 06:15	46.2	60.2	42.3
09/08/2022 18:30	45.5	62.4	41.9	10/08/2022 06:30	48.2	57.2	44.4
09/08/2022 18:45	44.1	52.9	41.0	10/08/2022 06:45	47.1	56.6	44.0
09/08/2022 19:00	44.8	52.6	41.9	10/08/2022 07:00	47.2	58.9	44.4
09/08/2022 19:15	46.6	65.4	41.7	10/08/2022 07:15	48.0	59.6	45.1
09/08/2022 19:30	43.9	53.6	40.5	10/08/2022 07:30	48.9	59.6	46.7
09/08/2022 19:45	43.4	54.4	40.0	10/08/2022 07:45	47.7	53.5	45.9
09/08/2022 20:00	44.4	63.0	40.1	10/08/2022 08:00	46.8	56.7	44.4
09/08/2022 20:15	44.6	64.1	40.6	10/08/2022 08:15	46.4	60.1	44.1
09/08/2022 20:30	44.0	57.4	38.2	10/08/2022 08:30	45.9	61.2	43.3
09/08/2022 20:45	43.9	62.8	40.1	10/08/2022 08:45	45.3	55.4	42.7
09/08/2022 21:00	44.2	57.1	37.8	10/08/2022 09:00	45.6	64.5	41.9
09/08/2022 21:15	45.0	62.2	39.1	10/08/2022 09:15	46.1	65.3	39.8
09/08/2022 21:30	47.2	63.7	40.0	10/08/2022 09:30	44.9	61.2	40.6
09/08/2022 21:45	43.9	55.3	38.4	10/08/2022 09:45	43.9	58.6	41.3
09/08/2022 22:00	43.0	52.7	38.2	10/08/2022 10:00	44.1	54.8	40.7
09/08/2022 22:15	41.2	51.7	37.8	10/08/2022 10:15	46.8	64.5	41.8
09/08/2022 22:30	42.0	48.8	37.9	10/08/2022 10:30	44.7	55.5	41.9
09/08/2022 22:45	41.7	52.8	36.9	10/08/2022 10:45	48.0	60.4	42.2
09/08/2022 23:00	40.4	50.9	36.0	10/08/2022 11:00	43.9	58.6	40.5
09/08/2022 23:15	40.0	51.4	35.7	10/08/2022 11:15	45.6	59.0	40.8
09/08/2022 23:30	39.8	52.6	35.8	10/08/2022 11:30	44.3	56.5	40.8
09/08/2022 23:45	41.4	63.0	35.6	10/08/2022 11:45	42.7	49.6	40.2
10/08/2022 00:00	41.2	62.4	34.6	10/08/2022 12:00	43.6	55.0	40.5
10/08/2022 00:15	39.8	55.1	35.5	10/08/2022 12:15	43.2	59.2	40.0
10/08/2022 00:30	40.1	64.3	35.3	10/08/2022 12:30	43.8	61.1	40.1
10/08/2022 00:45	36.9	52.4	33.1	10/08/2022 12:45	45.3	56.8	41.5
10/08/2022 01:00	40.5	51.6	33.6	10/08/2022 13:00	43.8	55.3	40.7
10/08/2022 01:15	37.7	47.8	33.4	10/08/2022 13:15	43.4	55.7	39.9
10/08/2022 01:30	36.8	53.7	33.1	10/08/2022 13:30	43.3	62.2	39.8
10/08/2022 01:45	36.8	49.5	34.0	10/08/2022 13:45	42.9	58.9	38.2
10/08/2022 02:00	37.7	53.0	33.8	10/08/2022 14:00	42.2	51.8	38.3
10/08/2022 02:15	38.9	53.1	34.9	10/08/2022 14:15	41.6	52.4	38.1
10/08/2022 02:30	36.3	45.5	32.2	10/08/2022 14:30	42.2	55.3	37.7
10/08/2022 02:45	38.4	53.6	36.1	10/08/2022 14:45	42.6	55.8	39.1
10/08/2022 03:00	39.7	49.7	36.6	00/01/1900 00:00	0.0	0.0	0.0
10/08/2022 03:15	38.1	53.0	33.7	00/01/1900 00:15	0.0	0.0	0.0

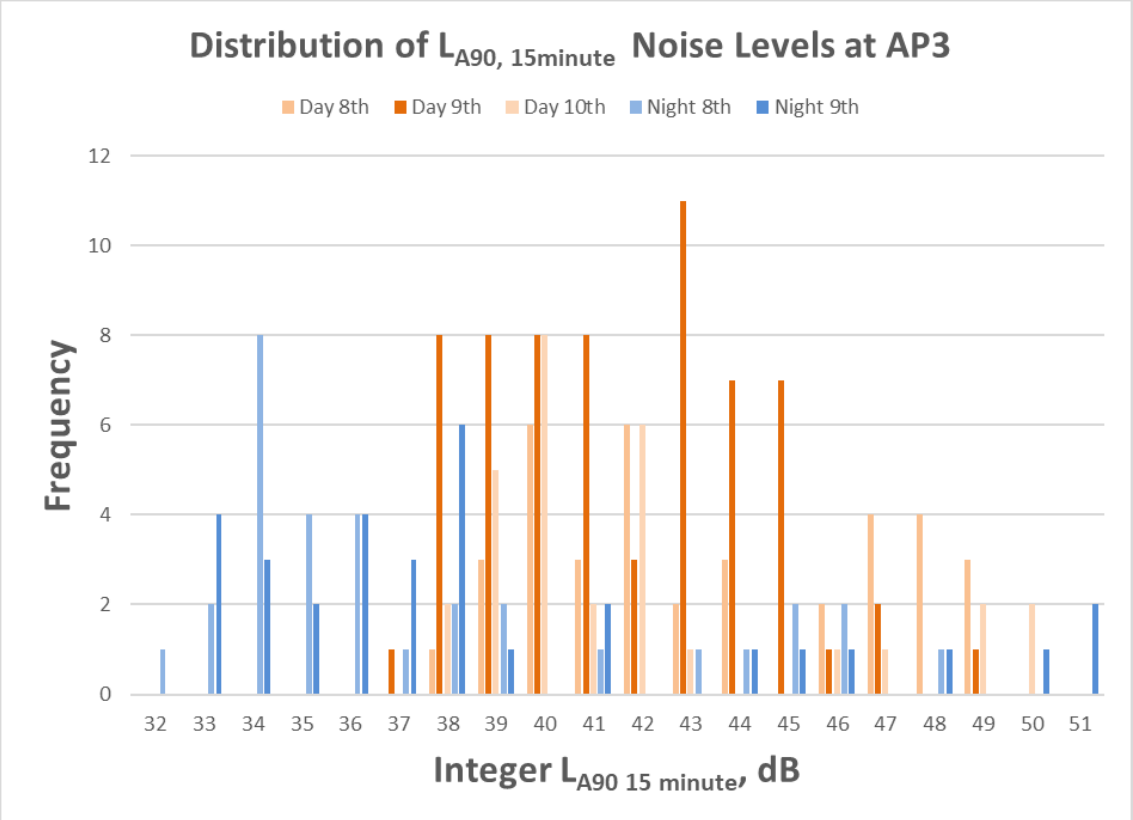
MP1


Distribution of $L_{A90, 15minute}$ Noise Levels at AP1
Day 9th
Day 8th
Day 10th
Night 8th
Night 9th
Frequency
0
2
4
6
8
10
12
14
16
18
37
38
39
40
41
42
43
44
45
46
47
48
49
50
Integer $L_{A90\ 15\ minute}$, dB

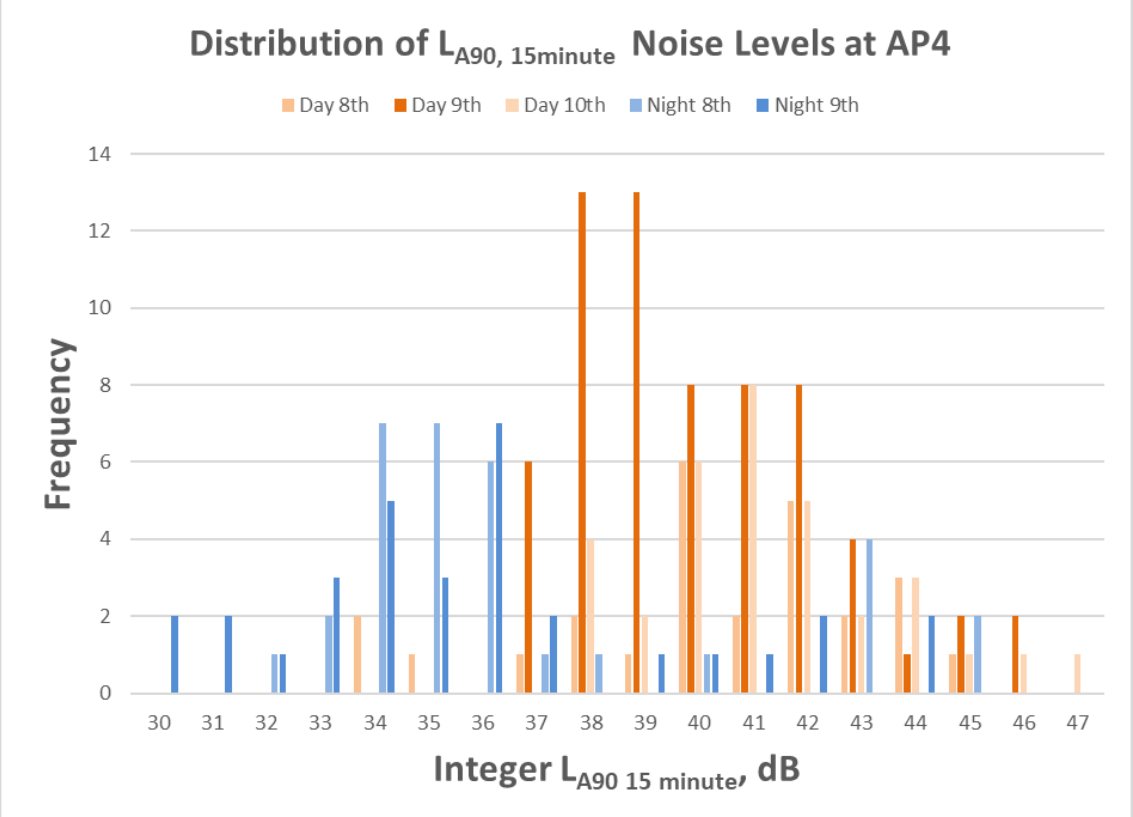
MP2


Distribution of $L_{A90, 15minute}$ Noise Levels at AP2
Day 8th
Day 9th
Day 10th
Night 8th
Night 9th
Frequency
0
2
4
6
8
10
12
14
31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57
Integer $L_{A90\ 15\ minute}$, dB

MP3


Distribution of $L_{A90, 15minute}$ Noise Levels at AP3
Day 8th
Day 9th
Day 10th
Night 8th
Night 9th
Frequency
0
2
4
6
8
10
12
32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51
Integer $L_{A90\ 15\ minute}$, dB

MP4


Distribution of $L_{A90, 15minute}$ Noise Levels at AP4
Day 8th
Day 9th
Day 10th
Night 8th
Night 9th
Frequency
0
2
4
6
8
10
12
14
30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
Integer $L_{A90\ 15\ minute}$, dB