

# Technical Appendix 6: Noise Impact Assessment

Penpergwm Solar Farm

21/04/2021

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## STATEMENT OF PURPOSE

- 6.1 *This draft Noise Impact Assessment is being published to accompany pre-application consultation carried out under Articles 8 and 9 of the Development of National Significance (Procedure) (Wales) Order 2016. The formal pre-application consultation runs until 25th August 2021.*

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## EXECUTIVE SUMMARY

- 6.2 This Noise Impact Assessment has been undertaken for a Proposed Development consisting of the installation and operation of a proposed solar farm with associated infrastructure on lands circa 0.5km north of Penpergwm and c. 3.9km southeast of Abergavenny, Monmouthshire
- 6.3 The objectives of the assessment were to identify and describe any likely significant noise effects on key receptors during the operational phase of the Proposed Development.
- 6.4 In order to assess the potential noise impacts of the Proposed Development, the current baseline characteristics of the Application Site and the surrounding area have been identified as well as the predicted impacts of the Proposed Development.
- 6.5 A total of 24 noise sensitive receptors were included in the assessment within a Study Area of 500m around the Application Site. All of the identified receptors are residential dwellings.
- 6.6 As part of the assessment to determine the potential noise impacts of the Proposed Development, a low background noise level of 25dB is assumed to be appropriate for a typical low noise rural night-time setting. The day-time background noise levels are assumed to be higher than 25dB and therefore the night-time assessment is considered a worst-case scenario.
- 6.7 The solar panels themselves do not generate noise. The main noise source associated with the Proposed Development will be the ten MV transformers located around the site as well as the grid transformer. The site is set up using the distributed inverter set up and there will be small inverters located at the panel racks. These small inverters have very low noise levels of around 65dB and will be inaudible at the site boundary; they have therefore been dismissed from further analysis.
- 6.8 A simulation of noise associated with the Proposed Development was produced using SoundPlan modelling software to predict noise levels for the purpose of undertaking an ISO9613-2 assessment. Source noise levels were modelled based on a candidate noise source.
- 6.9 An assessment of the acoustic impact of the Proposed Development was undertaken in accordance with BS 4142: 2014+A1:2019. The results showed that a **Low** impact during night-time periods is anticipated and therefore no mitigation is required.
- 6.10 In addition to this, the levels at each receptor are below the Night Noise Guideline value of 40dB set out in the WHO Night-time Guidelines. This is the level recommended for the primary prevention of subclinical adverse health effects related to night noise in the population.
- 6.11 The Proposed Development is therefore in line with the policies contained within the Monmouthshire County Council Adopted Local Plan 2011 – 2021.

## INTRODUCTION

### Background

- 6.12 Neo Environmental Ltd has been appointed by Great House Energy Centre Ltd (the “Applicant”) to undertake a Noise Impact Assessment (“NIA”) for a proposed solar farm and associated infrastructure (the “Proposed Development”) on land 0.5km north of Penpergwm and c. 3.9km southeast of Abergavenny, Monmouthshire (the “Application Site”).
- 6.13 Please see **Figure 4 of Volume 2: Planning Application Drawings** for the layout of the Proposed Development.

### Development Description

- 6.14 The Proposed Development consists of the construction of a 40MW solar farm and will comprise PV panels mounted on metal frames, inverter and transformer units, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, a temporary construction compound and all ancillary grid infrastructure and associated works.

### Site Description

- 6.15 The Application Site is located on land 0.5km north of Penpergwm and c. 3.9km southeast of Abergavenny, Monmouthshire; the approximate centre point of which is Grid Reference E332954, N211435. Comprising 14 agricultural fields, the Application Site measures 70.03 hectares (ha) in total with only c. 17.61 hectares of the landscape under the solar arrays themselves. See **Figure 4 of Volume 2: Planning Application Drawings** for details.
- 6.16 Land within the Application Site itself is undulating, ranging between 61 – 140m Above Ordnance Datum (AOD) and consists of fields typically of medium scale, bound by a mixture of grassy field margins, semi-mature hedgerows, and intermittent trees (see **Figure 3 of Volume 2: Planning Application Drawings** for field numbers).
- 6.17 The Application Site is in an area with existing electricity infrastructure with a pylon line crossing Field 3 to the north and running in a north – south direction between Fields 6 and 7 and to the west of Field 8.
- 6.18 The local area is largely agricultural in nature, punctuated by individual properties and farmsteads; the nearest residential areas are the villages of Penpergwm and The Bryn; located 0.5km and 0.9km north respectively. and Yeomadon, located 0.7km northeast and southeast respectively. Recreational Routes include two Public Rights of Way (PRoW) which pass through Fields 8, 9, 10 and 11 in the southern section of the site and an Other Route with Public Access (ORPA) which passes from Great House along the eastern boundary of Field 14 and through the treeline on the southern border of Fields 5, 6 and 7. Another PRoW passes along the northern boundary of Fields 1, 3 and 4.

- 6.19 While there are a number of drains and watercourses throughout the Application Site, including a small tributary of the Frwd Brook bordering Field 11, the site is entirely contained within Flood Zone A, an area described as having a “*Low probability*” of flooding.
- 6.20 The Application Site will be accessed via an improved farm access situated on the southern boundary. Traffic will approach the site entrance from the south using a local road from Penpergwm for approximately 800m. Traffic will be routed to Penpergwm from the north via the B4598. This road connects to the strategic road network south of Abergavenny at the A40 / A465 interchange.

## Scope of the Assessment

- 6.21 The objectives of this assessment are to identify and describe any likely significant noise effects on key receptors during the operational phase of the Proposed Development.
- 6.22 In order to assess the potential noise impacts of the Proposed Development, this report identifies the current baseline characteristics of the Application Site and the surrounding area, as well as the predicted impacts. This allows for the identification of potential noise impacts and recommendation of mitigation measures where appropriate.
- 6.23 This report is supported by the following Appendices:
- **Appendix 6A – Figures**
    - Figure 6.1: Noise Assessment Map

## Statement of Authority

- 6.24 This Noise Impact Assessment has been produced by Michael McGhee of Neo Environmental. Having completed a civil engineering degree in 2012, Michael became a technician member of the Institute of Acoustics in 2013 and has since worked on over 100 noise impact assessments, ranging from solar and wind farms to large scale residential developments across the UK and Ireland.



## LEGISLATION

6.25 This assessment has been collated and considered based on the following legislative, planning policy and guidance context:

- Future Wales – the National Plan 2040 (NP)<sup>1</sup>
- Planning Policy Wales (PPW) Edition 11<sup>2</sup>
- Technical Advice Note 11: Noise<sup>3</sup>
- BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound (BS4142)<sup>4</sup>
- ISO9613-2 Method for Rating Industrial noise affecting mixed residential and industrial areas<sup>5</sup>;
- World Health Organisation (WHO) Guidelines for Community Noise<sup>6</sup>; and
- WHO Night-time Guidelines.<sup>7</sup>

### Future Wales – the National Plan 2040 (NP)

6.26 Future Wales – the National Plan 2040 (NP)<sup>8</sup> is the national development framework, setting the direction for development in Wales to 2040. It is a development plan with a strategy for addressing key national priorities through the planning system, including sustaining and developing a vibrant economy, achieving decarbonisation and climate-resilience, developing strong ecosystems and improving the health and well-being of our communities.

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<sup>1</sup> Ministry of Housing, Communities & Local Government, National Planning Policy Framework, Feb 2019. Available at <https://gov.wales/sites/default/files/publications/2021-02/future-wales-the-national-plan-2040.pdf>

<sup>2</sup> Welsh Government, Planning Policy Wales (PPW) Edition 11 (February 2021) Available at: [https://gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-11\\_0.pdf](https://gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-11_0.pdf)

<sup>3</sup> Welsh Government, Technical Advice Note 11: Noise (Oct 1997) Available at: <https://gov.wales/sites/default/files/publications/2018-09/tan11-noise.pdf>

<sup>4</sup> BSI BS 4142+A1:2019 (2019) Methods for rating and assessing industrial and commercial sound.

<sup>5</sup> International Standards Organisation (1996) Acoustics – Attenuation of sound during propagation outdoors, Dec 1996

<sup>6</sup> World Health Organization (WHO), Guidelines for Community Noise, 1999

<sup>7</sup> World Health Organization (WHO), Night Noise Guidelines for Europe, 2009

<sup>8</sup> Ministry of Housing, Communities & Local Government, National Planning Policy Framework, Feb 2019. Available at <https://gov.wales/sites/default/files/publications/2021-02/future-wales-the-national-plan-2040.pdf>

- 6.27 Policy 18 (Renewable and Low Carbon Energy Developments of National Significance) states that proposals for renewable and low carbon energy projects (including repowering) qualifying as Developments of National Significance will be permitted subject to Policy 17 (not related to noise) and the following criteria:

*“there are no unacceptable adverse impacts by way of shadow flicker, noise, reflected light, air quality or electromagnetic disturbance”.*

## Planning Policy Wales (PPW): Edition 11

- 6.28 Planning Policy Wales (PPW) Edition 11 was adopted by the Welsh Government in February 2021. This replaced the previously adopted PPW and sets out the land use planning policy for Wales. Chapter 5 of the PPW outlines the planning policy in relation to ‘Renewable and Low Carbon Energy’. With regards to noise, it states:

*“Planning authorities should also identify and require suitable ways to avoid, mitigate or compensate adverse impacts of renewable and low carbon energy development. The construction, operation, decommissioning, remediation and aftercare of proposals should take into account:*

- *the need to minimise impacts on local communities, such as from noise and air pollution, to safeguard quality of life for existing and future generations”*

- 6.29 Chapter 6 of the PPW outlines policy in relation to ‘Distinctive and Natural Places’, with a section that relates to ‘Air Quality and Soundscape’, however there is no policy in relation to renewable energy noise and the text is quite general.

## Technical Advice Note (TAN) 11: Noise

- 6.30 Guidance is contained within Technical Advice Note (TAN) 11: Noise. This document contains guidance in relation to noise from industrial or commercial activities, its states:

*“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”.*

- 6.31 This guidance is dated to its release in 1997 and newer versions of BS4142 have been released. The most up to date version of the guidance will be used in this assessment.

### **BS4142:2014+A1:2019**

- 6.32 This British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature which includes:

- sound from industrial and manufacturing processes;
- sound from fixed installations which comprise mechanical and electrical plant and equipment;
- sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

- 6.33 The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

### **ISO9613 Part 2**

- 6.34 This International Organisation for Standardisation (ISO) standard specifies an engineering method for calculating the attenuation of outdoor sound during propagation to predict the levels of environmental noise at a distance from a variety of sources.

### **WHO Guidelines for Community Noise**

- 6.35 The WHO Guidelines for Community Noise sets out specific guideline values for community noise in specific environments. The values relevant to this assessment are:

- An  $L_{Aeq}$  of 30dB within bedrooms during night time hours (8 hour period);
- An  $L_{Aeq}$  of 35dB within living rooms during day time hours (16 hour period);
- An  $L_{Aeq}$  of 50-55dB in gardens during day time hours (16 hour period); and

- An  $L_{Aeq}$  of 45 dB outside bedrooms with an open window during night time hours (8-hour period).

## WHO Night Time Guidelines

6.36 The WHO Night Time Guidelines recommend updated levels lower than those found in the community noise guidelines. In respect of sleep disturbance, the guidelines recommend:

- 40 dB  $L_{night, outside}$  Night Noise Guideline (NNG); and
- 55 dB  $L_{night, outside}$  Interim Target (IT).

6.37 It further states:

*“For the primary prevention of subclinical adverse health effects related to night noise in the population, it is recommended that the population should not be exposed to night noise levels greater than 40 dB of  $L_{night, outside}$  during the part of the night when most people are in bed. The LOAEL of night noise, 40 dB  $L_{night, outside}$ , can be considered a health-based limit value of the night noise guidelines (NNG) necessary to protect the public, including most of the vulnerable groups such as children, the chronically ill and the elderly, from the adverse health effects of night noise.*

*An interim target (IT) of 55 dB  $L_{night, outside}$  is recommended in the situations where the achievement of NNG is not feasible in the short run for various reasons. It should be emphasized that IT is not a health-based limit value by itself. Vulnerable groups cannot be protected at this level. Therefore, IT should be considered only as a feasibility-based intermediate target which can be temporarily considered by policy-makers for exceptional local situations.”*

## Review of Development Plan Policy

### Monmouthshire County Council Adopted Local Plan 2011 - 2021

6.38 The Monmouthshire County Council Adopted Local Plan (2011 – 2021)<sup>9</sup> was adopted by the county council in February 2014. **Policy SD1: Renewable Energy** is the only policy of relevance in relation to noise from a solar farm. This policy states:

*“Renewable energy schemes will be permitted where:*

*(1) There are no unacceptable adverse impacts upon the landscape, townscape and historic features and there is compliance with Policy LC5, with regard to protection and enhancement of landscape character;*

<sup>9</sup>Monmouthshire County Council, Monmouthshire County Council Adopted Local Plan 2011 – 2021 (Feb 2014), Available at <https://www.monmouthshire.gov.uk/app/uploads/2017/05/Adopted-Local-Development-Plan-with-PDF-tags.pdf>

*(2) There are no unacceptable adverse impacts on biodiversity;*

*(3) There are no unacceptable adverse impacts on the amenities of nearby residents by way of noise, dust, odour or increases in traffic;*

*(4) The wider environmental, economic, social and community benefits directly related to the scheme outweigh any potentially adverse impacts; and*

*(5) The distinct identity of Monmouthshire will not be compromised.*

*For all types of renewable energy, cumulative impacts will be an important consideration where there are other renewable energy schemes currently operating in the area.*

*When the technology is no longer operational there is a requirement to decommission, remove the facility and complete a restoration of the site to its original condition.”*

6.39 This Noise Impact Assessment has been undertaken in accordance with good practice and relevant legislation and policy as outlined above.

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## METHODOLOGY

### Baseline Conditions

- 6.40 A desk-based assessment has been conducted to identify Noise Sensitive Receptors (“NSRs”) where it is considered that there is potential for increased noise effects due to the Proposed Development.
- 6.41 Residences closest to the Proposed Development were identified as the key NSRs for the purposes of this assessment. The Study Area included all receptors within 500m of the Application Site (See **Figure 6.1 Appendix 6A**).
- 6.42 No baseline monitoring was conducted due to the relatively low levels of noise produced from solar farms. However, the effects were compared against a background noise level of 25dB, which is typical of a low noise rural night-time setting with no wind.

### Potential Effects

- 6.43 As the Proposed Development is not yet constructed, it is not possible to complete an onsite survey to measure the actual source noise levels on site. Therefore, the predicted impacts were calculated using source noise data from the manufacturer of the noise emitting equipment. The data is similar to the type anticipated to be used for the Proposed Development and therefore provided a valid method for calculating sound levels.
- 6.44 SoundPlan<sup>10</sup> noise modelling software was utilised to determine the noise impact from the Proposed Development. The software allows the user to create a three-dimensional replication of the topographic and structural detail of the assessment area. The user can characterise the ground type, and include further structural detail such as berms, walls and reflective surfaces. The user also assigns relevant Sound Power Levels (LWA) to individual items of plant taking account of percentage on time, etc. This software is industry standard.
- 6.45 For the purposes of this assessment the noise sources were considered as constant. However, in reality, the noise source will be constant during daylight hours once the Proposed Development is operational and during the night-time period, noise will only be generated from sunrise onward.
- 6.46 The solar panels have been included in the model as screens because they will act as noise barriers and will block some acoustic transmission paths between the noise sources and the receptors. A ray trace model within Soundplan was used as part of this assessment to assess reflections from panels that increase the noise propagation and barrier attenuation, which in turn reduces the noise propagation compared with an open field devoid of panels.

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<sup>10</sup> SoundPLAN International LLC, *Soundplan Noise software, debuting in 1986*. Further information found at <http://www.soundplan.eu/english/soundplan-acoustics/>

- 6.47 ISO9613-2<sup>11</sup> is an international standard which specifies an engineering method for calculating the attenuation of sound during propagation outdoors, in order to predict the levels of environmental noise at a distance from a variety of sources.
- 6.48 The ISO9613-2 algorithms take the octave band sound power output of the source as their acoustic input data and calculates on an octave band basis attenuation due to geometric spreading, atmospheric absorption and ground effects. This is the model which was utilised within the software model.
- 6.49 Where appropriate, a rating penalty was established to correct the specific sound level if a tone, impulse or other characteristic was expected to occur.
- 6.50 The SoundPlan software model simulates the digital ground model (“DGM”), single point receivers and noise contour lines, to generate noise contour maps for each model simulation. Noise contour maps accurately illustrate noise propagation for the study area and can be viewed in **Figure 6.1 Appendix 6A**.

## Impact Assessment

- 6.51 Once the specific sound levels due to the proposed new sound source were predicted, the rating sound level was calculated, and it is this which was compared to the existing background sound level to determine the level of impact. The rating level was obtained by adding any penalties due to character that may be applicable to the predicted specific sound level.
- 6.52 **Table 6-1** below details how the difference between the rating sound level and background sound level was used to conclude the level of impact under BS 4142: 2014+A1:2019, although it should be noted that any assessment is context specific.

**Table 6-1: Magnitude of Impact Criteria**

MAGNITUDE OF IMPACT	DEFINITION
High	Rating level is more than 5dB above the background level
Low	Rating level is less than 5dB above the background level
Negligible	Rating level is 10dB or more below the background level

<sup>11</sup> International Standards Organisation (1996) *Acoustics – Attenuation of sound during propagation outdoors*

## BASELINE CONDITIONS

### Noise Sensitive Receptors in the Study Area

6.53 The co-ordinates of the NSRs can be found in **Table 6-2**. Note that the co-ordinates were taken from the façade of each property closest to the Application Site boundary, which were identified from available mapping sources including Google Earth.

**Table 6-2: Noise Sensitive Receptors in Study Area**

Name	Easting	Northing
Receptor 1	332511	210927
Receptor 2	332605	210925
Receptor 3	332524	210964
Receptor 4	333086	210807
Receptor 5	333108	210804
Receptor 6	333528	210440
Receptor 7	333586	210416
Receptor 8	334231	210392
Receptor 9	334263	210366
Receptor 10	334465	210954
Receptor 11	334343	211254
Receptor 12	334349	211267
Receptor 13	334198	211293
Receptor 14	334206	211274
Receptor 15	333565	211336
Receptor 16	333671	211387
Receptor 17	333707	211418
Receptor 18	333734	211655
Receptor 19	333720	211668



Receptor 20	333831	211921
Receptor 21	333350	211952
Receptor 22	332796	211822
Receptor 23	332635	212093
Receptor 24	332588	212105

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## POTENTIAL EFFECTS

- 6.54 The solar panels themselves do not generate noise. The main noise source associated with the Proposed Development will be the ten MV transformers located around the site as well as the grid transformer. The site is set up using the distributed inverter set up and there will be small inverters located at the panel racks. These small inverters have very low noise levels of around 65dB and will be inaudible at the site boundary; they have therefore been dismissed from further analysis. Full details of the infrastructure associated with the Proposed Development are submitted with the planning application (See Figures 4-13 of Volume 2: Planning Application Drawings).
- 6.55 The Proposed Development will be in operation during daylight hours only; however, during the summer months, this will mean the noise source will be in operation during the night-time hours of between 4 am and 7 am. The noise levels of the transformers will change throughout the day, reaching their peak when the solar farm is generating at its maximum power, usually when the sun is high in the sky just after noon. For the purpose of this NIA, continuous operation at peak level is assumed for both day-time and night-time hours as a worst-case scenario.
- 6.56 Source noise levels are based on the information supplied by the manufacturer of plant similar to the type expected to be used for the Proposed Development.
- 6.57 Table 6-3 shows A-weighted sound power levels of the noise sources which have been included in the noise model.

Table 6-3: Summary of 1/1 Octave Band Centres

Octave Band Centre Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Total
Medium Voltage Transformer	76.6	74.8	80.2	79.7	74.8	67.8	59.5	62.8	85.0
Substation Transformer (dB(A))	81.7	79.9	85.3	84.8	49.9	72.9	64.6	67.9	90.0

## Results

- 6.58 Predicted specific sound levels at nearby properties are detailed in **Table 6-4** and an illustrative sound footprint for the Proposed Development is provided in **Figure 6.1 of Appendix 6A**.
- 6.59 The sound emitted by the transformers can have a distinctive character. Under the subjective method described in BS 4142: 2014+A1:2019, a correction of 2dB is typically applied to be consistent with ‘*a just perceptible tone*’.
- 6.60 Note that a 3dB façade correction is included within the SoundPlan model at each of the receptor locations.

**Table 6-4: Predicted Noise Impacts at the NSRs**

Receptor	SPECIFIC SOUND LEVEL ( $L_{A,r,Tr}$ ) DB (PREDICTED)	RATING PENALTY (DB)	RATING LEVEL (DB)
Receptor 1	18.9	2.0	20.9
Receptor 2	20.4	2.0	22.4
Receptor 3	19.0	2.0	21.0
Receptor 4	23.0	2.0	25.0
Receptor 5	23.2	2.0	25.2
Receptor 6	21.0	2.0	23.0
Receptor 7	20.8	2.0	22.8
Receptor 8	18.0	2.0	20.0
Receptor 9	17.6	2.0	19.6
Receptor 10	19.4	2.0	21.4
Receptor 11	21.1	2.0	23.1
Receptor 12	20.9	2.0	22.9
Receptor 13	20.7	2.0	22.7
Receptor 14	21.5	2.0	23.5
Receptor 15	25.9	2.0	27.9
Receptor 16	25.7	2.0	27.7
Receptor 17	25.8	2.0	27.8

Receptor 18	22.9	2.0	24.9
Receptor 19	22.9	2.0	24.9
Receptor 20	20.2	2.0	22.2
Receptor 21	21.6	2.0	23.6
Receptor 22	25.7	2.0	27.7
Receptor 23	19.7	2.0	21.7
Receptor 24	19.3	2.0	21.3

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## IMPACT ASSESSMENT

6.61 **Table 6-5** compares the predicted rating level with the adopted background noise levels of 25dB which is typical of a rural night-time setting. Although the level of noise from a solar farm will vary across the day, the day-time to night-time levels are assumed to be the same for the purposes of this report, therefore the assessment of night-time levels is seen as a worst-case scenario.

**Table 6-5: Noise Impacts against the Guideline Values**

Receptor	Rating Level (dB)	Baseline Noise Level (LA90) dB	Exceedance (dB)	Receptor
Receptor 1	20.9	25.0	-4.1	Low
Receptor 2	22.4	25.0	-2.6	Low
Receptor 3	21.0	25.0	-4.0	Low
Receptor 4	25.0	25.0	0.0	Low
Receptor 5	25.2	25.0	0.2	Low
Receptor 6	23.0	25.0	-2.0	Low
Receptor 7	22.8	25.0	-2.2	Low
Receptor 8	20.0	25.0	-5.0	Low
Receptor 9	19.6	25.0	-5.4	Low
Receptor 10	21.4	25.0	-3.6	Low
Receptor 11	23.1	25.0	-1.9	Low
Receptor 12	22.9	25.0	-2.1	Low
Receptor 13	22.7	25.0	-2.3	Low
Receptor 14	23.5	25.0	-1.5	Low
Receptor 15	27.9	25.0	2.9	Low
Receptor 16	27.7	25.0	2.7	Low
Receptor 17	27.8	25.0	2.8	Low
Receptor 18	24.9	25.0	-0.1	Low
Receptor 19	24.9	25.0	-0.1	Low

Receptor 20	22.2	25.0	-2.8	Low
Receptor 21	23.6	25.0	-1.4	Low
Receptor 22	27.7	25.0	2.7	Low
Receptor 23	21.7	25.0	-3.3	Low
Receptor 24	21.3	25.0	-3.7	Low

- 6.62 The Proposed Development is predicted to have a **Low impact** at all receptors within the study area. No mitigation is therefore required for this Development.
- 6.63 In addition to this, the levels at each receptor are found to be below the Night Noise Guideline value of 40dB set out in the World Health Organisation (WHO) Night-time Guidelines. This is the level recommended for the primary prevention of subclinical adverse health effects related to night noise in the population.

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## SUMMARY

- 6.64 This Noise Impact Assessment has been undertaken for a Proposed Development consisting of the installation and operation of a proposed solar farm with associated infrastructure on lands circa 0.5km north of Penpergwm and c. 3.9km southeast of Abergavenny, Monmouthshire
- 6.65 The objectives of the assessment were to identify and describe any likely significant noise effects on key receptors during the operational phase of the Proposed Development.
- 6.66 In order to assess the potential noise impacts of the Proposed Development, the current baseline characteristics of the Application Site and the surrounding area have been identified as well as the predicted impacts of the Proposed Development.
- 6.67 As part of the assessment to determine the potential noise impacts of the Proposed Development, a low background noise level of 25dB is assumed to be appropriate for a typical low noise rural night-time setting. The day-time background noise levels are assumed to be higher than 25dB and therefore the night-time assessment is considered a worst-case scenario.
- 6.68 The solar panels themselves do not generate noise. The main noise source associated with the Proposed Development will be the ten MV transformers located around the site as well as the grid transformer. The site is set up using the distributed inverter set up and there will be small inverters located at the panel racks. These small inverters have very low noise levels of around 65dB and will be inaudible at the site boundary; they have therefore been dismissed from further analysis.
- 6.69 A simulation of noise associated with the Proposed Development was produced using SoundPlan modelling software to predict noise levels for the purpose of undertaking an ISO9613-2 assessment. Source noise levels were modelled based on a candidate noise source.
- 6.70 An assessment of the acoustic impact of the Proposed Development was undertaken in accordance with BS 4142: 2014+A1:2019. The results showed that a **Low** impact during night-time periods is anticipated and therefore no mitigation is required.
- 6.71 In addition to this, the levels at each receptor are below the Night Noise Guideline value of 40dB set out in the WHO Night-time Guidelines. This is the level recommended for the primary prevention of subclinical adverse health effects related to night noise in the population.
- 6.72 The Proposed Development is therefore in line with the policies contained within the Monmouthshire County Council Adopted Local Plan 2011 – 2021.

## APPENDICES

### Appendix 6A: Figures

- Figure 6.1: Noise Assessment Map

DRAFT

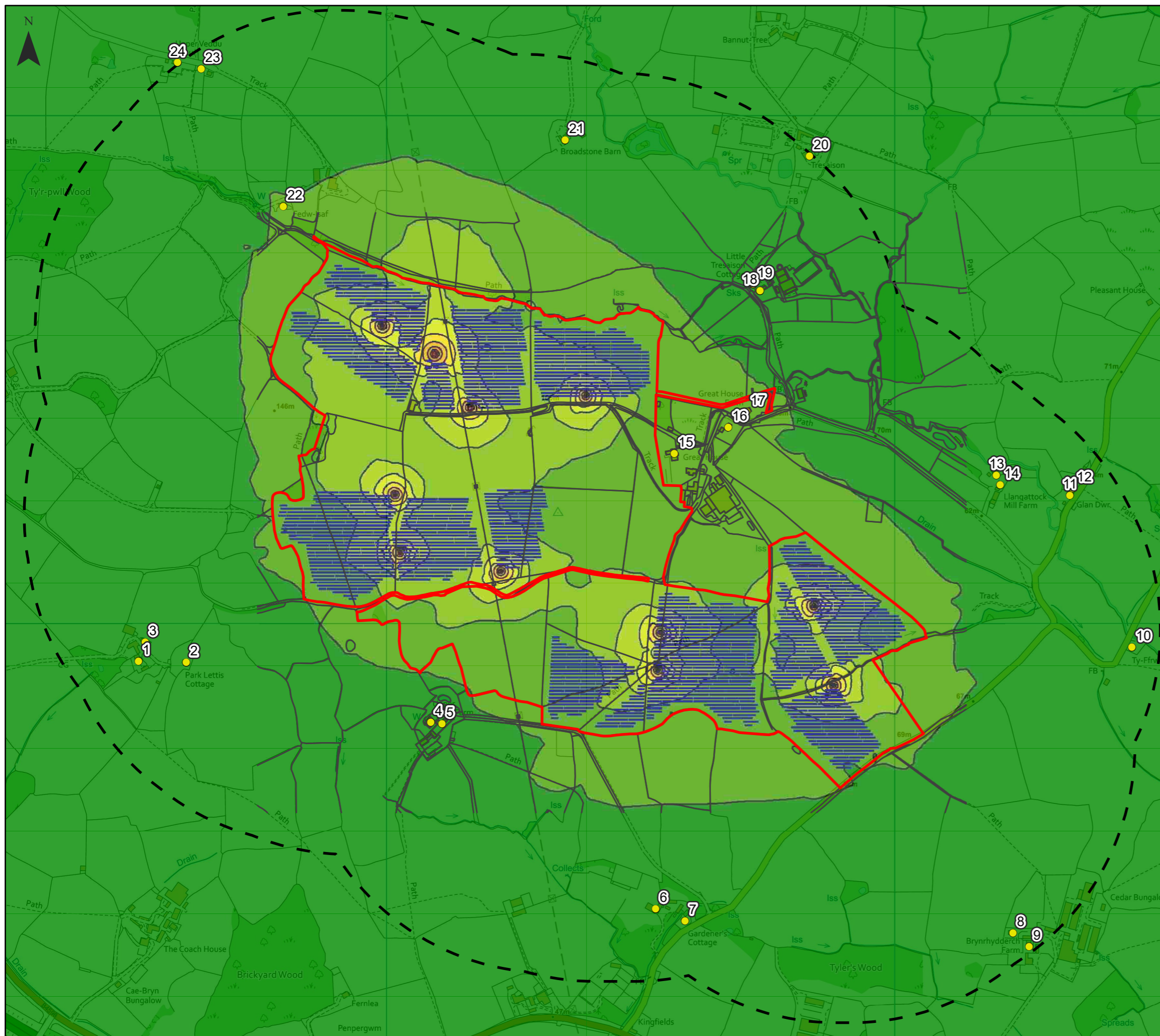


## Appendix 6A: Figures



DRAFT



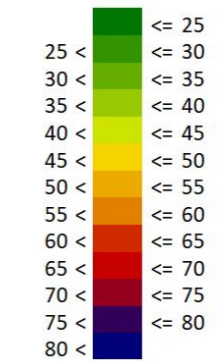
# Penpergwm Solar Farm Noise Assessment Map Figure 6.1



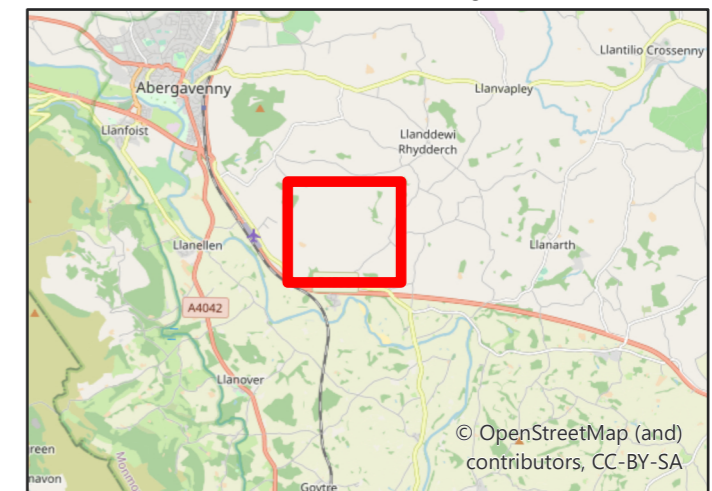
## Key

-  Development Boundary
-  500m Panel Buffer
-  Noise Receptors

## Noise level LrD in dB(A)



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Date: 23/06/2021  
 Drawn By: Michael McGhee  
 Scale (A3): 1:7,500  
 Drawing No: NEO00668/0491/A





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