Chapter 8: Noise

Glyn Taff Solar Farm – Environmental Impact Assessment

05/03/2025

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EXECUTIVE SUMMARY

8.1. This Chapter includes a Noise Impact Assessment that has been undertaken for the construction, operational and decommissioning phases of a Proposed Development consisting of the installation and operation of a proposed Solar Farm and associated grid infrastructure, on lands centred around Bryntail Farm at approximate National Grid Reference (NGR) E 309333, N 189800

8.2. 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.

8.3. A total of 35 noise sensitive receptors, including three residential areas, were included in the assessment within a Study Area of 500m around the Application Site. All of the identified receptors are residential dwellings. As per the methodology section, where there are a number of residential receptors within close proximity, a representative dwelling or dwellings is/are chosen for full assessment as the impacts will not vary to any significant degree, however this was not required as part of this assessment.

8.4. No baseline monitoring was undertaken due to the usually low noise effects from a solar farm development, therefore a 25dB background level has been assumed taking into account a typical rural nighttime setting in a low wind scenario. Although this is typical, rural noise levels can vary from site to site. It is thought that a suitable noise condition should be able to adequately protect receptors from significant noise levels.

8.5. 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.

8.6. An assessment of the acoustic impact of the Proposed Development was undertaken in accordance with BS 4142: 2014+A1:2019. The results showed only **Negligible impacts** at all receptors during the day time and night time periods within the study area are anticipated. **A Negligible impact** in relation to noise does not constitute a significant effect as the impact rating is **Minor**. A **Negligible impact** being a rating level at a receptor below background noise levels. This change in noise level for the baseline will be barely perceptible at the receptor location. Residual effects on Noise Sensitive Receptors will be **Negligible**, and therefore **Not Significant**.

8.7. 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.

8.8. The Proposed Development is therefore in line with the policies contained within the Rhondda Cynon Taf Local Development Plan 2006 - 2021.

INTRODUCTION

Background

8.9. Neo Environmental Ltd has been appointed by Renantis UK Limited (the "Applicant") to undertake an Environmental Impact Assessment (EIA) including a Noise Impact Assessment for a proposed solar farm (the "Proposed Development") on lands at Bryn Tail Farm, Bryntail Tail Lane, Pontypridd (the "Application Site"). Please see Figure 1 for the layout of the Proposed Development.

Development Description

8.10. Installation, operation and subsequent decommissioning of a renewable energy scheme comprising ground mounted photovoltaic solar arrays together with substation compound, transformer stations, internal access track, landscaping, biodiversity measures, boundary fencing, security measures, CCTV posts, monitoring house, storage containers access improvement and ancillary infrastructure. The solar arrays will have a combined capacity of up to 39.9MWp.

Site Description

8.11. The area of the Proposed Development (the "Application Site") lies at an elevation of approximately 140m – 330m AOD and covers a total area of c. 70.9 hectares. It is centred around Bryntail Farm at approximate National Grid Reference (NGR) E 309333, N 189800. It is south of Eglwysilan Road. The site extends west of Bryntail Farm and east of the Bryn Tail Lane. The site is within the administrative area of Rhondda Cynon Taf Council.

8.12. The site comprises 38 agricultural fields that are currently in use for livestock farming. It is on the east side of the Taff Valley c. 1.6 km east of Ynysangharad War Memorial Park. Access will be gained from the Bryntail Tail Lane.

8.13. The site is adjacent to the Twyn Hywel Energy Park a consented wind farm including 14 turbines (DNS/3272053).

Scope of the Assessment

8.14. 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.

8.15. 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.

8.16. This report is supported by the following Appendices:

- Appendix 8A – Figures
  - Figure 8.1: Noise Assessment Map
  - Figure 8.2: Noise Mitigation Map
- Appendix 8B – Construction Noise

Statement of Authority

8.17. This Noise Impact Assessment has been produced by Michael McGhee and David Thomson 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.

8.18. David has a BSc (Hons) in physics, a MSc in sensor design, a MSc in nanoscience and nanotechnology and a Diploma in acoustics and noise control. He has worked on numerous noise impact assessments for solar farms, battery storage facilities and wind farms across the UK and Ireland.

LEGISLATION

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

- The Environmental Protection Act 1990[1]
- Planning Policy Wales (PPW)[2]
- Noise and Soundscape Plan for Wales 2023 - 2028[3]
- BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound (BS4142)[4]
- ISO9613-2 Method for Rating Industrial noise affecting mixed residential and industrial areas[5];
- BS5228 Code of practice for noise and vibration control on construction and open sites[6];
- World Health Organisation (WHO) Guidelines for Community Noise[7];
- WHO Night-time Guidelines[8]; and
- Rhondda Cynon Taf Local Development Plan 2006 - 2021.

The Environmental Protection Act 1990

8.20. The EPA 1990 specifies mandatory powers available to Local Authorities in respect of any noise that either constitutes or is likely to cause a statutory nuisance, which is also defined in the Act. A duty is imposed on Local Authorities to carry out inspections to identify statutory

[1] UK Government The Environmental Protection Act, 1990, Available at https://www.legislation.gov.uk/ukpga/1990/43/contents

[2] Welsh Government, Planning Policy Wales (PPW), Available at: https://www.gov.wales/planning-policy-wales

[3] Welsh Government, Noise and Soundscape Plan for Wales 2023 – 2028, Available at: https://www.gov.wales/noise-and-soundscape-plan-for-wales-2023-2028

[4] BSI BS 4142+A1:2019 (2019) Methods for rating and assessing industrial and commercial sound.

[5] International Standards Organisation (1996) Acoustics – Attenuation of sound during propagation outdoors, Dec 1996

6 British Standards Institute (2014) Code of practice for noise and vibration control on construction and open sites Part one, British Standard 5228, Feb 2014

[7] World Health Organization (WHO), Guidelines for Community Noise, 1999

[8] World Health Organization (WHO), Night Noise Guidelines for Europe, 2009

nuisances, and to serve abatement notices against these. Procedures are also specified with regards to complaints from persons affected by a statutory nuisance.

Planning Policy Wales

8.21. The Planning Policy Wales (PPW) Edition 12 was published in February 2024. This sets out the Welsh Government's land use planning policies. It is supported by a series a Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together provide the national planning policy for Wales.

8.22. With regards to noise from renewable and low carbon developments, the PPW highlights the importance of minimising adverse impacts on local communities during the construction, operation and decommissioning phases of the development.

Noise and Soundscape Plan for Wales 2023 - 2028

8.23. The Noise and Soundscape Plan for Wales is Wales's national strategy on soundscapes, meaning the sound environment as perceived or experienced and/or understood by a person or people, in context. All forms of airborne sound that may be heard by the people of Wales are considered to be within the scope of this document.

8.24. The Plan emphasises the need for good acoustic design in new developments, with the aim of protecting people from the harmful effects of noise. The focus of good acoustic design is not only about protecting people from the harmful effects of noise, but also considering the sounds people want to hear and the sounds people won't want to hear.

BS4142:2014+A1:2019

8.25. 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.

8.26. 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

8.27. 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

8.28. 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

8.29. 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).

8.30. 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 Local Development Plan Policy

Rhondda Cynon Taf Local Development Plan 2006 - 2021

8.31. The Local Development Plan 2006 - 2021[9] was adopted on 2nd March 2011 by the Rhondda Cynon Taf County Borough Council.

8.32. The Plan states in **Policy AW 10 – Environmental Protection and Public Health** that:

Development proposals will not be permitted where they would cause or result in a risk of unacceptable harm to health and / or local amenity because of:-

2. Noise Pollution

Unless it can be demonstrated that measures can be taken to overcome any significant adverse risk to public health, the environment and / or impact upon local amenity.

Rhondda Cynon Taf Local Development Plan (LDP) 2022 – 2037

8.33. Rhondda Cynon Taf County Borough Council are preparing a Revised Local Development Plan[10] for the period 2022 - 2037. This process formally began in April 2022. This will replace the current LDP for Rhondda Cynon Taf (2006 – 2021). The current LDP will remain in force until the Revised LDP is adopted.

8.34. A formal Review of the current LDP was considered necessary in 2019. The findings and considerations of this may be seen in the Council approved LDP (2006-2011) Review Report , November 2019. The primary conclusion of the Review Report was that it was necessary to begin preparation of a fully Revised LDP.

8.35. In September 2020, formal preparation began of an initial Revision of the LDP which would have been for the Plan Period 2020 – 2030. It was decided in March 2022 to cease all work on this Revised LDP.

8.36. At the same time in March 2022, it was decided to begin this new Revised LDP for the Plan Period 2022 – 2037. A Delivery Agreement was prepared for this new Revised LDP.

8.37. The Revised LDP is expected to be adopted in May 2026.

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[9] Rhondda Cynon Taf County Borough Council Local Development Plan 2006 - 2021, available at: https://www.rctcbc.gov.uk/EN/Resident/PlanningandBuildingControl/LocalDevelopmentPlans/LocalDevelopmentPlan20062021.aspx

[10] Rhondda Cynon Taf Revised Local Development Plan (LDP) 2022 – 20237, available at: https://www.rctcbc.gov.uk/EN/Resident/PlanningandBuildingControl/RevisedLocalDevelopmentPlan20222037/RevisedLocalDevelopmentPlanLDP2022%e2%80%932037.aspx

8.38. There are currently no published polices for the Revised LDP.

METHODOLOGY

Baseline Conditions

8.39. 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.

8.40. 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 (**Figure 8.1 Appendix 8A**).

8.41. For each NSR, the level of sensitivity associated with the type of NSR needs to be assessed. **Table 8-1** shows the level of significance associated with typical NSRs.

8.42. There are four levels of sensitivity 'High', 'Medium' 'Low', and 'Negligible'. The ranking is primarily based on the relationship between the amenity associated with an NSR and its susceptibility to noise. NSR's which have amenities associated with low noise levels, such as residential properties, are allocated with a 'High' level of sensitivity, whereas nightclubs would be allocated with a 'Low' level of sensitivity.

Table 8-1: Receptor Sensitivity

Sensitivity	Description	Examples of NSR
High	Receptors where people or operations are particularly susceptible to noise	Residential, including private gardens where appropriate. Quiet outdoor areas used for recreation Conference facilities Theatres/Auditoria/Studios Schools during the daytime Hospitals/residential care homes Places of worship
Medium	Receptors moderately sensitive to noise, where it may cause some distraction or disturbance	Residential where the owner has a financial stake in the Proposed Development Offices

Sensitivity	Description	Examples of NSR
		Bars/Cafes/Restaurants where external noise may be intrusive. Sports grounds when spectator noise is not a normal part of the event and where quiet conditions are necessary (e.g. tennis, golf, bowls)
Low	Receptors where distraction or disturbance from noise is minimal	Buildings not occupied during working hours Factories and working environments with existing high noise levels Sports grounds when spectator noise is a normal part of the event Night Clubs
Negligible	Anything else	Anything else

Field Surveys

8.43. This assessment was conducted as a desk-based assessment due to the likely low noise impacts which relate to a solar farm development.

Potential Effects

Construction Stage

8.44. BS 5228:2009: A1:2014 ("BS 5228") refers to the need for the protection against noise and vibration of persons living and working in the vicinity of and those working on construction and open sites. It recommends procedures for noise and vibration control in respect of construction operations.

8.45. The standard stresses the importance of community relations, and states that early establishment and maintenance of these relations throughout site operations will aid in allaying people's concerns. In terms of neighbourhood nuisance, the following factors are likely to affect the acceptability of construction noise:

- Site location, relative to the noise sensitive premises;

- Existing ambient noise levels;
- Duration of site operations;
- Hours of work;
- The attitude of local residents to the site operator; and
- The characteristics of the noise produced.

8.46. Recommendations are made regarding the supervision, planning, preparation and execution of works, emphasising the need to consider noise at every stage of the operation.

8.47. Measures to control noise are described within the OCEMP and include the following:

- Control of noise at source by, e.g.:
  - Substitution of plant or activities by less noisy ones;
  - Modification of plant or equipment to reduce noise emissions;
  - The use of noise control enclosures;
  - The siting of equipment and its method of use;
  - Equipment maintenance; and
- Controlling the spread of noise, e.g., by increasing the distance between plant and noise-sensitive receptors or by the provision of acoustic screening.

8.48. This document does not specify absolute noise limits relating to construction activities; however, it does provide detailed guidance on the steps that can be taken to minimise potential noise & vibration effects.

8.49. Methods of calculating the levels of noise resulting from construction activities are provided, as are source levels for various types of plant, equipment and construction activities.

8.50. In addition to the onsite construction activities, construction traffic passing to and from the construction site will also represent a potential source of noise to surrounding dwellings.

Operational Stage

8.51. 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.

8.52. SoundPlan[11] 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.

8.53. 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.

8.54. ISO9613-2[12] 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.

8.55. 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.

8.56. Where appropriate, a rating penalty was established to correct the specific sound level if a tone, impulse or other characteristic was expected to occur.

8.57. 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 8.1 of Appendix 8A**.

Decommissioning Stage

8.58. Potential effects of decommissioning the Proposed Development are similar in nature to those during construction.

Impact Assessment

8.59. 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.

[11] SoundPLAN International LLC, *Soundplan Noise software, debuting in 1986*. Further information found at http://www.soundplan.eu/english/soundplan-acoustics/

[12] International Standards Organisation (1996) *Acoustics – Attenuation of sound during propagation outdoors*

8.60. Table 8-2 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 8-2: Magnitude of Impact Criteria

MAGNITUDE OF IMPACT	Noise Level, x $L_{Aeq,T}$ dB (Existing - Target)
High	x >= 10
Medium	5 <= x < 10
Low	0 <= x < 5
Negligible	< 0

Significance of Effects

8.61. This impact assessment stage considers the level of significance the noise impact has on the decision process. Table 8-3 provides a framework in determining the level of significance relating to the magnitude of impact with the sensitivity of the receptor. The noise sensitive receptors assessed in this report are considered to have high sensitivity.

Table 8-3-: Significance of effects

Magnitude of Impact	Level of Significance Relative to Sensitivity of Receptor			
	High	Medium	Low	Negligible
High	Major	Moderate to Major	Minor to Moderate	Minor
Medium	Moderate to Major	Moderate	Minor	Negligible to Minor
Low	Minor to Moderate	Minor	Negligible to Minor	Negligible to Minor
Negligible	Minor	Negligible to Minor	Negligible to Minor	Negligible

Assessment Limitations

8.62. No baseline monitoring was undertaken due to the usually low noise effects from a solar farm development, therefore a 25dB background level has been assumed taking into account a typical rural nighttime setting in a low wind scenario. Although this is typical, rural noise levels can vary from site to site. It is thought that a suitable noise condition should be able to adequately protect receptors from significant noise levels.

8.63. Some of the noise effects have been estimated based on experience of similar projects. Should the noise levels vary from those in this report, a revised assessment will need to be completed prior to the construction stage.

8.64. No detailed modelling of vibration impacts has been undertaken. Due to the large distances between the receptors and the vibration generating activities assumptions on the low impact from these activities.

BASELINE CONDITIONS

Noise Sensitive Receptors in the Study Area

8.65. The co-ordinates of the NSRs can be found in Table 8-4. 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. An asterisk indicates a landowner property with a financial interest in the Proposed Development.

Table 8-4: Noise Sensitive Receptors in Study Area

Name	Easting	Northing
Receptor 1	308568	190381
Receptor 2	308525	190318
Receptor 3	308362	189993
Receptor 4	308458	189876
Receptor 5	308527	189816
Receptor 6	308384	189712
Receptor 7	308450	189638
Receptor 8	308554	189580
Receptor 9	308615	189541
Receptor 10	308690	189562
Receptor 11	308747	189495
Receptor 12	308461	189528
Receptor 13	308495	189479
Receptor 14	308544	189420

Name	Easting	Northing
Receptor 15	309038	189518
Receptor 16	309050	189490
Receptor 17	309352	189828
Receptor 18	308745	189022
Receptor 19	308839	188991
Receptor 20	308942	188929
Receptor 21	308985	188880
Receptor 22*	309031	188814
Receptor 23	309131	188815
Receptor 24	309177	188888
Receptor 25	309258	188942
Receptor 26	309305	188968
Receptor 27	309365	189040
Receptor 28	309369	188916
Receptor 29	309390	188851
Receptor 30	309510	188785
Receptor 31	309965	189278
Receptor 32	310103	189170
Receptor 33	310148	189175
Receptor 34	310358	189950
Receptor 35	308886	189330

POTENTIAL EFFECTS

Do Nothing Scenario

8.66. In the absence of the Proposed Development, it is likely that the existing noise environment, as stated in the baseline section, will remain largely unchanged.

Construction Stage

Noise

8.67. Construction noise levels at any location will vary during the construction period as the combinations of plant as well as working distance from Noise Sensitive Receptors (NSR's) varies. It is not standard practice at this stage to specify every element of these factors that may vary the noise and therefore it is necessary to make reasonable allowances for the level of noise emissions that may be associated with the key phases of construction activity. Both the Proposed Development and grid substation have been assessed together, however where there is an impact from the grid substation, this will be outlined. The key activities which are considered to be those with the most potential to result in adverse noise effects:

- Construction of tracks and hardstanding areas (Proposed Development);
- Installation of mounting frames; including piling (Proposed Development only);

8.68. The Construction Traffic Management Plan conducted set out the traffic impacts that would occur due to the construction phase of the development on the local road network. In total, the construction of the solar farm is expected to give rise to 684 HGV deliveries over the 12-month construction period. There is expected to be a daily maximum of approximately 15 HGV deliveries (30 HGV movements). This is a maximum amount of movements which is likely to occur for only a few weeks and therefore any impact is likely to be viewed as Temporary. There are a number of receptors along the L4019 where the effects of increased traffic will increase noise levels, however the addition of 15 deliveries per day is unlikely to lead to a significant effect.

8.69. Given that most of the HGV movements are likely to only increase by 15 per day for a few weeks, these effects are considered to be Temporary, and as such the effect of traffic noise upon NSRs will be Temporary and **Low** impact and therefore effects are of **Slight Significance** and **Temporary** in terms of the EIA Regulations.

8.70. Construction noise levels at any location will vary during the construction period as the combinations of plant as well as working distance from NSRs varies. It is not practical at this

stage to specify every element of these factors that may vary the noise and therefore it is necessary to make reasonable allowances for the level of noise emissions that may be associated with the key phases of construction activity. The key activities with the most potential to result in adverse noise effects are:

- Construction of access tracks; and
- Piling operations for PV panel installation.

8.71. Table 8-5 shows the distances between the nearest houses to the Proposed Development and key stages of construction.

Table 8-5: Distances from NSRs to Construction Activities

Receptor	Construction Activity	
	Construction of Access Tracks	Piling Operations
	Distance from Construction Activity (m)	
Receptor 22	10	100
Receptor 27	186	110

8.72. The calculation details are listed in Appendix 8B, and the results are shown in Table 8-6.

Table 8-6: Predicted Construction Noise Levels

Receptor	Construction Activity	
	Construction of Access Tracks	Piling Operations
	Predicted Construction Noise Level, dB, LAeq,10hr	
Receptor 22	57.6	21.6
Receptor 27	31.9	20.6

8.73. As can be seen from Table 8-6, the predicted construction noise levels are lower than the daytime threshold level of 65dB at all receptors during all construction works. Therefore, the impact is to be considered Low and temporary.

8.74. It is likely that a planning condition will be imposed, limiting times of construction, which are likely to correspond to the 'daytime' hours defined in BS5228:2009, i.e. 07:00-18:00 weekdays, 07:00-13:00 Saturdays.

8.75. In general night-time working will not take place, although in some circumstances there may be a requirement for night-time working, for example, there may be a requirement for pumps to run overnight, dewatering excavations or for generators to power night-time security

lighting. Based on the calculations above, it is very unlikely that such activities would give rise to noise levels in excess of the night-time lower threshold.

8.76. It is concluded that the effects of noise during the construction of the Development would be **Low** and therefore **Not Significant** at all receptors during the construction of the access track near to the site access point.

8.77. In addition, good practice measures will be implemented as standard to manage noise during construction, and these are outlined in the mitigation section of this report.

Operational Stage

8.78. Within the Proposed Solar Farm, the solar panels themselves do not generate noise. The main noise source associated with the Proposed Solar Farm will be the inverters located around the site.

8.79. 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 4am and 7am. The noise levels of the inverters 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.

8.80. 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 and represent the maximum acoustic emissions. Predictions based on this data therefore represent a worst-case scenario and the sound levels would be expected to be less when the Proposed Development is not operating at maximum capacity. The data for the noise sources are estimated based on research of similar projects.

8.81. **Table 8-7** shows A-weighted sound power levels of the noise sources which have been included in the noise model.

Table 8-7: Summary of 1/1 Octave Band Centres

Octave Band Centre Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Total
Transformer	50.8	65.9	72.4	77.8	75.0	71.2	66.0	56.9	**81.1**

8.82. Should the chosen noise source increase noise levels from that specified in this report then this would be agreed with the Council prior to the construction stage.

Results

8.83. Predicted specific sound levels at nearby properties are detailed in **Table 8-8** (an asterisk (*) indicates a landowner property) and an illustrative sound footprint for the Proposed Development is provided in **Figure 8.1 of Appendix 8A.**

8.84. BS 4142 states that corrections should be applied in order to account for certain acoustic features which have the potential to increase the level of effect at nearby dwellings.

8.85. The three acoustic features to be considered in the application of rating corrections are as follows:

- Impulsivity: The character of the sound from the Development will generally be low level and constant sound, with no rapid change in the level or character of noise. It is therefore considered that no impulsive penalty is required;
- Tonal elements: Octave band data is not available for many of the plant items. Due to the types of plant items to be installed however, it is likely that tonal elements may be perceptible at the nearest noise sensitive receptors. As such a 2dB penalty for tonal characteristics is considered appropriate; and
- Intermittency: It is considered that the plant items will not have identifiable on/off conditions, with many items operating at gradually varying loads relative to both the intensity of light incident upon the solar panels and the air temperature. It is therefore considered that intermittency will not be readily distinctive against the residual sound.

8.86. In light of the above, a total correction of 0dB is considered appropriate to derive the rating level for the Development at the receptors. Note that a 3dB façade correction is included within the SoundPlan model at each of the receptor locations.

Table 8-8: Predicted Noise Impacts at the NSRs

Receptor	Specific Sound Level ($L_{Ar,Tr}$) dB (Predicted)	Rating Penalty (dB)	Rating Level (dB)
Receptor 1	3.8	0	3.8
Receptor 2	4.0	0	4.0
Receptor 3	1.5	0	1.5

Receptor	Specific Sound Level ($L_{Ar,Tr}$) dB (Predicted)	Rating Penalty (dB)	Rating Level (dB)
Receptor 4	0.7	0	0.7
Receptor 5	0.0	0	0.0
Receptor 6	3.0	0	3.0
Receptor 7	2.8	0	2.8
Receptor 8	0.3	0	0.3
Receptor 9	-0.3	0	-0.3
Receptor 10	-1.2	0	-1.2
Receptor 11	0.5	0	0.5
Receptor 12	2.2	0	2.2
Receptor 13	2.5	0	2.5
Receptor 14	3.4	0	3.4
Receptor 15	13.1	0	13.1
Receptor 16	11.9	0	11.9
Receptor 17	22.0	0	22.0
Receptor 18	6.2	0	6.2
Receptor 19	7.1	0	7.1
Receptor 20	7.6	0	7.6
Receptor 21	7.9	0	7.9
Receptor 22*	7.7	0	7.7
Receptor 23	8.4	0	8.4
Receptor 24	9.9	0	9.9
Receptor 25	11.5	0	11.5
Receptor 26	11.9	0	11.9
Receptor 27	13.3	0	13.3
Receptor 28	10.9	0	10.9

Receptor	Specific Sound Level ($L_{Ar,Tr}$) dB (Predicted)	Rating Penalty (dB)	Rating Level (dB)
Receptor 29	9.7	0	9.7
Receptor 30	8.3	0	8.3
Receptor 31	10.3	0	10.3
Receptor 32	9.3	0	9.3
Receptor 33	9.0	0	9.0
Receptor 34	2.9	0	2.9
Receptor 35	4.7	0	4.7

IMPACT ASSESSMENT

8.87. Table 8-9 compares the predicted rating level with the adopted background noise levels for both the day-time and night-time periods. An asterisk (*) indicates a landowner property.

Table 8-9: Noise Impacts against the Adopted Background Noise Level

Receptor	Rating Level (dB)	Baseline Noise Level (LA90) dB	Exceedance (dB)	Impact
Receptor 1	3.8	25.0	-21.2	Negligible
Receptor 2	4.0	25.0	-21.0	Negligible
Receptor 3	1.5	25.0	-23.5	Negligible
Receptor 4	0.7	25.0	-24.3	Negligible
Receptor 5	0.0	25.0	-25.0	Negligible
Receptor 6	3.0	25.0	-22.0	Negligible
Receptor 7	2.8	25.0	-22.2	Negligible
Receptor 8	0.3	25.0	-24.7	Negligible
Receptor 9	-0.3	25.0	-25.3	Negligible
Receptor 10	-1.2	25.0	-26.2	Negligible
Receptor 11	0.5	25.0	-24.5	Negligible
Receptor 12	2.2	25.0	-22.8	Negligible
Receptor 13	2.5	25.0	-22.5	Negligible
Receptor 14	3.4	25.0	-21.6	Negligible
Receptor 15	13.1	25.0	-11.9	Negligible
Receptor 16	11.9	25.0	-13.1	Negligible
Receptor 17	22.0	25.0	-3.0	Negligible
Receptor 18	6.2	25.0	-18.8	Negligible
Receptor 19	7.1	25.0	-17.9	Negligible
Receptor 20	7.6	25.0	-17.4	Negligible

Receptor	Rating Level (dB)	Baseline Noise Level (LA90) dB	Exceedance (dB)	Impact
Receptor 21	7.9	25.0	-17.1	Negligible
Receptor 22*	7.7	25.0	-17.3	Negligible
Receptor 23	8.4	25.0	-16.6	Negligible
Receptor 24	9.9	25.0	-15.1	Negligible
Receptor 25	11.5	25.0	-13.5	Negligible
Receptor 26	11.9	25.0	-13.1	Negligible
Receptor 27	13.3	25.0	-11.7	Negligible
Receptor 28	10.9	25.0	-14.1	Negligible
Receptor 29	9.7	25.0	-15.3	Negligible
Receptor 30	8.3	25.0	-16.7	Negligible
Receptor 31	10.3	25.0	-14.7	Negligible
Receptor 32	9.3	25.0	-15.7	Negligible
Receptor 33	9.0	25.0	-16.0	Negligible
Receptor 34	2.9	25.0	-22.1	Negligible
Receptor 35	4.7	25.0	-20.3	Negligible

8.88. The Proposed Development is predicted to have only **Negligible impacts** at all receptors during both the day time and the night time periods within the study area.

8.89. 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.

Significance of Effect

8.90. **Table 8-10** sets out the significance of effect at each NSR for the daytime and nighttime periods.

Table 8-10: Significance of Effects (Internal) for the Day-Time and Night-Time Periods

Receptor	Sensitivity	Magnitude	Significance of Effect
Receptor 1	High	Negligible	Minor
Receptor 2	High	Negligible	Minor
Receptor 3	High	Negligible	Minor
Receptor 4	High	Negligible	Minor
Receptor 5	High	Negligible	Minor
Receptor 6	High	Negligible	Minor
Receptor 7	High	Negligible	Minor
Receptor 8	High	Negligible	Minor
Receptor 9	High	Negligible	Minor
Receptor 10	High	Negligible	Minor
Receptor 11	High	Negligible	Minor
Receptor 12	High	Negligible	Minor
Receptor 13	High	Negligible	Minor
Receptor 14	High	Negligible	Minor
Receptor 15	High	Negligible	Minor
Receptor 16	High	Negligible	Minor
Receptor 17	High	Negligible	Minor
Receptor 18	High	Negligible	Minor
Receptor 19	High	Negligible	Minor
Receptor 20	High	Negligible	Minor
Receptor 21	High	Negligible	Minor
Receptor 22*	High	Negligible	Minor
Receptor 23	High	Negligible	Minor
Receptor 24	High	Negligible	Minor
Receptor 25	High	Negligible	Minor
Receptor 26	High	Negligible	Minor

Receptor	Sensitivity	Magnitude	Significance of Effect
Receptor 27	High	Negligible	Minor
Receptor 28	High	Negligible	Minor
Receptor 29	High	Negligible	Minor
Receptor 30	High	Negligible	Minor
Receptor 31	High	Negligible	Minor
Receptor 32	High	Negligible	Minor
Receptor 33	High	Negligible	Minor
Receptor 34	High	Negligible	Minor
Receptor 35	High	Negligible	Minor

Cumulative Effects

8.91. There are no existing or planned developments within 500m of the Proposed Development which require a cumulative assessment of noise impacts.

Mitigation Measures

Construction/Decommissioning Phase

8.92. The measures set out below will be implemented as part of the Proposed Development:

- Core working hours are proposed to be between 07:00 until 18.00, Monday to Friday and 07.00 until 13:00 on a Saturday (unless in exceptional circumstances where need arises to protect plant, personnel or the environment). In addition to this, a start-up and close down period for up to an hour before and after the core working hours is proposed. This does not include the operation of plant or machinery likely to cause a disturbance. Deliveries of plant and materials by HGV to site shall only take place by designated routes and within times as set out in the Construction Traffic Management Plan (CTMP); and
- Where practicable, the work programme will be phased, which would help to reduce the combined effects arising from several noisy operations.

- A dedicated person will be appointed for the management of the delivery booking system during the construction stage.

8.93. Due to the impacts being **Low** and **temporary** at all noise sensitive receptors, acoustic barriers will not be required to mitigate noise impacts, however a temporary acoustic barrier is recommended to mitigate noise from construction of the access track near the landowner property. The location of the recommended mitigation can be seen in **Appendix 8A: Figure 8.2**.

8.94. In addition, the following good practice measures will be implemented during construction:

- Operations shall be limited to times agreed with the Council's Environmental Health Department.
- The site contractors shall publicise the programme (in local newspapers, through mailings to local residents and through an on-site information board at the site access) for the commencement and duration of operations, provide details of the project programme and provide named contacts for daytime and out of hours.
- A community liaison group, comprising representatives from the nearest communities and the Applicant, shall meet regularly prior to and during the construction period to facilitate communication between the parties and ensure that opportunities are taken to minimise noise nuisance through effective project management.
- The site contractors shall prepare detailed method statements for each construction activity, which will include identification of potentially noisy operations and details of noise control measures to be adopted, to be available for inspection by Council's Environmental Health Department.
- The contractors shall be required to select the quietest item of suitable plant available for all site operations where practicable.
- The work programme on site will also be phased to reduce the combined effects arising from several noisy operations.
- Where necessary and practicable, noise from fixed plant and equipment shall be contained within suitable acoustic enclosures or behind acoustic screens.
- All sub-contractors appointed by the main contractor shall be formally and legally obliged, through contract, to comply with all environmental noise conditions.
- Where practicable, night-time working will not be carried out. However, any plant and equipment required for operation at night (23:00 - 07:00) shall be mains electric

powered where practicable. Any night-time lighting rigs, pumps or other equipment shall be powered using mains electricity or silenced and suitably shielded to ensure compliance with World Health Organisation (WHO) night-time noise criteria at the nearest residential properties, assuming open windows. No work outside the quiet day time will take place in close proximity to NSR's.

8.95. Application of the above measures to manage construction noise will ensure that effects are minimised as far as reasonably practicable.

Operational Phase

8.96. As a **Not Significant Long-Term effect** was identified during the operational stage mitigation will not be required.

8.97. Residual effects for the operational phase of the Proposed Development will be **Negligible**, and therefore **Not Significant**.

CUMULATIVE EFFECTS

8.98. There are no other known solar farm developments within the 5km study zone. Permission was granted in March of 2017 for the retention and expansion of a quarry approximately 515m south of the Application Site (**Planning Reference TA160820**). Extraction of aggregates from a quarry requires strict noise control measures (conditioned as part of the Planning Consent). Taking into consideration the distance between the two developments and the insignificant noise levels during the operation of the solar farm, **No Cumulative effects** (Not Significant) are anticipated.

SUMMARY

8.99. This Chapter includes a Noise Impact Assessment that has been undertaken for the construction, operational and decommissioning phases of a Proposed Development consisting of the installation and operation of a proposed Solar Farm and associated grid infrastructure, on lands centred around Bryntail Farm north of Pontypridd.

8.100. 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.

8.101. A total of 35 noise sensitive receptors, including three residential areas, were included in the assessment within a Study Area of 500m around the Application Site. All of the identified receptors are residential dwellings. As per the methodology section, where there are a number of residential receptors within close proximity, a representative dwelling or dwellings is/are chosen for full assessment as the impacts will not vary to any significant degree, however this was not required as part of this assessment.

8.102. No baseline monitoring was undertaken due to the usually low noise effects from a solar farm development, therefore a 25dB background level has been assumed taking into account a typical rural nighttime setting in a low wind scenario. Although this is typical, rural noise levels can vary from site to site. It is thought that a suitable noise condition should be able to adequately protect receptors from significant noise levels.

8.103. 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.

8.104. An assessment of the acoustic impact of the Proposed Development was undertaken in accordance with BS 4142: 2014+A1:2019. The results showed only **Negligible impacts** at all receptors during the day time and night time periods within the study area are anticipated. **A Negligible impact** in relation to noise does not constitute a significant effect as the impact rating is **Minor**. A **Negligible impact** being a rating level at a receptor below background noise levels. This change in noise level for the baseline will be barely perceptible at the receptor location. Residual effects on Noise Sensitive Receptors will be **Negligible**, and therefore **Not Significant**.

8.105. 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.

8.106. The Proposed Development is therefore in line with the policies contained within Future Wales: The National Plan 2040 and the Rhondda Cynon Taf Local Development Plan 2006 – 2021 and all other material considerations.

APPENDICES

Appendix 8A: Figures

- Figure 8.1: Noise Assessment Map
- Figure 8.2: Noise Mitigation Map

Appendix 8B: Construction Noise