



Pennant Walters

GLANLLYNFI GARTH WIND FARM

Draft Environmental Statement

Chapter 13 - Noise



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13 Noise

13.1 Introduction

13.1.1. This chapter presents the assessment of the likely significant effects of the Proposed Development with respect to Noise and Vibration. The assessment is based on information obtained to date. It should be read in conjunction with the Project description provided in **Chapter 4: Development Description** and with respect to relevant parts of the following chapter:

- **Chapter 12: Traffic and Transport.**

13.1.2. Supporting technical information in relation to Noise and Vibration is contained in the following appendices:

- **Appendix 13A: Acoustic Terminology;**
- **Appendix 13B: Relevant Legislation, Planning Policy and Technical Guidance;**
- **Appendix 13C: Construction Traffic Noise;** and
- **Appendix 13D: Operational Wind Turbine Noise.**

13.1.3. This chapter describes:

- the legislation, policy and technical guidance that has informed the assessment (**Section 13.2**);
- the consultation and engagement that has been undertaken and how comments from consultees relating to Noise and Vibration have been addressed (**Section 13.3**);
- the methods used for baseline data gathering (**Section 13.4**);
- the overall baseline (**Section 13.5**);
- the embedded measures relevant to Noise and Vibration (**Section 13.6**);
- the scope of the assessment for Noise and Vibration (**Section 13.7**);
- the methods used for the assessment (**Section 13.8**);
- the assessment of Noise and Vibration effects (**Section 13.9**);
- the assessment of cumulative (inter-project) effects (**Section 13.10**);
- a summary of the significance conclusions (**Section 13.11**);
- additional measures proposed (**Section 13.12**); and
- an outline of further work to be undertaken for the Environmental Statement (ES) (**Section 13.13**).

Limitations and assumptions

- 13.1.4. The Draft ES has been produced to fulfil Pennant Walters's (the 'Applicant') consultation duties and enable consultees to develop an informed view of the likely significant effects of the Proposed Development.
- 13.1.5. Some project information is yet to be confirmed, including details of properties which have a Financial Involvement with the Proposed Development. This information will be confirmed and reported in the Final ES.
- 13.1.6. The baseline noise survey section is marked as 'in preparation', it will be completed and reported in the Final ES.
- 13.1.7. The assessment of operational wind turbine noise is marked as 'in preparation'. To complete this assessment the baseline noise survey results are required. This Draft ES chapter sets out the methodology that will be used, including findings from a baseline desk-based review and the proposed approach to operational noise modelling. The chapter also details the methodology for assessing cumulative operational turbine noise, along with the locations where these assessments will be undertaken.

13.2 Relevant legislation, planning policy and technical guidance

- 13.2.1. This section identifies the legislation, planning policy and technical guidance that has informed the assessment of effects with respect to Noise and Vibration. Further information on policies relevant to the Proposed Development is provided in **Chapter 5: Legislation and policy overview**.

Legislation

- 13.2.2. A summary of the relevant legislation is given in **Table 13.1** with further detail contained in **Appendix 13B: Relevant Legislation, Planning Policy and Technical Guidance**

Table 13.1 Legislation relevant to the Noise and Vibration assessment

Legislation document	Context
Control of Pollution Act 1974 (CoPA) ¹	Sets out the legislative approach to construction and demolition noise. Sections 60 and 61 of the Act give the Local Authority special powers for controlling noise arising from construction and demolition works, regardless of whether a statutory nuisance has been caused or is likely to be caused. Works within the scope of these provisions include repair and maintenance work and road works.
Environmental Protection Act 1990 (EPA) Part III – as amended by the Noise and Statutory Nuisance Act 1993 ²	An Act to make provision for the improved control of pollution (including from noise and vibration) arising from certain industrial and other processes.

¹ UK Government (1974). *Control of Pollution Act 1974*. [online]. Available at: <https://www.legislation.gov.uk/ukpga/1974/40> [Accessed 22 June 2026].

² UK Government (1990). *Environmental Protection Act 1990*. [online]. Available at: <https://www.legislation.gov.uk/ukpga/1990/43/contents> [Accessed 22 June 2026].

Legislation document	Context
	Section 79 of the EPA (as amended) declares several matters to be statutory nuisances, one of which is noise (the term includes vibration). The Act requires local authorities to inspect their area periodically to detect any nuisance and, where a complaint of a statutory nuisance is made by a person living within its area, to take such steps as are reasonably practicable to investigate the complaint.

Planning Policy

- 13.2.3. A summary of the relevant national and local planning policy is given in **Table 13.2** with further detail contained in **Appendix 13B: Relevant Legislation, Planning Policy and Technical Guidance**.

Table 13.2 Planning policy relevant to the Noise and Vibration assessment

Planning policy document	Context
National planning policy	
Future Wales – The National Plan 2040 ³	Provides the national development framework up to 2040 and refers to the protection from noise through planning throughout, including renewables. Identifies an area containing the Proposed Development as a pre-assessed area for wind energy development, within which there is a presumption in favour of large-scale wind energy development.
Planning Policy Wales (PPW) – Edition 12 ⁴	Sets out the land use planning policies of the Welsh Government, supplemented by Technical Advice Notes (TANs). Paragraph 5.9.16 states “ <i>Wales has an abundant wind resource and, as a result, wind forms a key part of meeting the Welsh Government’s vision for future renewable energy production.</i> ” This policy document sets out the importance of fully considering potential noise impacts from new energy infrastructure when making planning decisions and refers to use of ETSU-R-97 ⁵ for the assessment of noise from wind turbines.
Local planning policy	
Bridgend County Borough Council Local Development Plan 2018-2033 ⁶	In the Local Development Plan (LDP) <i>noise</i> is considered as part of a wider framework for environmental protection, pollution control, placemaking and public health. Noise is integrated throughout policies that deal with pollution, amenity, transport and development quality. The key strategic policies (SPs) relevant to noise, vibration and this Proposed Development are summarised below.

³ Welsh Government (2021). *Future Wales: the national plan 2040*. [online]. Available at: <https://www.gov.wales/future-wales-national-plan-2040> [Accessed 22 June 2026].

⁴ Welsh Government (2024). *Planning Policy Wales. Edition 12*. [online]. Available at: <https://www.gov.wales/planning-policy-wales> [Accessed 22 June 2026].

⁵ The Working Group on Noise from Wind Turbines (1996). *ETSU-R-97. The assessment and rating of noise from wind farms*. [online]. Available at: https://regmedia.co.uk/2011/08/02/etsu_r_97.pdf [Accessed 22 June 2024].

⁶ Bridgend County Borough Council (2024). *Local Development Plan 2018-2033*. [online]. Available at: <https://www.bridgend.gov.uk/media/izcfqp1f/written-statement.pdf> [Accessed 22 June 2024].

Planning policy document	Context
	<i>“SP3: Good Design and Sustainable Placemaking. Development proposals will ... Avoid or minimise noise, air, and soil and water pollution.</i> <i>SP8: Health and Well-being. Development proposals will not result in significant risk to life, human health or well-being, particularly in respect of air, noise, light, water or land pollution.</i> <i>SP13: Renewable and Low Carbon Energy Development. Development proposals will not result in unacceptable impacts on the natural and historic environmental or local communities (such as noise and air pollution).</i> <i>DNP9: Natural Resource Protection and Public Health. Development proposals will only be permitted where it can be demonstrated that they would not cause a new, or exacerbate an existing, unacceptable risk of harm to health, biodiversity and/or local amenity due to: several factors, including: ... Noise pollution.”</i>

Technical Guidance

- 13.2.4. A summary of the technical guidance for Noise and Vibration is given in **Table 13.3** with further detail contained in **Appendix 13B: Relevant Legislation, Planning Policy and Technical Guidance**.

Table 13.3 Technical guidance relevant to the Noise and Vibration assessment

Technical guidance document	Context
Assessment and Rating of Wind Turbine Noise (AWTN) ⁷	In June 2026, DESNZ published AWTN, replacing ETSU-R97 as the principal UK guidance for assessing and controlling operational noise from onshore wind farms. The guidance retains the core ETSU-R-97 principles but updates the methodology to reflect current understanding of turbine noise, propagation, cumulative impacts and community response. The document provides a framework for setting operational wind turbine Total Noise Assessment Criteria (TNAC), Site-Specific Noise Limits (SSNLs), undertaking background noise surveys, predicting turbine noise, assessing cumulative effects, addressing acoustic characteristics such as tonality and amplitude modulation, and managing compliance through planning conditions and post-construction monitoring. Where topics are not covered comprehensively, practitioners should follow established good practice, such as guidance published by the Institute of Acoustics (IOA). The daytime and night-time total noise level limits (not termed the TNAC), and the method for deriving them, remain unchanged from ETSU-R-97. However, the AWTN introduces the option to derive a single noise level limit applicable to both periods where quiet daytime and night-time background sound levels are similar and where this approach is agreed with the Local Planning Authority.

⁷ Department for Energy Security and Net Zero (DESNZ) (2026). *Assessment and Rating of Wind Turbine Noise*. [online]. Available at: [Assessment and Rating of Wind Turbine Noise](#) [Accessed 01 July 2026].

Technical guidance document	Context
	The AWTN also confirms that assessments of low frequency noise, turbine induced groundborne vibration and infrasound are not required at the planning stage. Similarly, an assessment of excess amplitude modulation (AM) is not required at the planning stage, as this is more appropriately addressed through post-consent compliance monitoring. To account for this potential phenomenon, the guidance provides draft noise condition wording relating to AM.
Energy Technology Support Units R-97 – The Assessment and Rating of Noise from Wind Farms (ETSU-R-97)⁸	ETSU-R-97 was replaced by AWTN in June 2026. Given the recent publication of the replacement guidance, ETSU-R-97 continues to be referenced within several planning and guidance documents. Accordingly, reference to this technical guidance is still made in this chapter.
A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (IOA GPG)⁹	Published by the Institute of Acoustics, the IOA GPG represents current good practice in the assessment of noise impacts from wind turbine developments. It is of note that the AWTN continues to reference application of good practice guidance such as that published by the IOA. The document provides clarification and guidance on wind farm noise assessments, including consultation, background noise survey methodology, noise survey data analysis, derivation of noise limits, noise prediction model input data, algorithms and parameters, cumulative impact assessment procedures, assessment reporting and planning conditions. A set of Supplementary Guidance Notes (SGNs) also form part of the publication and include further specific detail for different technical areas as follows: : Data collection : Data processing & derivation of ETSU-R-97 background curves : Sound power level data : Wind shear : Post completion measurements : Noise propagation over water for on-shore wind turbines.
Report for UK Government: A review of noise guidance for onshore wind turbines¹⁰ (the 'BEIS report')	WSP, on behalf of the UK government Department for Business, Energy & Industrial Strategy (BEIS) completed a review of the onshore commercial wind turbine noise assessment guidance, ETSU-R-97. The review highlighted areas within the guidance that warranted consideration for updating, while also recommending where further evidence needed to support any future updates, should they be progressed. In response to the BEIS Report the UK Government recently published the AWTN.

⁸ Department of Trade and Industry (1996). *ETSU-R-97. The Assessment & Rating of Noise from Wind Farms*. [online]. Available at: https://assets.publishing.service.gov.uk/media/5a798b42ed915d07d35b655a/ETSU_Full_copy_Searchable_.pdf [Accessed 22 June 2026].

⁹ Institute of Acoustics (2013). *A Good Practice Guide to the Application Of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise*. [online]. Including Supplementary Guidance Notes 1 to 6. Available at: <https://www.ioa.org.uk/publications/wind-turbine-noise> [Accessed 22 June 2026].

¹⁰ Department for Business, Energy & Industrial Strategy (2023). *A Review of Noise Guidance for Onshore Wind Turbines*. [online]. Available at: <https://www.wsp.com/en-gb/insights/wind-turbine-noise-report> [Accessed 22 June 2026].

Technical guidance document	Context
Technical Advice Note (TAN) 11 Noise ¹¹	TAN 11 provides general advice on noise and refers to TAN 8 for guidance regarding noise from wind turbines. TAN 8 was superseded by national development framework in Future Wales – The National Plan 2040 (see Table 13.2).
Updates to TAN 11 Noise ¹²	The purpose of this document was to update TAN 11 in response to revisions and amendments made to the supporting legislation and British Standards that underpin the guidance. The document endorses “the Institute of Acoustics Good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise.” And states that “Authorities processing wind turbine applications should also note that six supplementary guidance notes have been issued to support this guide (http://www.ioa.org.uk/publications/good-practice-guide)”. It goes on to state that “The Department of Energy and Climate Change have commenced further work on amplitude modulation and any Welsh Government position on this work would be considered at the appropriate time.” In response to the BEIS Report the UK Government recently published the AWTN.
Noise and soundscape plan for Wales 2023 to 2028 ¹³	This document presents the Welsh national strategy on soundscapes. With reference to wind turbines, it highlights that development proposals must seek to minimise their impact to homes and tourism receptors; and that communities should be protected from significant cumulative impacts. The document references UK noise assessment guidance, namely ETSU-R-97 and IOA GPG; as well as the BEIS Report. In response to the BEIS Report the UK Government recently published the AWTN.
Designing for Renewable Energy in Wales ¹⁴	This guidance document sets out key design objectives and considerations for the sensitive development of large-scale onshore wind and solar installations in Wales. With reference to wind turbines, it highlights that development proposals must seek to minimise their noise impact to homes and tourism receptors; and that communities should be protected from significant cumulative impacts. The document references UK noise assessment guidance, namely ETSU-R-97 and the IOA GPG; and references the BEIS Report. In response to the BEIS Report the UK Government recently published the AWTN.
Practice guidance: Planning implications of renewable and low carbon energy development ¹⁵	This practice guidance is a tool to support Local Planning Authorities (LPAs) in dealing with applications for renewable and low carbon energy development.

¹¹ Welsh Government (1997). *Planning Guidance (Wales), Technical Advice Note (Wales) 11, Noise*. [online]. Available at: <https://www.gov.wales/sites/default/files/publications/2018-09/tan11-noise.pdf> [Accessed 22 June 2026].

¹² Welsh Government (2015). *CL-01-15 Updates to TAN 11: Noise – Noise Action Plan (2013-18) Commitments*. [online]. Available at: <https://www.gov.wales/updates-technical-advice-note-tan-11-noise-cl-01-15> [Accessed 22 June 2026].

¹³ Welsh Government (2023). *Noise and Soundscape Plan for Wales 2023 to 2028*. [online]. Available at: <https://www.gov.wales/noise-and-soundscape-plan-for-wales-2023-2028> [Accessed 22 June 2026].

¹⁴ Welsh Government (2023). *Designing for Renewable Energy in Wales*. [online]. Available at: <https://www.gov.wales/designing-renewable-energy-wales> [Accessed 22 June 2026].

¹⁵ Welsh Government (2011). *Planning implications of renewable and low carbon energy development: practice guidance* [online]. Available at: <https://www.gov.wales/planning-implications-renewable-and-low-carbon-energy-development-practice-guidance> [Accessed 22 June 2026].

Technical guidance document	Context
	With reference to wind turbine development, it states that it is important to ensure that operational noise levels meet ETSU-R-97 established limits. For construction and decommissioning activity, it recommends restricting working hours and adopting good practice measures for reducing noise in line with BS 5228-1 and BS 8233.
Design Manual for Roads and Bridges, LA 111, Noise and Vibration (LA 111) ¹⁶	LA 111 provides comprehensive guidelines for assessing and managing noise and vibration impacts from road projects. It outlines methodologies for evaluating baseline noise and vibration levels, predicting impacts from construction and operation, and determining the significance of these impacts. The document also includes strategies for mitigating adverse effects on nearby communities and the environment.
Calculation of Road Traffic Noise (CRTN) ¹⁷	CRTN methodology provides the established UK procedure for predicting road traffic noise levels and is widely used in environmental assessments of transport schemes. The method calculates noise levels using traffic flow, vehicle speed, heavy vehicle composition, road gradient, road surface and receptor distance, with corrections for screening, barriers, reflections and local topography. Predicted noise levels are typically expressed as daytime L _{A10,18h} values and form the basis of operational road traffic noise assessments.

13.3 Consultation and Engagement

Overview

- 13.3.1. The assessment has been informed by consultation responses and ongoing stakeholder engagement. An overview of the approach to consultation is provided in **Chapter 2: Approach to the EIA**.

Scoping Opinion

- 13.3.2. A Scoping Direction was issued by Planning and Environment Decisions Wales (PEDW), on behalf of the Welsh Ministers, on 12 June 2026. A summary of the relevant responses received in the Scoping Opinion in relation to Noise and Vibration and confirmation of how these have been addressed within the assessment to date is presented in **Table 13.4**.

Table 13.4 Summary of EIA Scoping Direction Responses for Noise and Vibration

Consultee	Consideration	How addressed in this Draft ES
PEDW / BCBC Environmental Health Officer	Aspects scoped in and out. BCBC's Environmental Health Officer has reviewed the scoping opinion report and agrees with the elements scoped in and out of the EIA with respect to noise (Scoping Direction ID.75).	The elements scoped in and out of the EIA have been updated based on the latest information, see Section 13.7 .

¹⁶ Highways England (2020) *Design Manual for Roads and Bridges (DMRB), LA 111, Noise and vibration. Revision 2*. Available at: <https://www.standardsforhighways.co.uk/search/cc8cfcf7-c235-4052-8d32-d5398796b364> [Accessed 22 June 2026]

¹⁷ Department of Transport and Welsh Office (1988) *Calculation of Road Traffic Noise*. London: Her Majesty's Stationery Office (HMSO)

Consultee	Consideration	How addressed in this Draft ES
PEDW / BCBC Environmental Health Officer	Cumulative assessment. BCBC's Environmental Health Officer advises that the cumulative assessment should be based on the consented noise limits of both operational and consented wind farms, rather than manufacturers' noise emission data (Scoping Direction ID.76).	The cumulative assessment is currently being prepared in accordance with the AWTN guidance and the IOA GPG, and will be presented within the final ES. The assessment will consider the consented noise limits for both operational and consented wind farms, whilst also evaluating the extent to which those limits can realistically be utilised in practice, taking account of controlling properties, turbine noise emission characteristics and appropriate allowances for future increases in noise levels in line with best practice.
PEDW	Population and Human Health Effects. PEDW agrees that population and human health effects may appropriately be assessed through the relevant technical chapters, including Noise (Scoping Direction ID.81).	Noise effects on human receptors are assessed in the Noise chapter.
BCBC Environmental Health Officer	Reproduction of Policy SP13 of the LDP, namely that, renewable and low carbon development proposals will be permitted subject to several criteria, including no unacceptable impacts on the natural and historic environment or local communities (such as noise) and that no other unacceptable cumulative impacts will arise.	Noise effects on local communities are assessed in the Noise chapter. Noise disturbance effects on the natural environment are assessed in Chapter 8: Biodiversity and Chapter 9: Ornithology. Noise effects on the setting of historic assets have been scoped out, as detailed in Chapter 7: Historic Environment.

Technical Engagement

- 13.3.3. Technical engagement has been undertaken with the Environmental Health Department of BCBC. The consultation sought agreement on the baseline noise survey measurement locations and methodology, as well as the cumulative wind farm developments to be included in the operational turbine noise assessment.
- 13.3.4. A summary of the technical engagement undertaken to date is outlined in **Table 13.5**.

Table 13.5 Technical engagement on the Noise and Vibration assessment

Consultee	Consideration	How addressed in this Draft ES
BCBC Environmental Health Officer	BCBC's Environmental Health Officer (EHO) responded by email to a request to agree the baseline noise measurement locations, survey methodology and	The baseline noise survey and cumulative assessment are being prepared in accordance with the AWTN guidance and the IOA GPG and will be presented in the final ES.

Consultee	Consideration	How addressed in this Draft ES
	cumulative development approach (see Figure 13.4: Cumulative turbines). <u>Proposed noise monitoring locations</u> BCBC's EHO advises that the proposed noise monitoring locations are acceptable and the final siting for equipment installation will be determined by the site engineer following a review of local conditions, including consideration to the presence of foliage, water courses and any other potential noise sources, as well as the orientation of buildings and the location of external amenity spaces so that extraneous noise affects are minimised. <u>Cumulative assessment</u> BCBC's EHO advises that the cumulative assessment should be based on the consented noise limits of both operational and consented wind farms.	Subject to access approvals, the baseline noise survey will be completed at a sample of the nearest noise-sensitive properties, as shown in Figure 13.2: Proposed noise monitoring locations. The cumulative assessment will consider the consented noise limits of both operational and consented wind farms, whilst also evaluating the extent to which those limits can realistically be utilised in practice, taking account of controlling properties, turbine noise emission characteristics and appropriate allowances for future increases in noise levels in line with best practice. The cumulative developments scoped in and out of further assessment are detailed in Table 13.15 and Table 13.16, respectively.

13.4 Data gathering methodology

Study area

Construction

- 13.4.1. For construction noise, consideration has been given to activities located within 300m of sensitive properties. In accordance with LA 111, this distance represents the area within which construction activities would typically have the potential to give rise to significant noise effects.
- 13.4.2. For construction vibration, consideration has been given to activities located within 100m of sensitive properties. In accordance with LA 111, this distance represents the area within which construction activities would typically have the potential to give rise to significant vibration effects.
- 13.4.3. The Study Area for construction traffic noise is 50m either side of public roads with the potential for an increase in noise due to the addition of construction traffic to existing traffic levels. The Study Area is consistent with the guidance in LA 111.

Operation

- 13.4.4. For the assessment of operational turbine noise, representative noise-sensitive receptor properties closest to both the Proposed Development and the cumulative developments under consideration have been identified. The selected properties are those with the greatest potential to experience significant adverse effects, either from the Proposed Development operating in isolation or under the cumulative operational scenario (i.e. the Proposed Development operating concurrently with cumulative developments that remain scoped-in). The selected receptors are representative of all noise-sensitive receptors

within the Study Area. Further details of the representative receptors are provided in **Section 13.7** and **Figure 13.3: Noise-sensitive receptors**.

- 13.4.5. For the cumulative assessment, consideration has been given to those developments that are proposed, consented or operational within 5km of the Proposed Development turbine locations, as shown in **Figure 13.1: Study Areas**. This distance captures the area where cumulative operational wind turbine noise could give rise to significant effects at receptors.

Desk Study

- 13.4.6. A desk study has been undertaken to assist in determining the baseline conditions and to inform the assessment of cumulative operational wind turbine noise. This has included:
- identification of noise-sensitive receptors, including those most likely to experience significant effects from the construction and operation of the Proposed Development, both individually and in combination with other developments under the cumulative scenario;
 - identification of cumulative wind turbine developments within the Study Area, including key development parameters such as conditioned operational noise level limits (consented developments) site layout, installed / candidate turbine models, hub-heights, and other relevant development design characteristics;
 - identification of existing local noise sources in the vicinity of the identified receptors, including natural sources such as watercourses; and
 - identification and collection of data required to inform operational noise predictions, including ground contours and other relevant environmental and site characteristics.
- 13.4.7. A summary of the organisations that have supplied data, together with the nature of that data is outlined in **Table 13.6**.

Table 13.6 Data sources used to inform the Noise and Vibration assessment

Organisation	Data source	Data provided
BCBC	Local authority planning portal ¹⁸	Identification of cumulative wind farm developments and potential future sensitive receptors.
Bing	Bing Maps ¹⁹	Publicly available mapping information.
BSI	BS 5228-1: 2009+A1:2014 ²⁰	Guidance on assessment of construction noise.
Esri	ArcGIS Online Basemaps ²¹	Open mapping information and satellite imagery.
Google	Google Maps ²²	Publicly available mapping information and satellite imagery.
Google	Google Street View ²³	Publicly available street scene photography.
NPTC	Local Authority planning portal ²⁴	Identification of cumulative wind farm developments.

¹⁸ BCBC website. [online]. Available at: www.bridgend.gov.uk [Accessed 25 June 2026].

¹⁹ Bing. [online] Available at: www.bing.com/maps. [Accessed 25 June 2026].

²⁰ British Standard Institution. (2014). BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites - Noise*.

²¹ Esri ArcGIS Desktop 10.8.1.

²² Google. *Google Maps*. [online]. Available at www.google.com/maps [Accessed 25 June 2026].

²³ Google. *Google Street View*. [online]. Available at www.google.com/maps [Accessed 25 June 2026].

²⁴ NPTC website. [online]. Available at: <https://www.npt.gov.uk/> [Accessed 25 June 2026].

Organisation	Data source	Data provided
Ordnance Survey (OS)	AddressBase Plus database ²⁵	Local authority addresses and four-level classification scheme explaining the function of each property.
OS	OS Terrain 50 ²⁶	Open contour height line dataset.
UK Government	Check your Council Tax band website ²⁷	Property information.
Welsh Government	'Planning casework' portal ²⁸	Cumulative development information for Development of National Significance (DNS) and Significant Infrastructure Project (SIP) applications.

Turbine Data

- 13.4.8. A range of turbine models would be appropriate for the Proposed Development. The final selection of turbine would follow a competitive tendering process and thus the actual model of turbine may differ from that which this assessment has been based. However, the final choice of turbine would be required to comply with the SSNL's which have been established for the development within this noise assessment, and which will be confirmed in the Final ES.
- 13.4.9. The development comprises eight turbines; the candidate turbine type is the Vestas V150 4.2 MW, with serrated trailing edge (STE) blades, operating in Mode P01, hub height of 105m, rotor diameter of 150m, and a maximum tip height of 180m.
- 13.4.10. Candidate turbine source data have been taken from Vestas document *V150-4.0/4.2 MW Third octave noise emission*²⁹. Third octave band noise spectra for the candidate turbine are taken from *Table 3: V150-4.2MW P01, expected 1/3 octave band performance (Blades with serrated trailing edge)*. The manufacturer sound power data are referenced to hub height wind speeds and have therefore been converted to standardised 10 m height wind speeds, as required for assessment in accordance with the AWTN. In line with best practice, the approach detailed in the IOA GPG and **Section 1.2 of Appendix 13D: Operational Wind Turbine Noise** has been applied to derive standardised sound power levels for the candidate turbine type with a 105m hub height. Following the standardisation process, sound power levels at integer wind speeds were obtained by linear interpolation between the nearest non-integer wind speed values.
- 13.4.11. The resulting standardised broadband sound power level data for the candidate turbine are presented in **Table 13.7**. The data includes a +2dB uncertainty correction.

²⁵ OS. AddressBase Plus. Available at www.ordnancesurvey.co.uk/products/addressbase-plus [Accessed 25 June 2026].

²⁶ OS Terrain 50. [online]. Available at: www.ordnancesurvey.co.uk/products/os-terrain-50 [Accessed 25 June 2026].

²⁷ UK Government. *Council Tax Bands*. [online]. Available at: <https://www.gov.uk/council-tax-bands> [Accessed 25 June 2026].

²⁸ Welsh Government. *Planning casework*. [online]. Available at: <https://planningcasework.service.gov.wales/> [Accessed 25 June 2026].

²⁹ Vestas (2018). *V150-4.0/4.2 MW Third octave noise emission (DMS 0067-4767 V05)*, dated 15 March 2018

Table 13.7 Proposed Development candidate turbine sound power level, L_{WA} (dBA)

Turbine	Standardised 10m height wind speed (v_{10}), m/s									
	3	4	5	6	7	8	9	10	11	12
Vestas V150 4.2MW, 105m hub, Mode P01 with STE	93.9	97.7	102.6	106.4	106.9	106.9	106.9	106.9	106.9	106.9
Data includes a +2dB uncertainty correction										

- 13.4.12. Octave band spectra data standardised to 10m height wind speed for the candidate turbine are presented in **Table 13.8**. The octave band spectra include a +2 dB uncertainty correction.

Table 13.8 Proposed Development candidate turbine octave band power level, Vestas V150 4.2MW, 105m hub Mode P01 with STE, L_{WA} (dBA)

Octave band frequency	Standardised 10m height wind speed (v_{10}), m/s									
	3	4	5	6	7	8	9	10	11	12
31.5 Hz	63.6	67.4	72.8	76.8	77.6	78.0	78.4	78.6	78.7	79.0
63 Hz	74.5	78.3	83.6	87.4	88.1	88.3	88.4	88.5	88.6	88.7
125 Hz	82.4	86.2	91.2	95.0	95.6	95.6	95.7	95.7	95.8	95.8
250 Hz	87.2	91.0	96.0	99.7	100.2	100.2	100.2	100.2	100.2	100.1
500 Hz	89.1	92.9	97.8	101.5	102.0	102.0	101.9	101.9	101.9	101.8
1 kHz	88.0	91.7	96.7	100.4	100.9	100.9	100.9	100.9	100.9	100.9
2 kHz	83.8	87.6	92.6	96.3	96.9	97.0	97.1	97.1	97.2	97.2
4 kHz	76.8	80.4	85.5	89.4	90.1	90.3	90.6	90.7	90.8	90.9
8 kHz	66.6	70.3	75.5	79.4	80.3	80.8	81.2	81.5	81.7	81.9
dBA	93.9	97.7	102.6	106.4	106.9	106.9	106.9	106.9	106.9	106.9
Data includes a +2dB uncertainty correction										

Survey work

- 13.4.13. A detailed baseline noise survey will be undertaken to inform the assessment work. This is in preparation. The survey will be completed before Final ES submission and reported in this section and associated appendices.
- 13.4.14. Subject to access approvals, the baseline noise survey will be completed at a sample of the nearest NSR properties, as shown in **Figure 13.2: Proposed noise monitoring locations**. Continuous long-term monitoring will be undertaken for a minimum of 2-weeks in line with IOA GPG guidance.
- 13.4.15. The noise survey will be undertaken using BS EN 61672-1:2013 Class 1 specification sound pressure level measurement equipment.
- 13.4.16. The sound pressure level measurement systems will be laboratory calibrated to traceable standards within the preceding 2 years and the hand-held calibrators within the preceding 12 months. Each measurement system will be field-calibration-checked at the point of installation and at collection using the stated handheld calibrators.

- 13.4.17. Each measurement system will be installed with the microphone mounted under free-field conditions, approximately 1.2m above ground level. The measurement location will be selected to be representative of the primary external living spaces and will minimise the influence of any local sources such as road traffic, water courses, wind through local trees/foliage and noise from property boiler flues.
- 13.4.18. The measurement system will be used to obtain noise level data in the $L_{A90,T}$ noise index (as well as other environmental monitoring indices), in continuous 10-minute intervals over the full measurement durations.
- 13.4.19. For the duration of the baseline noise survey, concurrent wind measurements will be undertaken using two meteorological masts, one in the Northern Array (BNG: Easting 287083, Northing 192770) and one in the Southern Array (BNG: Easting 288447, Northing 189935).
- 13.4.20. Following completion of the baseline noise survey, the noise and wind data will be analysed to determine the relationship between background noise levels and standardised 10m wind speed.
- 13.4.21. Separate analysis graphs, including background noise curves will be produced for each measurement location, for the quiet daytime and night-time periods in accordance with the AWTN. The background noise curves will be used to determine the TNAC and subsequently the SSNLs.

13.5 Overall baseline

Current baseline

- 13.5.1. The current baseline work is under preparation and will be completed before Final ES submission. This section will include the full analysed results of the baseline noise survey that will be used in the determination of the TNAC and the SSNLs.

Future baseline

- 13.5.2. It is reasonable to assume that, over time, background noise levels in the vicinity of the Proposed Development would generally remain the same, with possible slight increases in road traffic noise in line with normal growth of flows of the local network.
- 13.5.3. There are two operational wind turbine developments within the operational wind turbine noise Study Area, these are Llynfi Afan Renewable Energy Park and Pen y Cymoedd Wind Farm. In addition, a further two cumulative developments are consented but yet to be constructed, these are Foel Trawsant Wind Farm and Upper Ogmere Wind Turbines; and a further cumulative development is at a pre-application stage, this is Mynydd Ty-talwyn Energy Park.
- 13.5.4. Should the consented and pre-application wind farms become operational then there is the potential for increases in the local noise environment due to both their construction and operation. However, both the superseded ETSU-R-97 and replacement AWTN noise assessment methods recognise that the total noise levels limits / TNAC that they set for operational noise allow an increase above the prevailing background noise levels, and that it would therefore not be appropriate for subsequent wind farm development to then

cause further increases. This is why both the ETSU-R-97 and AWTN TNAC are applied cumulatively, and why it requires the background noise levels used in the assessment are determined in absence of any wind turbine noise, i.e. for this assessment, the background noise levels are to be determined before any such future noise level increases.

13.6 Embedded measures

- 13.6.1. A range of environmental measures have been embedded into the Proposed Development as outlined in **Chapter 4: Development Description**. **Table 13.9** outlines how these embedded measures will influence the Noise and Vibration assessment.

Table 13.9 Summary of the embedded environmental measures

Receptor	Potential changes and effects	Embedded measures	Compliance mechanism
Construction			
Noise and vibration sensitive properties	Temporary increases in noise due to construction activities.	Best Practicable Means (BPM) as defined in Section 72 of the CoPA.	Construction Environmental Management Plan (CEMP), delivery secured through DNS condition.
Operation			
Noise-sensitive properties	Permanent increases in noise due to operational turbine noise.	In accordance with the AWTN, operational wind turbine noise will be controlled by the application of SSNLs at relevant noise-sensitive receptors locations. The cumulative operational noise levels of all acoustically relevant wind turbines will meet the TNAC.	DNS condition to include SSNLs at relevant noise-sensitive receptor locations.
Noise-sensitive properties	Permanent increases in noise due to operational wind turbine noise.	Realistic candidate turbine, within the physical parameters for the development, selected for assessment, to demonstrate how appropriate SSNLs can be achieved.	DNS condition to require that the details of the final turbine selected for installation (including noise emission detail) are submitted to, and approved by, the Local Authorities prior to installation.

13.7 Scope of the assessment

The Proposed Development

- 13.7.1. In defining the scope of the Noise and Vibration assessment, the Proposed Development is considered to comprise all construction activities required to deliver the project. This includes works within the Northern and Southern Arrays, transportation of equipment and materials to and from the Development Site, the operational elements of the Proposed Development, and road traffic movements generated during operation.

13.7.2. The following aspects are scoped into the assessment:

- Construction traffic movements on the existing road network; and
- Operational wind turbine noise.

Spatial Scope

13.7.3. The spatial scope of the assessment of Noise and Vibration covers the area of the Proposed Development contained within the application boundary, together with the Zones of Influence (Zols) that have formed the basis of the study area described in **Section 13.4**.

13.7.4. For construction traffic noise, in accordance with LA 111, a construction traffic study area shall encompass properties located within 50m of the kerb line of public roads where construction traffic is predicted to increase the baseline noise level by 1 dB(A) or more compared with existing traffic conditions.

13.7.5. For operational wind turbine noise, AWTN and IOA GPG guidance requires the assessment of noise at the nearest noise sensitive properties. In addition, intervening topography between turbine and noise-sensitive property has also been accounted for when determining the extent of noise sensitive receptors included within the assessment. Noise-sensitive properties have been selected to be those which have the greatest potential to be subject to an adverse impact, either from the Proposed Development operating in isolation or from the cumulative scenario. The selected receptors are representative of all noise-sensitive receptors in the operational Study Area.

Temporal Scope

13.7.6. The temporal scope of the assessment of Noise and Vibration is consistent with the period over which the Proposed Development would be carried out and therefore covers the 22-month construction period and the 30-year operational life.

Potential Receptors

13.7.7. A representative sample of noise-sensitive receptors that have been identified as being potentially subject to effects from operational turbine noise are summarised in **Table 13.10**. Noise receptors have been selected in line with AWTN and IOA GPG guidance. All selected receptors are residential properties. These receptors are shown in **Figure 13.3: Noise-sensitive receptors**.

Table 13.10 Representative noise-sensitive receptors subject to potential operational turbine noise effects

Receptor	Easting	Northing	Distance to closest Project turbine	Distance to closest cumulative turbine
Bryn Llefrith Farm	285943	193543	1.0 km (T1)	1.8 km (FT7) ¹
Blaen-Cwmdu Farm	287727	192128	520 m (T4)	1.2 km (LA12) ²
Brynrhug Farm	286641	191838	860 m (T3)	2.0 km (LA12)
Cwrt-Y-Mwnwys Farm	285821	191956	1.1 km (T3)	2.4 km (FT1)

Receptor	Easting	Northing	Distance to closest Project turbine	Distance to closest cumulative turbine
2 Penybryn Bungalow	285961	194011	1.3 km (T1)	1.8 km (FT7)
Cwmdu Isaf Farm	287796	190561	950 m (T8)	2.8 km (LA12)
18 Garwfechan Road	290265	189981	820 m (T5)	3.8 km (LA10)
Cynhordy Farm	288310	188992	580 m (T7)	3.2 km (MT2) ³
Gelliheblig	287693	189603	770 m (T8)	3.5 km (MT4)
Penylan Farm	284807	193052	1.9 km (T3)	960 m (FT1)
Tonna Farm	285004	193599	1.9 km (T1)	870 m (FT7)
Blaencaerau Farm	286955	194764	1.6 km (T1)	1.4 km (LA9)
14 Pwllcarn Terrace	290073	193653	2.7 km (T2)	1.2 km (UO1) ⁴
30 Railway Terrace	289904	193247	2.5 km (T2)	1.1 km (LA10)
Maes Cadlawr Farm	286612	187154	3.1 km (T7)	840 m (MT4)
Y Graig	287276	186766	3.0 km (T7)	910 m (MT2)
¹ FT = Foel Trawsnant Wind Farm ² LA = Llynfi Afan Renewable Energy Park ³ MT = Mynydd Ty-talwyn Energy Park ⁴ UO = Upper Ogmore Wind Farm				

- 13.7.8. Representative noise-sensitive receptors have been selected to include those closest to the Proposed Development and those closest to the cumulative developments in the direction of the Proposed Development, as these receptors have the greatest potential to experience cumulative operational noise effects. The selected receptors provide appropriate geographic coverage across the local area.
- 13.7.9. Noise receptors within 50m of public roads used by construction traffic are also potential receptors. This includes receptors on the main A-road access routes, namely the A4017 and A4061. All heavy vehicle traffic is understood to access the Northern and Southern Arrays via the access route which is approximately 25km long.

Likely significant effects

- 13.7.10. The effects on Noise and Vibration receptors which have the potential to be significant and have been taken forward for detailed assessment are summarised in **Table 13.11**.

Table 13.11 Summary of effects scoped in the Noise and Vibration assessment

Receptors/potential effects	Justification
Construction noise - traffic movements on the existing road network	There are noise sensitive receptors within 50m of public roads with the potential for an increase in baseline noise levels due to development generated construction traffic.
Operational noise - wind turbine	Noise sensitive receptors are within the operational wind turbine Study Area. Some noise sensitive receptors are closer to the cumulative developments than the Proposed Development.

- 13.7.11.** The effects on receptors that do not have the potential to be significant, and which are therefore scoped out of further assessment are summarised in

13.7.12. **Table 13.12.**

Table 13.12 Summary of effects scoped out of the Noise and Vibration assessment

Receptors/potential effects	Justification
Construction noise and vibration - access tracks	There are no receptors within 300m of access track works. Separation distance sufficient that a significant effect would not occur.
Construction noise and vibration - improvements on the existing road network	Improvement works may be required at the junction of the A4061 and the Proposed Development access track. There are no noise-sensitive receptors within 300m of the works area. Construction activities would be localised, short in duration and undertaken during daytime hours. The works would include vegetation clearance and provision of hardstanding, requiring only limited plant and equipment. Noise and vibration effects would be controlled through the implementation of Best Practicable Means (BPM), as defined in Section 72 of the Control of Pollution Act 1974, including adherence to the guidance set out in BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014.
Construction noise and vibration - construction compound	There are no receptors within 300m of the construction compound. Separation distance sufficient that a significant effect would not occur.
Construction noise and vibration - turbine locations	There are no receptors within 300m of turbine locations. Separation distance sufficient that a significant effect would not occur.
Construction noise and vibration - substation	There are no receptors within 300m of the substation. Separation distance sufficient that a significant effect would not occur.
Construction noise and vibration - blasting	Blasting is not proposed.
Construction noise and vibration - borrow pits	Borrow pits are not proposed.
Operational tonal noise and amplitude modulation - wind turbines	AWTN guidance advises that neither tonal noise nor amplitude modulation character corrections should normally be included within planning-stage assessments. Instead, these characteristics are best controlled through planning conditions and post-construction compliance procedures, with corrections applied only where these features are confirmed by post consent measurement.
Operational low frequency noise, infrasound, groundborne vibration - wind turbines	AWTN identifies that low frequency noise, infrasound and groundborne vibration do not normally require separate assessment at the planning stage, on the basis that their effects are either negligible or adequately controlled through compliance with the operational noise criteria.
Operational noise - substation	The separation distance to the closest noise-sensitive receptor is approximately 770m, distance between Cynhordy substation and the Cynhordy Farm receptor, sufficient that a significant noise effect would not occur.
Operational noise and vibration - traffic	Very low volumes of operational traffic are anticipated once the Proposed Development is operational. Traffic movements would be limited to routine maintenance and inspection visits, with turbines and substation equipment inspected and maintained at six-monthly intervals. As a result, operational traffic flows would be sufficiently low that no significant effect would be expected.
Decommissioning noise and vibration	Similar in character to construction, but lower intensity of works. There are no receptors within 300m of turbine locations or access tracks. Separation distance sufficient that a significant effect would not occur.

13.8 Assessment methodology

- 13.8.1. The generic project-wide approach to the assessment methodology is set out in **Chapter 2: Approach to EIA**. However, whilst this has informed the approach that has been used in this Noise and Vibration assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this Noise and Vibration assessment.

Construction Noise - Traffic

- 13.8.2. The traffic flow data have been used to assess changes in road traffic noise levels resulting from construction traffic on the A4061 and the A4107. Construction HGVs will travel from the A465 trunk road onto the A4061, proceeding for 2 km before joining the Proposed Development access track. Vehicles will then exit the access track onto the A4107, using a short section of approximately 250 m before turning onto a further access track that provides access to the Northern and Southern Arrays. Two noise-sensitive receptors are located on Rhigos Road (A4061), adjacent to the construction HGV route.
- 13.8.3. Road traffic noise calculations have been carried out based on the former Department of Transport and the Welsh Office's technical memorandum Calculation of Road Traffic Noise (CRTN).
- 13.8.4. Basic Noise Level (BNL) calculations, using road link data for vehicle flows, average speed and the percentage of HGVs, have been undertaken for a notional receptor location 10m from the edge of the carriageway of each road considered.
- 13.8.5. It is assumed that there is no change in average speed on each road link between the scenarios with and without construction traffic.
- 13.8.6. The CRTN prediction method enables calculations of hourly L_{A10} and $L_{A10,18h}$ road traffic noise levels. Annual Average Weekday Traffic flows (AAWT) over an 18-hour period between 06:00 and midnight, have been used to predict road traffic noise in terms of an $L_{A10,18h}$. The BNL is the predicted road traffic noise level at 10m from the road.
- 13.8.7. A notional receptor at 10m has been used because the change in traffic noise level adjacent to any given road will be the same at all distances where noise from that route is dominant. Traffic noise calculations have been undertaken to establish the change in the daytime $L_{A10,18h}$ noise level for the peak daily construction traffic trips, therefore representing a worst case.
- 13.8.8. Road traffic noise predictions have been undertaken for the following scenarios:
- Scenario 1: Traffic flows in 2029;
 - Scenario 2: Traffic flows in 2029 plus peak daily Proposed Development construction traffic.
- 13.8.9. The changes in road traffic noise have been determined by subtracting the noise level determined in Scenario 1 from those for Scenario 2. The resulting changes are those associated with the additional construction traffic movements.
- 13.8.10. The calculated change in road traffic noise level is categorised and assessed applying the magnitude of impact and effect significance criteria described in **Section 13.9**.

Operational Noise - Wind Turbine

13.8.11. The assessment of operational noise will be undertaken following the method detailed within AWTN and the IOA GPG, including the following steps:

- A review of the identified cumulative developments to identify those which are retained for further consideration in the assessment;
- Selection of a representative sample of noise-sensitive receptors including those closest to the Proposed Development and those closest to cumulative developments (but in the direction of the Proposed Development) that are retained for further consideration in the assessment;
- A detailed baseline noise survey will be undertaken. Subject to access approvals, the baseline noise survey will be completed at a sample of the nearest NSR properties, as shown in **Figure 13.2: Proposed noise monitoring locations**. Noise measurement locations will be agreed via technical engagement with BCBC Environmental Health Department. Proposed measurement locations have been selected based on proximity to Proposed Development and cumulative developments that are retained following a cumulative scoping exercise (see below), potential local noise sources in the vicinity of identified receptors (e.g. roads and rivers) and preliminary operational wind turbine noise level predictions including account of ground contour data;
- The obtained baseline noise survey data will be assessed in line with AWTN and the IOA GPG, including separate consideration to 'quiet daytime' and night-time periods, with the relationships between background noise level and standardised wind speed determined for each period at each measurement location;
- The cumulative TNAC will be identified for each measurement location for both daytime and night-time periods drawing on the results of the baseline noise survey analysis;
- A detailed noise model will be prepared for the Proposed Development and surrounding area extending to include the cumulative developments that have been retained for further consideration in the assessment. Further details of the noise modelling process are contained in **Appendix 13D**;
- The noise model will be used to determine the resulting wind turbine noise levels, at the selected sample receptors, for the Proposed Development and each of the cumulative developments retained for further consideration in the assessment. Predictions will be undertaken for each development operating in isolation and cumulatively;
- Predictions will be undertaken for the Proposed Development based on a realistic candidate wind turbine that fits within the physical parameters for the development;
- Predictions for the cumulative developments will be undertaken based on the candidate turbines adopted in their respective noise assessments (proposed developments);
- Noise level predictions will be undertaken for each receptor, for 10m height integer wind speeds ranging from turbine 'cut-in' speed to 12m/s;
- Noise level predictions will include appropriate corrections for uncertainty. Where a cumulative development is consented, an additional +2 dB correction will be applied, to allow an appropriate margin for possible future increases in levels from those consented developments, but with results 'capped' at any planning consent noise level limits (to ensure that predicted levels are not above limits required to be complied with);
- A cumulative scoping exercise will identify which cumulative developments remain acoustically relevant and will be included in the assessment. For receptors closest to the Proposed Development, predicted noise levels from cumulative developments will be compared against the TNAC; developments predicted to be more than 10 dB below

the TNAC will be scoped out. The exercise will also consider receptors closest to the cumulative developments, comparing noise from the Proposed Development in isolation against conditioned or assessed noise limits. Where Proposed Development noise is more than 10 dB below the relevant limits, significant effects would not arise either alone or cumulatively, and those receptors will be removed from the assessment;

- The total noise levels from the Proposed Development (without mitigation) and the cumulative developments that remain scoped in will be calculated and assessed against the TNAC;
- Where cumulative exceedances are identified, the remaining ('Residual', or 'Noise Budget') limits available for use by the Proposed Development (operating in isolation) will be determined;
- If required, an example noise management scheme will be determined for the Proposed Development, appropriate to demonstrate how the remaining available limits could be complied with, such that a cumulative exceedance would not arise; and,
- The total cumulative noise levels will be recalculated with the example noise management scheme in place and reassessed against the cumulative noise level limits.
- SSNLs will be calculated for the development (in isolation), appropriate for inclusion as part of a consent noise condition. The SSNLs will be set such that the Proposed development would not give rise to a cumulative exceedance of the TNAC.

- 13.8.12. The resulting impact magnitude and effect significance will be determined following the criteria described in the **Section 13.9**.

Noise Receptor Sensitivity

- 13.8.13. The receptor sensitivity categories are presented in **Table 13.13**. All selected receptors are residential properties and are categorised as 'high' sensitivity.

Table 13.13 Noise receptor sensitivity

Receptor sensitivity	Description	Examples
High	Receptors where people or operations are sensitive to noise.	Dwellings and other residential buildings, schools, hospitals, places of worship
Medium	Receptors where people or operations are moderately sensitive to noise.	Offices and restaurants.
Low	Receptors where people or operations are not sensitive to noise.	Unoccupied buildings or factories and working environments with existing noise levels.

Magnitude of impact and Significance of effect

Construction Traffic Noise

- 13.8.14. The construction traffic noise magnitude of impact scale is detailed in **Table 13.14**.

Table 13.14 Construction traffic noise - Magnitude of impact

Magnitude of impact	Increase in baseline noise level on public roads used by construction traffic
High	Greater than or equal to 5 dB
Medium	Greater than or equal to 3 dB and less than 5 dB
Low	Greater than or equal to 1 dB and less than 3 dB
Slight	Less than 1 dB

- 13.8.15. Construction traffic noise constitutes a significant effect where it is determined that a 'high' or 'medium' magnitude of impact occurs for a duration exceeding:
- 10 or more days or nights in any 15 consecutive days or nights; or
 - A total number of days exceeding 40 in any 6 consecutive months.
- 13.8.16. For noise sensitive receptors situated within 50m of a road, a significant effect is identified, following consideration of context and where the impact magnitude is 'high' or 'medium'.
- Operational Noise - Wind Turbines
- 13.8.17. Operational wind turbine noise is not categorised against a magnitude of impact scale. The assessment of significance is determined by comparing the predicted wind turbine noise levels at the identified noise sensitive receptors against the applicable noise limits / TNAC / SSNLs.
- 13.8.18. Operational wind turbine noise constitutes a significant effect where predicted noise levels exceed the applicable noise limits.

13.9 Assessment of Noise and Vibration effects

- 13.9.1. Construction traffic noise has been assessed according to the method set out in **Section 13.8**. Predicted increases in road traffic noise from construction traffic are presented for each assessed road link in **Appendix 13C**.
- 13.9.2. The highest predicted increase in road noise due to construction traffic is +0.7 dB on the A4017, this is classified as a **Slight** magnitude of impact which is not significant.

13.10 Assessment of cumulative (inter-project) effects

- 13.10.1. A cumulative effects assessment (CEA) will be undertaken for the Proposed Development which considers the combined impacts with other developments on the same single receptor or resource (inter-project effects). The assessment will be reported in the Final ES. The detailed method followed in identifying and assessing potential cumulative effects is set out in **Chapter 2: Approach to EIA**.
- 13.10.2. The locations of cumulative wind turbine developments within the 5km operational Study Area have been identified and are shown on **Figure 13.4: Cumulative turbines**.
- 13.10.3. Cumulative developments that have the potential to contribute to a combined noise impact with the Proposed Development are **Table 13.15**.

Table 13.15 Cumulative developments scoped in

Development	Number of turbines	Status	Distance from project	Direction from project
Foel Trawsnant Wind Farm	8	Consented	3.4 km	Northwest
Llynfi Afan Renewable Energy Park	12	Operational	1.2 km	Northeast
Mynydd Ty-talwyn Energy Park	10	Pre-application	4.2 km	Southwest
Pen y Cymoedd Wind Farm ¹	76	Operational	5.0 km	Northwest
Upper Ogmores Wind Farm	7	Consented	4.2 km	Northeast
¹ Only one turbine within Study Area				

- 13.10.4. The following cumulative developments are located too far from the Proposed Development to contribute to a combined noise impact and have been scoped out **Table 13.16**.

Table 13.16 Cumulative developments scoped out

Development	Number of turbines	Status	Distance from project	Direction from project
Fforch Nest Wind Farm	11	Operational	6.8 km	East
Ffynnon Oer Wind Farm	16	Operational	6.1 km	North
Mynydd Fforch-Dwn Wind Farm	4	Approved	6.4 km	Northwest
Mynydd y Gaer Wind Farm	11	Proposed	6.4 km	Southeast
Pant-Y-Wal Wind Farm	18	Operational	5.4 km	East
Gelli Las Farm ¹	2	Operational	3.2 km	South
Baiden Farm ²	2	Operational	4.8 km	Southwest
Cefn Parc Stud Farm	1	Operational	5.2 km	Southwest
¹ Small turbines 250 kW				
² Small turbines 11 kW				

13.11 Significance conclusions

- 13.11.1. A summary of the results of the Noise and Vibration assessment is provided in **Table 13.17**.

Table 13.17 Summary of significance of effects

Receptor and summary of predicted effects	Sensitivity / importance / value of receptor ¹	Magnitude of change ²	Significance ³	Summary rationale
All receptors: Construction road traffic noise	High	Slight	Not significant	Slight magnitude of change of road links as a result of construction traffic movements.
All receptors: Operational wind turbine noise	High	In preparation	In preparation	-

1. The sensitivity/importance/value of a receptor is defined using the criteria set out in Section 13.8, all assessed receptors are categorised as high.
2. For construction traffic noise, the magnitude of impact on a receptor resulting from activities relating to the development is defined using the criteria set out in Section 13.8 and is defined as slight, low, medium, high.
3. For construction traffic noise, the significance of the environmental effects is based on the combination of the sensitivity/importance/value of a receptor and the magnitude of impact/change and is expressed as major (significant), moderate (potentially significant) or minor/negligible (not significant), subject to the evaluation methodology outlined in Section 13.8.
4. For operation wind turbine noise, the significance is determined based on whether or not the SSNLs are met. For 'high' sensitivity receptors, as present in this case, a significant effect is registered where operational wind turbine noise from the Proposed Development gives rise to an exceedance of the SSNLs. Where no exceedance of the SSNLs arises, a not significant effect is registered.

13.12 Additional measures

- 13.12.1. Following the completion of the Operational Noise assessment set out above, it will be determined if it is necessary to implement any additional mitigation measures. These would be in addition to the embedded measures outlined and assessed in **Section 13.6**.

13.13 Further work to be undertaken

- 13.13.1. This section describes the further work to be undertaken to support the Noise and Vibration assessment presented in the ES.

Baseline

- 13.13.2. A detailed baseline noise survey will be completed. Noise measurements are proposed at four locations. We will consult with the Environmental Health Departments of BCBC to agree noise measurement locations and survey approach prior to commencing the baseline noise survey. The results of the baseline noise survey will inform the wind turbine assessment.

Assessment

- 13.13.3. The following assessments will be completed and reported:
- Operational noise - wind turbines

Environmental measures

- 13.13.4. If necessary, details of additional environmental measures required will be identified drawing on the results of the operational noise assessments, to be completed.