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13 Noise

13.1 Introduction

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

- Chapter 8: Biodiversity; and
- Chapter 9: Ornithology.

13.1.2. This chapter describes:

- the legislation, policy and technical guidance that has informed the assessment (**Section 13.2**);
- 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 Noise and Vibration conditions (**Section 13.5**);
- 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 of potentially significant Noise and Vibration effects (**Section 13.8**);
- the preliminary assessment of Noise and Vibration effects (**Section 13.9**);
- preliminary assessment of cumulative (inter-project) Noise and Vibration effects (**Section 13.10**);
- a summary of the preliminary significance conclusions for Noise and Vibration (**Section 13.11**);
- additional mitigation measures proposed (**Section 13.12**);
- Noise and Vibration residual effects assessment (**Section 13.1**); and
- an outline of further work to be undertaken for the Final Environmental Statement (ES) (**Section 13.13**).

13.1.3. Supporting technical information and detailed data is contained in Appendix 13A – 13C, including:

- noise terminology used in the assessment (Appendix 13A, Section 13.1);
- summaries of the legislation, policy and technical guidance that has informed the assessment (Appendix 13A, Section 13.2);
- noise modelling method for construction traffic noise on A-roads (Appendix 13B, Section 13.1);

- noise modelling method for construction traffic noise on local access roads (Appendix 13B, Section 13.2);
- operational wind turbine noise modelling and prediction method is detailed (Appendix 13C, Section 13.1);
- operational wind turbine noise wind shear correction method is detailed (Appendix 13C, Section 13.2);
- the details of baseline noise survey will be reported in the Final ES, including measurement location and equipment information, once the survey has been completed (Appendix 13C, Section 13.3);
- the baseline noise survey results will be reported in the Final ES once the survey has been completed (Appendix 13C, Section 13.4);
- predicted operational wind turbine noise levels will be reported in the Final ES, including cumulative developments, once the modelling and assessment has been completed (Appendix 13C, Section 13.5);
- noise limits will be reported in the Final ES following completion of the baseline noise survey (Appendix 13C, Section 13.6);
- cumulative wind turbine noise assessment will be reported in the Final ES following completion of the baseline noise survey (Appendix 13C, Section 13.7);

Limitations and assumptions

13.1.4. The information provided in this Draft ES is preliminary, the final assessment of likely significant Noise and Vibration effects will be reported in the Final ES. This Draft ES has been produced to fulfil the Applicant's Pre-Application Consultation (PAC) responsibilities and enable consultees to develop an informed view of the likely significant effects of the Proposed Development based on latest current information.

13.1.5. Some information is yet to be confirmed, including details of properties which have a Financial Involvement in the Proposed Development. This information will be confirmed and assessed, as required, 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**.

Table 13.1 Legislation relevant to the Noise and Vibration assessment.

Legislation Document	Context
Control of Pollution Act (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. 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**.

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.
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 *"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."*

[1] UK Government (1974). *Control of Pollution Act 1974.* [online]. Available at: https://www.legislation.gov.uk/ukpga/1974/40 [Accessed 3 October 2025].

[2] UK Government (1990). *Environmental Protection Act 1990.* [online]. Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents [Accessed 3 October 2025].

[3] Welsh Government (2021). *Future Wales: the national plan 2040.* [online]. Available at: https://www.gov.wales/future-wales-national-plan-2040 [Accessed 3 October 2025].

[4] Welsh Government (2024). *Planning Policy Wales. Edition 12.* [online]. Available at: https://www.gov.wales/planning-policy-wales [Accessed 3 October 2025].

Planning Policy document	Context
	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	
Caerphilly County Borough Local Development Plan to 2021[6]	This Local Development Plan sets out the planning framework for the Caerphilly County Borough Council (CCBC) area, guiding decisions on land use, development, and infrastructure. It outlines areas suitable for development and those where development should be restricted. It aims to safeguard the environment while encouraging sustainable growth, and it plays a key role in coordinating infrastructure provision. The key policies relevant to Noise and Vibration and this Proposed Development are presented below. **Policy CW2 Amenity**. Proposals must have regard for all relevant material planning considerations, so that there is no unacceptable impact on the amenity of adjacent properties or land. **Policy CW19 Locational Constraints – Rural Development and Diversification**. Proposals need to demonstrate they are compatible with their rural location. The development should not have an unacceptable impact upon the rural character due to noise impact.
Torfaen County Borough Council Local Development Plan (to 2021)[7]	This Local Development Plan sets out the planning framework for the Torfaen County Borough Council (TCBC) area, guiding decisions on land use, development, and infrastructure. It outlines areas suitable for development and those where development should be restricted. It aims to safeguard the environment while encouraging sustainable growth, and it plays a key role in coordinating infrastructure provision. The key policy relevant to noise, vibration and this Proposed Development is presented below. **Policy BW1 General Policy – Development Proposals**. The proposal does not have an unacceptable impact upon the amenities of the occupiers of adjoining or neighbouring properties, and the proposal does not result in unacceptable adverse effects in respect to noise.

[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 3 October 2024]

[6] Caerphilly County Borough Council (2010), *Local Development Plan up to 2021.* [online]. Available at: https://www.caerphilly.gov.uk/business/planning-and-building-control-for-business/local-development-plan/local-development-plan-2010-(adopted)/the-adopted-ldp [Accessed 3 October 2025].

[7] Torfaen County Borough Council (2013), *Local Development Plan (to 2021).* [online]. Available at: https://www.torfaen.gov.uk/en/PlanningAndDevelopment/Planningpolicy/LocalDevelopmentPlan/Local-Development-Plan.aspx [Accessed 3 October 2025].

Technical Guidance

13.2.4. A summary of the technical guidance for Noise is given in **Table 13.3.**

Table 13.3 Technical guidance relevant to the Noise assessment

Technical Guidance document	Context
Technical Advice Note (TAN) 11 Noise[8]	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[9]	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."*
Noise and soundscape plan for Wales 2023 to 2028[10]	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 confirms that current UK noise assessment guidance, namely ETSU-R-97 and IOA GPG; and references the report for *BEIS: A review of noise guidance for onshore wind turbines*.
Energy Technology Support Units R-97 – The Assessment and Rating of Noise from Wind Farms (ETSU-R-97)[11]	ETSU-R-97 sets out the UK's methodology for assessing noise from wind turbines. The document provides a method for determining appropriate daytime and night-time noise limits for operational turbine noise. Those limits are derived based on acceptable fixed lower limits (which usually applies at lower wind speeds), and an allowable exceedance over prevailing background noise levels (which usually applies at higher wind speeds). The limits are determined over range of wind speed conditions between turbine cut-in wind speed and 12m/s.

[8] 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 3 October 2025].

[9] 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 3 October 2025].

[10] 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 3 October 2025].

[11] 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 3 October 2025].

Technical Guidance document	Context
A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (IOA GPG)[12]	The IOA GPG represents current good practice in applying the ETSU-R-97 method in the assessment of noise impacts from wind turbine developments. The document provides clarification and guidance on ETSU-R-97 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: • SGN 1: Data collection. • SGN 2: Data processing & derivation of ETSU-R-97 background curves. • SGN 3: Sound power level data. • SGN 4: Wind shear. • SGN 5: Post completion measurements. • SGN 6: Noise propagation over water for on-shore wind turbines.
Report for UK Government: A review of noise guidance for onshore wind turbines[13] (the 'BEIS report')	WSP, on behalf of the UK government Department for Business, Energy & Industrial Strategy (BEIS) have completed a review of the onshore commercial wind turbine noise assessment guidance, ETSU-R-97. The review highlights areas within the guidance that warrant consideration for updating, while also recommending where further evidence needed to support any future updates, should they be progressed.
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 confirms that current UK noise assessment guidance, namely ETSU-R-97 and the IOA GPG; and references the report for *BEIS: A review of noise guidance for onshore wind turbines*.
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. 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.

[12] 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 3 October 2025].

[13] 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 3 October 2025].

[14] Welsh Government (2023). *Designing for Renewable Energy in Wales*. [online]. Available at: https://www.gov.wales/designing-renewable-energy-wales [Accessed 3 October 2025].

[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 3 October 2025].

Technical Guidance document	Context
BS 5228-1:2009+A1:2014 *Code of practice for noise vibration control on construction and open sites – Part 1: Noise* (BS 5228-1)[16]	This standard sets out methods for calculating and assessing construction noise. The standard provides the latest recommendations for methods of noise control where there is a need for the protection of persons living and working in the vicinity of, and those working on, construction and open sites. The standard provides a database of information, including previously measured sound pressure level data for a variety of different construction plant undertaking various common activities. The data can be used in noise level calculations following the prediction methods that its presents.
BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings* (BS 8233)[17]	This standard provides guidance on the control of noise in and around buildings. It suggests appropriate criteria for different situations, which are primarily intended to guide the design of new or refurbished buildings undergoing a change of use.
Calculation of Road Traffic Noise (CRTN)[18]	The memorandum provides a method to calculate road traffic noise levels. The factors which may influence road traffic noise levels relate to the road (surface and gradient), the traffic (flow, speed and composition) and the propagation (distance and screening). These are accounted for in the presented calculation method. The results of CRTN calculation can be used to determine the noise level changes associated with changes in road traffic flows / composition.
Design Manual for Roads and Bridges, LA 111, Noise and vibration (LA 111)[19]	This document sets out the requirements for noise and vibration assessments from road projects, applying a proportionate and consistent approach using best practice and ensuring compliance with relevant legislation. Whilst this guidance is focussed on the assessment of impact from new road projects, the principles of the assessment method can be used to determine and assess the change in noise level at sensitive receptors from changes road traffic in general or from other proposed developments.
Acoustics — Attenuation of sound during propagation outdoors — Part 2: Engineering method for the prediction of sound pressure levels outdoors, 2024 (ISO 9613-2)[20]	Defines a method for calculating the attenuation of sound during propagation outdoors to predict the levels of environmental noise at distances from a source or sources. Results are for downwind (conservative) propagation conditions. The calculation method accounts for various factors including ground effects, atmospheric absorption and barrier attenuation.

[16] British Standards Institution (2014). *BS 5228-1:2009 + A1:2014. Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 1: Noise*.

[17] British Standards Institution (2014). *BS 8233:2014. Guidance on sound insulation and noise reduction for buildings.*

[18] Department of Transport and Welsh Office HMSO (1988). *Calculation of Road Traffic Noise.*

[19] Highways England et al (2020). *Design Manual for Roads and Bridges. Sustainability & Environment Appraisal. LA 111 – Noise and vibration. Revision 2.*

[20] ISO (2024). *ISO 9613-2:2024 Acoustics — Attenuation of sound during propagation outdoors — Part 2: Engineering method for the prediction of sound pressure levels outdoors. International Organization for Standardization.*

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 **Section 2.4** of **Chapter 4: Approach to Environmental Impact Assessment**

13.3.2. For Noise and Vibration, consultation has been undertaken as part of the EIA Scoping Stage of the Proposed Development. Technical engagement will take place following PAC and involve consultation with the Environmental Health Officers (EHOs) at CCBC and TCBC.

Scoping Opinion

13.3.3. A Scoping Direction was issued by the Planning and Environmental Decisions Wales (PEDW, formerly Planning Inspectorate Wales), on behalf of the Welsh Ministers, on 04 December 2024 (reference DNS CAS-03701-H3V4Y3: Rhyswg Wind Farm). A summary of the relevant responses received in the Scoping Opinion in relation to Noise and Vibration, and confirmation of how they have been addressed within this Draft ES is presented in **Table 13.4.**

13.3.4. The information provided in this Draft ES is preliminary.

Table 13.4 Summary of EIA Scoping Direction Responses for Noise

Consultee	Consideration	How addressed in this Draft ES
Planning and Environment Decisions Wales (PEDW)	ID.31 The applicant's attention is drawn to comments from Motvind at Appendix 1, within which they raise concerns with the impact of noise and vibration, wake effect, and pollution from PFAS and microplastics on species and their habitats. The applicant should consider these potential impacts in the assessment.	Impact on species and habitats is considered in **Chapter 8: Biodiversity**.
PEDW	ID.45 The impact of noise should be considered for users of public rights of way (PRoW), including equestrian users, and wildlife.	The completed assessment has been undertaken in accordance with ETSU-RT-97 and considers the most sensitive receptors to potential noise and vibration impact where there is the greatest potential for a significant effect to arise. This is where there is permanent (not transient) occupation. Page iv of ETSU-R-97 states: *"The Noise Working Group recommends that the current practice on controlling wind farm noise by the application of noise limits at the nearest noise-sensitive properties is the most appropriate approach.* People's use of a PRoW is highly transient, so a significant effect would not occur.

Consultee	Consideration	How addressed in this Draft ES
		The BS 5228-1 method can include public open spaces, however, a significant effect would not occur because the extent of the area impacted would be small relative to the total available area. PROW's have therefore been scoped out of the assessment. The adoption of residential properties as the primary receptors for assessment reflects a robust and well-established best practice approach.
PEDW	ID.46 The applicant's attention is drawn to comments from Motvind at appendix 1. The assessment of noise should consider low-frequency noise emissions and Amplitude Modulation from operational turbines.	Operational low-frequency noise and amplitude modulation (AM) wind turbines are scoped out. With regard to low-frequency noise, the BEIS report states *"...the weight of evidence appears to indicate that wind turbine infrasound has no adverse effects on human health at typical exposure levels… "*, and that *"...due to the inherent characteristics of wind turbine sound, suitable controls on A-weighted sound levels are expected to also provide sufficient control for the potential impact of low frequency noise."* With regards to AM, the ETSU-R-97 assessment method accounts for this, up to a stated degreed, it being a component part of typical wind turbine noise. The remaining potential issue is therefore only that associated with possible 'excess' AM. There is currently no reliable or recognised means to predict the likely occurrence of AM. There are reported recommendations for its measurement and quantification, but at the time of writing there has been no endorsement of those approaches at a national level. The current policy position remains that an assessment in accordance with ETSU-R-97 and the IoA GPG remains that required.
PEDW	ID.47 The scoping report does not address whether impacts from vibration will be assessed under this section of the ES. This matter should be discussed with relevant consultees and the rationale set out in the ES.	For construction vibration, the adopted Study Area is 100 m around construction activities with the potential to generate vibration. Beyond that distance, construction vibration levels are expected to be sufficiently low that significant effects would not arise. The construction vibration Study Area will be applied to construction activities on the Site and across the immediate wider area, e.g. at

Consultee	Consideration	How addressed in this Draft ES
		locations where road or junction upgrade works would be undertaken (if required). Construction work will also be required for the formation of access tracks or other infrastructure. Based on the available evidence, operational vibration from the turbines would be significantly below the threshold at which adverse effects, in terms of building damage or human perception, would occur. An assessment of operational vibration is therefore scoped out.
CCBC	ID.93 It is considered appropriate to include a chapter on noise in the Environmental Statement. In considering noise, the needs of equestrian users of public rights of way should be considered.	Addressed by inclusion of this chapter in the Draft ES. With respect to people, PRoW receptors are scoped-out of the assessment because their use is highly transient, and because best practice on the control of wind turbine noise is to consider locations where there is permanent occupancy and hence a greater potential for a significant effect to arise. ETSU-R-97 confirms: "*The Noise Working Group recommends that the current practice on controlling wind farm noise by the application of noise limits at the nearest noise-sensitive properties is the most appropriate approach*". The BS 5228-1 method can include public open spaces, however, a significant effect would not occur because the extent of the area impacted would be small relative to the total available area. Impact on species and habitats is considered in **Chapter 8: Biodiversity**. Also, see response to ID.45
MotVind	ID.185 First and foremost, we urge you to include the assessment of infrasound and low-frequency noise emissions generated by the operational turbines. These emissions can have profound implications for local residents and wildlife, and their impact must be thoroughly evaluated. In this process, the effects of Amplitude Modulation must also be considered. (Here we refer to the WSP *'Report for UK government: a review of noise guidance for onshore wind turbines'* 31st May 2023 that	Operational infrasound, low-frequency noise and amplitude modulation (AM) wind turbines are scoped out. See above response to ID.46 in respect of Low Frequency noise and Amplitude Modulation. With respect to infrasound, the BEIS report confirms "*…the weight of evidence appears to indicate that wind turbine infrasound has no adverse effects on human health at typical exposure levels…"*. As assessment of infrasound has therefore been scoped-out.

Consultee	Consideration	How addressed in this Draft ES
	outlines the failings in the present guidance ETSU-R-97).	
MotVind	ID.187 Additionally, the seismic impact from ground-borne infrasound due to turbine vibration, as well as cumulative effects with adjacent turbines and neighbouring wind farms, should not be overlooked. Understanding these impacts is vital for ensuring the safety and wellbeing of the surrounding environment. We have noted in several EIAs that vibration is mentioned in a chapter title only to be subsequently ignored or only considered as a construction impact. This is not the case. It is an operational impact and one that could have significant impact on mine workings, spoil tips, aquifers and caverns.	Based on the available evidence, operational vibration from the turbines would be significantly below the threshold at which adverse effects, in terms of human perception or building damage would occur. On this basis, assessment of operational vibration is scoped out.

Technical Engagement

13.3.5. Technical engagement will involve direct consultation with the Environmental Health Departments of CCBC and TCBC. This consultation will aim to agree the baseline noise measurement locations and survey methodology to be use. Additionally, agreement will be sought on the scope of the Noise and Vibration assessment, including the assessment methods to be applied, in particular the cumulative operational turbine noise assessment.

13.3.6. A summary of the completed technical engagement 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
CCBC Environmental Health Department	Baseline noise measurement locations, Noise and Vibration assessment scope and methodology.	To be completed and reported in the Final ES.
TCBC Environmental Health Department	Baseline noise measurement locations, Noise and Vibration assessment scope and methodology.	To be completed and reported in the Final ES.

13.4 Data gathering methodology

Study Area

Construction

13.4.1. For construction noise, consideration has been given to activities that would take place within 300m of sensitive properties. This search distance encompasses the area in which construction activities have the potential to generate significant effects at receptors.

13.4.2. For construction vibration, consideration has been given to activities that would take place within 100m of sensitive properties. This search distance encompasses the area in which construction activities have the potential to generate significant effects at receptors.

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, a sample of the closest noise-sensitive properties have been identified. Selected properties are those which have the greatest potential to be subject to a significant adverse effect, either from the Proposed Development operating in isolation or from the cumulative operational scenario (i.e. concurrently with cumulative developments that remain scoped-in). The selected receptors are representative of all noise-sensitive receptors in the Study Area.

13.4.5. Initial consideration has been given to potential cumulative wind turbines within 10km of the proposed turbine locations, this is the Study Area, as shown in **Figure 13.1: Operational Study Areas**. However, based on professional experience from other onshore wind farm projects, only those wind turbines situated within 5km of the Proposed Development have been scoped in to the cumulative assessment.

Desk Study

13.4.6. A desk study has been undertaken to assist in determining the baseline conditions. This has included:

- identification of noise-sensitive receptors, including those with the greatest potential to be subject to an impact from the construction and operational of the Proposed Development, in isolation, and/or under the cumulative scenario;
- identification of cumulative wind turbines in the Study Area, including their development details (e.g. Site layout, candidate turbine model, hub-height);
- identification of possible local noise sources in the vicinity of the identified receptors (including local water courses); and
- identification of information to inform the operational noise level predictions (e.g. topographic ground contours).

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 assessment

Organisation	Data source	Data provided
Bing	Bing Maps[21]	Publicly available mapping information.
BSI	BS 5228-1: 2009+A1:2014[22]	Noise data for construction noise predictions.
CCBC	Local authority planning portal[23]	Identification of DNS applications including cumulative wind farm developments and potential future sensitive receptors.
Esri	ArcGIS Online Basemaps[24]	Open mapping information and satellite imagery.
Google	Google Maps[25]	Publicly available mapping information and satellite imagery.
Google	Google Street View[26]	Publicly available street scene photography.
Ordnance Survey (OS)	AddressBase® Plus database[27]	Local authority addresses and four-level classification scheme explaining the function of each property.
OS	OS Explorer (1:25,000 scale)[28]	Publicly available mapping information.
OS	OS Landranger (1:50,000 scale)[29]	Publicly available mapping information.
OS	OS Terrain® 50[30]	Open contour height line dataset.
TCBC	Local authority planning portal[31]	Identification of DNS applications including cumulative wind farm developments and potential future sensitive receptors.
UK Government	Check your Council Tax band website[32]	Property information.
Welsh Government	'Planning casework' portal[33]	Cumulative development information for DNS applications.

21 Bing. [online] Available at: www.bing.com/maps. [Accessed 31 October].
22 British Standard Institution. (2014). BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites - Noise*.
23 CCBC website. [online]. Available at: www.caerphilly.gov.uk [Accessed 31 October].
24 Esri ArcGIS Desktop 10.8.1.
25 Google. *Google Maps*. [online]. Available at www.google.com/maps [Accessed 31 October].
26 Google. *Google Street View*. [online]. Available at www.google.com/maps [Accessed 31 October].
27 OS. AddressBase Plus. Available at www.ordnancesurvey.co.uk/products/addressbase-plus [Accessed 31 October].
28 OS Explorer maps. [online]. Available via: www.bing.com/maps [Accessed 31 October].
29 OS Landranger maps. [online]. Available via: www.bing.com/maps [Accessed 31 October].
30 OS Terrain® 50. [online]. Available at: www.ordnancesurvey.co.uk/products/os-terrain-50 [Accessed 31 October].
31 TCBC website. [online]. Available at: www.torfaen.gov.uk/ [Accessed 31 October].
32 UK Government. *Council Tax Bands*. [online]. Available at: https://www.gov.uk/council-tax-bands [Accessed 3 October 2025].
33 Welsh Government. *Planning casework*. [online]. Available at: https://planningcasework.service.gov.wales/ [Accessed 31 October].

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 noise criterion levels 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 three turbines; the candidate turbine type is a Vestas V136 4.5 MW, Power Optimised Mode P04, hub height of 112m, rotor diameter of 136m, and a maximum tip height of 180 m.

13.4.10. Broadband sound power level data for the candidate turbine will be presented in **Table 13.7** following confirmation of the performance specification.

Table 13.7 Candidate turbine sound power level (dBA)

	Standardised 10 m height wind speed (v_{10}), m/s									
Turbine	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Vestas V136 4.5 MW, L_{WA}	-	-	-	-	-	-	-	-	-	-

13.4.11. Octave band spectra for the candidate turbine are presented in **Table 13.8** following confirmation of the performance specification.

Table 13.8 Candidate turbine octave band power level dBA

	Octave band centre frequency, Hz									
Turbine	**32**	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**L_{WA}**
Vestas V136 4.5 MW, L_{WA}	-	-	-	-	-	-	-	-	-	-

Survey work

13.4.12. A detailed baseline noise survey will be undertaken to inform the assessment and work and is in preparation. The survey will be completed before Final ES submission and reported in this section and associated appendices.

13.4.13. The baseline noise survey will be completed at a sample of the nearest NSR properties. Continuous long-term monitoring will be undertaken for a minimum of 2-weeks in line with IOA GPG guidance.

13.4.14. The noise survey will be undertaken using BS EN 61672-1:2013[34] Class 1 specification sound pressure level measurement equipment.

13.4.15. The sound pressure level measurement system will be laboratory calibrated to traceable standards within the preceding 2 years and the hand-held calibrators within the preceding 12 months. Each

[34] British Standard Institution. (2013). BS EN 61672-1:2013 Electroacoustics - Sound level meters - Part 1: Specifications. BSI Standards Publication

measurement system will be field-calibration-checked at the point of installation and at collection using the stated handheld calibrators.

13.4.16. 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.

13.4.17. 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. Measurement data will be obtained for the periods commencing on the hour, 10 minutes past, 20 minutes past, half past, 20 minutes to and 10 minutes to each hour.

13.4.18. For the duration of the baseline noise survey, concurrent wind measurements will be undertaken using an existing meteorological mast at Trecelyn (BNG: Easting 323489 Northing 197943), approximately 2.8km north of Rhyswg. [16]

13.4.19. To enable the Trecelyn mast wind data to be used for the Rhyswg Site, the Trecelyn mast wind data has been analysed by The Wind Consultancy Service (TWCS), an independent wind energy consultancy specialising in the analysis and assessment of wind speed and direction data collected for wind energy projects.

13.4.20. In their report[35], TWCS have calculated speed-up factors between Trecelyn and Rhyswg for both quiet daytime and night-time period as defined by ETSU-R-97. Mean, standard deviation and polynomial equations of these speed-ups are also provided.

13.4.21. 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 10 m wind speed.

13.4.22. Separate analysis graphs, including background noise curves will be produced for each measurement location, for the quiet daytime and night-time periods. The background noise curves are used to determine operational noise limits.

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 operational turbine noise level limits.

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. Both scoped-in cumulative developments are in planning. The DNS case stage for cumulative development 01: Trecelyn Wind Farm is ‘recommendation’. The DNS case stage for cumulative

[35] The Wind Consultancy Service (2025). *Rhyswg - Calculation of Speed-ups for Noise Assessment. Report 5930_R1.*

development 02: Mynydd Maen Wind Farm is 'examination'. Should these wind farms be approved then there is the potential for increases in the local noise environment due to both their construction and operation. However, the ETSU-R-97 noise assessment recognises that the limits it sets 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 the ETU-R-97 noise limits are applied cumulatively, and why it requires the background noise levels used in the assessment to be 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 **Section 4.9**. **Table 13.9** outlines the measures relevant to noise and vibration and how these embedded measures will be secured.

Table 13.9 Summary of the embedded environmental measures relevant to noise and vibration

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.	Scheme layout has been developed to ensure that appropriate noise level limits can be achieved when operating in both isolation and under the cumulative scenario.	DNS condition to secure that the development is delivered in line with the proposed layout and physical parameters for the development
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 noise level limits can be achieved when operating in isolation and under the cumulative scenario.	DNS condition to require that the details of the final turbine selected for installation (including noise emission detail) are submitted and to, and approved by, the Local Authorities prior to installation.

13.7 Scope of the assessment

13.7.1. The scope of this assessment has been established through an ongoing scoping process. Further information can be found in **Chapter 2: Approach to Environmental Impact Assessment**.

13.7.2. This section provides an update to the scope of the assessment and updates the evidence base for scoping-out elements following further iterative assessment.

The Proposed Development

13.7.3. The aspects of the Proposed Development that have the potential to generate significant Noise or Vibration effects include Site construction works and compounds, construction upgrade works to junctions on the existing road network, construction traffic movements on public roads and access tracks, and operational turbine noise.

13.7.4. The following aspects are scoped-in to the assessment:

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

Spatial Scope

13.7.5. The spatial scope of the assessment of Noise covers the area of the Proposed Development contained within the EIA Assessment Area, together with the Zones of Influence (ZoIs) that have formed the basis of the Study Areas described in **Section 13.4**.

13.7.6. For construction noise, BS 5228-1 states *"At distances over 300 m noise predictions have to be treated with caution, especially where a soft ground correction factor has been applied, because of the increasing importance of meteorological effects"*. LA 111, although specific to road schemes, provides guidance on construction noise and vibration. It states *"a Study Area of 300 m from the closest construction activity is normally sufficient to encompass noise"*. Beyond 300 m noise from construction activities are unlikely to have a significant effect on receptors.

13.7.7. For construction vibration, LA 111 provides guidance on construction vibration. It states *"A Study Area of 100m from the closest construction activity with the potential to generate vibration is normally sufficient to encompass vibration sensitive receptors."* Beyond 100m vibration from construction activities are unlikely to have a significant effect on receptors.

13.7.8. For operation, ETSU-R-97 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 Study Area.

Temporal Scope

13.7.9. The temporal scope of the assessment of Noise is consistent with the period over which the Proposed Development would be carried out and therefore covers the 22-month construction period (April 2029 to January 2031) and the 30-year operational life.

Potential Receptors

13.7.10. **Table 13.10** presents the receptors considered to be potentially subject to significant effects. Noise receptors have been selected in line with ETSU-R-97 and IOA GPG guidance, all selected receptors are residential properties. The Noise receptors are shown in **Figure 13.3: Noise receptors**.

Table 13.10 Noise receptors subject to potential effects

Receptor	Easting	Northing	Distance to closest Proposed Development turbine*	Distance to closest cumulative turbine†
NSP01 - Glan-Shon Farm	322468	195964	1.4 km	400 m
NSP02 - Roxburgh Bungalow	322410	195541	1.1 km	610 m
NSP03 - 66 Llanfach Road	322186	195205	970 m	1.0 km
NSP04 - Graigwen Bungalow	322512	195259	760 m	780 m
NSP05 - 68 Gwyddon Road	322100	195012	960 m	1.2 km
NSP06 - Cefn Rhyswg Farm	322389	194505	640 m	1.5 km
NSP07 - Rhyswg Fawr Farm	322664	194608	340 m	1.4 km
NSP08 - Maesderwen	322391	193796	1.1 km	2.2 km
NSP09 - Hillside	322647	193941	810 m	2.0 km
NSP10 - Three Spring	322834	193730	960 m	2.2 km
NSP11 - Tyn y Ffynon	324646	193999	960 m	2.7 km

*** The closest Proposed Development turbine is 'T01', except for NSP11 which is 'T03'.**
† The closest cumulative turbine for all receptors is Trecelyn T04.

13.7.11. The Noise receptors selected include those closest to the Proposed Development and those identified to have the greatest potential to be subject to an operational cumulative noise impact. The selected receptors cover a geographic spread across the local area.

13.7.12. 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 A467 and A472. It also includes receptors on the local access roads, namely Central Avenue and Old Pant Road, and receptors on streets adjacent to the local access roads, including Claremont Road, Glanshon Court, Willow Court, Lindon Court and Clos Tir-Y-Pwll. There are 276 residential properties within 50m of the Central Avenue and Old Pant Road construction traffic route.

Likely significant effects

13.7.13. The effects on sensitive receptors that have the potential to be significant, and which have therefore been scoped in for detailed assessment are summarised in **Table 13.11.**

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

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.

Construction noise and vibration - junction improvements on the existing road network	There are noise sensitive receptors within 300m of proposed junction improvement works.
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.

13.7.14. The effects on receptors that do not have the potential to be significant, and which are therefore scoped out of further are summarised in **Table 13.12.**

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

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 - road works on the public highways to facilitate the delivery of Abnormal Indivisible Loads (AILs)	Noise generating activities will be local, short in duration and completed during the daytime. The works include removal of street furniture, the clearance of hedgerow and the provision of hardstanding, the plant and equipment requirements will be minimal. Noise and vibration impacts will be managed by the adoption of Best Practicable Means (BPM) as defined in Section 72 of the Control of Pollution Act 1974, including the advice contained within 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 low frequency noise, infrasound, amplitude modulation - wind turbines	Low frequency noise, infrasound and amplitude modulation are outside the scope of the assessment methodology required to be applied for compliance with national policy and a significant effect is not expected.
Operational vibration - wind turbines	The separation distance to the closest noise-sensitive receptor is sufficient that a significant vibration effect would not occur.
Operational noise - substation	The separation distance to the closest noise-sensitive receptor is approximately 1,140m, sufficient that a significant noise effect would not occur.
Operational noise and vibration - traffic	Very low volumes of Site traffic are expected once the Proposed Development is operational, sufficiently low that a significant effect would not occur.
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 Environmental Impact Assessment**, and specifically in Section **2.5** to **2.8**. This has informed the approach that has been used in the scoped-in noise assessments. Set out below is the assessment methodology specific to each assessment that has been scoped in. Each presented methodology has been prepared to be consistent with the project-wide approach whilst applying the guidance and best practice that is applicable in each case.

Construction Noise - Traffic

13.8.2. The assessment of construction traffic noise is based on traffic flow data taken from Department for Transport (DfT) count points on the A467 near Newbridge and the A4046 in Ebbw Vale.

13.8.3. The traffic flow data have been used to assess changes in road traffic noise levels resulting from construction traffic on the A-roads and the local roads.

13.8.4. For the A-roads where existing and projected traffic numbers are available, the assessment method is based on noise change. Road traffic noise calculations have been carried out based on the Department of Transport's technical memorandum Calculation of Road Traffic Noise (CRTN).

13.8.5. 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.

13.8.6. It is assumed that there is no change in average speed on each road link between the scenarios with and without construction traffic.

13.8.7. CRTN uses Annual Average Weekday Traffic flows (AAWT) over the 18-hour period between 06:00 and midnight, to predict road traffic noise in terms of an $L_{A10,18hr}$. The BNL is the predicted road traffic noise level at 10m from the road.

13.8.8. A notional receptor 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 $L_{A10,18hr}$ noise level for the peak number of daily trips.

13.8.9. Road traffic noise predictions have been undertaken for the following scenarios:

- Scenario 1: Traffic flows in January 2030 (peak construction traffic movements);
- Scenario 2: Traffic flows in January 2030 plus Proposed Development construction traffic; and
- Scenario 3: Traffic flows in January 2030 plus Proposed Development construction traffic plus cumulative development (Mynydd Maen Wind Farm, Trecelyn Wind Farm and Cil-lonydd Solar farm).

13.8.10. The changes in road traffic noise have been determined by subtracting the noise level determined in one scenario from another. The resulting change is that associated with the additional construction traffic movements.

13.8.11. 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: Preliminary Assessment of Noise effects**.

13.8.12. For the local access roads, namely Central Avenue and Old Pant Road where existing traffic flow data is not available, the assessment method is based on absolute noise level. Road traffic noise calculations have been completed based on the BS 5228-1 haul road calculation method.

13.8.13. The haul road method provides a calculation method to predict sound levels ($L_{Aeq,T}$) for mobile plant items that pass at intervals. The calculation uses plant sound power, the number of vehicles per hour, the average vehicle speed (km/h) and distance of the receiver from the centre of the haul road, in metres. A distance of 5m has been adopted, this represents the shortest distance between road and receiver.

13.8.14. Haul road noise predictions have been undertaken for the following scenario:

- Scenario 4: Construction vehicle traffic flows in January 2030.

13.8.15. The calculated absolute construction road traffic noise level is categorised and assessed applying the magnitude of impact and effect significance criteria described in **Section 13.9: Preliminary Assessment of Noise effects**.

Operation Noise - Wind Turbine

13.8.16. The assessment of operational noise will be undertaken following the method detailed within ETSU-R-97 and the IOA GPG, including the following steps:

- Completion of a desk study to identify cumulative developments, closest noise-sensitive receptors to the Proposed Development and those which have the greatest potential to be subject to a cumulative impact;
- A review of the identified cumulative developments has been undertaken 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 that are retained for further consideration in the assessment;
- A detailed baseline noise survey will be undertaken, noise measurement locations will be agreed via technical engagement with CCBC and TCBC Environmental Health Departments. The 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 ETSU-R-97 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;
- The total ETSU-R-97 cumulative wind turbine noise level limits 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 13C - Section 13.1 Modelling and Prediction**;
- 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) or based on their installed turbine types (operational 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 be undertaken to identify which of the cumulative developments that have been retained for further consideration, remain acoustically relevant to the assessment and those which are not. Those which are, will be scoped-in to the final cumulative assessment and those which are not will be scoped-out. For the closest receptors to the Proposed Development, predicted noise levels for the cumulative developments will be compared against the cumulative noise level limits. Where the levels are more than 10 dB below the limits a significant effect would not arise from the cumulative developments, and they will be scoped out. The scoping exercise will also include consideration to the receptors closest to the identified cumulative developments. For those receptors, the predicted noise levels from the Proposed Development operating in isolation will be compared against the conditioned noise limits (consented developments) or identified in limits determined in their respective noise assessments (proposed development). Where the levels from the Proposed Development are more than 10dB below the limits, a significant effect would not arise from the Proposed Development operating either in isolation or under the cumulative scenario, 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 cumulative noise level limits;
- 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 does 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.

13.8.17. Ultimately, the remaining available limits that are determined for the Proposed Development will be set such that the Proposed Development would not give rise to a cumulative exceedance of the total ETSU-R-97 noise levels.

13.8.18. The resulting impact magnitude and effect significance will be determined following the criteria described in the **Section 13.9: Preliminary assessment of Noise effects** below.

Noise Receptor Sensitivity

13.8.19. 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 particularly susceptible to noise.	Dwellings and other residential buildings, schools, hospitals, places of worship.
Medium	Receptors moderately sensitive to noise, where it may cause some distraction or disturbance.	Offices and restaurants.
Low	Receptors where distraction or disturbance from noise is minimal.	Unoccupied buildings or factories and working environments with existing levels of noise.

Magnitude of impact and significance

Construction Noise - A-road Traffic

13.8.20. The construction traffic noise magnitude of impact scale is detailed in **Table 13.14** and is defined based on LA 111 guidance.

Table 13.14 Construction traffic noise - Magnitude of impact

Magnitude of impact	Increase in baseline noise level on public road used for 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

13.8.21. 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.

13.8.22. 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'.

Construction Noise - Local Access Roads

13.8.23. As defined in LA 111 guidance, lowest observable adverse effect level (LOAEL) and significant observable adverse effect level (SOAEL) are established for noise sensitive receptors with reference to baseline noise levels.

13.8.24. The LOAEL and SOAEL will be established in line with **Table 13.15**.

Table 13.15 Construction noise - LOAEL and SOAEL

Time period	LOAEL	SOAEL
Day (0700-1900 weekday and 0700-1300 Saturdays)	Baseline noise levels $L_{Aeq,T}$	Threshold determined as per BS 5228-1 Section E3.2 and Table E.1
Night (2300-0700)	Baseline noise levels $L_{Aeq,T}$	Threshold determined as per BS 5228-1 Section E3.2 and Table E.1
Evening and weekends (time period not covered above)	Baseline noise levels $L_{Aeq,T}$	Threshold determined as per BS 5228-1 Section E3.2 and Table E.1

13.8.25. The construction noise magnitude of impact scale is detailed in **Table 13.16**.

Table 13.16 Construction noise - Magnitude of impact

Magnitude of impact	Construction noise level
High	Above or equal to SOAEL +5 dB
Medium	Above or equal to SOAEL and below SOAEL +5 dB
Low	Above or equal to LOAEL and below SOAEL
Slight	Below LOAEL

13.8.26. Construction 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.

13.8.27. For noise sensitive receptors situated within 50m local access roads, a significant effect is identified, following consideration of context and where the impact magnitude is 'high' or 'medium'.

Operational Noise - Wind Turbines

13.8.28. 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 level at the identified noise sensitive receptors against the applicable noise limits.

13.8.29. Operational wind turbine noise constitutes a significant effect where predicted noise levels exceed the applicable noise limits.

13.9 Preliminary assessment of Noise effects

13.9.1. The assessment of Noise effects section is in preparation for construction junction improvements and operation wind turbine noise.

Construction Noise - A-Road Traffic

13.9.2. Construction traffic noise has been assessed according to the method set out in **Section 13.8 Assessment methodology**. Predicted increases in road traffic noise from construction traffic are presented for each assessed road link in **Appendix 13B - Section 13.1 Construction Traffic Noise Predictions - A-Roads**.

13.9.3. The highest predicted increase in road noise due to construction traffic is +0.3 dB on the A467 (south of Central Avenue), this is classified as a Slight magnitude of impact; which is not significant.

Construction Noise - Local Access Roads

13.9.4. Construction traffic noise has been assessed according to the method set out in **Section 13.8 Assessment methodology**. Predicted absolute road traffic noise levels from construction traffic movements are presented in **Appendix 13B - Section 13.2 Construction Traffic Noise Prediction - Local Access Roads**.

13.9.5. Based on a peak of 24 HGV movements in a day and up to 8 HGVs within a 1-hour period, the highest predicted absolute noise level due to HGV construction traffic is 60 dB $L_{Aeq,1hr\ facade}$ (5m from Central Avenue or Old Pant Road). This is classified as a Low magnitude of impact, which is not significant.

13.10 Preliminary assessment of cumulative (inter-project) effects

13.10.1. The cumulative effects assessment (CEA) is in preparation and will be provided in full in the Final ES. The 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 detailed method followed in identifying and assessing potential cumulative effects is set out in **Section 2.9** of **Chapter 2**.

Potential Cumulative Developments

13.10.2. The locations of cumulative wind turbine developments within the 10 km operational Study Area have been identified and are shown on **Figure 13.1: Operational Study Areas**. Further details related to cumulative developments is provided in **Chapter 2, Section 2.9.**

13.10.3. Cumulative developments that have the potential to contribute to a combined noise impact with the Proposed Development are:

- Trecelyn Wind Farm (approx. 1.2 km northwest) - 4 turbine development, in planning; and
- Mynydd Maen Wind Farm (approx. 2.5 km northeast) - 13 turbine development, in planning.

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:

- Abertillery Wind Farm (approx. 9.8 km north) - 6 turbine development, in planning;

- Byrn Ysgawen Farm Wind Turbine (approx. 6.2 km southwest) - 1 turbine development, operational;
- Coed-y-Giffach Farm Wind Turbines (approx. 8.2 km north) - 2 turbine development, operational;
- Mynydd Llanhilleth Wind Farm (approx. 5.8 km north) - 7 turbine development, in planning;
- Mynydd Carn-y-Cefn Wind Farm (approx. 8.5 km north) - 8 turbine development, consented;
- Oakdale Business Park Wind Turbines (approx. 6.6 km northwest) - 2 turbine development, operational;
- Pen-y-Fan Industrial Estate Wind Turbine (approx. 6.4 km northwest) - 1 turbine development, operational;
- Pen-y-Fan Ganol Farm Wind Turbine (approx. 8.5 km northwest) - 1 turbine development, operational;
- Twyn Hywel Energy Park (approx. 10 km southwest) - 14 turbine development, consented; and
- Tyle Crwth (approx. 6.4 km southwest) - 1 turbine development, operational.

Cumulative development 01: Trecelyn Wind Farm

13.10.5. The proposed Trecelyn Wind Farm is located within the CCBC area (ref.: DNS CAS-02114-J9X4S6, case stage: recommendation).

13.10.6. The development comprises four turbines. The candidate turbine type is a Vestas V117 serrated trailing edge (STE) 4.2 MW, hub height of 84 m, rotoof 117 m, and a maximum tip height of 145 m.

13.10.7. The closest receptor to this wind farm with the potential to be subject to a cumulative impact with the Proposed Development is NSP01 - Glan-Shon Farm (BNG Easting: 322468, Northing: 195964).

13.10.8. Broadband sound power level data for the Trecelyn Wind Farm candidate turbine is presented in **Table 13.17.** The data have been corrected to standardised 10 m height wind speed (v_{10}) and include a +2 dB uncertainty correction in line with best practice.

Table 13.17 Cumulative dev. 01: Candidate turbine sound power level (dBA)

	Standardised 10 m height wind speed (v_{10}), m/s									
Turbine	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Vestas V117 4.2 MW STE[36], L_{WA}	95.0	97.8	102.0	105.7	107.8	108.0	108.0	108.0	108.0	108.0

13.10.9. Octave band spectra for the Trecelyn Wind Farm candidate turbine are presented in **Table 13.18**.

[36] Source: Trecelyn Wind Farm Environmental Statement - Vol 02 - Chapter 13 Noise. Available at: https://planningcasework.service.gov.wales/case/CAS-02114-J9X4S6 [Accessed 20 October 2025].

Table 13.18 Cumulative dev. 01: Candidate turbine octave band power level dBA

	Octave band centre frequency, Hz									
Turbine	**32**	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**L_{WA}**
Vestas V117 4.2 MW STE[22], L_{WA}	-	88.3	95.5	100.3	102.6	102.4	99.7	94.5	86.8	106.4

Cumulative development 02: Mynydd Maen Wind Farm

13.10.10. The proposed Mynydd Maen Wind Farm is located within the CCBC area (ref.: DNS/3276725, case stage: examination).

13.10.11. The development comprises 13 turbines. The candidate turbine type is a Vestas V117 4.2 MW STE, Power Optimised Mode P02, hub height of 91.5 m, rotor diameter of 117 m, and maximum tip height of 149.9 m.

13.10.12. The closest receptor to this wind farm with the potential to be subject to a cumulative impact with the Proposed Development is NSP11 - Tyn-y-Ffynon (BNG Easting: 324636, Northing: 194004).

13.10.13. Broadband sound power level data for the Mynydd Maen Wind Farm candidate turbine is presented in **Table 13.19.** The data have been corrected to standardised 10 m height wind speed (v_{10}) and include a +2 dB uncertainty correction in line with best practice.

Table 13.19 Cumulative dev. 02: Candidate turbine sound power level (dBA)

	Standardised 10 m height wind speed (U_{10}), m/s									
Turbine	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Vestas V117 4.2 MW STE, mode P02[37], L_{WA}	94.7	98.0	102.2	106.0	107.9	108.0	108.0	108.0	108.0	108.0

13.10.14. Octave band spectra for the Mynydd Maen Wind Farm candidate turbine are presented in **Table 13.20.**

Table 13.20 Cumulative dev. 02: Candidate turbine octave band power level dBA

	Octave band centre frequency, Hz									
	32	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**L_{WA}**
Vestas V117 4.2 MW STE, mode P02[23], L_{WA}	-	88.4	95.5	100.2	102.5	102.4	99.8	99.8	94.9	107.4

[37] Source: Mynydd Maen Wind Farm Environmental Statement - Vol 02 - Chapter 11 Acoustics. Available at: https://planningcasework.service.gov.wales/case/CAS-01313-C6S0N8 [Accessed 20 October 2025].

13.11 Preliminary significance conclusions

13.11.1. The preliminary significance conclusions section is in preparation. Following completion of the assessments, a summary of the results of the Noise assessment will be provided in **Table 13.21**

Table 13.21 Preliminary summary of significance of effects

Receptor and summary of predicted effects	Sensitivity / importance / value of receptor[1]	Magnitude of impact/change[2]	Significance[3,4]	Summary rationale
Construction road traffic noise - A-roads	High	Slight	Not significant	Slight magnitude of change on road links as a result of construction traffic movements.
Construction road traffic noise - Local access roads	High	Low	Not significant	Low magnitude of change on road links as a result of construction traffic movements
Operational 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 and is defined as [low, medium and high].
2. The magnitude of impact/change 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, 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 (significant) or minor (not significant) and 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 applicable noise level limits would be met. For 'very 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 applicable noise limit. Where no exceedance of the applicable noise limits arises, a not significant effect is registered.

13.12 Additional measures

13.12.1. Following the completion of the Operational Noise assessments set out above, it will then be determined if it will be 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. The information provided in this Draft ES is preliminary, the final assessment of likely significant Noise and Vibration effects will be reported in the Final ES. This Draft ES has been produced to fulfil the Applicants Pre-Application Consultation (PAC) responsibilities and enable consultees to develop an informed view of the likely significant effects of the Proposed Development based on latest current information.

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 CCBC and TCBC 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.

Additional mitigation

13.13.4. If necessary, additional mitigation measures sections will be identified drawing on the results of the noise assessments as detailed above.