Fferm Solar Larnog

Environmental Statement

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8. Noise and Vibration

8.1. Introduction

8.1.1 This chapter presents the assessment of likely significant effects of the Proposed Development upon humans 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 5: Project Description**.

8.1.2 This chapter draws upon additional information to support the assessment, which is contained within the following technical appendices:

- **Appendix 11F: Transport Statement**;
- **Appendix 8A: Baseline Sound Level Survey**; and
- **Appendix 8B: Assessment Data**.

8.1.3 This ES chapter describes:

- The legislation, policy and technical guidance that has informed the assessment (**Section 8.2**);
- The consultation and engagement that has been undertaken and how comments from consultees relating to Noise and Vibration have been addressed (**Section 8.3**);
- The study area utilised for the assessment (**Section 8.4**);
- The scope of the assessment for Noise and Vibration (**Section 8.5**);
- Methods used for baseline data gathering (**Section 8.6**);
- The overall baseline (**Section 8.7**);
- The methods used for the assessment (**Section 8.8**);
- The embedded measures relevant to Noise and Vibration (**Section 8.8.35**);
- The assessment of Noise and Vibration effects (**Section 8.10**);
- Additional measures proposed (**Section 8.11**);
- The determined Noise and Vibration residual effects (**Section 8.12**);
- The assessment of cumulative (inter-project) effects (**Section 8.13**);
- Any monitoring requirements (**Section 8.14**);
- A summary of the significance conclusions (**Section 8.15**); and
- An outline of further work to be undertaken (**Section 8.16**).

8.1.4 This chapter has been prepared by WSP on behalf of the Applicant in accordance with the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017, as amended[1]. A statement outlining the relevant expertise and qualifications of competent experts is provided in **Chapter 1: Introduction**.

[1] UK Government (2017). *The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017*. (Online) Available at: https://www.legislation.gov.uk/wsi/2017/567/contents. (Accessed July 2026).

8.2. Legislative Framework, Policy and Guidance

8.2.1 This section identifies the legislation, planning policy and technical guidance that has informed the assessment of effects with respect to Noise and Vibration.

Legislative Framework

8.2.2 A summary of the relevant legislation applicable to Noise and Vibration is provided in **Table 8.1** below.

Table 8.1 - Legislation relevant to the Noise and Vibration assessment

Legislation	Legislative Context
Control of Pollution Act 1974 (CoPA)[2]	The CoPA makes provision for the agreement of noise levels and methods of working with Local Authorities such that working in accordance with the agreement is a defence against any prosecution under the Act. The Act established the concept of "*Best Practicable Means*" (BPM) as a defence against prosecution under the Act. BPM refers to the measures that are reasonably practicable to prevent or minimise environmental impacts. The Act also enables the preparation of approved codes of practice (COP) for various sources.
Environmental Protection Act 1990 (EPA)[3]	The EPA further establishes the BPM defence. The Act also establishes that noise from premises and also individual vehicles on the public highways can be a statutory nuisance if they are a nuisance or prejudicial to health. The Act also clarifies that noise from road traffic on the public highway is not a nuisance. Road traffic is different to the 'individual vehicle' considered above as road traffic consists of a mixture of numerous vehicles originating from, and travelling to, different locations, and is therefore 'anonymous', i.e. sound from road traffic cannot be attributed to any one particular construction site or operational facility. Conversely, an individual vehicle may be identifiable and associated with, for example, a specific commercial or industrial operation.

Policy

8.2.3 A summary of the relevant planning policy applicable to Noise and Vibration is provided in **Table 8.2** below.

[2] Control of Pollution Act 1974, c. 40. Available at: https://www.legislation.gov.uk/ukpga/1974/40/contents (Accessed: July 2026)
[3] Environmental Protection Act 1990, c. 43. Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents (Accessed: July 2026)

Table 8.2 - Summary of policy relevant to Noise and Vibration

Policy	Policy Context
National Planning Policy	
Future Wales – The National Plan 2040[4]	Future Wales is the national development framework for Wales and has development plan status. Policies 17 and 18 relate to renewable energy development, and state that "…all proposals should demonstrate that they will not have an unacceptable adverse impact on the environment. …"
Planning Policy Wales (PPW) Edition 12[5]	PPW sets out the land use planning policies of the Welsh Government, supplemented by Technical Advice Notes (TANs). PPW sets out the importance of fully considering potential noise impacts from new energy infrastructure when making planning decisions (Paragraph 6.7.3). Guidance around soundscapes promote a holistic approach to achieving well-being goals by considering the context of the sound in a given environment, and not just the absolute level of a sound.
Welsh Assembly Government: TAN 11: Noise (1997)[6]	TAN 11 provides general advice on noise and, with regard to industrial development, refers to British Standard (BS) BS 4142:1997 Method for rating industrial noise affecting mixed residential and industrial areas (now superseded, the current version has been used in this assessment) and BS 8233:2014 Guidance on sound insulation and noise reduction for buildings; and with regard to construction noise: BS 5228:2009+A1:2014 Noise and vibration on construction and open sites. Part 1: Noise and BS 5228-2:2009+A1:2014 Noise and vibration on construction and open sites. Part 2: Vibration.
Noise and Soundscape Plan for Wales 2023 – 2028[7]	This document sets out Wales's national strategy on soundscapes. It is noted that soundscape analysis is an emerging field, but the importance of the context of sound and the environment in which it is perceived is recognised, in addition to absolute sound levels. Whilst reference is made to World Health Organisation (WHO) research indicating health impacts in terms of healthy life years lost due to noise effects, the impact of noise in inappropriate settings is emphasized, with the goal of the policy being appropriate soundscapes. Section 6 'Natural soundscapes' identifies areas valued for tranquillity as particularly sensitive, and this guidance has been referred to when determining the sensitivity of outdoor areas.
Local Planning Policy	
Vale of Glamorgan Local Development	Policy MD2 – Design of New Development In order to create high quality, healthy, sustainable and locally distinct places development proposals should: …

[4] Welsh Government (2021). *Future Wales: the national plan 2040.* [online]. Available at: https://www.gov.wales/future-wales-national-plan-2040 [Accessed July 2026].
[5] Welsh Government (2024*). Planning Policy Wales*. Edition 12. [online]. Available at: https://www.gov.wales/planning-policy-wales [Accessed July 2026].
[6] Welsh Assembly Government. (1997). *Technical Advice Note (TAN) 11: Noise*. Cardiff: Welsh Assembly Government. [Online]. Available at: https://gov.wales/sites/default/files/publications/2018-09/tan11-noise.pdf [Accessed: July 2026]
[7] Welsh Government. (2018). *Noise and Soundscape Plan for Wales 2023–2028*. Cardiff: Welsh Government. Available at: https://www.gov.wales/sites/default/files/publications/2023-11/noise-and-soundscape-plan-for-wales-2023-2028.pdf [Accessed November 2026]

Policy	Policy Context
Plan 2011-2026[8]	8. Safeguard existing public and residential amenity, particularly with regard to privacy, overlooking, security, noise and disturbance Policy MD7 – Environmental Protection Development proposals will be required to demonstrate they will not result in an unacceptable impact on people, residential amenity, property and/or the natural environment from either: … 4. Noise, vibration, odour nuisance and light pollution … Where impacts are identified the Vale of Glamorgan Council (hereafter the 'Council') will require applicants to demonstrate that appropriate measures can be taken to minimise the impact identified to an acceptable level. Planning conditions may be imposed or legal obligation entered into, to secure any necessary mitigation and monitoring processes. Policy MD19 – Low Carbon and Renewable Energy Generation Proposals for the generation of low carbon and renewable energy will be permitted where it can be demonstrated that there is no unacceptable impact on the interests of: … Residential amenity
Vale of Glamorgan Council Local Development Plan Review Report[9]	A review in 2021, in accordance with Section 69 of the Planning and Compulsory Purchase Act 2004 (as amended), concluded that a Replacement Local Development Plan is required for the period 2021 – 2036. Appendix 5 of the review report appraises the existing policies. Comments on the relevant policies outlined above are summarized below. • MD2: This policy will be revised to address, amongst other things, green infrastructure objectives; • MD7: This policy is effective without amendment; and • MD19: This policy is effective but may be revised to 'Ensure policy reflects national renewable energy policy and supports carbon reduction targets to mitigate climate change.'
Vale of Glamorgan Supplementary Planning Guidance (SPG)[10]	The SPG states that Local Planning Authorities should require renewable energy schemes to avoid, mitigate or compensate for adverse impacts. It states that consideration should be given to the construction, operation, and decommissioning phases, and take account of the need to minimise impacts on local communities, such as from noise and air pollution.

Guidance

8.2.4 The key guidance documents applicable to this Chapter are:

- ISEP (formally IEMA) Guidelines for environmental noise impact assessment[11];

[8] Vale of Glamorgan Council (2012). *Vale of Glamorgan Local Development Plan 2011-2026*
[9] Vale of Glamorgan Council (2022). Local Development Plan Review Report. Available online at: https://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Final-Review-Report-PDF.pdf (Accessed: November 2026).
[10] Vale of Glamorgan Council (2019) *Supplementary Planning Guidance: Renewable Energy*
[11] Institute of Environmental Management and Assessment (IEMA), November (2014*). Guidelines for environmental noise impact assessment, Version 1.2.*

- Calculation of Road Traffic Noise (CRTN)[12];
- Design Manual for Roads and Bridges (DMRB) LA111: Noise and vibration[13];
- ISO 9613-2:2024 Acoustics – Attenuation of sound during propagation outdoors: Part 2 Engineering method for the prediction of sound pressure levels outdoors[14];
- BS 5228-1:2009+A1:2014 Noise and vibration on construction and open sites. Part 1: Noise[15];
- BS 5228-2:2009+A1:2014 Noise and vibration on construction and open sites. Part 2: Vibration[16];
- BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound[17];
- BS 8233:2014 Guidance on sound insulation and noise reduction for buildings[18];
- BS 7445 – Description and Measurement of Environmental Noise[19]; and
- Acoustics of Schools: a design guide[20].

8.3. Consultation

8.3.1 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 Environmental Impact Assessment (EIA).**

Scoping Opinion

8.3.2 An EIA Scoping Report was submitted to the Council in June 2026 in accordance with the EIA Regulations, seeking confirmation of the proposed scope and methodology for the Environmental Impact Assessment in relation to the Proposed Development.

8.3.3 Following consultation with prescribed consultees and other relevant stakeholders, the Council issued a Scoping Opinion on 7 October 2026. A summary of the relevant responses received in the Scoping Opinion in relation to Noise and Vibration and

[12] His Majesty's Stationary Office (HMSO) (1988). *Calculation of Road Traffic Noise*.
[13] National Highways. (2020). *Design Manual for Roads and Bridges (DMRB) LA 111: Noise and vibration*. Revision 2.
[14] International Standards Organisation (ISO, 2024). *International Standard ISO 9613-2:2024 Acoustics – Attenuation of sound during propagation outdoors – Part 2: Engineering method for the prediction of sound pressure levels outdoors.*
[15] British Standards Institution (BSI). (2014). *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*. London: BSI Standards Limited.
[16] British Standards Institution (BSI). (2014). *BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration*. London: BSI Standards Limited.
[17] British Standards Institution (BSI). (2019). *BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound*. London: BSI Standards Limited.
[18] British Standards Institution (BSI, 2014). British Standard BS 8233:2014 Guidance on sound insulation and noise reduction for buildings. BSI; London.
[19] British Standards Institution (2003). *BS 7445-1:2003 Description and measurement of environmental noise – Part 1: Basic quantities and procedures.*
[20] Institute of Acoustics and the Association of Noise Consultants, November 2015. *Acoustics of Schools: a design guide.*

confirmation of how these have been addressed within the assessment to date is presented in **Table 8.3**.

Table 8.3 - Summary of Scoping Opinion responses relevant to Noise and Vibration

Consultee	Summary of Scoping Opinion Response	Consideration in the ES
Vale of Glamorgan Council	Query raised on potential of exposed coastal site impact of wind noise through solar panels	There is no assessment method or published guidance available to assess turbulent wind noise. However, it is considered that the sound of wind noise through the solar panels would be of a low level and would tend to be masked by the sound from turbulent wind noise in flora and manmade structures and would be unlikely to give rise to significant effects. It is, therefore, not considered any further in this ES chapter.
Vale of Glamorgan Council	Operational vibration might be an issue due to the exposed site and prevailing south westerly winds and should be scoped into the assessment	The comment appears to conflate groundborne vibration and airborne noise. There will be negligible emissions of groundborne vibration during the operational phase, as rotating equipment will be limited to small cooling fans. As such, operational groundborne vibration is scoped out of the assessment. With respect to the effect of wind direction on airborne noise, as set out in Section 8.8 Assessment Methodology and Significance Criteria, the prediction method used to predict levels of operational noise is that provided in ISO 9613[14]. The prediction method assumes propagation during light downwind conditions in all directions from each source. As such, it is considered that the effect of the prevailing wind direction is accounted for in the prediction method.
Vale of Glamorgan Council	Consideration should be given to potential future development 'Land at Cosmeston Farm' (planning application ref. 2020/01170/OUT).	The site for 'Land at Cosmeston Farm' has been reviewed. It is noted that the proposed receptor locations forming part of the scheme are no closer than the receptor R08 Ysgol Llyn Derw. Predicted construction and operational noise levels at R08, set out in **Appendix 8B: Assessment Data**, are low in absolute terms and would not give rise to significant effects. Therefore, no significant effects are expected at Land at Cosmeston Farm. Potential cumulative effects at Land at Cosmeston Farm are assessed in **Section 8.13**.

Technical Engagement

8.3.4 Throughout the EIA process, consultation and engagement with interested parties specific to Noise and Vibration has been undertaken. A summary of consultation and engagement undertaken is presented in **Table 8.4**, together with how these have been considered as part of the Noise and Vibration assessment.

Table 8.4 - Summary of technical engagement undertaken in support of this chapter

Consultee	Summary of Engagement	Consideration in the ES
Vale of Glamorgan Council	Consultation sought to agree proposed methodology of baseline noise survey	Noise survey methodology was confirmed to be suitable on 10/03/2025. Details of the survey are provided in **Appendix 8A: Baseline Sound Level Survey**.

8.4. Study Area

8.4.1 The Study Area has been defined to encompass all receptors relevant to Noise and Vibration that could reasonably be affected by the Proposed Development, taking into account the nature of the topic, the characteristics of the Proposed Development, the potential impact pathways and relevant guidance and best practice.

8.4.2 Determination of the extent of the study areas is based on appropriate guidance, where available, and professional judgement has been applied where there is a lack of specific guidance on the determination of study areas (e.g. there is no specific guidance on determination of study areas for construction or operational noise).

8.4.3 The closest sensitive receptors to proposed construction activities and operational plant, which fall within the respective study areas, will be the focus of the assessment. Where necessary, the study areas may be expanded, or additional receptors within the Study Area be considered, where sensitive receptors closer to the Site are found to be subject to likely significant effects due to noise or vibration.

8.4.4 The proposed study areas are set out in the list below and are presented in **Figure 8.1: Noise and Vibration Study Area, Receptors and Baseline Monitoring Locations**.

- **Construction noise**: DMRB LA 111 states that, with regard to Study Areas for construction noise, *'a study area of 300 m from the closest construction activity is normally sufficient to encompass noise sensitive receptors'*. Therefore, the Study Area for airborne noise effects from construction activities has been defined as an area approximately 300 m from the Site. This encompasses all residential receptors considered within this assessment. In accordance with the relevant guidance, if the assessments indicate likely significant effects, or if cumulative effects are considered likely based on any proposed parallel construction programmes from nearby developments, the study areas may be expanded to include other sensitive receptors close to the boundary of the Study Area.;
- **Construction vibration**: Groundborne vibration attenuates rapidly with distance from source to receiver. DMRB LA 111 notes that '*A study area of 100 m from the closest construction activity with the potential to generate vibration is normally sufficient to encompass vibration sensitive Receptors*'; however, for the purposes of this assessment, the same Study Area as defined for construction noise is also used for the assessment of construction vibration, as a conservative approach;

- **Decommissioning**: The environmental effects associated with the decommissioning phase are expected to be of a similar level to those during the construction phase works. Therefore, the study areas used for construction noise and vibration are also applicable to the decommissioning phase;
- **Construction traffic noise**: In line with the EIA Scoping Report and EIA Scoping Direction, the assessment of construction noise has been scoped out of the assessment. Therefore, no study area for construction traffic noise is defined. Justification for elements being scoped out of the assessment are provided in **Table 8.6**;
- **Construction traffic vibration**: In line with the EIA Scoping Report and EIA Scoping Direction, the assessment of construction noise has been scoped out of the assessment. Therefore, no study area for groundborne vibration arising from construction traffic is defined. Justification for elements being scoped out of the assessment are provided in **Table 8.6**;
- **Operational noise**: The assessment of operational noise considers noise arising from operational plan and equipment. Maintenance activities are not considered, as these are unlikely to entail significant noise emissions and hence are unlikely to result in significant noise effects. The Study Area for this aspect has been determined using professional judgement and experience of similar schemes, as there is no relevant guidance setting out the spatial extents of study areas that should be considered when assessing operational noise. The Study Area has been defined as an area approximately 500 m distance from the Site. This encompasses all residential receptors considered within this assessment; and
- **Operational vibration**: In line with the EIA Scoping Report and EIA Scoping Direction, the assessment of construction noise has been scoped out of the assessment. Therefore, no study area for operational vibration is defined. Justification for elements being scoped out of the assessment are provided in **Table 8.6**.

8.5. Scope of Assessment

8.5.1 The assessment has been established through ongoing scoping process and stakeholder engagement. Further information is provided in **Chapter 2: Approach to the EIA.** The ES assesses likely significant effects (including direct, indirect and cumulative effects), sets out mitigation and compensation measures, and identifies any technical limitations encountered.

Elements Scoped into the Assessment

8.5.2 Taking into account the scoping and consultation process, the effects due to noise and vibration which have the potential to be significant and have been taken forward for detailed assessment are summarised in **Table 8.5**.

Table 8.5 - Elements scoped into the assessment

Element Scoped In	Relevant Phase	Justification
Construction activity noise	Construction/ Decommissioning	Noise from construction/decommissioning could have the potential to give rise to significant effects.
Construction activity vibration	Construction/ Decommissioning	Vibration from construction/decommissioning could have the potential to give rise to significant effects.
Operational noise	Operation	Operational noise from operational plant and equipment could have the potential to give rise to significant effects.
Cumulative effects	Operation/ Construction	The Proposed Development is in an area with several other plans and projects which have either come forward or are expected to come forward. There is, therefore, potential for significant cumulative effects.

Elements Scoped Out of the Assessment

8.5.3 Elements that do not to have the potential to give rise to likely significant effects have been scoped out of the assessment for Noise and Vibration. They have therefore not been considered within the ES. A summary of the impacts scoped out, together with justification, is presented in **Table 8.6**.

Table 8.6 - Elements scoped out of the assessment

Elements Scoped Out	Justification
Construction road traffic noise	Construction road traffic noise is scoped out as significant effects are unlikely. As a guide, it takes an increase of 25% in traffic flows to cause an increase in noise levels of 1 dB. The Design Manual for Roads and Bridges (DMRB) LA 111 (2020)[21] provides criteria for road traffic noise increases in the short term, with a threshold increase of +3.0 dB for a medium magnitude of impact. Based on information on the anticipated numbers of construction road vehicle movements provided in **Appendix 11F: Transport Statement**, which indicates a maximum morning increase of vehicle flows on any affected road link of 13%, it is considered that construction traffic would not give rise to a road traffic noise increase of +3.0 dB. Therefore, increases in road traffic noise levels are not expected to give rise to significant effects, and are not considered further.

[21] Highways England (2020) *Design Manual for Roads and Bridges, LA 111 Noise and Vibration, Version 2.0*. Available online at: https://www.standardsforhighways.co.uk/tses/attachments/by-attachment-id/4b6c3ac3-c00d-41f2-8531-4744d1ed0a7c?inline=true (Accessed 13 May 2026).

Elements Scoped Out	Justification
Construction road traffic groundborne vibration	Groundborne vibration from road traffic is scoped out because there is no methodology available for predicting and assessing it. The relevant guidance document which sets out criteria for the assessment of airborne noise from road traffic (DMRB) scopes out assessment of vehicle induced vibration (for new roads), on the basis that the road surface will be free from irregularities that would give rise to vehicle induced vibration. Irregularities in the road surface should be minimised through normal maintenance overseen by the Highway Authority.
Maintenance activities during operational phase	Maintenance activities are unlikely to entail significant noise emissions and hence are unlikely to result in significant noise effects. Maintenance activities are therefore scoped out of the assessment.
Operational groundborne vibration	There is no significant rotating equipment (other than small cooling fans) or other sources of operational groundborne vibration forming part of the Proposed Development that would have the potential to give rise to any significant effects at any location. Assessment of operational groundborne vibration is therefore scoped out of the assessment.

Spatial Scope

8.5.4 As detailed in **Section 8.4**, the spatial scope for the assessment of construction noise and vibration has been defined based on guidance set out in DMRB LA 111[21], and encompasses the nearest receptors subject to potentially significant effects.

8.5.5 The spatial scope for the operational assessment is based on professional judgement and experience of similar schemes, as there is no relevant guidance setting out the spatial extents of study areas that should be considered when assessing operational noise. The spatial scope has been defined to encompass all dwellings and other noise sensitive premises potentially affected by operational noise from the Proposed Development.

Temporal Scope

8.5.6 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 following phases:

- Construction: Anticipated to commence in 2028 and last for approximately 6-9 months, followed by a commissioning period of approximately 3 months;
- Operation: The Proposed Development would have a design life of up to 40 years; and
- Decommissioning: Approximately 6-9 months.

8.6. Baseline Data Collection

Desk Study

8.6.1 A summary of the organisations that have supplied data, together with the nature of that data is outlined in **Table 8.7.**

Table 8.7 - Data sources used to inform the baseline data collection

Organisation	Data Source	Data Provided
Ordnance Survey (OS)	OS Master Map © Crown Copyright and database rights 2026	Identification of the nearest Noise Sensitive Receptors (NSR's) and the Site.

Site Visits/Surveys

8.6.2 Site visits, surveys and data collection exercises have been undertaken to inform the assessment and establish existing baseline conditions. These activities have been carried out in accordance with relevant legislation, guidance and recognised industry best practice.

8.6.3 Consultation was sought with the Environmental Health Team at the Council to discuss and agree the methodology for the noise survey. A subsequent meeting was arranged, and the noise survey methodology was confirmed to be suitable by the Council via email on 10 March 2025.

8.6.4 The agreed methodology was as follows:

- To undertake unattended noise monitoring for approximately seven days at two Noise Measurement Locations (NMLs). The NMLs were selected to measure noise levels representative of the nearest residential receptors to the Site and are indicated in **Figure 8.1: Noise and Vibration Study Area, Receptors and Baseline Monitoring Locations**;
- NML1 was proposed at a location close to residential properties on Fort Road. Background noise levels measured at this location are representative of residential properties on Fort Road and Lavernock Road;
- NML2 was proposed at the northern boundary of The Bay Caravan Park, which is representative of residential properties located at this site; and
- One weather monitor was proposed to be collocated with the noise monitor at NML2 to log weather conditions during the survey period.

8.6.5 **Table 8.8** provides a summary of the survey undertaken in support of this assessment, including the survey type, scope of works, and survey period. Where the survey has informed the identification of receptors, baseline conditions, constraints, or mitigation requirements, this is described within the relevant sections of this chapter.

Table 8.8 - Site visits/surveys undertaken

Survey Type	Summary	Survey Period
Baseline sound level survey	Undertaken at two locations representative of the nearest NSR's to the Site to characterise baseline noise conditions. Meteorological conditions were measured using a weather monitor collocated with one of the noise monitors.	06 March to 13 March 2026

8.7. Baseline Conditions

Existing Baseline Conditions

8.7.1 A baseline sound level survey was undertaken between 06 March to 13 March 2026 to quantify and characterise baseline conditions at the nearest NSR's to the Site.

8.7.2 Unattended long-term monitoring was undertaken at two locations (indicated in **Figure 8.1: Noise and Vibration Study Area, Receptors and Baseline Monitoring Locations**), and meteorological conditions were measured using a data logging weather station collocated with the monitoring equipment at NML2. The survey was conducted with reference to BS 7445-1:2003, BS 7445-2:1991 and BS 4142:2014+A1:2019.

8.7.3 It was observed during the installation of the monitoring equipment at NML1 that road traffic noise from the B4267 was the dominant noise. At NML2, vehicle movements associated with The Bay Carvan Park were noted to be dominant.

8.7.4 A summary of the representative baseline sound levels used in the assessment, determined based on the results of the baseline monitoring, are provided below in **Table 8.9**. Full details of the baseline sound level survey are provided in **Appendix 8A: Noise and Vibration Study Area, Receptors and Baseline Monitoring Locations**.

Table 8.9 - Representative baseline sound levels used in the assessment

ID	Log. Avg. Daytime Ambient Sound Level, dB $L_{Aeq,12h}$	Background sound level, dB $L_{A90,T}$			Residual sound level, dB $L_{Aeq,T}$		
		D*	E*	N*	D*	E*	N*
NML1	53	47	38	30	50	45	37
NML2	48	37	31	31	43	35	41
* - D: Daytime (0700 to 1900 hrs), E: Evening (1900 to 2300 hrs), N: Night-time (2300 to 0700 hrs).							

Future Baseline Conditions

8.7.5 Due to the rural location of the Site, future baseline conditions in absence of the Proposed Development are expected to remain similar to existing, notwithstanding a gradual increase in road traffic noise associated with normal growth of road traffic on the local highway network.

Receptors

8.7.6 A list of the receptors considered within Noise and Vibration assessment is provided in **Table 8.10**. Since the submission of the EIA Scoping Report (see **Appendix 1B: EIA Scoping Report**), an additional receptor (R02) has been included. Therefore, identifying reference numbers for receptor R03 and upwards have been incremented since scoping.

Table 8.10 - Sensitive receptors

ID	Receptor	Type	Sensitivity	Approximate coordinates (OSGB36 National Grid)	
				Easting, m	Northing, m
R01	The Bay Caravan Park	Residential	High	317567	168024
R02	Dros-y-Mor	Residential	High	317300	167900
R03	The Vineyard, Lavernock Road	Residential	High	316891	168214
R04	Baruch, Fort Road	Residential	High	317780	168590
R05	Ty'r Orsaf, Fort Road	Residential	High	317859	168575
R06	Sutton Farm, Fort Road	Residential	High	317943	168317
R07	Lavernock Point Holiday Estate	Residential	High	318233	168180
R08	Ysgol Llyn Derw	School	High	317864	168840
R09	Wales Coast Path	Public Right of Way (PRoW)	Medium	317700	167945
R10	Cosmeston Lakes Country Park	Recreation area	High	317545	168750

8.7.7 The assignment of representative baseline datasets has been undertaken based on proximity to the B4267, which was found to be one of the primary sources of environmental noise influencing baseline conditions in the area. The assignment of representative baseline datasets for each receptor is set out in **Table 8.11**.

Table 8.11 - Representative Baseline Datasets

ID	Receptor	Representative Baseline Dataset
R01	The Bay Caravan Park	NML2
R02	Dros-y-Mor	NML2
R03	The Vineyard, Lavernock Road	NML1
R04	Baruch, Fort Road	NML1
R05	Ty'r Orsaf, Fort Road	NML1
R06	Sutton Farm, Fort Road	NML2
R07	Lavernock Point Holiday Estate	NML2
R08	Ysgol Llyn Derw	NML1
R09	Wales Coast Path	NML2
R10	Cosmeston Lakes Country Park	NML1

8.8. Assessment Methodology and Significance Criteria

Assessment Approach

8.8.1 The generic project-wide approach to the assessment methodology is set out in **Chapter 2: Approach to the 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 the Noise and Vibration assessment.

Receptor Sensitivity

8.8.2 The criteria for defining receptor sensitivity for Noise and Vibration is presented in **Table 8.12** and has been produced on the basis of experience of assessing similar facilities and the application of professional judgement, taking into account the draft guidance in Noise and Soundscape Plan for Wales 2023 – 2028 (Consultation draft).

Table 8.12 - Sensitivity criteria

Sensitivity	Definition
High	Dwellings, outdoor recreation areas where tranquillity is intrinsic to the location (e.g., 'Green Flag Award winning sites and tranquil local nature reserves').
Medium	Schools, hotels, outdoor recreation areas where tranquillity may be valued but is not intrinsic to the location.
Low	Offices.
Negligible	Industrial and commercial premises.

Magnitude of Impact

8.8.3 The magnitude of impact reflects the degree of change that would occur to a receptor or resource as a result of the Proposed Development. The criteria used to define magnitude of impact have been developed with reference to relevant legislation, guidance and professional judgement.

Determining the Magnitude of Impact – Construction Activity Noise

Dwellings and School

8.8.4 A quantitative assessment has been undertaken to determine the potential significant environmental effects relating to construction noise following the guidance set out in BS 5228-1.

8.8.5 Calculations have been undertaken based on typical configurations of plant items for key activities of each stage of construction. The configuration of plant items and associated noise levels assumed for the key construction activities are presented in **Appendix 8B: Assessment Data**. The configuration of plant includes plant noise levels and 'on-time' duration for each plant item.

8.8.6 The main Construction activities considered within the assessment are listed in **Table 8.13**.

Table 8.13 - Construction activities

Construction Activity (CA) Ref.	Construction Activity
CA1.1	Main Site Compound
CA1.2	Western Satellite Compound
CA1.3	Eastern Satellite Compound
CA2	Foundation Construction – Substation and BESS
CA3	Delivery and Installation of Equipment – Substation and BESS
CA4	Foundation Construction – Transformers/Inverters/PV Panels
CA5	Erection of PV Panels – Pile-driven Supports
CA6	Trenching
CA7	Trenchless crossings

8.8.7 In general, the works required for the construction phase of the Proposed Development do not have extensive plant requirements and are unlikely to entail intensive work in any one location for an extended duration.

8.8.8 In accordance with the outline Construction Environmental Management Plan (oCEMP), all construction activities with potential to generate significant noise emissions will occur during normal construction hours (i.e. 07:00 to 19:00 hours on weekdays and 07:00 to 13:00 on Saturdays). It is assumed that, if any trenchless crossings would be required, these would be small scale and would be carried out during normal construction hours.

8.8.9 Predicted construction phase noise levels are representative of a reasonable worst-case maximum noise level when a given construction activity would be in closest proximity to the nearest receptors. As such, it is considered that the predicted construction phase noise levels (for most construction activities) are indicative of the noise level that receptors would be exposed to for a duration of around one to three days, and that in the longer term, e.g. weeks/months, construction noise levels would tend to be significantly lower, in the order of 10 to 20 dB lower, than the predicted levels.

8.8.10 The determination of the magnitude of impact due to construction noise is based on the ABC method, provided in Annex E.3.2 of BS 5228-1. The method relies on comparing predicted noise levels with a significance threshold determined based on the measured baseline sound levels during the period when works would take place. Table E.2 from Annex E.3.2 of BS 5228-1 containing the ABC method is reproduced below in **Table 8.14**. The BS5228-1 threshold criteria are determined based on the baseline monitoring results provided in **Table 8.9**.

Table 8.14 - Construction noise: threshold of potential significant impact at dwellings

Assessment category and threshold value period	Threshold value, in decibels, dB, $L_{Aeq,T}$		
	Cat. A [A)]	Cat. B [B)]	Cat. [C)]
Night-time (23:00 – 07:00)	45	50	55
Evenings and weekends [(D)]	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75
NOTE 1 - A potential significant adverse effect is indicated if the $L_{Aeq,T}$ noise level arising from the Site exceeds the threshold level for the category appropriate to the ambient noise level. NOTE 2 - If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant adverse effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due to Site noise. NOTE 3 - Applied to residential receptors only. A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values. B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as Category A values. C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than Category A values. D) 19:00–23:00 weekdays, 13:00–23:00 Saturdays and 07:00–23:00 Sundays.			

8.8.11 The ABC method is used to indicate potentially significant effects; however, after following the ABC method to indicate significance Annex E.3.2 of BS 5228-1 states:

> *"The assessor then needs to consider other project-specific factors, such as the number of receptors affected and the duration and character of the impact, to determine if there is a significant effect".*

8.8.12 With regard to duration of exposure, BS 5228-1 provides temporal thresholds above which additional noise insulation must be provided. The temporal thresholds provided in BS 5228-1, where additional noise insulation must be provided if construction noise exceeds specific threshold levels, are durations longer than:

- 10 or more days or nights in any 15 consecutive days or nights; or
- A total number of days exceeding 40 in any six consecutive months.

8.8.13 **Table 8.15** details the basis for assessing magnitude of impact in accordance with the ABC method in BS 5228-1. The school has been assessed using the same criteria below as for dwellings.

Table 8.15 - Establishing the magnitude of impact due to construction noise (dwellings)

Magnitude	Criteria	Semantic
High	Noise levels exceeding BS 5228-1 threshold for a duration which may trigger the requirement to provide additional noise insulation/ temporary rehousing.	Construction noise levels very much greater than baseline and disruptive.

Magnitude	Criteria	Semantic
Medium	Noise levels exceeding BS 5228-1 threshold for a duration which does not trigger the requirement to provide additional noise insulation/ temporary rehousing.	Construction noise levels greater than baseline and potentially disruptive.
Low	Noise levels equal to, but not exceeding, BS 5228-1 threshold.	Construction noise levels just greater than baseline. Very unlikely to be disruptive.
Negligible	Noise levels not exceeding BS 5228-1 threshold.	Construction noise levels may be just above or below baseline noise levels, but not disruptive.

Public Rights of Way and Recreation Areas

8.8.14 BS 5228-1 provides criteria for assessing construction noise impacts at public open spaces in Annex E.3.3. The guidance refers to lower cutoff limits of 65 dB $L_{Aeq,T}$ for weekday daytimes and Saturday mornings and 55 dB $L_{Aeq,T}$ for Saturday afternoons and evenings. The guidance states *'For public open space, the impact might be deemed to cause significant effects if the total noise exceeds the ambient noise ($L_{Aeq,T}$) by 5 dB or more for a period of one month or more. However, the extent of the area impacted relative to the total available area also needs to be taken into account in determining whether the impact causes a significant effect.'*

8.8.15 Based on the above, if the total ambient noise level with construction noise is likely to exceed the baseline ambient noise level by 5 dB or more for a period of at least one month, this indicates an impact of medium magnitude. If the total ambient noise level is below this threshold, this indicates an impact of negligible to low magnitude. The extent of the area of open space affected will also be taken into account when determining the magnitude of impact.

Determining the Magnitude of Impact – Construction Activity Vibration

8.8.16 Construction activities that are considered to induce a potential significant source of vibration are ones including the use of vibratory rollers and piling which may be required for some of the PV panel support structures.

8.8.17 Levels of construction vibration have been predicted and assessed at the nearest NSR's using the methods and criteria discussed in BS 5228-2:2009+A1:2014. Criteria provided in BS 5228-2 for vibration impacts to human receptors and to structures have been used to indicate varying impact magnitudes in **Table 8.16** and **Table 8.17** respectively.

Table 8.16 - Criteria for construction and decommissioning vibration (human response)

Magnitude of Impact	PPV Vibration Level
High	Above or equal to 10 mm/s Peak Particle Velocity (PPV)
Medium	Above or equal to 1 mm/s and below 10 mm/s PPV

Magnitude of Impact	PPV Vibration Level
Low	Above or equal to 0.3 mm/s and below 1 mm/s PPV
Negligible	Below 0.3 mm/s PPV

Table 8.17 - Criteria for construction and decommissioning vibration (building damage)

Magnitude of Impact	PPV Vibration Level	Damage Category
High	≥ 60 mm/s PPV	Major
Medium	≥ 30 mm/s PPV	Minor
Low	≥ 15 mm/s PPV	Cosmetic
Negligible	< 15 mm/s PPV	-

Determining the Magnitude of Impact – Operational noise affecting dwellings

8.8.18 A 3D computer noise model was produced using the CadnaA software package. The software implements the prediction methodology provided in ISO 9613 Part 2. Details of the plant source noise levels are provided in **Appendix 8B: Assessment Data**. Noise emissions from the inverters, intermediate transformers, BESS units and associated equipment have been considered.

8.8.19 **Table 8.18** below provides the magnitude of impact categories for assessing operational noise, based on the results of the initial estimate of impact undertaken in accordance with BS 4142:2014+A1:2019. The final determination of magnitude of impact depends on consideration of the context, as required by the method detailed in the standard.

Table 8.18 - Establishing the magnitude of impact due to operational noise

Magnitude	Initial Estimate of Impact
High	Rating levels significantly exceeding (+8 dB, or above) representative background sound levels. Final determination of magnitude of impact subject to consideration of context.
Medium	Rating levels moderately exceeding (+3 to +7 dB above) representative background sound levels. Final determination of magnitude of impact subject to consideration of context.
Low	Rating levels just exceeding (+1 to +2 dB above) representative background sound levels. Final determination of magnitude of impact subject to consideration of context.
Negligible	Rating levels equal to, or lower than, representative background sound levels. Final determination of magnitude of impact subject to consideration of context.

8.8.20 As referred to in paragraph 8.8.19, following the initial estimate of impact, consideration of context is required in order to determine the significance of impact due to operational noise. BS 4142:2014+A1:2019 states that all pertinent contextual elements should be considered, including:

- The absolute level of the sound;

- The character and level of the residual sound compared to the character and level of the specific sound; and
- The sensitivity of the receptors and whether these already incorporate design measures (such as façade insulation, or acoustic screening, etc.) which would secure good internal and/or outdoor acoustic conditions.

8.8.21 An assessment of predicted ambient noise change due to the addition of the operational noise to the residual acoustic environment is undertaken to address the second bullet point, above. The criteria used when assessing ambient noise is provided in **Table 8.19** based on criteria from the ISEP Guidelines.

Table 8.19 - Criteria for ambient noise change

Magnitude	Noise Change, dB	Description
Negligible	0	No increase in ambient noise levels.
Low	+1 to +2	Increase in ambient noise level tending to imperceptible.
Medium	+3 to +5	Perceptible ambient noise level increase.
High	>= +6	Perceptible and noticeable increase in ambient noise level.

Determining the Magnitude of Impact – Operational noise affecting schools

8.8.22 The guidance document 'Acoustics of Schools: a design guide' states:

"For new schools, 60 dB $L_{Aeq,30min}$ should be regarded as an upper limit for external noise at the boundary of external areas used for formal and informal outdoor teaching and recreation. ….

Noise levels in unoccupied playgrounds, playing fields and other outdoor areas should not exceed 55 dB $L_{Aeq,30min}$ and there should be at least one area suitable for outdoor teaching activities where noise levels are below 50 dB $L_{Aeq,30min}$. …"

8.8.23 The assessment of potential operational noise impacts at schools will be undertaken with reference to the guidance above.

Determining the Magnitude of Impact – Operational noise affecting Public Rights of Way and Recreation Areas

8.8.24 BS 8233 provides guideline criteria for ambient noise levels in external amenity spaces associated with dwellings. Whilst the criteria in BS 8233 are not applicable to public open spaces, the criteria are considered to provide an indication of desirable ambient noise levels in such locations.

8.8.25 On this basis, the BS 8233 desirable guideline limit of 50 dB $L_{Aeq,T}$ is adopted as the criterion for determining impacts from operational noise. If the total ambient sound level with the addition of the operational sound is above this criterion, this indicates a medium magnitude of impact. If the total ambient sound level with the addition of the

operational sound is below this criterion, this indicates impacts of negligible to low magnitude.

Construction Noise and Vibration: Decommissioning

8.8.26 The environmental effects associated with the decommissioning phase are expected to be of a similar level to those during the construction phase works. Therefore, the likely significance of effects relating to the construction phase assessment will be applicable to the decommissioning phase.

Significance of Effects

8.8.27 The significance of effects is determined through consideration of the sensitivity (or value) of the receptor and the magnitude of impact. The assessment identifies the likely significant effects of the Proposed Development during construction, operation and decommissioning.

8.8.28 Typically, effects identified as **Moderate** or **Major** are generally considered significant in EIA terms. Effects assessed as **Minor** or **Negligible** are generally considered not significant, unless professional judgement indicates otherwise. However, for the purpose of the noise and vibration assessment, effects identified as **Moderate** may or may not be significant, depending on the context the scenario (e.g. the duration of exposure, the time of day of exposure, etc.).

Significance Criteria

8.8.29 This chapter reports on the likely significant Noise and Vibration effects for the construction, operational, and decommissioning phases of the Proposed Development.

8.8.30 The following criteria will be considered when determining significance:

- Relevant legislation and planning policy;
- International, national, regional, and local standards/guidance;
- Probability of occurrence of likely effect;
- Geographical extent of likely effect;
- Magnitude and complexity of likely effect;
- Sensitivity/value/importance of the receptor/receiving environment;
- Duration, frequency and reversibility of effect (temporary/permanent);
- Inter-relationship between effects (both cumulatively and in terms of potential effect interactions).

8.8.31 The matrix used to determine significance is provided below in **Table 8.20**.

Table 8.20 - Matrix for determining significance of effect

		Sensitivity (Value/Importance)			
		High	**Medium**	**Low**	**Negligible**
Magnitude of impact	High	Major	Moderate/ Major	Minor/ Moderate	Negligible
	Medium	Moderate/ Major	Moderate	Minor	Negligible
	Low	Minor/ Moderate	Minor	Negligible/ Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Assessment Assumptions and Limitations

8.8.32 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

8.8.33 There is currently limited information available on:

Construction Activities

- Locations of specific construction activities (foundation construction and pile driven supports for PV panels, trenching and any trenchless crossings which may be required); and
- Construction plant types and numbers.

Operational Plant

- Operational duty of plant;
- Locations of string inverters; and
- Final plant selection.

Cumulative Information

- Programme of construction for nearby cumulative developments; and
- Construction methods and plant specifications.

8.8.34 To address the limitations identified above, the following approach has been taken:

Construction Activities and Operational Plant

- Reasonable worst-case assumptions have been made.

Cumulative Effects

- Where construction from nearby cumulative development is identified to occur in parallel to the construction of the Proposed Development, reasonable worst-case assumptions will be made when assessing cumulative effects.

8.8.35 With the approach outlined above, it is considered that the assumptions and limitations do not affect the robustness of the assessment of likely significant effects associated with the construction and operation of the Proposed Development.

8.9. Embedded Mitigation

8.9.1 A summary of the Noise and Vibration related mitigation measures embedded into the Proposed Development to control, avoid or reduce any effects for the construction, operation, or decommissioning is provided in **Table 8.21**.

Table 8.21 - Summary of embedded mitigation

Ref	Embedded Mitigation Measure	Purpose	Relevant Phase	Securing Mechanism
oCEMP	Undertaking construction in accordance with good practice and BPM, that is set out in the oCEMP supporting this EIA (**see Appendix 5A: oCEMP**). All construction activities to be undertaken within normal working hours for construction. Any required mitigation measures to avoid significant effects will be confirmed in the detailed CEMP.	To control and minimise potential impacts on the environment during the construction phase.	Construction/ Decommissioning	The detailed CEMP would be secured via planning condition.

Ref	Embedded Mitigation Measure	Purpose	Relevant Phase	Securing Mechanism
Operational Noise Management Plan (ONMP)	A planning condition, or planning conditions, would be attached to the consent for the Proposed Development that will define fixed operational noise limits and require submission, and approval, of a scheme of operational noise management that will ensure compliance with the noise limits. The determination of the fixed noise limits will be undertaken in liaison with, and agreed in writing by the Council. The ONMP should be submitted prior to the operation of the scheme.	To control and minimise potential impacts on the environment during the operation phase.	Operation	ONMP to be secured via planning condition.

8.10. Assessment of Likely Significant Effects

Construction Phase

Construction Activity Noise

8.10.1 An assessment of construction phase noise effects has been undertaken based on the plant data and predicted worst case construction noise levels provided in **Appendix 8B: Assessment Data**.

8.10.2 The assessment considers reasonable worst case construction noise levels at the closest receptor to each activity. A detailed construction programme has not been defined at this stage; therefore, whilst it is considered there is some potential for construction activities to overlap simultaneously in one area, there is currently not enough detail available to identify where and when this is likely to occur.

8.10.3 It is considered that most construction activities would not be in any one location for an extended period of time. On this basis, it is considered unlikely that overlapping construction activities would be likely to cause substantial increases in the predicted construction noise levels, or to materially increase the duration of exposure to construction noise at any one receptor. Nonetheless, when a construction contractor is appointed, and detailed construction information and programme becomes available,

the potential for construction activities to give rise to increased construction noise levels and/or increased durations of exposure to construction noise will be further considered, and this together with the relevant mitigation measures will be incorporated into the detailed CEMP. An oCEMP has been provided as part of this ES (see **Appendix 5A: oCEMP**).

8.10.4 Predicted construction phase noise levels due to each Construction Activity (CA), defined in **Table 8.13**, are presented in **Table 8.22** for each receptor.

Table 8.22 – Predicted construction noise levels

CA	Predicted Construction Noise Level, dB $L_{Aeq,T}$									
	R01	R02	R03	R04	R05	R06	R07	R08	R09	R10
CA1.1	47	45	44	55	52	48	43	52	46	61
CA1.2	55	51	47	49	48	48	44	45	51	48
CA1.3	51	47	45	52	51	50	44	47	48	51
CA2	52	48	44	46	46	46	42	43	48	45
CA3	56	52	48	50	50	50	45	47	52	49
CA4	61	61	63	61	65	65	56	49	72	51
CA5	60	60	61	60	64	65	54	48	70	49
CA6	62	53	55	58	60	64	48	46	63	47
CA7	64	52	47	50	49	50	45	46	51	50

8.10.5 Based on the baseline sound levels presented in **Table 8.9**, and the criteria presented in **Table 8.14** and outlined under paragraph 8.8.14, the BS 5228-1 threshold of significance is 65 dB $L_{Aeq,12h}$ at all receptors.

8.10.6 With reference to the criteria provided in **Table 8.15**, the predicted construction phase noise levels provided in **Table 8.22** indicate that, for the majority of receptors during all construction phase activities, resultant impacts would be no greater than negligible magnitude. CA4 is predicted to result in noise levels which equal the BS 5228-1 threshold at receptors R05 and R06, and CA5 is predicted to result in a noise level which is equal to the BS 5228-1 threshold at receptor R06, which would result in impacts of low magnitude.

8.10.7 Construction activities CA4 and CA5 are predicted to result in noise levels which exceed the BS 5228-1 threshold at receptor R09 (the Wales Coast Path) which indicates an impact of medium magnitude. However, the predicted construction noise levels are representative of the worst case when construction activities are in closest proximity. On this basis, it is considered unlikely that the BS 5228-1 threshold would be exceeded at R09 for a month or more. The extent of area of the Wales Coast Path affected by construction noise would be limited. As such, it is considered that construction noise would result in impacts of low magnitude at R09.

8.10.8 With reference to **Table 8.20**, impacts of negligible magnitude to receptors of high sensitivity result in negligible effects and are **not significant**. Impacts of low magnitude

to receptors of high sensitivity result in minor/moderate effects and are potentially significant. On the basis that the duration of exposure would be limited, and that the BS 5228-1 thresholds would not be exceeded, it is considered that the minor/moderate effects would tend towards minor and would be **not significant**. Impacts of low magnitude to receptors of medium sensitivity result in effects of minor significance and are **not significant**.

Decommissioning Stage

8.10.9 Though there will likely be some variation in the activities required for the Decommissioning stage, predicted noise levels and associated impacts and effects set out above for the construction phase are representative of likely effects during the Decommissioning stage. On this basis, predicted noise effects during the Decommissioning stage are **not significant**.

Construction Activity Vibration

8.10.10 The construction activities considered to give rise to a potentially significant levels of vibration are those that involve the use of vibratory rollers for the construction compounds and foundations, and percussive piling for the PV panels supporting structures.

Vibratory Rollers

8.10.11 The nearest NSR's to vibration from rollers are R05 and R06, which are around 60 m from the foundation construction for transformers and inverters.

8.10.12 Calculations of vibration levels associated with the rollers, undertaken in accordance with the prediction method in BS 5228-2, are presented in **Table 8.23** and provide vibration levels from steady state operation of the rollers and for start-up and run-down operation, in conjunction with the percentage of probability that the stated vibration level could be exceeded.

Table 8.23 - Construction phase vibration levels from vibratory rollers at nearest NSR's

Receptor	Distance to Activity, m	Operational Mode of Roller	Probability of Exceeding PPV Vibration Level, %	PPV Vibration Level*
R05 and R06	60	Steady	50	0.19
			33	0.36
			5	0.70
R05 and R06	60	Start-up / Run-down	50	0.38
			33	0.61
			5	1.02

* Resultant PPV – the maximum instantaneous value of the vector sum of the three components (vertical, transverse, longitudinal)

8.10.13 Predicted vibration levels from rollers indicate that indicative worst-case levels of vibration have a 50% chance of exceeding 0.19 mm/s PPV at R05 and R06 during steady state operation and 0.38 mm/s PPV at R05 and R06 during start-up/run-down operation.

8.10.14 With regard to human perception, based on the predicted vibration levels in **Table 8.23** and the criteria set out in **Table 8.16**, use of vibratory rollers would tend to give rise to impacts of low magnitude. With reference to **Table 8.20**, impacts of low magnitude to receptors of high sensitivity would give rise to effects of minor/moderate significance. Assuming that the duration of the impacts would be limited, it is considered that the effects would tend towards Minor significance and be **Not Significant**.

8.10.15 With regard to potential building damage, based on the predicted vibration levels in **Table 8.23** and the criteria set out in **Table 8.17**, use of vibratory rollers would give rise to impacts of negligible magnitude. With reference to **Table 8.20**, impacts of negligible magnitude to receptors of high sensitivity would give rise to effects of negligible significance which are **Not Significant**.

Piling for PV Panel Mounting Structures

8.10.16 The nearest receptors from proposed PV panels which may require pile-driven supports for the mounting structures are R01, R05 and R06 which are located between 30 to 50 m away from proposed PV panels.

8.10.17 Calculations of vibration levels associated with piling activities, undertaken in accordance with the prediction method in BS 5228-2, indicate levels of between 1.28 to 2.38 mm/s PPV at R01, R05 and R06. The maximum predicted vibration level from piling activities at all other receptors is no greater than 0.77 mm/s PPV, with predicted vibration levels at R08 of 0.13 mm/s PPV.

8.10.18 With reference to the criteria for human perception of vibration in **Table 8.16**, the predicted vibration levels due to piling activities result in impacts of medium magnitude at R01, R05 and R06. Impacts of low magnitude are predicted at all other receptors (R02, R03, R04 and R07) except R08 where an impact of negligible magnitude is predicted.

8.10.19 With reference to **Table 8.20**, and in consideration of impacts to human perception, impacts of medium magnitude to receptors of high sensitivity result in moderate/major effects and are potentially significant, impacts of low magnitude result in effects of minor/moderate significance and are potentially significant and impacts of negligible magnitude result in negligible effects and are **not significant**.

8.10.20 With respect to the potentially significant effects to human perception identified above (paragraph 8.10.19), it is considered that piling would be a transient activity that receptors would only be exposed to for a limited period of around a few days. On the

basis that residents will be informed of these works, in accordance with the oCEMP, and that the duration of exposure is limited, it is considered that the potentially significant effects identified would tend towards moderate or minor significance and be **not significant**.

8.10.21 The requirement to inform nearby residents potentially subject to moderate or minor effects from construction vibration to human perception is set out in the oCEMP (**Appendix 5A: oCEMP**).

8.10.22 With reference to the criteria for potential building damage in **Table 8.17**, the predicted vibration levels due to piling result in impacts of negligible magnitude. With reference to **Table 8.20**, impacts of negligible magnitude to receptors of high sensitivity result in effects of negligible significance and are **not significant**.

Operational Phase

Operational Noise Affecting Dwellings

8.10.23 An assessment of operational noise effects due to noise emissions from operational plant and equipment on the nearest dwellings has been undertaken based on the plant data and predicted operational noise levels provided in **Appendix 8B: Assessment Data.** To carry out the initial estimate of impact in accordance with BS 4142, predictions of operational noise were compared against the representative baseline sound levels set out in **Table 8.9**.

8.10.24 Using the subjective method for determining rating penalties, it was determined that a rating penalty of +2 dB for tonality being just perceptible is appropriate, to account for the character of the noise emissions from the transformers and inverters. The specific sound would not be impulsive or intermittent.

8.10.25 The BS 4142 initial estimate of impact for the daytime, evening and night-time is presented below in **Table 8.24**.

Table 8.24 - Operational phase: BS 4142 initial estimate of impact

Receptor	Background Sound Level, dB, $L_{A90,T}$			Specific Sound Level, dB, L_s			Rating Level, dB, $L_{Ar,Tr}$			Rating Level minus Background, dB		
	D*	E*	N*	D	E	N	D	E	N	D	E	N
R01	37	31	31	39	33	31	41	35	33	+4	+4	+2
R02	37	31	31	35	30	27	37	32	29	0	+1	-2
R03	47	38	30	33	27	23	35	29	25	-12	-9	-5
R04	47	38	30	35	29	26	37	31	28	-10	-7	-2
R05	47	38	30	35	29	26	37	31	28	-10	-7	-2
R06	37	31	31	39	32	27	41	34	29	+4	+3	-2
R07	37	31	31	32	26	22	34	28	24	-3	-3	-7

Receptor	Background Sound Level, dB, $L_{A90,T}$			Specific Sound Level, dB, L_s			Rating Level, dB, $L_{Ar,Tr}$			Rating Level minus Background, dB		
	D*	E*	N*	D	E	N	D	E	N	D	E	N
* - D: daytime (0700 to 1900 hrs), E: Evening (1900 to 2300 hrs), N: Night-time (2300 to 0700 hrs)												

8.10.26 With reference to the criteria in **Table 8.18**, the results of the initial estimate of impact in **Table 8.24** indicate that:

- Impacts of negligible magnitude are predicted at most NSR's at all times of day;
- An impact of low magnitude is predicted at R01 during the night-time and at R02 in the evening; and
- Impacts of medium magnitude are predicted at R01 and R06 during the daytime and evening.

8.10.27 Final determination of the resultant magnitude of impact is undertaken through consideration of context, in accordance with BS 4142. Where contextual considerations indicate a different magnitude of impact than indicated by the initial estimate, the final magnitude of impact may be modified accordingly.

8.10.28 Consideration of context should take into account, amongst other factors, the level and character of the specific sound and the level and character of the residual sound. To consider the relative levels of the specific and residual sound, noise change calculations have been undertaken, and are presented in **Table 8.25.**

Table 8.25 - Operational phase, BS 4142 consideration of context - noise change calculations

Receptor	Residual Sound Level, dB, $L_{Aeq,T}$			Specific Sound Level, dB, L_s			Ambient Sound Level, dB			Noise Change, dB		
	D*	E*	N*	D	E	N	D	E	N	D	E	N
R01	43	35	35	39	33	31	44	37	36	+1	+2	+1
R02	43	35	35	35	30	27	44	36	36	+1	+1	+1
R03	50	45	37	33	27	23	50	45	37	0	0	0
R04	50	45	37	35	29	26	50	45	37	0	0	0
R05	50	45	37	35	29	26	50	45	37	0	0	0
R06	43	35	35	39	32	27	44	37	36	+1	+2	+1
R07	43	35	35	32	26	22	43	36	35	0	+1	0
* - D: Daytime, E: Evening, N: Night-time												

8.10.29 With reference to the criteria in **Table 8.19**, the results of the noise change calculations in **Table 8.25** indicate that the addition of the specific sound to the residual acoustic environment would, at worst, give rise to noise changes of low magnitude. With reference to **Table 8.20**, a noise change of low magnitude to receptors of high sensitivity result in effects which are minor/moderate and potentially significant. On the basis that the absolute sound levels are low, it is considered that the effects would tend towards minor and would be **not significant**.

8.10.30 With reference to the results of the initial estimate of impact, it is considered that, for receptors and time periods which were predicted to experience negligible and low impacts, that the above consideration of context confirms that the resulting impacts would be of no greater than low magnitude. With reference to **Table 8.20**, impacts of negligible to low magnitude to receptors of medium sensitivity result in effects of no greater than minor significance and are **not significant**.

8.10.31 The remaining receptors and time periods are those where impacts of medium magnitude are predicted in the initial estimate of impact: R01 and R06 during the daytime and evening. With reference to the consideration of context in **Table 8.25** and paragraph 8.10.29**,** despite the low magnitude of impact due to ambient noise increase, it is acknowledged that the character of the specific sound is different to the character of the residual sound, and could, at times, be noticeable. This could cause a change in the perception of the acoustic character of the area, indicating a potentially adverse effect on the local soundscape.

8.10.32 However, the absolute sound levels are low. The absolute level of the daytime ambient sound levels are at least 6 dB below the BS 8233 desirable limit of 50 dB $L_{Aeq,16h}$. The evening ambient sound levels fall further below these criteria with a maximum predicted ambient sound level of 37 dB $L_{Aeq,4h}$.

8.10.33 In consideration of potential impacts during the night-time, and assuming 10 dB attenuation from a partially open window, absolute ambient sound levels in the night-time would not exceed the BS 8233 criteria for internal ambient sound levels in bedrooms at night. As such, based on consideration of absolute sound levels, it is unlikely that any adverse impact would occur.

8.10.34 Furthermore, as set out in **Appendix 8A: Baseline Sound Level Survey**, the ambient sound levels used in the noise change calculation are derived from the 25th percentile of the measured sound levels during the baseline survey. As such, the noise change calculations are indicative of the potential impact during the quieter times. For the majority of the time, the noise increase would be lower. Also, as indicated in **Appendix 8B: Assessment Data**, evening energy generation would be around 8% in the first hour of the evening in June and July, with limited evening generation the rest of the time. Therefore, predicted noise changes in the evening are representative of a limited period of the evening in a limited period of each year.

8.10.35 Therefore, based on the above, it is considered that where impacts of medium magnitude were indicated in the initial estimate, that these would tend towards low impacts. With reference to **Table 8.20**, impacts of low magnitude to receptors of high sensitivity result in effects of minor/moderate significance and are potentially significant. Based on the context discussed above in **paragraphs 8.10.31** to **8.10.34** it is considered that the effects would tend towards minor significance and be **not significant**.

Operational Noise Affecting R08 – Ysgol Llyn Derw

8.10.36 Predicted operational noise levels at the school (R08, Ysgol Llyn Derw) are 29 dB $L_{Aeq,T}$, which is predicted to cause no noise increase of the representative daytime baseline sound level of 50 dB $L_{Aeq,12h}$.

8.10.37 With reference to the guidance under **paragraph 8.8.22**, the predicted daytime operational sound level at R08 is 31 dB below the upper limit for external noise at the boundary of external areas used for formal and informal outdoor teaching and recreation, and 26 dB below the criterion for noise levels in unoccupied playgrounds, playing fields and other outdoor areas. The total ambient noise level of 50 dB $L_{Aeq,T}$ does not exceed the criterion for an area suitable for outdoor teaching activities. Based on the above, the predicted magnitude of impact at R08 is negligible.

8.10.38 With reference to **Table 8.20**, impacts of negligible magnitude to receptors of medium sensitivity result in negligible effects and are **not significant**.

Operational Noise Affecting Public Rights of Way and Recreation Areas

8.10.39 The predicted total ambient noise levels, consisting of the existing baseline residual sound level plus the predicted operational noise level, at the nearest PRoWs and recreation areas, are presented below in **Table 8-26**. The residual sound levels presented below are derived from the 25th percentile of the measured sound levels during the baseline survey. As such, they are indicative of the potential impact during existing quieter periods.

Table 8-26 - Operational phase, BS 4142 consideration of context - noise change calculations

Location	Residual Sound Level, dB $L_{Aeq,T}$	Predicted Operational Noise Level, dB $L_{Aeq,T}$	Total Ambient Sound Level (Residual plus operational noise), dB $L_{Aeq,T}$
Daytime			
R09	43	44	47
R10	50	30	50
Evening			
R09	35	35	38
R10	45	25	45

8.10.40 The results for receptor R09 in **Table 8-26** above indicate that, with the addition of the operational noise to the residual acoustic environment, total ambient sound levels would be 47 dB $L_{Aeq,T}$ during the daytime and 38 dB $L_{Aeq,T}$ during the evening. With reference to the criteria provided in **paragraph 8.8.25**, operational noise at R09 would result in impacts of negligible significance. With reference to **Table 8.20**, impacts of negligible magnitude to receptors of medium sensitivity result in effects of negligible significance and are **not significant**.

8.10.41 The results for receptor R10 in **Table 8-26** above indicate that, with the addition of the operational noise to the residual acoustic environment, total ambient sound levels would be 50 dB $L_{Aeq,T}$ during the daytime and 45 dB $L_{Aeq,T}$ during the evening. On the basis that the operational noise level is significantly below the residual sound level, and does not give rise to any increase in the total ambient sound level, it is considered that impacts due to operational noise would tend towards negligible magnitude. With reference to the criteria provided in **paragraph 8.8.25**, operational noise at R10 would result in impacts of negligible significance. With reference to **Table 8.20**, impacts of negligible magnitude to receptors of high sensitivity result in effects of negligible significance and are **not significant**.

8.11. Additional Mitigation Measures

8.11.1 Embedded mitigation measures have been incorporated into the design of the Proposed Development and have been taken into account within the assessment of likely significant effects.

8.11.2 There are no additional mitigation measures required, as the assessment has not identified any significant effects.

8.12. Residual Effects

8.12.1 Residual effects are the effects that remain following the implementation of all embedded and additional mitigation measures identified within this assessment.

8.12.2 As no additional mitigation measures have been identified, the residual effects are identical to those set out in **Section 8.10**, above. These are summarised in **Table 8.28** 'Summary of Significant Effects'. There are no residual effects which are deemed to be significant in EIA terms.

8.13. Cumulative Effects

8.13.1 A Cumulative Effects Assessment (CEA) has been 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 **Chapter 2: Approach to the EIA**.

8.13.2 A long list of developments was compiled through a review of planning applications, local development allocations and other committed developments within the Study Area. These developments were screened to identify those with the potential to interact with the Proposed Development and give rise to cumulative effects. The developments within 1 km of the Site boundary have been taken forward to the detailed CEA and are presented in **Table 8.27**.

Table 8.27 - Cumulative developments within 1 km of the Proposed Development

Ref	Development	Planning Reference	Development Description	Status	Distance from the Site (km)
1	Larnog Solar Farm – Grid Connection	Not applicable.	The Project Substation would be connected to the selected NGED substation via underground electrical cabling. The grid connection cable route is anticipated to be predominantly located within the public highway corridor. Indicative grid connection and routing options for each option are shown on **Figure 5.6: Indicative Grid Connection**.	Unknown	Adjacent to the Site
2	Sully to Cosmeston Active Travel Route	2025/00493/RG3	Works for a shared pedestrian and cycle route (Active Travel Route), earthworks, landscaping and associated works from Sully to Cosmeston.	Consented	Adjacent to the Site
3	Land at Upper Cosmeston Farm, Lavernock Road, Penarth	2020/01170/OUT	Outline application for residential development, a primary school, community space and public open space with all matters reserved other than access.	Consented	0.28
4	Land at Swanbridge Road, Sully - Phase 2	2025/00509/RES	Residential development of up to 190 units with associated access and associated works.	Consented	0.62

8.13.3 The potential for cumulative effects has been considered for the construction, operation and, where relevant, decommissioning phases of the Proposed Development. The assessment takes account of the geographical and temporal overlap between the Proposed Development and other developments included within the cumulative assessment.

8.13.4 The cumulative assessment considers whether the interaction of effects from multiple developments could result in effects that are greater than those identified for the Proposed Development in isolation. Where no credible pathway for cumulative effects has been identified, this is stated and justified within the assessment.

Ref 1. Larnog Solar Farm – Grid Connection

8.13.5 With reference to **Appendix 2A: Grid Connection Appraisal**, the grid connection and cable route required for the Proposed Development would primarily entail linear construction works that would not affect any one receptor for an extended period. Potential environmental impacts during the construction phase would be controlled via standard construction management measures and are unlikely to give rise to significant effects. If construction of this scheme was concurrent, it would be coordinated with the construction of the Proposed Development so as to avoid significant cumulative effects. Therefore, any cumulative effects during construction would be **not significant**.

8.13.6 In consideration of potential cumulative effects due to operational noise, the cabling would not result in any noise emissions and any additional plant required for the grid connection would not result in significant noise emissions. Therefore, cumulative effects during the operational phase are considered to be **not significant**.

Ref. 2 Sully to Cosmeston Active Travel Route

8.13.7 Planning documentation for the consented Sully to Cosmeston Active Travel Route development was reviewed, however no specific noise assessment for the scheme was identified. Parts of the scheme are located adjacent to the northern boundary of the Proposed Development and, qualitatively, it is considered that there is the potential for significant cumulative effects during the construction phase at R03 to R05, should the two construction phases for the two respective developments be undertaken simultaneously. However, on the basis that the construction works for the Active Travel Route would be linear, and therefore transient in nature with respect to a given receptor as works on the scheme move along the route, it is considered that any effects on the receptors mentioned would be temporary and **not significant**.

Ref. 3 Land at Upper Cosmeston Farm

8.13.8 The consented Land at Upper Cosmeston Farm development is located approximately 0.28 km from the Site. The noise assessment for the scheme[22] was reviewed, though this does not provide a quantitative assessment of construction noise. Qualitatively, it is considered that construction of the scheme has the potential to give rise to significant cumulative effects during the construction phase at R04 and R05, if construction of the scheme is concurrent with construction of the Proposed Development. R04 is approximately 280 m from the site boundary of the Land at Cosmeston Farm development, which is towards the upper extents of the 300 m study area of construction. Furthermore, it is unlikely that foundations of buildings are to be constructed at the site boundary and any boundary works at the nearest point to R04

[22] Inacoustic (2019). Upper Farm, Cosmeston. Noise Assessment (Version 4).

and R05 would be temporary. With these points considered, it is likely that any cumulative effects would be **not significant**.

Ref. 4 Land at Swanbridge Road

8.13.9 Planning documentation for the consented development at Land at Swanbridge Road, Sully was reviewed, however no specific noise assessment for the scheme was identified. The scheme is Phase 2 of a larger residential scheme. The nearest receptor to the site boundary of Land at Swanbridge is over 300 m away and is therefore not within the Study Area for the construction phase. Therefore, any cumulative effects during the respective construction phases are considered likely to be **not significant**.

8.14. Monitoring Requirements

8.14.1 Based on the findings of the assessment, and that:

- Construction phase impacts will be controlled via CEMP; and
- Operational noise will be controlled through appropriately worded planning condition(s) requiring operational noise levels to comply with fixed noise limits in accordance with an ONMP to be submitted and approved by the Council.

8.14.2 There are no requirements to recommend any monitoring.

8.15. Summary

8.15.1 An assessment of the likely noise and vibration effects arising from the construction, decommissioning and operation of the Proposed Development has been undertaken. **Table 8.28** provides a summary of the assessment at each receptor including how it is likely to be affected, how it will be mitigated for, and what the residual effects and monitoring requirements will include.

Table 8.28 - Summary of significant effects

Receptor and Summary of Predicted Effects	Embedded Mitigation	Sensitivity of Receptor	Magnitude of impact	Significance of Effect	Further Mitigation	Residual Effect	Monitoring
R01 Potential effects due to construction noise and vibration and operational noise.	oCEMP ONMP	High	Construction noise: Negligible Construction vibration: Medium Operational noise: Medium	**Construction noise:** Negligible (not significant) **Construction vibration:** Moderate (not significant) **Operational noise:** Moderate (not significant)	None at this time. However, requirements for mitigation for operational plant to be confirmed prior to operation based on final plant selection as part of ONMP.	**Construction noise:** Negligible (not significant) **Construction vibration:** Moderate (not significant) **Operational noise:** Moderate (not significant)	Verification of operational noise levels at selected receptor locations to be determined post consent as part of ONMP.
R02 Potential effects due to construction noise and vibration and operational noise.	oCEMP ONMP	High	Construction noise: Negligible Construction vibration: Low Operational noise: Low	**Construction noise:** Negligible (not significant) **Construction vibration:** Minor (not significant) **Operational noise**: Minor (not significant)	As above	**Construction noise:** Negligible (not significant) **Construction vibration:** Minor (not significant) **Operational noise**: Minor (not significant)	As above
R03 Potential effects due to construction noise and vibration and	oCEMP ONMP	High	Construction noise: Negligible Construction vibration: Low Operational noise: Negligible	**Construction noise**: Negligible (not significant) **Construction vibration:** Minor (not significant)	As above	**Construction noise**: Negligible (not significant) **Construction vibration:** Minor (not significant)	As above

Receptor and Summary of Predicted Effects	Embedded Mitigation	Sensitivity of Receptor	Magnitude of impact	Significance of Effect	Further Mitigation	Residual Effect	Monitoring
operational noise.				**Operational noise**: Negligible (not significant)		**Operational noise**: Negligible (not significant)	
R04 Potential effects due to construction noise and vibration and operational noise.	oCEMP ONMP	High	Construction noise: Negligible Construction vibration: Low Operational noise: Negligible	**Construction noise**: Negligible (not significant) **Construction vibration:** Minor (not significant) **Operational noise**: Negligible (not significant)	As above	**Construction noise**: Negligible (not significant) **Construction vibration:** Minor (not significant) **Operational noise**: Negligible (not significant)	As above
R05 Potential effects due to construction noise and vibration and operational noise.	oCEMP ONMP	High	Construction noise: Low Construction vibration: Medium Operational noise: Negligible	**Construction noise**: Minor (not significant) **Construction vibration:** Moderate (not significant) **Operational noise**: Negligible (not significant)	As above	**Construction noise**: Minor (not significant) **Construction vibration:** Moderate (not significant) **Operational noise**: Negligible (not significant)	As above
R06 Potential effects due to construction noise and vibration and	oCEMP ONMP	High	Construction noise: Low Construction vibration: Medium Operational noise: Medium	**Construction noise**: Minor (not significant) **Construction vibration:** Moderate (not significant)	As above	**Construction noise**: Minor (not significant) **Construction vibration:** Moderate (not significant)	As above

Receptor and Summary of Predicted Effects	Embedded Mitigation	Sensitivity of Receptor	Magnitude of impact	Significance of Effect	Further Mitigation	Residual Effect	Monitoring
operational noise.				**Operational noise**: Moderate (not significant)		**Operational noise**: Moderate (not significant)	
R07 Potential effects due to construction noise and vibration and operational noise.	oCEMP ONMP	High	Construction noise: Negligible Construction vibration: Low Operational noise: Negligible	**Construction noise**: Negligible (not significant) **Construction vibration:** Minor (not significant) **Operational noise**: Negligible (not significant)	As above	**Construction noise**: Negligible (not significant) **Construction vibration:** Minor (not significant) **Operational noise**: Negligible (not significant)	As above
R08 Potential effects due to construction noise and vibration and operational noise.	oCEMP ONMP	High	Construction noise: Negligible Construction vibration: Negligible Operational noise: Negligible	**Construction noise**: Negligible (not significant) **Construction vibration:** Negligible (not significant) **Operational noise**: Negligible (not significant)	As above	**Construction noise**: Negligible (not significant) **Construction vibration:** Negligible (not significant) **Operational noise**: Negligible (not significant)	As above
R09 Potential effects due to construction noise and vibration and	oCEMP ONMP	Medium	Construction noise: Low Construction vibration: Negligible Operational noise: Negligible	**Construction noise**: Minor (not significant) **Construction vibration:** Negligible (not significant)	As above	**Construction noise**: Minor (not significant) **Construction vibration:** Negligible (not significant)	As above

Receptor and Summary of Predicted Effects	Embedded Mitigation	Sensitivity of Receptor	Magnitude of impact	Significance of Effect	Further Mitigation	Residual Effect	Monitoring
operational noise.				**Operational noise**: Negligible (not significant)		**Operational noise**: Negligible (not significant)	
R10 Potential effects due to construction noise and vibration and operational noise.	oCEMP ONMP	High	Construction noise: Negligible Construction vibration: Negligible Operational noise: Negligible	**Construction noise**: Negligible (not significant) **Construction vibration:** Negligible (not significant) **Operational noise**: Negligible (not significant)	As above	**Construction noise**: Negligible (not significant) **Construction vibration:** Negligible (not significant) **Operational noise**: Negligible (not significant)	As above

8.16. Further work to be undertaken

8.16.1 Following statutory consultation, the noise assessment may be updated, where necessary, taking into account any stakeholder feedback and any amendments to the scheme design.