Lime Down
Solar Park

Environmental Statement

Volume 1, Chapter 14: Noise and Vibration

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Revision 2

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Schedule of Changes

Revision	Section Reference	Description of Changes	Reason for Revision
2	Table 14-15	Updated operational daytime and night-time adverse effect levels.	Updated for Deadline 1 of Examination to accurately relate to the typical background sound levels.
	Table 14-21 and Table 14-22	Updated construction traffic noise levels.	Updated for Deadline 1 of Examination to correct an error in the %HGV data and align with updated traffic data for road links 11 to 13.
	Paragraph 14.10.29 to 14.10.31	Added to provide further discussion of the revised construction traffic noise levels.	Updated for Deadline 1 of Examination to reflect the changes in reported construction traffic noise levels.
	Paragraph 14.10.45	Updated to provide further clarification regarding the soundscape.	Updated for Deadline 1 of Examination in response to Wiltshire Council's Relevant Representation.
	Paragraph 14.10.48 to 14.10.49, and 14.10.52	Updated the summary of operational noise results.	Updated for Deadline 1 of Examination to capture any changes following a correction in background noise levels.

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14 Noise and Vibration

14.1 Introduction

14.1.1 This chapter of the Environmental Statement (ES) presents the findings of the Environmental Impact Assessment (EIA), focusing on an assessment of the likely significant effects on noise and vibration as a result of the Scheme. For more details about the Scheme, refer to **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**.

14.1.2 This chapter identifies and proposes measures to address the potential impacts and likely significant effects of noise and vibration on human receptors, during the Construction, Operation and Maintenance, and Decommissioning phases of the Scheme. Where relevant, the impacts of noise and vibration on heritage receptors are assessed in **ES Volume 1, Chapter 12: Cultural Heritage [EN010168/APP/6.1]**, and the impacts of noise and vibration on ecological receptors are assessed in **ES Volume 1, Chapter 9: Ecology and Biodiversity [EN010168/APP/6.1]**.

14.1.3 This chapter is supported by the following figures in **ES Volume 2 [EN010168/APP/6.2]**:

- Figure 14-1: Noise Monitoring and Sensitive Receptor Locations (including Figures 14-1-1 to 14-1-3);
- Figure 14-2: Daytime Operational Noise Contours; and
- Figure 14-3: Night-time Operational Noise Contours.

14.1.4 This chapter is supported by the following appendices in **ES Volume 3 [EN010168/APP/6.3]**:

- Appendix 14-1: Noise and Vibration Legislation, Policy and Guidance;
- Appendix 14-2: Acoustic Terminology;
- Appendix 14-3: Baseline Noise Survey; and
- Appendix 14-4: Noise Modelling.

14.2 Consultation

14.2.1 A request for an EIA Scoping Opinion was sought from the Secretary of State through the Planning Inspectorate in July 2024. The issues raised in the Scoping Opinion are summarised and responded to within **ES Volume 3, Appendix 1-2: Scoping Opinion Responses [EN010168/APP/6.3]** which demonstrates how the matters raised in the Scoping Opinion are addressed in this ES. A summary of the Planning Inspectorate's responses to the noise and vibration scoping report, and how these have been addressed in this ES Chapter, are summarised in **Table 14-1**.

Table 14-1: Planning Inspectorate Scoping Opinion Responses

ID	Summary of Matter	Response
3.9.1	The Scoping Report proposes to scope out an assessment of vibration impacts during the operation phase on the basis that solar PV arrays do not use plant or equipment that generate significant vibration levels. Considering the nature of the Proposed Development during operation the Inspectorate is content to scope this matter out of further assessment.	The Applicant Lime Down Solar Park Limited notes the Planning Inspectorate is content to scope out an assessment of vibration impacts during the operation and maintenance phase of the Scheme.
3.9.2	The Scoping Report proposes to scope out an assessment of noise and vibration impacts from operational traffic on the basis that minimal road traffic movements (4 per month) would occur during operation. On this basis, the Inspectorate is content that this matter can be scoped out of further assessment. However, the ES should confirm the operational vehicle types and numbers (with reference to thresholds within guidance) to justify this position.	The Applicant notes the Planning Inspectorate is content to scope out an assessment of noise and vibration impacts from operational traffic. Section 14.10 of this chapter has considered vehicle types and numbers and assesses operational traffic in comparison to construction traffic.
3.9.3	Paragraph 14.4.1 of the Scoping Report states that the study area for the Noise and Vibration assessment is shown on Figure 14.1. Figure 14.1 only shows the site boundary and proposed long term monitoring locations. A plan illustrating both the extent of the study area and the expected route(s) of construction traffic should be included in the ES.	**ES Volume 2, Figure 14-1: Noise Monitoring and Sensitive Receptor Locations [EN010168/APP/6.2]** shows the Study Area extents (500 m from the Order Limits) and **ES Volume 2, Figure 13-1: Study Area – Solar PV Sites [EN010168/APP/6.2]** and **ES Volume 2, Figure 13-2: Study Area – Cable Route Corridor [EN010168/APP/6.2]** show the expected construction traffic routes.
3.9.4	Appendix 14.1 of the Scoping Report sets out “long term monitoring locations” for the Proposed Development. Paragraph 14.4.4 states that monitoring locations have been selected to be representative of baseline noise conditions at sensitive receptor locations and communities in proximity to the Scheme. The Inspectorate notes that all monitoring locations are in close proximity to Lime Down A to E and Melksham Substation and no monitoring has	Baseline noise monitoring at 12 locations across the extent of the Cable Route Corridor has been carried out following discussion with Wiltshire Council. Results of the baseline noise monitoring are presented in **ES Volume 3, Appendix 14-3: Baseline Noise Survey Results [EN010168/APP/6.3]**. The construction noise and vibration assessment also consider potential significant effects in proximity to the

ID	Summary of Matter	Response
	been undertaken in proximity to the Cable Route Corridor. The ES should include an assessment of noise impacts at all locations where significant effects are likely or otherwise present a justification in the ES as to why significant effects are not likely to occur.	Cable Route Corridor. The results of this assessment are presented in Section 14.10 of this chapter.
3.9.5	The study area for noise and vibration is defined in Scoping Report paragraph 14.4.1 using an arbitrary distance of 500 m from the Proposed Development however this distance is not justified. The ES should explain how the study area and sensitive receptors have been selected with reference to the extent of likely impacts and relevant supporting evidence such as modelling and/or relevant guidance. Effort should be made to agree the study area(s) with relevant consultation bodies.	The 500 m Study Area from the Order Limits was agreed with Wiltshire Council in November 2024 and again in March 2025. The method used for selecting sensitive receptors considered in the noise and vibration assessment included those with the potential to be subject to significant effects. Further detail is provided in Sections 14.5 and 14.6 of this chapter.
3.9.6	Paragraph 14.4.5 of the Scoping Report states that "*baseline condition surveys for the extension of Lime Down C have not been completed prior to the submission of this Scoping Report*". All works that have the potential of being required and to be permitted by the DCO should be described and assessed in the ES.	Baseline noise surveys for the extension of Lime Down C have since been carried out. Monitoring locations LT8 to LT11, as described in Section 14.7 of this chapter, are representative of Lime Down C.
3.9.7	The Scoping Report states that operational effects will cease completely when operation of the scheme ceases and are therefore temporary. The Inspectorate acknowledges that operational noise effects would cease upon decommissioning, however given the design life of the Proposed Development is expected to be 60 years, care should be taken in the assessment not to underplay potential operational effects in this regard.	Operational effects are assessed in this chapter using methodologies applicable to the assessment of permanent effects. Further detail regarding the method and results is provided in Section 14.6 and 14.10 of this chapter, respectively.
3.9.8	The Scoping Report states that during the construction and operation stages of the development embedded mitigation in the form of a CEMP and OEMP will be used and therefore, no additional mitigation is expected to be required.	All measures that would mitigate likely significant effects are described in Section 14.9 of this chapter.

ID	Summary of Matter	Response
	For the avoidance of doubt, any measures that are envisaged to mitigate likely significant effects, embedded or otherwise, should be described within the ES.	

14.2.2 Engagement has been undertaken with stakeholders with respect to noise and vibration arising from the Scheme. The matters raised and how these are addressed within the ES are summarised in **Table 14-2**.

14.2.3 Statutory consultation was held between 29 January 2025 and 19 March 2025. A full list of consultation responses in relation to noise and vibration are presented in the **Consultation Report [EN010168/APP/5.1]** submitted as part of the Application.

Table 14-2: Summary of Engagement Undertaken

Consultee and Date	Issue/Topic	Response
Wiltshire County Council Environmental Health Department 11/04/2024	The Scheme's noise and vibration team held a meeting with the Environmental Health Officer (EHO) at Wiltshire Council during the non-statutory consultation phase to establish a suitable noise study area and methodology surrounding low background noise levels at night.	The EHO at Wiltshire Council provided guidance which has been taken into account during the establishment of the chosen noise Study Area and methodology for low background noise levels.
Wiltshire Council Environmental Health Department 19/03/2025	The Scheme's noise and vibration team noted that the proposed Study Area for the noise and vibration assessment was 500 m beyond the extents of the Development Area (inclusive of Solar PV Sites, Cable Route Corridor and Highway Improvement Areas). This proposed Study Area is partially based upon guidance contained within BS 5228:2014 (Ref 14-1) which states that noise prediction should generally not be undertaken beyond a range of 300 m due to the increasing impact of meteorological effects. As meteorological effects can be controlled through the use of noise modelling software, the Study Area was increased to 500 m.	The EHO at Wiltshire Council confirmed the proposed 500 m Study Area was considered appropriate. The Study Area is defined in Section 14.5 and presented in **ES Volume 2, Figure 14-1: Noise Monitoring and Sensitive Receptor Locations [EN010168/APP/6.2]**
Wiltshire Council Environmental Health Department 19/03/2025	The Scheme's noise and vibration team noted that assessments undertaken in accordance with BS 4142 (Ref 14-2) should account for low background noise levels, giving the increasing prevalence of absolute noise levels (as opposed to excess over background) where levels are low. Therefore, the Scheme's noise and vibration team proposed that background	While the EHO at Wiltshire Council confirmed the use of 30 dB as a minimum background noise level to be appropriate, the importance of contextual reasoning and robust assessment of potential impacts were emphasised. It was also highlighted that a 'one size

Consultee and Date	Issue/Topic	Response
	noise levels below 30 dB (identified as being 'Very Low' within BS 4142:1999 (Ref 14-3)) would be assessed at a level of 30 dB. This method avoids overstatement of potential impacts at receptors where background levels are low and where predicted absolute noise levels of proposed sources would not generate adverse impacts.	fits all' approach may not be appropriate for all receptors, given the potential difference in existing soundscape at various receptor locations surrounding the scheme. This is considered within the assessment presented in Section 14.10.
Wiltshire Council Environmental Health Department 19/03/2025	The Scheme's noise and vibration team proposed a night-time period of 05:00 to 07:00 for the assessment of tracking solar panels would be used and that all other plant would be considered for the remainder of the night-time (23:00 to 07:00).	Wiltshire Council confirmed the proposed night-time assessment periods were considered appropriate and requested all assumptions of plant noise are clearly identified within the chapter. All modelling assumptions, including those with respect to plant noise, are provided in Appendix 14-4. Following a review of manufacturer specification sheets of Solar PV Panel tracking motors, it is proposed to exclude these from the operational modelling as outlined in paragraphs 14.4.17 to 14.4.18.
Wiltshire Council Environmental Health Department 19/03/2025	The EHO at Wiltshire Council noted a Section 61 application would likely be required to be submitted as part of the application for the Scheme.	The Applicant has noted this approach, and the provision of a Section 61 clause is included within the **Outline Construction Environmental Management Plan (CEMP) [EN010168/APP/7.12]**.
Wiltshire Council Environmental Health Department 23/07/2025	The EHO was provided an update on the noise and vibration assessment, covering the methodology, results, embedded and additional mitigation, and commitments in the **Outline Construction Environmental Management Plan [EN010168/APP/7.12]** and **Outline Operational Environmental Management Plan [EN010168/APP/7.13].**	Wiltshire Council requested that noise from generators and from works at Existing National Grid Melksham substation be considered. These topics are covered in this chapter. It was agreed to have another meeting post submission.

14.3 Legislation, Planning Policy and Guidance

14.3.1 Full details of the legislation, policy, and guidance of relevance to the assessment of noise and vibration is provided in full in **ES Volume 3, Appendix 14-1: Noise and Vibration Legislation, Policy and Guidance [EN010168/APP/6.3]**. A summary of relevant legislation, planning policy and guidance relating to noise and vibration is provided below.

Legislation

14.3.2 Legislation relevant to the Scheme and noise and vibration includes:

- The Control of Pollution Act 1974 (Ref 14-1); and
- The Environmental Protection Act 1990 (Ref 14-2)

National Planning Policy

14.3.3 The National Policy Statements (NPSs) that are relevant to the Scheme are:

- Overarching National Policy Statement for Energy (EN-1) (January 2024) (Ref 14-3);
- National Policy Statement for Renewable Energy Infrastructure (EN-3) (January 2024) (Ref 14-4); and
- National Policy Statement for Electricity Networks Infrastructure (EN-5) (January 2024) (Ref 14-5);

14.3.4 The NPSs listed above came into effect on 17 January 2024. These NPSs set out the Government's energy policy for the delivery of nationally significant energy infrastructure, the need for new energy infrastructure, and guidance for the determination of an application for a Development Consent Order (DCO).

14.3.5 The relevant NPS requirements, together with an indication of where in the ES the information is provided to address these requirements, are provided in **ES Volume 3, Appendix 5-1: National Policy Statement Requirements [EN010168/APP/6.3]** and **ES Volume 3, Appendix 14-1: Noise and Vibration Legislation, Policy and Guidance [EN010168/APP/6.3].**

14.3.6 The Noise Policy Statement for England (NPSE) (March 2010) (Ref 14-6) seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. The statement applies to all forms of noise, including environmental noise, neighbour noise, and neighbourhood noise

14.3.7 The National Planning Policy Framework (NPPF) (December 2024) (Ref 14-7) sets out the Government's planning policies for England and how these are expected to be applied.

14.3.8 Details of the relevant NPSE (Ref 14-6) and NPPF (Ref 14-7) clauses together with an indication of where in the ES the information is provided to address these requirements, are provided in **ES Volume 3, Appendix 14-1: Noise and Vibration Legislation, Policy and Guidance [EN010168/APP/6.3]**.

Local Planning Policy

14.3.9 Local planning policies that are relevant to the Scheme and noise and vibration are:

- Wiltshire Council Noise and Planning Technical Guidance (Ref 14-8); and
- Wiltshire Core Strategy (Ref 14-9).

Other Guidance

14.3.10 Other standards and guidance documents relevant to the assessment of the impacts of the Scheme on noise and vibration include:

- Department for Communities and Local Government (DCLG) (2014) National Planning Practice Guidance (Ref 14-10);
- British Standards (BS) 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound (BS 4142:2014) (Ref 14-11);
- BS 4142:2014+A1:2019 Technical Note, Association of Noise Consultants Good Practice Working Group (Ref 14-12)
- BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings (BS 8233:2014) (Ref 14-13);
- BS 5228:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 1 (Noise) (BS 5228-1:2014) & Part 2 (Vibration) (BS 5228-2:2014) (Ref 14-14);
- IEMA Guidelines for Environmental Noise Impact Assessment, 2014 (Ref 14-15);
- Calculation of Road Traffic Noise (CRTN) (Ref 14-16); and
- Design Manual for Roads and Bridges (DMRB) Volume 11 LA 111 (Ref 14-17).

14.3.11 Further details on how such guidance has been applied to the noise and vibration assessment of the Scheme are provide in Section 14.6.

14.4 Assessment Assumptions and Limitations

Baseline

14.4.1 It is currently anticipated that (subject to the necessary consents being granted) construction work will commence no earlier than 2027 and is anticipated to last for a minimum of 24 months. It is anticipated that the earliest that commercial operations will commence is 2029. The operational life of the Scheme is to be 60 years.

14.4.2 While some temporary changes in baseline noise levels between the time of the baseline monitoring and the anticipated construction phase may occur in some localities due to temporary noise sources such as construction works, no developments are understood to be proposed that may influence noise levels in

the operational noise Study Area that would lead to a major additional and ongoing noise source which would notably alter the local baseline noise environment prior to 2029 (e.g. highway or railway schemes, major industrial facilities). Additionally, it is assumed that existing noise sources (i.e. road traffic and farm activities) are not expected to increase by a level that would materially affect baseline noise conditions. As such, baseline noise monitoring undertaken in 2023, 2024, and 2025 is considered to be representative of the future baseline scenario in 2029 when the Scheme is operational.

14.4.3 Any measurement of existing ambient or background sound levels will be subject to a degree of uncertainty. Environmental sound levels vary between days, weeks, and throughout the year due to variations in source levels and conditions, as well as meteorological effects on sound propagation and other factors. Hence, any measurement survey can only provide a sample of the ambient levels. Every effort has been made to make sure that measurements may be considered to provide a representative sample of conditions, such as avoiding periods of adverse weather conditions, and school holiday periods (which are often considered to result in atypical sound levels). However, a small degree of uncertainty will always remain in the values taken from a survey. A precautionary approach is adopted when analysing such data to provide a robust assessment.

Construction and Decommissioning Phases

14.4.4 Specific details of the construction works associated with the Scheme will be available once the detailed design has been completed and a construction methodology has been prepared. Thus, the assessment of construction and decommissioning noise and vibration has considered representative construction and decommissioning activities that have the potential to result in significant effects on identified receptors, based on information presented in **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**, previous experience of similar schemes, and professional judgement. These assessments are based on a reasonable representative worst-case scenario.

Construction and Decommissioning Noise

14.4.5 Construction and decommissioning noise calculations for the Solar PV Panels and Cable Corridor Route have been undertaken using the computer modelling software SoundPLAN ® (version 9.1) (Ref 14-18). The list of plant assumed for each construction activity together with their corresponding sound power level, sourced from BS 5228-1:2014 (Ref 14-14), is provided in **ES Volume 3, Appendix 14-4: Noise Modelling Results [EN010168/APP/6.3]**.

14.4.6 As a worst-case scenario, construction noise and vibration has been assumed to take place simultaneously across all Solar PV Sites and along the whole Cable Corridor Route. In practice, this will not be the case as construction

activity will move across the sites, so individual receptors will not be subject to the reported noise levels for the full construction phase.

14.4.7 It has been assumed, as a reasonable worst-case and based on construction requirements for similar projects, that continuous flight auger (CFA) piling would be required for construction of the main 400 kV Substation, 132 kV Substations and Solar PV Mounting Structures.

14.4.8 These sound sources are taken to be representative of the plant and/or activities that will be used during the Construction phase and Decommissioning phase of the Scheme. Noise predictions were carried out to represent a conservative scenario where construction and decommissioning plant is operational nearest to the identified receptors and does not take into account quieter periods when limited activities take place or activities take place at further distances. Consequently, noise predictions may overestimate construction and decommissioning noise levels and are therefore considered to be a reasonable worst-case.

14.4.9 As described in **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**, trenchless crossings may require Horizontal Directional Drilling (HDD). For the assessment of construction noise, it is assumed that trenchless crossing may require continuous drilling into the night-time period for all identified areas, which is the most sensitive period in terms of noise impacts. As the drilling activities at the entry pit will generate the highest level of noise, calculations of noise have been based on a reasonable worst-case assumption that all potential HDD sites are entry pits.

14.4.10 Noise effects during the Decommissioning phase of the Scheme are anticipated to be similar or less than noise effects during the Construction phase. The decommissioning works would likely be shorter in duration and less intensive, with fewer noisy activities (for example without the need for piling) than in the Construction phase. The noise assessment is therefore presented jointly for the construction and Decommissioning phases, with construction predictions and activities considered representative (or an overestimate) of the Decommissioning phase. It is assumed, conservatively, that the significance of effects during decommissioning will be equivalent, but no worse than for construction.

Construction and Decommissioning Vibration

14.4.11 As part of the installation of the Solar PV Panels, Solar PV Mounting Structures are likely to be required to be installed into the ground through a form of piling. Additionally, piling is likely to be required for the 132 kV and 400 kV Substations. As a piling method has not yet been finalised, it is assumed as a reasonable worst-case that an auger piling method will be adopted which is a typical approach in similar developments.

Operation and Maintenance Phase

14.4.12 A series of assumptions were made for the generation of the operational noise model, primarily concerning the sound power levels of the operational plant, their time of operation and the local environment. A summary of these assumptions is provided below, and full details of the operational plant sound power levels are given in **ES Volume 3, Appendix 14-4: Noise Modelling [EN010168/APP/6.3]**.

14.4.13 As described in **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**, the operation and maintenance phase will include the replacement of Solar PV Panels and BESS Area. This maintenance would involve fewer noise and vibration generating activities than the construction phase and therefore, as with the decommissioning, effects are expected to be no worse than presented for the construction assessment.

Noise Modelling Inputs

Noise Modelling Methodology

14.4.14 SoundPLAN ® (Ref 14-18) acoustic modelling software (version 9.1) implementing the calculation procedures of ISO 9613:2024 (Ref 14-19) has been employed to predict the propagation of sound from the Scheme in all directions and to quantify resultant sound levels at the identified noise-sensitive receptor locations.

14.4.15 The following parameters were used in the operational noise model:

- The ground absorption has been set to 0 (i.e. assumed hard ground conditions), except where identifiable ground features are present where acoustically soft ground (such as fields) is set to 1;
- The noise calculations have employed settings in ISO 9613-2 to represent moderate downwind conditions, as a reasonable worst-case;
- Topography obtained from DEFRA LIDAR (Ref 14-20) data has been used;
- Building footprints in the surrounding area have been sourced from Ordnance Survey Master Map (Ref 14-21) data;
- Residential building heights outside of the Site boundary have been modelled with a standard height of 7.0 m and two storeys;
- Noise sensitive receptor building heights have been derived from satellite imagery and 3-D street view photography with buildings ranging from 4.0 m bungalows to 9.0 m 3-storey buildings;
- Receiver points have been modelled as 1.5 m above local ground level (representative of ground-floor windows during the day), 4 m above local ground level (representative of first-floor bedroom windows during the night)

and 6.5 m above ground level for certain receptors (representative of second-floor bedroom windows during the night); and

- The maximum order of reflections has been set to 3.

Solar PV Panels

14.4.16 The Scheme will utilise either fixed south facing or single axis tracker Solar PV Panel arrangement. As a reasonable worst-case, a single axis tracker system, which moves the Solar PV Panels throughout the day to maximise their efficiency by keeping them oriented towards the sun, has been assumed.

14.4.17 From manufacturer specification sheets, it is known that the noise from each Solar PV Panel tracker motor will be less than 50 dB at a 1 m distance and less than 40 dB at a 3 m distance.

14.4.18 Additionally, the two closest receptors to the proposed Solar PV Sites are R04 and R42, both over 100 m away, where noise will be below 20 dB based on the manufacturer provided data. This level of noise would be unlikely to be perceptible at sensitive receptors, therefore noise emissions from tracker motors have not been considered in the operational noise assessment.

Operational Plant Assumptions

14.4.19 Daytime predictions have been calculated at ground floor level with night-time levels at first floor level or above, based upon where residents are most likely to be at these times.

14.4.20 The Conversion Units have been assumed to only operate during the daytime as their operation is only required during daylight hours. Additionally, the 132 kV Substations are only to be operational during the daytime. The modelling assumes all other noise generating plant is in continuous operation throughout the day and night.

14.4.21 The operational plant within the Scheme has been derived from the indicative Scheme layout shown in **ES Volume 2, Figure 3-1: Indicative Site Layout Plan [EN010168/APP/6.2]**. This shows the proposed locations of BESS Containers, BESS Inverters, a 400 kV Substation, four 132 kV Substations, and Conversion Units.

14.4.22 Further details regarding operational plant data including spectral data are provided in **ES Volume 3, Appendix 14-4: Noise Modelling [EN010168/APP/6.3]**.

14.4.23 As described in **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**, local grid connections to the distribution network will be made for all substations.

14.4.24 Where connections to the local grid network are not practicable, the substations will be equipped with a backup diesel generator. This generator is intended to

only operate in the event of a grid connection failure (power outage) and will maintain communication and protection systems to ensure a safe restart when power is restored.

14.4.25 As such diesel generators would be a temporary noise source only active in an emergency situation, and are therefore not considered further as part of the operational noise assessment which employs a methodology applicable to permanent noise sources.

14.5 Study Area

14.5.1 The Study Area for the noise and vibration assessment includes receptors likely to be at risk of possible direct and indirect impacts from the Scheme.

14.5.2 For the purposes of providing an assessment of likely significant noise and vibration effects, the Study Area has been defined as receptors within 500 m of the Order Limits along with the construction routes, as agreed with Wiltshire Council.

14.5.3 It is considered that receptors further than 500 m from the Order Limits will experience considerably lower levels of noise and vibration emissions as these will attenuate over distance, resulting in negligible noise effects from the Scheme.

14.5.4 The effect of noise and vibration generated during the Construction, Operational and Maintenance and Decommissioning phases of the Scheme are considered at nearby sensitive receptors. The sensitive receptors considered are the nearest receptors to the Site (i.e. the receptors that will experience the highest levels of noise and vibration). Although noise and vibration may be perceptible at other receptors in the area around the Scheme, effects will not be significant if they are suitably controlled at the identified receptors.

14.5.5 The full Study Area is presented illustratively within **ES Volume 2, Figure 14-1 Noise Monitoring and Sensitive Receptor Locations [EN010168/APP/6.2]**.

14.6 Assessment Methodology

14.6.1 This section sets out the scope and methodology for the assessment of the impacts of the Scheme on noise and vibration.

Sources of Information

14.6.2 In the preparation of this chapter, the following sources of information have been used:

- Aerial imagery of the Order Limits and surrounding area to define sensitive receptors and monitoring locations;
- Plant noise source data taken from manufacturer specifications, and BS 5228-1:2014 (Ref 14-14); and

- **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]** for information on the Construction and Operation and Maintenance phases of the Scheme.

Impact Assessment Methodology

14.6.3 The NPSE (Ref 14-6) defines adverse and significant adverse effects, as follows:

- Lowest Observable Adverse Effect Level (LOAEL) – the level above which adverse effects on health and quality of life can be detected; and
- Significant Observed Adverse Effect Level (SOAEL) – the level above which **significant adverse** effects on health and quality of life occur.

14.6.4 Paragraph 2.15 of the NPSE (Ref 14-10) recognises SOAELs are contextual to the situation:

"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times."

14.6.5 The LOAEL and SOAEL levels used for this assessment are set out in **Table 14-3** for construction noise, and **Table 14-9** for operational noise.

Construction and Decommissioning Noise

14.6.6 Noise associated with Construction and Decommissioning phases has been calculated at the assessed receptors using the methodology in BS 5228-1:2014 (Ref 14-14) based on assumptions detailed within Section 14.4 and **ES Volume 3, Appendix 14-4: Noise Modelling [EN010168/APP/6.3]**.

14.6.7 The construction impact semantic scale, set out below, is based on the ABC method of assessment described in Annex E.3.2 of BS 5228-1:2014 (Ref 14-14), which sets out threshold values depending upon the ambient noise at receptors, which have been determined from the baseline sound survey.

14.6.8 The assessment is based on the core working hours of the Scheme as established within **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**:

- Monday to Friday from 07:00 to 18:00;
- Saturday from 08:00 to 13:30; and
- No Sunday or Bank Holiday working unless crucial to construction (for example activities which must be a continuous) or in an emergency.

14.6.9 The potential exception to these hours concerns HDD works, which may be required at night-time, as described in Paragraph 14.4.9.

14.6.10 The LOAEL and SOAEL levels for Construction and Decommissioning phases are defined in **Table 14-3**.

Table 14-3: Construction Impact Categories - LOAEL and SOAEL

Time Period	LOAEL	SOAEL	Threshold Level $L_{Aeq,1hr}$ dB
Day (0700-1900 hours Weekday and 0700-1200 Saturdays)	Baseline noise levels $L_{Aeq,T}$	Threshold level determined as per BS 5228-1:2014 Section E3.2 and Table E.1 BS 5228-1:2014	65 - 75
Night (2300-0700) hours	Baseline noise levels $L_{Aeq,T}$	Threshold level determined as per BS 5228-1:2014 Section E3.2 and Table E.1 BS 5228-1:2014	45 - 55
Evening and weekends (time periods not covered above)	Baseline noise levels $L_{Aeq,T}$	Threshold level determined as per BS 5228-1:2014 Section E3.2 and Table E.1 BS 5228-1:2014	55 - 65

14.6.11 The Unacceptable Adverse Effect Level (UAEL) for construction works is set as the trigger level for temporary rehousing as set out in Section E.4 of BS 5228-1:2014 (Ref 14-14). This ranges from 65 dB L_{Aeq} at night to 85 dB L_{Aeq} between 08.00 and 18.00 during the day.

14.6.12 The magnitude of impact for construction noise is outlined in **Table 14-4**, as defined in DMRB (Ref 14-17).

Table 14-4: Magnitude of Impact for Construction Noise

Magnitude of Impact	Construction Noise Level
Neutral	No increase
Negligible	Below LOAEL
Low	Above or equal to LOAEL and below SOAEL
Medium	Above or equal to SOAEL and below SOAEL + 5 dB
High	Above or equal to SOAEL + 5 dB

14.6.13 Although a significant effect due to construction activities may be determined through an assessment based on exceedances of the defined thresholds for construction noise and vibration, consideration of the significance of the effect for temporary construction activities exceeding the LOAEL or SOAEL is undertaken through qualitative consideration of the following:

- Duration of temporary likely effects;

- Frequency of events;
- Number of receptors; and
- Sensitivity of receptor.

Construction and Decommissioning Traffic Noise

14.6.14 Baseline traffic noise levels have been calculated at assessed receptors (as shown in **Table 14-21** and **Table 14-22**) based on the methodology in CRTN (Ref 14-16), utilising baseline traffic flows along the construction route for the proposed 2027 year of construction. The percentage increase in all traffic and Heavy Goods Vehicles (HGV) has been used to calculate the likely change in traffic noise due to construction traffic during the construction works.

14.6.15 The magnitude of effects for construction traffic noise, as defined in DMRB (Ref 14-17), are presented in **Table 14-5**.

Table 14-5: Magnitude of Impact for Construction Road Traffic Noise

Magnitude of impact	Increase in basic noise level of closest public road used for construction traffic (dB)
Neutral	No Increase
Negligible	Less than 1.0
Low	Greater than or equal to 1.0 and less than 3.0
Medium	Greater than or equal to 3.0 and less than 5.0
High	Greater than or equal to 5.0

Construction and Decommissioning Vibration

14.6.16 The level of vibration at the assessment receptors has been estimated using the method in Table E.1 of British Standard 5228-2:2014 (Ref 14-14) which is based on the distance to receptor and a scaling factor. Further information regarding vibration predictions is provided in **ES Volume 3, Appendix 14-4: Noise Modelling [EN010168/APP/6.3]**.

14.6.17 BS 5228-2:2014 (Ref 14-14) provides guidance on the perception of vibration within occupied buildings. This provides a simple method of determining annoyance alongside evaluation of cosmetic damage associated with construction and decommissioning induced vibration. BS 5228-2:2014 (Ref 14-14) Annex B Significance of vibration effects presents guidance on effects in terms of Peak Particle Velocity (PPV) levels (a standard measure of vibration effects) and their potential effect on humans in Table B.1 which is reproduced in **Table 14-6**.

Table 14-6: BS 5228-2:2014 Guidance on Effects of Vibration Levels

Vibration Level[A, B, C]	Effect
0.14 mms^{-1}	Vibration might be just perceptible in the most sensitive situations for most vibration frequences associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3 mms^{-1}	Vibration might be just perceptible in residential environments.
1.0 mms^{-1}	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.
10 mms^{-1}	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.

A) The magnitudes of the values presented apply to a measurement position that is representative of the point of entry into the recipient. B) A transfer function (which relates an external level to an internal level) needs to be applied if only external measurements are available. C) Single or infrequent occurrences of these levels do not necessarily correspond to the stated effect in every case. The values are provided to give an initial indication of potential effects, and where these values are routinely measured or expected then an assessment in accordance with BS 6472-1 or -2, and/or other available guidance, might be appropriate to determine whether the time varying exposure is likely to give rise to any degree of adverse comment.

14.6.18 For residential or light commercial buildings, a peak component particle velocity of 15 mm/s at 4Hz, increasing to 20 mm/s at 15Hz and to 50 mm/s at 40 Hz are considered the limits for transient vibration above which cosmetic damage can occur as defined in Table B.2 of BS 5228-2:2014 (Ref 14-14).

14.6.19 For the Construction phase vibration, the LOAEL and SOAEL is set out in DMRB (Ref 14-17) and is provided in **Table 14-7**.

Table 14-7: Construction Vibration LOAEL and SOAEL

Time Period	LOAEL	SOAEL
All time periods	0.3 mm/s PPV	1.0 mm/s PPV

14.6.20 The magnitude of impact for construction vibration is therefore determined in accordance with **Table 14-8**, as defined in DMRB (Ref 14-17).

Table 14-8: Magnitude of Impact for Construction Vibration

Magnitude of Impact	Vibration Level
Neutral	No Increase
Negligible	Below LOAEL
Low	Above or equal to LOAEL and below SOAEL
Medium	Above or equal to SOAEL and below 10 mm/s PPV

Magnitude of Impact	Vibration Level
High	Above or equal to 10 mm/s PPV

14.6.21 The Scheme is intended to be decommissioned after 60 years. It is expected that the noise and vibration impacts resulting from the decommissioning of the Scheme will be equivalent to but no worse than the impacts arising from construction and construction traffic noise. As such, noise effects identified in the assessment of construction noise and vibration are applicable to the Decommissioning phase. Additionally, no piling will be required during decommissioning of the Scheme.

Operation and Maintenance Noise

14.6.22 The assessment of operational noise effects has been undertaken according to the methodology set out in BS 4142:2014 (Ref 14-11).

14.6.23 The baseline noise measurements have been used to determine representative daytime and night-time background noise levels at the assessed receptors (**Table 14-12** and **Table 14-13**).

14.6.24 For the assessment of operational noise, a detailed review of the measured data and observations during measurements has been undertaken with the typical background sound levels for the assessment derived through statistical analysis as set out in **Ref 14-17** and **ES Volume 3, Appendix 14-3: Baseline Noise Survey [EN010168/APP/6.3]**.

14.6.25 Noise from operational plant, such as 132 kV and 400 kV Substations, Conversion Units, BESS Containers, and BESS Inverters has been calculated using expected plant emission sound power level data, as outlined in **ES Volume 3, Appendix 14-4: Noise Modelling [EN010168/APP/6.3].**

14.6.26 Operational noise has been assessed following BS 4142:2014 (Ref 14-11) guidance, whereby the rating level of noise emissions from activities are compared against the background level of the pre-development noise climate. Source data for operational noise emissions is presented in **ES Volume 3, Appendix 14-4: Noise Modelling [EN010168/APP/6.3]**. The relevant parameters in this instance are as follows:

- Background sound level – $L_{A90,T}$ – defined in the Standard as the 'A' weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval ('T') measured using a 'fast' time weighting and quoted to the nearest whole number of decibels;
- Specific sound level – $L_{Aeq,Tr}$ – the equivalent continuous 'A' weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, Tr; and

- Rating level – $L_{Ar,Tr}$ – the specific sound level plus any adjustment made for the characteristic features of the noise.

14.6.27 BS 4142:2014 (Ref 14-11) recognises that certain acoustic features of a sound source can increase the impact over that expected based purely on the sound level. The standard identifies the following features to be considered:

- Tonality - a penalty of 2 dB is applied for a tone which is just perceptible at the receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible;
- Impulsivity - a penalty of 3 dB is applied for impulsivity which is just perceptible at the receptor, 4 dB where it is clearly perceptible and 6 dB where it is highly perceptible. An impulse is defined as the sudden onset of a sound;
- Intermittency - a penalty of 3 dB can be applied if the intermittency of the specific sound is readily identifiable against the residual acoustic environment at the receptor i.e. it has identifiable on/off conditions; and
- Other sound characteristics - a penalty of 3 dB can be applied where the specific sound features characteristics that are neither tonal nor impulsive but are readily distinctive against the residual acoustic environment.

14.6.28 In the determination of rating levels (as per guidance from BS 4142:2014 (Ref 14-11) Section 9.2 ‘Subjective method’), a +3 dB acoustic feature correction to account for a distinctive continuous hum, which could be considered distinctive against the residual acoustic environment, has been applied to the predicted at receptor façade levels set out in **ES Volume 3, Appendix 14-4: Noise Modelling [EN010168/APP/6.3]**.

14.6.29 No other penalties have been applied as it is expected operational noise would remain continuous and constant, and no tonality correction has been applied due to the tonal noise from the transformers not being the dominant source at receptors locations.

14.6.30 The assessment has considered the level by which the Scheme's rating level exceeds the prevailing background noise levels, as well as the context in which the sound will occur. BS 4142:2014 (Ref 14-11) states that a difference of +5 dB is likely to be an indication of an adverse impact.

14.6.31 BS 4142:2014 (Ref 14-11) advises that, where rating levels and background levels are low, which is the case in rural areas such as those surrounding the Scheme, the assessment of operational noise should take into context the absolute noise level. The ANC Guide to BS 4142:2014 (Ref 14-12) provides context to this by stating:

“BS 4142 does not define ‘low’ in the context of background sound levels nor rating levels. The note to the Scope of the 1997 version of BS 4142 defined very

low background sound levels as being less than about 30 dB L_{A90}, and low rating levels as being less than about 35 dB $L_{Ar,Tr}$".

14.6.32 The ANC Guide suggests that: *"…similar values would not be unreasonable in the context of BS 4142, but that the assessor should make a judgement and justify it where appropriate".*

14.6.33 BS 4142:2014 (Ref 14-11) does not indicate how the initial estimate of impact should be adjusted when background and rating levels are low, only that the absolute levels may be more important than the difference between the two values. Where the background levels are low, the absolute levels might suggest a more acceptable outcome than would otherwise be suggested by the difference between the values (existing and proposed noise rating levels). As such, where background noise levels are identified as being below the 'very low' threshold of 30 dB, a background noise level of 30 dB L_{A90} has been adopted with respect to the setting of operational noise LOAEL and SOAEL, as provided in **Table 14-9**.

14.6.34 The LOAEL is set to 5 dB below background in acknowledgement of Wiltshire Council's Noise and Planning Technical Guidance (Ref 14-8) which suggests that impacts may occur above this threshold and the SOAEL is set to 5 dB above background in line with an adverse impact as identified by BS 4142:2014 (Ref 14-11).

14.6.35 Whilst the noise descriptors and categories presented in **Table 14-9** and **Table 14-10** have been established through reference to relevant guidance documents, there are other factors (predominantly site context in accordance with BS 4142:2014 (Ref 14-11)) which need to be taken into account when assessing the noise impact.

14.6.36 Therefore, impact magnitude has been assessed with consideration to both quantitative and contextual factors determining how specific impacts associated with the Scheme interact with the identified sensitive receptors.

Table 14-9: Operation Impact Categories – LOAEL and SOAEL

Time Period	LOAEL	SOAEL
All time periods	5 dB below the typical background level ($L_{A90,T}$) – minimum of 30 dB $L_{A90,T}$	5 dB above the typical background level ($L_{A90,T}$) – minimum of 30 dB $L_{A90,T}$

Table 14-10: Magnitude of Impact for Operational Noise

Magnitude of Impact	Vibration Level
Neutral	No Increase
Negligible	Below LOAEL
Low	Above or equal to LOAEL and below SOAEL
Medium	Above or equal to SOAEL and below SOAEL +5 dB
High	Above or equal to SOAEL +5 dB

Sensitivity of Receptors

14.6.37 The sensitivity of potentially affected receptors has been assessed in line with **Table 14-11**.

Table 14-11 Receptor Sensitivity

Sensitivity of Receptor	Definition
High	Residential dwellings, schools and hospitals
Medium	Offices, internal teaching/training spaces
Low	Commercial premises

14.6.38 Receptor sensitivity is based upon ISEP Noise guidelines (Ref 14-15). For the purposes of this assessment, receptors of negligible sensitivity have not been considered due to the absence of potential impact at these receptors (as per ISEP Guidelines for Environmental Noise Impact Assessment, 2014 (Ref 14-15)).

Identified Residential Sensitive Receptors

14.6.39 **Table 14-12** presents the receptor locations assessed for noise and vibration impacts. These locations are considered to represent worst-case assessment locations for the Solar PV Sites, BESS Area, and 132 kV and 400 kV Substations, as well as highways supporting traffic associated with the construction and operation and maintenance of the Scheme.

14.6.40 **Table 14-12** also presents the baseline monitoring location used to represent the background sound level at each receptor. The locations of the both the receptors and monitoring sites are shown on **ES Volume 2, Figure 14-1: Noise Monitoring and Sensitive Receptor Locations [EN010168/APP/6.2]**.

Table 14-12: Sensitive Noise and Vibration Receptors (Solar PV Sites)

Ref	Associated Site	Address	Distance from Order Limits (m) (Solar PV Sites only)	Representative Monitoring Location*
R01	E	Haresfield Farm	235	LT17
R02	E	41 Avil's Lane	250	LT17
R03	E	43 Avil's Lane	260	LT17
R04	E	Cleve End Children's Home	70	LT15
R05	E	Bottom Farm	460	LT14
R06	E	Pound Hill Cottage	240	LT14
R07	E	Pound Farm Cottage	75	LT14
R08	E	Plough House	330	LT14
R09	E	Hanger Farm	415	LT16
R10	D	Bradfield Manor	225	LT12
R11	D	Bradfield Bungalow	220	LT12
R12	D	Kingsway Barn	200	LT12
R13	D	6 Kingsway View	360	LT13
R14	D	West Park Farm	350	LT13
R15	D/B	Gorsey Leaze House	600**	LT3
R16	B	West Lodge	240	LT4
R17	C	Fosse Lodge	40	LT10
R18	C	Dunley House	390	LT10
R19	C	Surrendell Farm	160	LT11
R20	C	Townlease Farm	50	LT8
R21	C	Farleaze south	300	LT8
R22	C	Farleaze North	130	LT8
R23	C	Farleaze Cottages	50	LT8
R24	A/C	Lords Wood Cottage	155	LT8
R25	A/C	Commonwood Farm	410	LT8
R26	C	Racecourse Barn	135	LT9
R27	C	Church Cottage	200	LT9
R28	A/B/C	Lords Wood Farm	145	LT5
R29	A	Ladys Wood Farm	215	LT5
R30	A	Ladys Wood Cottage	160	LT5

Ref	Associated Site	Address	Distance from Order Limits (m) (Solar PV Sites only)	Representative Monitoring Location*
R31	A	The Cottage	320	LT1
R32	A	Southfields	80	LT1
R33	A	Commonwood Lane	160	LT6
R34	A	Hill House Farm	200	LT6
R35	B	Fosse Farm	30	LT5
R36	B	Lordswood Cottage	30	LT5
R37	B	Easton Grey Plain	70	LT2
R38	B	Foxley Manor Farm Cottage	230	LT3
R39	B	Lime Tree Cottages	220	LT3
R40	B	Cullivers Leaze	240	LT3
R41	B	Honey Lane Cottage	65	LT3
R42	B	North Lodge	95	LT4
R43	B	Vine Tree Cottage	250	LT4
R44	B	Orchard Cottage	220	LT4
R45	C	Grain Store Barn	80	LT11

*LT7 has not been used as a proxy for baseline sound levels at receptors due to the atypical results at this location, particularly at night

**R15 is included as a precautionary measure, despite being further than 500 m from the Solar PV Site, as it is bounded by the Solar PV Site at just over 500 m to both the south and northwest.

14.6.41 Receptors presented in **Table 14-12** have been considered for both the operational and construction assessments (Solar PV Sites and Cable Route Corridor construction). Distances stated are to the Solar PV Sites only; some receptors may have distances closer to the Cable Route Corridor than those stated in **Table 14-12**. When considering construction noise, both the Solar PV Sites and Cable Route Corridor works are assessed as operating simultaneously such that all potential cumulative impacts are identified.

14.6.42 Receptors presented in **Table 14-13** are within the Cable Route Corridor Study Area but outside the Solar PV Sites Study Area. Therefore, they have been considered solely within the construction assessments.

Table 14-13: Sensitive Noise and Vibration Receptors (Cable Route Corridor)

Ref	Associated Site	Address	Distance from Order Limits (m)	Representative Monitoring Location
R46	Cable Route Corridor	Grittleton Village Hall	25	LT18

Ref	Associated Site	Address	Distance from Order Limits (m)	Representative Monitoring Location
R47	Cable Route Corridor	1 Neeld Court	85	LT18
R48	Cable Route Corridor	The Horseshoes	225	LT19
R49	Cable Route Corridor	Springfield Farm	90	LT20
R50	Cable Route Corridor	Grove Farm	155	LT20
R51	Cable Route Corridor	Fowlswick Lane	15	LT21
R52	Cable Route Corridor	Ivy House	5	LT22
R53	Cable Route Corridor	Chippenham Lane	15	LT22
R54	Cable Route Corridor	Mynte Farm	5	LT23
R55	Cable Route Corridor	Westrop Barn	220	LT25
R56	Cable Route Corridor	The Roebuck	235	LT25
R57	Cable Route Corridor	Conway	90	LT26
R58	Cable Route Corridor	6 Silver Street	10	LT27
R59	Cable Route Corridor	Boyds Farm	60	LT28
R60	Cable Route Corridor	3 Goodes Hill	35	LT28
R61	Cable Route Corridor	184-186 Top Lane	55	LT29
R62	Cable Route Corridor	Beanacre Manor	145	LT29
R63	Cable Route Corridor	Westlands Lane	85	LT29
R64	Horizontal Directional Drilling	Ryley's Farm	290	LT19
R65	Horizontal Directional Drilling	Stowell Farm	380	LT23
R66	Horizontal Directional Drilling	Thingley Farm	10	LT25

Significance of Effect

14.6.43 The sensitivity of the receptor and the magnitude of the predicted effects are used as a guide, in addition to professional judgement, to predict the significance of the likely effects. **Table 14-14** summarises guideline criteria for assessing the significance of noise and vibration effects.

Table 14-14: Significance of Effects Matrix

Sensitivity / Magnitude	High	Medium	Low
High	Major	Major/Moderate	Moderate
Medium	Major/Moderate	Moderate	Moderate/Minor
Low	Moderate	Moderate/Minor	Minor
Negligible	Moderate/Minor	Minor	Negligible
Neutral	Neutral	Neutral	Neutral

14.6.44 Effects predicted to be of major or major/moderate significance are considered **significant** in the context of the EIA for noise and vibration.

14.6.45 **Table 14-15** sets out the LOAEL and SOAEL levels for each receptor for the Construction and Operation and Maintenance phases of the Solar PV Sites.

Table 14-15: LOAEL and SOAEL Levels for Sensitive Receptors (Solar PV Sites)

Ref	Construction Phase				Operation and Maintenance Phase			
	Daytime ($L_{Aeq,T}$ dB)		Night-time ($L_{Aeq,T}$ dB)		Daytime ($L_{Aeq,T}$ dB)		Night-time ($L_{Aeq,T}$ dB)	
	LOAEL	SOAEL	LOAEL	SOAEL	LOAEL	SOAEL	LOAEL	SOAEL
R01	50	65	48	55	40	50	34	44
R02	50	65	48	55	40	50	34	44
R03	50	65	48	55	40	50	34	44
R04	56	65	45	50	37	47	26	36
R05	57	65	45	50	35	45	26	36
R06	57	65	45	50	35	45	26	36
R07	57	65	45	50	35	45	26	36
R08	57	65	45	50	35	45	26	36
R09	50	65	45	50	34	44	31	41
R10	64	70	54	55	29	39	25	35
R11	64	70	54	55	29	39	25	35
R12	64	70	54	55	29	39	25	35
R13	45	65	37	45	32	42	30	40
R14	45	65	37	45	32	42	30	40
R15	46	65	36	45	27	37	25	35
R16	42	65	35	45	29	39	25	35
R17	54	65	41	45	27	37	25	35
R18	54	65	41	45	27	37	25	35
R19	46	65	39	45	31	41	28	38
R20	45	65	39	45	31	41	25	35
R21	45	65	39	45	31	41	25	35
R22	45	65	39	45	31	41	25	35
R23	45	65	39	45	31	41	25	35
R24	45	65	39	45	31	41	25	35
R25	45	65	39	45	31	41	25	35
R26	47	65	37	45	33	43	25	35
R27	47	65	37	45	33	43	25	35
R28	50	65	37	45	30	40	25	35
R29	50	65	37	45	30	40	25	35

Ref	Construction Phase				Operation and Maintenance Phase			
	Daytime ($L_{Aeq,T}$ dB)		Night-time ($L_{Aeq,T}$ dB)		Daytime ($L_{Aeq,T}$ dB)		Night-time ($L_{Aeq,T}$ dB)	
	LOAEL	SOAEL	LOAEL	SOAEL	LOAEL	SOAEL	LOAEL	SOAEL
R30	50	65	37	45	30	40	25	35
R31	54	65	51	55	27	37	25	35
R32	54	65	51	55	27	37	25	35
R33	52	65	45	50	27	37	25	35
R34	52	65	45	50	27	37	25	35
R35	50	65	37	45	30	40	25	35
R36	50	65	37	45	30	40	25	35
R37	54	65	45	50	27	37	25	35
R38	46	65	35	45	27	37	25	35
R39	46	65	35	45	27	37	25	35
R40	46	65	35	45	27	37	25	35
R41	46	65	35	45	27	37	25	35
R42	42	65	35	45	29	39	25	35
R43	42	65	35	45	29	39	25	35
R44	42	65	35	45	29	39	25	35
R45	46	65	39	45	31	41	28	38

14.6.46 The Operation and Maintenance phase is not applicable for the Cable Route Corridor receptors and therefore only the construction noise LOAEL and SOAEL are shown in **Table 14-16**.

Table 14-16: LOAEL and SOAEL Levels for Sensitive Receptors (Cable Route Corridor)

Ref	Construction Phase			
	Daytime ($L_{Aeq,T}$ dB)		Night-time ($L_{Aeq,T}$ dB)	
	LOAEL	SOAEL	LOAEL	SOAEL*
R46	56	65	45	50
R47	56	65	45	50
R48	51	65	49	55
R49	60	65	55	60
R50	60	65	55	60
R51	50	65	48	55
R52	66	70	60	65

Ref	Construction Phase			
	Daytime ($L_{Aeq,T}$ dB)		Night-time ($L_{Aeq,T}$ dB)	
	LOAEL	SOAEL	LOAEL	SOAEL*
R53	66	70	60	65
R54	47	65	43	50
R55	59	65	51	55
R56	59	65	51	55
R57	46	65	42	45
R58	46	65	42	45
R59	56	65	53	55
R60	56	65	53	55
R61	53	65	50	55
R62	53	65	50	55
R63	53	65	50	55
R64	51	65	49	55
R65	47	65	43	50
R66	59	65	51	55

*if night-time ambient levels are 55 dB or above the SOAEL is set to 5 dB above the background ambient

Public Rights of Way Receptors

14.6.47 Noise is assessed based on the effect on health and quality of life. Noise generated by the Construction, Operation and Maintenance, and Decommissioning phases of the Scheme will only affect Public Rights of Way (PRoW) users for limited periods of time when they are in close proximity to a noise source.

14.6.48 It is acknowledged that short-term exposure to noise can cause disturbance to PRoW users and result in adverse noise effects. Planning Practice Noise Guidance (Ref 14-10) identifies an adverse noise effect as something that *"affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life."* This is considered to describe the level of noise effect that may be perceived by PRoW users.

14.6.49 However, given the linear nature of PRoW, the range of noise impacts along them forming the ambient noise environment, and the transient usage of a PRoW, a material change in the experience of using the PRoW as a whole as a result of noise emissions from the Scheme, which could affect PRoW users' long-term health or quality of life, is not anticipated. Consequently, no significant adverse effects on PRoW users have been identified as arising from the Scheme and a detailed assessment of noise and vibration effects on PRoW users is scoped out.

14.6.50 National policy provides a means for noise effects to be identified. It allows for adverse effects on health and quality of life to occur where all reasonable steps have been taken to reduce these effects whilst taking into account sustainable development.

14.6.51 In accordance with national policy, all reasonable steps to minimise the effects of noise on PRoW users will be taken during the Construction, Operation and Maintenance and Decommissioning phases of the Scheme, and these are presented in Section 14.9.

14.7 Baseline Conditions

14.7.1 This section describes the existing and anticipated future baseline conditions for the noise and vibration assessment. Further details of the methodology and results of the baseline noise surveys are presented in **ES Volume 3, Appendix 14-3: Baseline Noise Survey [EN010168/APP/6.3]**.

Existing Baseline

14.7.2 The baseline noise environment has been established following noise surveys in proximity to the Solar PV Sites and the Cable Route Corridor. A logging weather station was installed onsite during the Cable Route Corridor surveys so any periods of adverse weather conditions can be identified and omitted from further analysis, in accordance with BS 4142:2014 (Ref 14-11).

14.7.3 The existing acoustic environment in the vicinity of much of the site is typical of a quiet rural location, with occasional sounds from wildlife, farming activity, trains and local traffic. Locations closer to the M4 and A429 are subject to more continuous road traffic noise.

Noise Survey Results

14.7.4 The detailed results of the noise measurements for monitoring positions LT1 to LT29 are presented in **ES Volume 3, Appendix 14-3: Baseline Noise Survey [EN010168/APP/6.3]**. **Table 14-17** shows the range of daytime and night-time L_{Aeq} and L_{A90} at each monitoring location.

Table 14-17 Baseline Monitoring Results

Location Reference	Monitoring Period	Daytime (07:00 – 23:00)		Night-time (23:00 – 07:00)	
		Range of $L_{Aeq,T}$ (dB)	Range of $L_{A90,T}$ (dB)	Range of $L_{Aeq,T}$ (dB)	Range of $L_{A90,T}$ (dB)
Solar PV Sites					
LT1	16/01/2024 - 22/01/2024	41 - 62	27 - 52	32 - 29	22 - 44
LT2	05/10/2023 - 11/10/2023	52 - 55	30 - 32	45 - 48	20 - 27

Location Reference	Monitoring Period	Daytime (07:00 – 23:00)		Night-time (23:00 – 07:00)	
		Range of $L_{Aeq,T}$ (dB)	Range of $L_{A90,T}$ (dB)	Range of $L_{Aeq,T}$ (dB)	Range of $L_{A90,T}$ (dB)
LT3	05/10/2023 - 11/10/2023	40 – 45	28 – 34	29 - 35	20 - 30
LT4	05/10/2023 - 11/10/2023	41 – 43	31 – 34	33 – 36	20 - 27
LT5	05/10/2023 - 12/10/2023	47 – 54	32 – 38	35 - 39	21 - 29
LT6	12/10/2023 - 18/10/2023	49 – 54	31 – 41	38 - 52	21 - 47
LT7	12/10/2023 - 13/10/2023	28 – 57	24 – 45	40 - 58	38 - 54
LT8	24/10/2023 - 31/10/2023	41 – 49	34 – 38	37 - 44	25 - 41
LT9	12/10/2023 - 17/10/2023	44 – 52	28 – 41	34 – 54	29 - 49
LT10	12/10/2023 - 16/10/2023	52 – 55	31 – 39	41 - 51	20 - 45
LT11	12/10/2023 - 18/10/2023	42 – 51	27 – 43	32 - 43	22 - 43
LT12	12/10/2023 - 18/10/2023	64 – 66	30 – 40	52 - 57	21 - 41
LT13	12/10/2023 - 17/10/2023	41 – 50	36 – 42	36 - 52	35 - 48
LT14*	31/10/2023 – 10/11/2023	57	40	44	31
LT15	31/10/2023 - 08/11/2023	50 – 61	40 – 52	39 - 50	31 - 43
LT16	18/10/2023 - 21/10/2023	47 – 52	40 – 44	36 - 48	34 - 43
LT17	31/10/2023 - 08/11/2023	46 – 51	43 – 49	41 - 55	36 - 49
Cable Route Corridor					
LT18	28/03/2025 - 04/04/2025	55 – 57	36 – 45	48 - 52	34 - 42
LT19	28/03/2025 - 04/04/2025	48 – 52	43 – 51	47 – 52	44 - 48
LT20	28/03/2025 - 04/04/2025	49 – 62	40 – 50	50 – 57	39 - 45
LT21	27/03/2025 - 03/04/2025	48 – 51	37 – 44	46 - 52	32 - 39
LT22	27/03/2025 - 03/04/2025	64 – 67	39 – 47	56 - 62	32 - 39
LT23	06/03/2025 - 12/03/2025	43 – 49	41 - 45	40 - 47	36 - 42

Location Reference	Monitoring Period	Daytime (07:00 – 23:00)		Night-time (23:00 – 07:00)	
		Range of $L_{Aeq,T}$ (dB)	Range of $L_{A90,T}$ (dB)	Range of $L_{Aeq,T}$ (dB)	Range of $L_{A90,T}$ (dB)
LT24	27/03-2025 - 31/03/2025	52 - 53	32 – 38	43 - 49	29 - 35
LT25	28/03/2025 - 03/04/2025	58 – 60	35 – 40	47 - 54	32 - 37
LT26	27/03/2025 - 01/04/2025	44 – 49	32 – 39	42 - 43	29 - 35
LT27	23/03/2025 – 03/04/2025	45 – 48	34 – 41	41 - 44	28 - 35
LT28	23/03/2025 – 03/04/2025	43 - 47	36 – 43	42 - 44	28 - 36
LT29	23/03/2025 – 03/04/2025	50 – 55	32 – 40	44 - 52	26 – 33

* Noise monitoring data for LT14 has been recorded as singular values for the monitoring period due to a meter fault. As such, the range of data is not available.

Future Baseline

14.7.5 This section considers those changes to the baseline conditions, as described above, that might occur in the absence of the Scheme and during the time period over which the Scheme would be in place. The future baseline scenarios are set out in **ES Volume 1, Chapter 6: EIA Methodology [EN010168/APP/6.1]**.

14.7.6 In the absence of the Scheme, it is considered that the future baseline noise environment will be higher than represented by the 2023-2025 measurement ambient sound levels. This is due to natural growth of road traffic flows resulting in increased noise in the local area.

14.7.7 The assessments assume that the measured baseline data is representative of future baseline conditions. A lower assumed baseline would result in the same or higher noise impacts and, therefore, the adopted approach represents a conservative approach.

14.7.8 The assessment of construction traffic noise effects accounts for the future peak construction year which includes natural traffic growth. However, the operational noise assessment assumes that the measured baseline data is representative (i.e. no higher) than future baseline conditions which represents a reasonable worst-case scenario.

14.8 Potential Impacts

14.8.1 Embedded mitigation measures being incorporated into the design and construction of the proposed Scheme are set out in Section 14.9 below.

14.8.2 Prior to the implementation of any mitigation (embedded or additional), the proposed Scheme has the potential to affect noise and vibration sensitive receptors (positively or negatively), during the Construction, Operation and Maintenance, and Decommissioning phases in the following ways:

- The potential noise and vibration effects arising from Construction and Decommissioning phase activities (e.g. site preparation, installation of plant, construction of substations and structures, laying of cables and vehicle movements);
- The potential noise effects arising from the operational plant over the lifetime of the Scheme; and
- The potential noise and vibration effects arising from vehicle movements during operation and maintenance of the Scheme. These impacts were scoped out of the assessment, however, in line with Planning Inspectorate comments, the number of vehicle movements are provided in Section 14.10.

14.9 Embedded Mitigation

14.9.1 The Scheme has been designed, as far as practicable, to avoid and reduce impacts and effects on noise and vibration through the process of embedding measures into the design.

14.9.2 The following embedded mitigation measures with respect to noise and vibration have been incorporated into the Scheme design.

Construction and Decommissioning Phases

14.9.3 Measures to control noise as defined in Annex B of BS 5228-1:2014 (Ref 14-14) and measures to control vibration as defined in Section 8 of BS 5228-2:2014 (Ref 14-14) will be adopted where reasonably practicable. These embedded measures represent Best Practicable Means (BPM) and will be secured within the **Outline Construction Environmental Management Plan (CEMP) [EN010168/APP/7.12]** for the Construction phase and the **Outline Decommissioning Strategy [EN010168/APP/7.14]** for the Decommissioning phase. These documents would be secured through DCO requirements.

14.9.4 During the Construction and Decommissioning phases, the following good practice measures would be put in place to minimise noise and vibration:

- Ensuring that all appropriate processes, procedures and measures are in place to minimise noise before works begin and throughout the construction programme;
- All contractors to be made familiar with current legislation and the guidance in BS 5228:2014 (Parts 1 and 2 (Ref 14-14)) which should form a prerequisite of their appointment;

- When works are taking place within close proximity to sensitive receptors, the screening of noise sources via the erection of temporary screens would be employed where practicable;
- All construction machinery would be regularly maintained to control noise emissions, with particular emphasis on lubrication of bearings and the integrity of silencers;
- All construction plant and equipment to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use;
- As far as practicable, works will be programmed to avoid noisy operations occurring simultaneously in close proximity to the same sensitive receptor;
- As far as practicable, construction compounds must be located a minimum of 250 m from residential receptors (refer to **ES Volume 2, Figure 3-2: Key Construction Phase Features [EN010168/APP/6.2]**);
- Adhere to the core working hours of the Scheme as stated in Paragraph 14.6.8 with a potential exception for HDD works where night-time working may be required; and
- Provision of information to the relevant local authority and local residents to advise of potential noisy works that are due to take place.

14.9.5 A construction noise monitoring scheme shall be developed in line with the **Outline CEMP [EN010168/APP/7.12]** and agreed with appropriate stakeholders following appointment of a principal contractor and prior to commencement of construction works as part of any Section 61 consent applications. Requirements for monitoring during the Decommissioning phase will be undertaken in line with the requirements of the **Outline Decommissioning Strategy [EN010168/APP/7.14]**.

14.9.6 As requirements and locations for HDD activities will not be finalised until a principal contractor is appointed, a hierarchy of mitigation measures is contained in the **Outline CEMP [EN010168/APP/7.12]** to ensure that significant noise effects do not occur due to potential night-time works.

14.9.7 These mitigation measures include the following:

- No HDD works will take place within 80 m (the distance at which the temporary re-housing limit, as defined in BS 5228-1:2014 (Ref 14-14), of 65 dB $L_{Aeq,8h}$ is predicted at night) of residential receptors;
- The potential for the use of quieter equipment than listed in **ES Volume 3, Appendix 14-4: Noise Modelling [EN010168/APP/6.3]** will be explored by the principal contractor; and

- Depending on the location, plant and timing of works, temporary acoustic fencing will be installed around the HDD site boundary to screen receptors from noise emission. This mitigation could provide 10 dB of attenuation when the noise screen completely hides the sources from the receiver.

14.9.8 Where necessary, the Applicant will submit an application for prior consent to carry out noisy work under Section 61 of the CoPA (Ref 14-1) to demonstrate that noise and vibration has been minimised as far as reasonably practicable. The Section 61 application will set out the specific method of working, calculations of noise levels at nearby receptors, the actual working hours required, noise monitoring locations, details of communication measures and the mitigation measures implemented to minimise noise and vibration impacts.

14.9.9 As detailed in **ES Volume 1, Chapter 13: Transport and Access [EN010168/APP/6.1]**, the **Outline Construction Traffic Management Plan (CTMP) [EN010168/APP/7.22]** will be secured through the DCO provide a framework for the management of construction vehicle movements to and from the Scheme, to ensure that the effects of the temporary Construction phase on the local highway network are minimised, including those associated with noise and vibration.

Operation and Maintenance Phase

14.9.10 Where practicable, the Scheme layout has been developed to minimise noise and vibration effects at sensitive receptor locations. The BESS Area and 132 kV and 400 kV Substations have been located a minimum of 450 m and 400 m from receptor locations respectively.

14.9.11 A 2 m bund with additional 3 m barrier around the eastern and southern boundary of the BESS Area has been incorporated within the design of the Scheme to attenuate noise and to reduce visual impacts as shown in **ES Volume 2, Figure 3-3: 400 kV Substation and BESS Layout [EN010168/APP/6.2]**.

14.9.12 Due to potential operational adverse noise effects at noise-sensitive receptors, further mitigation has been assumed within the noise assessment in the form of silencers, attenuation kits and enclosures from manufacturer specification sheets and information on similar types of installations. The following operational mitigation is included in the modelling used to support the results presented in Section 14.10:

- Silencer units on 75% (198) of BESS Containers;
- Silencer units on all (90) BESS Inverters;
- Seven Conversion Units in the vicinity of the BESS Area to have silencers ; and
- All 132 kV and 400 kV Substation Transformers to be housed in enclosures.

14.9.13 The Outline OEMP [EN010168/APP/7.13] commits to a level of embedded mitigation that would achieve the operational noise levels from the Scheme presented in Section 14.10. In practice this is likely to require a range of measures similar to those assumed in the modelling, although exact details may change once final plant specifications are known.

14.10 Assessment of Likely Impacts and Effects

14.10.1 This section considers the potential impacts outlined in Section 14.8 and, taking into account the embedded mitigation measures as detailed in Section 14.9, assesses the potential for the Scheme to generate effects using the methodology as detailed in Section 14.6.

Construction Phase

Construction Noise Main Activities

14.10.2 The following main noise-generating activities are assessed for the ES, however, this does not cover all activities that could take place (e.g. works involving other static or moving plant items that would produce lower levels of noise) and is considered to be a reasonable worst-case of noise generating activities:

- Construction of BESS Area, Conversion Units;
- Construction of Solar PV Panels which would likely include the use of push press piling rigs and excavators;
- Construction of the 400 kV Substation;
- Construction of 132 kV Substations; and
- Trenching and installation of the Grid Connection Cables and Interconnecting Connection Cables, which would include the use of both above-ground means (i.e. excavators and dozers) and HDD where need has been identified.

14.10.3 Construction noise levels at surrounding receptors would vary depending on the locations and types of works taking place. Due to the variation in construction works activities and locations across the Scheme, it is considered that any periods of regular high construction noise levels experienced at a receptor would be of a limited short-term duration (i.e. less than one month). Occupants of nearby receptors are likely to be more tolerable of these events if they are provided with timings and duration of high noise generating events.

14.10.4 The levels of unmitigated noise predicted at the identified receptors during the Construction phase of the Solar PV Sites are presented in **Table 14-18**. The predicted noise levels demonstrate the level of construction noise that may

occur at sensitive receptors during periods representative of reasonable worst-case construction activity.

Table 14-18 Construction Noise Predictions (Solar PV Sites)

Ref	Associated Site	Predicted Construction Noise Level ($L_{Aeq,12h}$ dB(A))	LOAEL	SOAEL	Effect Level
R01	E	59	50	65	Between LOAEL and SOAEL
R02	E	57	50	65	Between LOAEL and SOAEL
R03	E	56	50	65	Between LOAEL and SOAEL
R04	E	57	56	65	Between LOAEL and SOAEL
R05	E	53	57	65	Below LOAEL
R06	E	54	57	65	Below LOAEL
R07	E	56	57	65	Below LOAEL
R08	E	55	57	65	Below LOAEL
R09	E	54	50	65	Between LOAEL and SOAEL
R10	D	56	64	65	Below LOAEL
R11	D	54	64	65	Below LOAEL
R12	D	55	64	70	Below LOAEL
R13	D	53	45	65	Between LOAEL and SOAEL
R14	D	56	45	65	Between LOAEL and SOAEL
R15	D/B	53	46	65	Between LOAEL and SOAEL
R16	B	54	42	65	Between LOAEL and SOAEL
R17	C	54	54	65	LOAEL
R18	C	52	54	65	Below LOAEL
R19	C	54	46	65	Between LOAEL and SOAEL
R20	C	59	45	65	Between LOAEL and SOAEL
R21	C	56	45	65	Between LOAEL and SOAEL
R22	C	55	45	65	Between LOAEL and SOAEL
R23	C	53	45	65	Between LOAEL and SOAEL

Ref	Associated Site	Predicted Construction Noise Level ($L_{Aeq,12h}$ dB(A))	LOAEL	SOAEL	Effect Level
R24	A/C	58	45	65	Between LOAEL and SOAEL
R25	A/C	55	45	65	Between LOAEL and SOAEL
R26	C	53	47	65	Between LOAEL and SOAEL
R27	C	50	47	65	Between LOAEL and SOAEL
R28	A/B/C	57	50	65	Between LOAEL and SOAEL
R29	A	55	50	65	Between LOAEL and SOAEL
R30	A	57	50	65	Between LOAEL and SOAEL
R31	A	51	54	65	Below LOAEL
R32	A	59	54	65	Between LOAEL and SOAEL
R33	A	56	52	65	Between LOAEL and SOAEL
R34	A	51	52	65	Below LOAEL
R35	B	57	50	65	Between LOAEL and SOAEL
R36	B	55	50	65	Between LOAEL and SOAEL
R37	B	54	54	65	LOAEL
R38	B	50	46	65	Between LOAEL and SOAEL
R39	B	49	46	65	Between LOAEL and SOAEL
R40	B	48	46	65	Between LOAEL and SOAEL
R41	B	52	46	65	Between LOAEL and SOAEL
R42	B	56	42	65	Between LOAEL and SOAEL
R43	B	53	42	65	Between LOAEL and SOAEL
R44	B	53	42	65	Between LOAEL and SOAEL
R45	C	58	46	65	Between LOAEL and SOAEL

14.10.5 Predicted construction noise levels at all receptors, around the Solar PV Sites remain below the daytime SOAEL and are therefore not significant.

14.10.6 Construction noise levels that are equal to or exceed the LOAEL represent noise that is present and intrusive. Mitigation measures and noise management plans will be put into place to ensure that construction noise is minimised at all times throughout the construction programme. BPM (as defined in Section 72 of CoPA (Ref 14-1)) are covered in Section 14.9 to reduce construction noise as far as reasonably practicable.

14.10.7 33 receptors are predicted to experience construction noise levels between the LOAEL and SOAEL, with two additional receptors (R17, R37) equal to the LOAEL, resulting in a minor adverse impact which is not significant.

14.10.8 The levels of unmitigated noise predicted at the identified receptors during the Construction phase of the Cable Route Corridor are presented in **Table 14-18**. The predicted noise levels demonstrate the level of construction noise that may occur at sensitive receptors during periods representative of reasonable worst-case construction activity. It should be noted that these results do not include HDD activities which are presented separately in **Table 14-20**.

Table 14-19: Construction Noise Predictions (Cable Route Corridor)

Ref	Associated Site	Predicted Construction Noise Level ($L_{Aeq,12h}$ dB(A))	LOAEL	SOAEL	Effect Level
R46	Cable Route Corridor	56	56	65	LOAEL
R47	Cable Route Corridor	54	56	65	Below LOAEL
R48	Cable Route Corridor	51	51	65	LOAEL
R49	Cable Route Corridor	56	60	65	Below LOAEL
R50	Cable Route Corridor	48	60	65	Below LOAEL
R51	Cable Route Corridor	58	50	65	Between LOAEL and SOAEL
R52	Cable Route Corridor	68	66	70	Between LOAEL and SOAEL
R53	Cable Route Corridor	59	66	70	Below LOAEL
R54	Cable Route Corridor	64	47	65	Between LOAEL and SOAEL
R55	Cable Route Corridor	51	59	65	Below LOAEL
R56	Cable Route Corridor	63	59	65	Between LOAEL and SOAEL

Ref	Associated Site	Predicted Construction Noise Level ($L_{Aeq,12h}$ dB(A))	LOAEL	SOAEL	Effect Level
R57	Cable Route Corridor	53	46	65	Between LOAEL and SOAEL
R58	Cable Route Corridor	65	46	65	SOAEL
R59	Cable Route Corridor	57	56	65	Between LOAEL and SOAEL
R60	Cable Route Corridor	58	56	65	Between LOAEL and SOAEL
R61	Cable Route Corridor	52	53	65	Below LOAEL
R62	Cable Route Corridor	46	53	65	Below LOAEL
R63	Cable Route Corridor	51	53	65	Below LOAEL

14.10.9 Predicted noise levels for construction activities along the Cable Route Corridor remain below the daytime SOAEL and are therefore not significant at all receptors, except for R58 (Silver Street).

14.10.10 Seven receptors (R51, R52, R54, R56, R57, R59, R60) are predicted to experience construction noise levels between the LOAEL and SOAEL with an additional two receptors (R46, R48) equal to the LOAEL resulting in a minor adverse impact which is not significant.

14.10.11 Calculated construction noise levels are equal to the SOAEL at R58 (Silver Street) and, therefore, a significant noise effect has been identified with a magnitude of moderate adverse. This represents a worst-case assessment without any mitigation considered and, additionally, does not take into account the sequential nature of works with construction expected to move along the Cable Route Corridor. Elevated noise levels at this receptor would only be temporary when works are taking place in close proximity and it is expected that, during the remainder of the Construction phase, noise levels would be below the SOAEL. It is expected that, in reality, with the inclusion of embedded mitigation measures (as outlined in Section 14.9), construction noise levels would in fact be below the SOAEL at R58 resulting in an assessment of not significant.

14.10.12 Given the close proximity of receptor R58 to the proposed Cable Route Corridor, as part of the communication strategy, occupants of this receptor will be informed on the timing and duration of any construction activities taking place in the vicinity of the residence. This is committed to as part of the BPM identified in the **Outline CEMP [EN010168/APP/7.12]**.

14.10.13 It should be noted that construction noise predictions have been based on worst-case months that are representative of working days where all plant is operational over all areas of the Order Limits. In reality, it is likely that the worst-case noise levels predicted will only occur for limited periods of time where items of plant are operational in close proximity to sensitive receptors and will only be temporary in nature.

Construction Noise Horizontal Directional Drilling

14.10.14 HDD activities may last for up to three days and involve activities at a drill site and a reception pit. At this stage of the Scheme, 13 locations that may require HDD installation methods have been identified along the Cable Route Corridor. For the purposes of the noise assessment, HDD has been identified as worst-case trenchless cable installation method due to the noise levels and potential requirement for night-time working. Potential HDD locations are listed in **Table 14-20** along with receptors within 500 m, at which adverse levels of noise may occur.

Table 14-20 HDD Locations and Receptors

HDD Crossing	Receptor	Estimated Distance (m)	Predicted HDD Noise $L_{Aeq,1h}$ dB	Night-time LOAEL	Night-time SOAEL	Effect Level
Solar PV Sites						
Rodbourne Brook	R01	450	47	48	55	Below LOAEL
Gauze Brook 1	R14	390	48	37	45	Above SOAEL
Northern Railway 1	R10	490	46	54	55	Below LOAEL
	R20	265	52	39	45	Above SOAEL
	R21	430	47	39	45	Above SOAEL
	R22	455	46	39	45	Above SOAEL
	R45	205	55	39	45	Above SOAEL
Northern Railway 2	R21	315	50	39	45	Above SOAEL
	R22	330	50	39	45	Above SOAEL
Cable Corridor Route						
Gauze Brook 2	R19	265	52	39	45	Above SOAEL
The Street	R46	180	56	45	50	Above SOAEL

HDD Crossing	Receptor	Estimated Distance (m)	Predicted HDD Noise $L_{Aeq,1h}$ dB	Night-time LOAEL	Night-time SOAEL	Effect Level
Neeld Court	R47	130	60	45	50	Above SOAEL
M4	R48	305	51	49	55	Between LOAEL and SOAEL
	R65	290	51	49	55	Between LOAEL and SOAEL
A420	R52	100	62	60	65	Between LOAEL and SOAEL
Pudding Brook	R65	380	48	43	50	Between LOAEL and SOAEL
A4 and Pudding Brook	R54	165	57	43	50	Above SOAEL
Southern Railway	R55	340	49	51	55	Below LOAEL
	R56	300	51	51	55	LOAEL
	R57	230	54	42	45	Above SOAEL
Tributory to Avon at Corston	R57	345	49	42	45	Above SOAEL

14.10.15 HDD operations will only occur during the Construction phase (installation of Grid Connection Cables) and will not occur during the Decommissioning phase.

14.10.16 The night-time LOAEL and SOAEL for each receptor are defined in **Table 14-15** and **Table 14-16**. Additionally, the night-time limit for temporary re-housing is defined as 65 dB $L_{Aeq,T}$.

14.10.17 Sound Power Level of plant applicable to HDD activities, see **ES Volume 3, Appendix 14-4: Noise Modelling [EN010168/APP/6.3]**, indicate that significant effects (an exceedance of SOAEL) may occur during the night at the majority of identified sensitive receptors within 500 m of activities.

14.10.18 For the Rodbourne Brook crossing, noise levels are expected to be below the LOAEL at receptor R01 resulting in as assessment of not significant.

14.10.19 All other receptors would only experience significant noise effects if HDD was required at night. However, it should be noted that this identification of a likely significant effect is precautionary as it is expected that HDD activities outside of the daytime period would only be required if there is a clear and obvious benefit, such as for safety reasons or to avoid daytime disruption to many people.

14.10.20 The hierarchy of mitigation measures for HDD activities listed in Paragraph 14.9.7 will ensure that HDD activity noise effects will be reduced as far as reasonably practicable. This hierarchy includes the use of acoustic fencing which, if required, could provide up to 10 dB of noise attenuation. Consequently, noise from HDD activities at the remaining twelve locations would reduce for all respective receptors to below the night-time SOAEL and noise effects would be not significant.

14.10.21 Additionally, it should be noted that HDD activities are, at worst, expected to last three days and, as such, the predicted noise levels in **Table 14-20** will be short-term and temporary in nature.

14.10.22 For all works that are undertaken outside core work periods, a Section 61 consent (CoPA (Ref 14-1)) would be applied for and will contain details on the methodology, mitigation, communication strategy and monitoring, as committed to in the **Outline CEMP [EN010168/APP/7.12]**.

Construction Noise Existing National Grid Melksham Substation

14.10.23 Works are required at the Existing National Grid Melksham Substation to facilitate additional electrical infrastructure and a new 400 kV feeder bay to receive the Grid Connection Cables for the Scheme, as described in Section 3.2 of **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**.

14.10.24 The closest works could be from noise sensitive receptors is over 400 m and, as such, with reference to the construction noise assessment for the Solar PV Sites, effects from these works are considered to be not significant.

Construction Traffic Noise

14.10.25 Traffic flows, in the form of 18-hour Annual Average Weekday Traffic (AAWT), have been used to model the change in road traffic level as a result of construction vehicles facilitating the Solar PV Sites and Cable Route Corridor. Traffic flows have been taken from **ES Volume 1, Chapter 13: Transport and Access [EN010168/APP/6.1]**.

14.10.26 The potential changes in road traffic noise from these roads as a result of the Scheme have been considered by calculating a roadside noise level using CRTN (Ref 14-16) with and without the construction traffic. **Table 14-21** presents the results of the assessment.

14.10.27 The change in traffic noise level is with respect to the 2028 baseline to construction traffic noise, however, the observed 2024 baseline has been included for reference. The impact classification would remain low or negligible even if the observed 2024 baseline figures were used.

Table 14-21: Construction and Decommissioning Traffic Noise (Solar PV Sites)

Road ID	Road	Baseline BNL dB (Observed 2024)	Baseline 2028 BNL dB	Baseline and Construction Traffic BNL dB	Change in Traffic Noise Level, dB from Baseline 2028 and Construction Traffic	Impact Level
1	M4 J18	76.8	76.9	77.0	0.1	Negligible
2	A46	67.8	67.9	68.1	0.2	Negligible
3	B4040	62.3	62.5	63.3	0.8	Negligible
4	B4039	62.6	62.8	63.6	0.8	Negligible
5	W of Grittleton	55.4	55.7	58.2	2.5	Low
6	Alderton Road	56.4	56.7	58.5	1.8	Low
7	Fosse Way (S)	53.9	54.1	56.8	2.7	Low
8	Access Road 003	55.3	55.6	56.2	0.6	Negligible
9	M4 J17 DfT Counts	76.5	76.7	76.7	0	Neutral
10	A429 DfT	67.7	67.9	68.1	0.2	Negligible
11	Bradfield Cottage (S)	59.6	59.8	60.8	1.0	Low
12	Bradfield Cottage (MdN)	55.6	55.9	57.6	1.7	Low
13	A429	66.4	66.6	66.9	0.3	Negligible

Table 14-22 Construction and Decommissioning Traffic Noise (Cable Route Corridor)

Road ID	Road	Baseline BNL dB (Observed 2024)	Baseline 2028 BNL dB	Baseline and Construction Traffic BNL dB	Change in Traffic Noise Level, dB from Baseline 2028 and Construction Traffic	Impact Level
1	The Street	56.9	57.2	57.8	0.6	Negligible
2	Neeld CT	45.4	45.6	50	4.4	Medium
3	Unnamed Road	59.4	59.7	60.4	0.7	Negligible

Road ID	Road	Baseline BNL dB (Observed 2024)	Baseline 2028 BNL dB	Baseline and Construction Traffic BNL dB	Change in Traffic Noise Level, dB from Baseline 2028 and Construction Traffic	Impact Level
4	Unnamed Road	49.5	49.7	52.1	2.4	Low
5	Cromhall Lane	48.3	48.5	51.3	2.8	Low
6	Fowlsick Lane	54.9	55.2	55.6	0.4	Negligible
7	B4039	65.1	65.3	65.4	0.1	Negligible
8	A420	68.3	68.4	68.5	0.1	Negligible
9	Sheldon Cor	56.7	57	57.9	0.9	Negligible
10	Chippenham Lane	46	46.2	50	3.8	Medium
11	Unnamed Road	55.8	55.9	56.4	0.5	Negligible
12	A4 Bath Road	70.5	70.7	70.8	0.1	Negligible
13	Unnamed Road	55.7	55.9	56.7	0.8	Negligible
14	Unnamed Road	51.6	51.7	53.3	1.6	Low
15	Corsham Road	59	59.2	59.4	0.2	Negligible
16	Coppershell	53.5	53.7	55.1	1.4	Low
17	Silver Street	63.1	63.3	63.4	0.1	Negligible
18	B3353 Goodes Hill	65.3	65.5	65.7	0.2	Negligible
19	Westlands Lane (W)	55.8	56	56.6	0.6	Negligible
20	Westlands Lane (E)	55	55.2	55.6	0.4	Negligible
21	A365 Bath Road	66.9	67	67.2	0.2	Negligible

14.10.28 The assessment results presented above for the Solar PV Sites demonstrate that increases in noise levels at sensitive receptors due to construction traffic are predicted to be within the 'Low' impact bracket or below, indicative of a moderate/minor worst-case effect and therefore not significant.

14.10.29 The assessment results for the Cable Route Corridor also indicate negligible or low impacts on all roads except for Neeld Court and Chippenham Lane where medium impacts are predicted. While such impacts could lead to significant effects, as explained in Paragraph **Error! Reference source not**

found.14.6.43, professional judgement should be used in the final determination.

14.10.30 In this instance, these medium impacts are not considered to lead to significant adverse effects for the following reasons:

- The construction traffic noise levels close to these roads, as shown in Table 14-22, are predicted to remain below existing ambient noise levels in the area. This is evidenced, for example, by considering the ambient level of 56 dB at LT18 in Table 1 of **ES Volume 3, Appendix 14-3: Baseline Noise Survey [EN010168/APP/6.3]**, which is representative of the area around Neeld Ct where construction traffic is predicted to be 50 dB;
- The construction traffic noise levels close to these roads, as shown in Table 14-22, are predicted to remain below the LOAEL for construction activity, as defined in Table 14-3. Therefore, with reference to NPSE (Ref 14-6), adverse effects on health and quality of life are not expected;
- As clarified in Paragraph 13.10.73 of **ES Volume 1, Chapter 13: Transport and Access [EN010168/APP/6.1]**, such construction traffic would only operate for approximately 90 days of the programme. In addition, each one these roads serve two access points, and the calculations incorporate the worst-case assumption that both are operational at the same time. It is possible that in practice only one of the two access points is in operation at any given time, in which case medium impacts would never arise; and
- Existing traffic volumes on these roads are below the strict range of validity of the CRTN calculation method and, as such, are often considered qualitatively. In such instances the small volume of HGVs expected on these roads, 16 movements a day as presented in Table 13-33 of **ES Volume 1, Chapter 13: Transport and Access [EN010168/APP/6.1]**, is not considered significant. With reference to planning practice guidance, as presented in Table 3 of **ES Volume 3, Appendix 14-1: Noise and Vibration Legislation, Policy and Guidance [EN010168/APP/6.3]**, such numbers are considered an observed effect, whereby windows may wish to be closed some of the time, but not a significant one resulting in sleep disturbance or a material change in behaviour.

14.10.31 Therefore, all effects associated with construction traffic noise are not considered to be significant.

Construction Vibration

14.10.32 BS 5228-2:2014 (Ref 14-14) refers to the Transport Research Laboratory (TRL) report 429 'Groundborne Vibration Caused by Mechanised Construction Works' (2000) (Ref 14-23). Figure 50 of the TRL report indicates that ground vibration from miscellaneous vehicle operations on construction sites (including scrapers, rollers, dumpers, breakers, dozers and HGVs) are in the region of 1 mm/s PPV

at approximately 10 m, decreasing to the region of 0.1 mm/s PPV at approximately 50 m.

14.10.33 Actual vibration levels from works are dependent on a number of factors including ground conditions, plant or vehicle size, the nature of the works (in particular piling methods), the speed of HGV movements and the quality of surface of haul or other temporary roads. Based on the assumed HGV speeds on access routes, vibration from vehicles on the access roads is not expected to exceed 1 mm/s PPV at any sensitive receptors.

14.10.34 Given the assumption that CFA piling may be required for construction of the main 400 kV Substation, 132 kV Substations and Solar PV Mounting Structures, associated vibration levels from such an activity have been considered. Analysis of historic BS 5228-2:2014 (Ref 14-14) CFA piling data (see **ES Volume 3, Appendix 14-4: Noise Modelling [EN010168/APP/6.3]**) identifies the PPV SOAEL at approximately 15 m and the PPV LOAEL at approximately 40 m.

14.10.35 No receptors are within 40 m of the 400 kV Substation or 132 kV Substations.

14.10.36 No receptors are within 15 m or 40 m of the Solar PV Sites therefore, no significant effects are expected as a result of piling during construction of Solar Mounting Structures.

14.10.37 The highest levels of vibration generated by cable laying activities would be the use of vibratory rollers during reinstatement. Vibratory rollers may generate adverse levels of vibration (i.e. exceeding 0.3 mm/s) at receptors within 50 m and significant levels of vibration (i.e. exceeding 1.0 mm/s) at receptors within 25 m.

14.10.38 Two receptors (R20, R60) have been identified between 25 m and 50 m of the Cable Route Corridor and may experience PPV levels exceeding the LOAEL for temporary periods.

14.10.39 Four receptors within 25 m of the Cable Route Corridor are identified as R52 (Ivy House), R56 (The Roebuck), R58 (Silver Street) and R66 (Thingley Farm). These receptors may experience PPV levels exceeding the SOAEL for temporary periods.

14.10.40 As stated in BS 5228-2:2014 (Ref 14-14) (and reproduced in **Table 14-6**) *"It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents".*

14.10.41 For PPV vibration levels anticipated to exceed 1.0 mm/s, prior warning will be provided on the timings and duration of vibration generating activities. This will be stated in the **Outline CEMP [EN010168/APP/7.12]** and the **Outline Decommissioning Strategy [EN010168/APP/7.14]** which will be secured through the DCO. Given the short duration of these activities affecting individual

receptors (no longer than a day), prior warning is considered sufficient to mitigate significant effects.

14.10.42 Similar levels of vibration to piling may be generated by HDD activities. Following the HDD noise assessment, the nearest receptor to areas of the Cable Route Corridor where HDD activities may take place is approximately 100 m away (R52 for A420 Crossing) where ground borne vibration is not likely to be an issue.

14.10.43 Accordingly, at this stage, it is anticipated that all construction vibration effects at nearby sensitive receptors would be not significant.

Operation and Maintenance Phase

Operational Noise

14.10.44 Daytime predictions have been calculated at ground floor level with night-time levels at either first-floor or second-floor level depending on the number of storeys of the receptor building.

14.10.45 All embedded mitigation has been included as defined in Section 14.9 with a +3 dB acoustic feature correction applied as defined in Paragraph 14.6.34. The acoustic feature correction is an acknowledgement of the fact that the noise from the Scheme would introduce a new sound source to the area, altering the existing soundscape. However, noise levels, inclusive of the +3 dB correction, that remain below the SOAEL are not expected to have a significant effect on the health and quality of life of residents.

14.10.46 A summary table showing operational results is provided in **Table 14-23** below with a full breakdown of results per receptor available in **ES Volume 3, Appendix 14-4: Noise Modelling [EN010168/APP/6.3]**.

14.10.47 Additionally, Operational noise contours are presented in **ES Volume 2, Figure 14-2: Daytime Operational Noise Contours [EN010168/APP/6.2]** for the daytime and in **ES Volume 2, Figure 14-3: Night-time Operational Noise Contours [EN010168/APP/6.2]** for the night-time.

Table 14-23 Operational Noise Results Summary

Effect Level	Number of Receptors Daytime (07:00 – 23:00)	Number of Receptors Night-time (23:00 – 07:00)
Below LOAEL	17	29
Between LOAEL and SOAEL	28	16
Above SOAEL	0	0

14.10.48 During the daytime period, the operational rating noise level has been assessed as being below the LOAEL for 17 receptors (R01, R02, R03, R04, R05, R06, R07, R08, R09, R13, R14, R19, R23, R26, R27, R29, R40) with all remaining receptors between the LOAEL and SOAEL.

14.10.49 The areas with receptors between the LOAEL and SOAEL during the daytime have been identified as the following:

- North and northeast of Hullavington around Lime Down D (R10, R11, R12);
- Norton between Lime Down B and D (R15, R16, R41, R42, R43, R44);
- North of Grittleton around Lime Down C (R17, R18);
- Pig Lane between Lime Down C and D (R20, R21, R22, R45);
- Lord's Wood and west towards Luckington around Lime Down C (R24, R25);
- South of Sherston around Lime Down A (R31, R32, R33, R34);
- Ladyswood around Lime Down A and C (R28, R30, R35, R36); and
- Foxley Road around Lime Down B (R37, R38, R39).

14.10.50 During the night-time, 16 receptors have been assessed as between the LOAEL and SOAEL (R10, R15, R16, R19, R20, R21, R23, R28, R29, R30[1], R35, R36, R41, R43, R44, R45) with all other receptors below the LOAEL.

14.10.51 The areas with receptors between the LOAEL and SOAEL during the night-time have been identified as the following:

- North of Hullavington around Lime Down D (R10);
- Norton between Lime Down B and D (R15, R16, R41, R43, R44);
- North of Grittleton around Lime Down C (R19);
- Pig Lane between Lime Down C and D (R20, R21, R23, R45); and
- Ladyswood around Lime Down A and C (R28, R29, R30, R35, R36).

14.10.52 The night-time rating level at the worst-case receptors (R10, R20) is 35 dB $L_{Ar,Tr}$, which although is equal to the SOAEL, considering Paragraphs 14.6.27 to 14.6.28, can be defined as being a low rating level.

14.10.53 BS 8233:2014 Guidance on sound insulation and noise reduction for buildings (Ref 14-13) and the World Health Organization (WHO) 'Guidelines for Community Noise' (Ref 14-24) provide guidance levels for internal noise within

[1] Ladyswood Stud is set slightly further back from Lime Down A when compared to R30 and, as such, predicted daytime levels at R30 are considered a representative worst-case for this location. Similarly, as it is slightly closer to Lime Down C, night-time levels at R29 are considered a representative worst-case for this location.

dwellings of 30 dB $L_{Aeq,T}$ for good sleeping conditions at night. In accordance with examples in Annex A of BS 4142:2014 (Ref 14-11), it is assumed that building envelope attenuation would be reduced to approximately 10 dB by a partially open window.

14.10.54 Taking these into account, internal noise levels at R10, R20 and all other receptors, would comply with the BS 8233:2014 (Ref 14-13) recommended indoor ambient noise levels for good sleeping conditions with expected internal levels being around 25 dB.

14.10.55 As stated in the NPSE (Ref 14-6), noise levels between the LOAEL and SOAEL require for all reasonable measures to be applied to mitigate and minimise adverse effects on health and quality of life while also considering the principles of sustainable development. However, this does not mean that such adverse effects cannot occur. The above has been taken into context through the consideration of embedded mitigation measures including bunds, barriers, enclosures and attenuation kit or silencers for items of plant, as detailed in Section 14.9.

14.10.56 Whilst the design objective rating level of 5 dB below the typical background level from the Wiltshire Council Planning guidance (Ref 14-8) has not been met at all noise sensitive receptors, with 28 receptors between the LOAEL and SOAEL in the day-time and 16 in the night-time, all reasonable measures to reduce operational noise levels at receptors to a minimum have been taken into account. The operational noise modelling employed a wide range of mitigation, including silencers, heat exchangers, enclosures and screening, to avoid significant effects from noise at properties. The **Outline OEMP [EN010168/APP/7.13]** commits to the resulting levels at properties to provide reassurance that the Scheme as built will not lead to significant effects from noise.

14.10.57 As such, the effects arising from the operation and maintenance of the Scheme are likely to be not significant during both the daytime and night-time periods.

Operation Noise Existing National Grid Melksham Substation

14.10.58 The new 400 kV feeder bay at the Existing National Grid Melksham Substation would not generate additional operational noise and as such the associated effect from this modification is considered to be **not significant**.

Operation and Maintenance Phase Vibration

14.10.59 Due to the nature of the operational and maintenance activities of the Scheme (including the replacement of Solar PV Panels and BESS Batteries), vibration is considered to be negligible and unlikely to be perceptible. This assumption was validated within the Planning Inspectorate Scoping Opinion Responses (**Table 14-1**).

Operational Traffic Noise

14.10.60 Details regarding the replacement of Solar PV Panels and BESS Containers within the Scheme is presented in **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**.

14.10.61 Expected traffic volumes during the operation and maintenance, replacement periods are presented in Section 13.10 of **ES Volume 1, Chapter 13: Transport and Access [EN010168/APP/6.1]**. In summary, traffic flows are anticipated to be below those considered within the construction traffic noise assessment and, therefore, it is considered that any temporary impacts resulting from operation and maintenance traffic would be less significant than those predicted within the construction traffic noise assessment.

14.10.62 Therefore, no significant effects are anticipated as a result of Solar PV Panel and BESS Container replacement, whether it be ad hoc or planned.

Decommissioning

14.10.63 As stated in Paragraph 14.6.21, the Scheme is intended to be decommissioned after 60 years. It is expected that the noise and vibration impacts resulting from the decommissioning of the Scheme will be equivalent to but no worse than the impacts arising from construction and construction traffic noise.

14.10.64 Additionally, no piling will be required during decommissioning of the Scheme and as such, no significant effects are identified as a result of vibration during decommissioning.

14.10.65 The assessment presented for the Construction phase will therefore be representative (or an overestimate) of the Decommissioning phase. As such, a separate assessment for noise and vibration from the Decommissioning phase is not presented.

14.11 Additional Mitigation

14.11.1 The following additional mitigation measures have been incorporated into the Scheme design.

14.11.2 During the Construction phase, temporary elevated construction noise levels may be experienced at one receptor (R58 Silver Street) with respect to the Cable Route Corridor. Additionally, four receptors (R52 Ivy House, R56 The Roebuck, R58 Silver Street, R66 Thingley Farm) have been identified to experience PPV levels exceeding the SOAEL for temporary periods due to vibratory rollers during cable laying activities.

14.11.3 These receptors therefore require a detailed and bespoke communication strategy, over and above the general information and communication listed as embedded mitigation in Section 14.9, to inform occupants on the precise timing

and duration of the associated construction activity that could lead to high noise and/or vibration levels for a short period.

14.11.4 In addition to the timings and programme, such communication should include an explanation of the need for such works and the expected noise and/or vibration levels at the property.

Monitoring

14.11.5 The **Outline CEMP [EN010168/APP/7.12]** includes the monitoring requirements for the construction phase.

14.12 Residual Effects and Conclusions

14.12.1 This section summarises the residual significant effects of the Scheme on noise and vibration following the implementation of embedded and additional mitigation.

14.12.2 Significant residual effects are defined as moderate or major. These are listed in **Table 14-24** (construction and decommissioning).

14.12.3 See **ES Volume 1, Chapter 22: Summary of Residual Effects [EN010168/APP/6.1]** for a summary of significant effects.

Table 14-24 Summary of Significant Residual Effects (Construction and Decommissioning)

Receptor	Sensitivity (value)	Description of impact	Mitigation/Enhancement measure	Residual effect after mitigation
R58 (Silver Street)	High	Temporary construction noise levels predicted to be equal to the SOAEL during construction of the Cable Route Corridor.	Communication strategy to inform occupants on the timing and duration of any construction activities taking place in proximity to the residence.	Not significant
R52 (Ivy House), R56 (The Roebuck), R58 (Silver Street), R66 (Thingley Farm)	High	Temporary construction vibration levels predicted to be above the SOAEL during compaction works relating to the Cable Route Corridor construction	Communication strategy to inform occupants on the timing and duration of any construction activities taking place in proximity to the residence.	Not significant

14.13 Cumulative Effects Assessment

Inter-Project Cumulative Effects

14.13.1 This section presents an assessment of cumulative effects between the Scheme and other proposed and committed plans and projects.

14.13.2 This assessment has been made with reference to the methodology and guidance set out in **ES Volume 1, Chapter 6: EIA Methodology [EN010168/APP/6.1]** of this ES and shortlist of cumulative plans and projects identified in **ES Volume 3, Appendix 21-1: Long List of In-Combination Effects and Cumulative Developments [EN010168/APP/6.3]** of this ES.

14.13.3 For individual receptors, this cumulative effect assessment identifies where the assessed effects of the Scheme could interact with effects arising from other plans and/or projects on a spatial and/or temporal basis.

14.13.4 Plans and projects identified from **ES Volume 3, Appendix 21-1: Long List of In-Combination Effects and Cumulative Developments [EN010168/APP/6.3]** of this ES which have the potential to result in cumulative effects on noise and vibration are set out in **Table 14-25** and considered below. The remaining plans and projects were reviewed in relation to noise and vibration receptors identified in this assessment and no further potential for cumulative effects are identified.

Table 14-25 Plans and projects relevant to Noise and Vibration cumulative effects assessment

ID	Reference and Description	Distance from the Scheme	Potential Cumulative Effects
58	20/10972/OUT Outline Planning Application for up to 71 Dwellings, Community Car Park, Land Reserved for Future Expansion of Hullavington CofE Primary School, Access, Open Space, Surface Water Attenuation Basin, Landscaping and Associated Works	0.1 km	Potential cumulative noise and vibration impact during the Construction phase. Potential cumulative impact upon baseline noise levels at sensitive receptors. There is the potential for cumulative construction noise impacts from plant and construction traffic if construction of the Scheme and this development are to take place simultaneously however, it is expected that construction noise will be dominated by the Scheme. Future residential receptors at this proposed mixed use development fall within the 500 m Study Area of the Solar PV Sites. Operational noise levels at this receptor are expected to be around the same or less than those identified at receptor R11 (Bradfield Bungalow). Additionally, the introduction of 71 additional dwellings in the vicinity of the Scheme will not drastically change the existing baseline noise levels. As such, no significant cumulative adverse effects are expected.
123	PL/2024/01560 Laying a section of underground cable linking an approved solar farm (ref: 20/06840/FUL) to the approved cable route within National Grid's land title, together with ancillary work necessary for the implementation of the planning permission. (Melksham Substation)	0.0 km	Potential cumulative noise and vibration impact during the Construction phase. These developments fall within the Order Limits (Cable Route Corridor). Cumulative construction noise from plant and construction traffic may affect identified receptors in the vicinity of the Existing National Grid Melksham substation (R60, R61, R62) however, it is expected that noise levels associated with the construction of the Scheme's Cable Route Corridor will be dominant at these receptors and as such, the existing identified effects remain valid. As such, no significant cumulative adverse effects are expected.
129	PL/2022/09253 Installation of underground cable.	0.0 km	
207	19/10628/FUL The construction of a 10 MW Battery Storage Facility, the formation of a new access, alteration of an existing building, site clearance and other associated works.	0.3 km	Potential cumulative noise and vibration impact during the Construction phase. These developments fall within the 500 m Study Area of the Order Limits (Cable Route Corridor). Cumulative construction noise from plant and construction traffic may affect identified receptors in the vicinity of the development (R50, R51, R62) however, it is expected that noise levels associated with the construction of the Scheme's Cable Route Corridor will be dominant at these receptors and as such, the existing identified effects remain valid. As such, no significant cumulative adverse effects are expected.
208	PL/2021/07610 Development of a 20 MW battery storage facility		

ID	Reference and Description	Distance from the Scheme	Potential Cumulative Effects
310	PL/2024/10434 EIA Screening Opinion for proposed battery energy storage scheme of up to c. 50 MW	0.2 km	Potential cumulative noise and vibration impact during the Construction phase. This development falls within the 500 m Study Area of the Order Limits (Cable Route Corridor). Cumulative construction noise from plant on site and construction traffic may affect identified receptors in the vicinity of the development (R58, R59, R62) however, it is expected that noise levels associated with the construction of the Scheme's Cable Route Corridor will be dominant at these receptors and as such, the existing identified effects remain valid. As such, no significant cumulative adverse effects are expected.
328	PL/2024/09725 Outline Planning application (with all matters except access reserved) for up to 22 dwellings, new access off Corsham Road, Public open space, drainage and associated works	0.1 km	Potential cumulative noise and vibration impact during the Construction phase. This development falls within the 500 m Study Area of the Order Limits (Cable Route Corridor). Cumulative construction noise from plant on site and construction traffic may affect identified receptors in the vicinity of the development (R58, R59, R62) however, it is expected that noise levels associated with the construction of the Scheme's Cable Route Corridor will be dominant at these receptors and as such, the existing identified effects remain valid. As such, no significant cumulative adverse effects are expected.
346	PL/2024/09410 Construction and operation of a solar farm together with all associated works, equipment and necessary infrastructure	0.1 km	Potential cumulative noise and vibration impact during the Construction phase. This development falls within the 500 m Study Area of the Order Limits (Cable Route Corridor). Cumulative construction noise from plant on site and construction traffic may affect identified receptors in the vicinity of the development (R60) however, it is expected that noise levels associated with the construction of the Scheme's Cable Route Corridor will be dominant at these receptors and as such, the existing identified effects remain valid. As such, no significant cumulative adverse effects are expected.

In-Combination Cumulative Effects

14.13.5 In-combination cumulative effects are those where impacts from two or more environmental disciplines are considered likely to result in a new or different likely significant effect, or an effect of greater significance, than any one of the impacts on their own. The identified in-combination effects are set out within **ES Volume 1, Chapter 21 Cumulative and In-Combination Effects [EN010168/APP/6.1]**.

14.13.6 In-combination effects at residential receptors as a result of landscape and visual and noise and vibration impacts have been identified during the construction and decommissioning phases, however, these have been assessed as not significant.

14.13.7 In-combination effects at residential receptors as a result of landscape and visual, glint and glare, and noise and vibration impacts have also been identified during the operation and maintenance phase, however, these have been assessed as not significant.

14.14 References

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Ref 14-2 HMSO (1990) The Environmental Protection Act 1990. Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents [Accessed 07 August 2025]

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Ref 14-7 Ministry of Housing, Communities and Local Government (2024) National Planning Policy Framework (NPPF). Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed 07 August 2025]

Ref 14-8 Wiltshire Council (2023) Wiltshire Noise and Planning Technical Guidance. Available at: https://www.wiltshire.gov.uk/env-health-noise-information. [Accessed 07 August 2025]

Ref 14-9 Wiltshire Council (2015) Wiltshire Core Strategy. Available at: https://www.wiltshire.gov.uk/planning-policy-core-strategy [Accessed 07 August 2025]

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Ref 14-11 British Standards Institute (BSI) (2019) BS 4142:2014+A1:2019. 'Method for Rating Industrial and Commercial Sound' 2014.

Ref 14-12 Association of Noise Consultants Good Practice Working Group (2020) BS 4142:2014+A1:2019 Technical Note.

Ref 14-13 BSI (2014) BS 8233:2014 ‘Guidance on Sound Insulation and Noise Reduction for Buildings’ 2014.

Ref 14-14 BSI (2014) BS 5228-1:2009+A1:2014. Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise & Part 2: Vibration 2009

Ref 14-15 Institute of Sustainability and Environmental Professionals (ISEP) (2014) Guidelines for Environmental Noise Impact Assessment [Accessed 07 August 2025]

Ref 14-16 Department for Transport (DfT) (1988) ‘Calculation of Road Traffic Noise’ (CRTN)

Ref 14-17 Highways England (2019) Design Manual for Roads and Bridges (DMRB). Available at: https://nationalhighways.co.uk/suppliers/design-standards-and-specifications/design-manual-for-roads-and-bridges-dmrb/ [Accessed 07 August 2025]

Ref 14-18 SoundPLAN ® registered trademark of SoundPLAN GmbH

Ref 14-19 International Organisation for Standardisation (ISO) (1996) ISO 9613 Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation. Switzerland: ISO

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