



WHITESTONE
solar farm

WHITESTONE SOLAR FARM

Volume 6: Environmental Statement

6.14 Chapter 14: Noise and Vibration

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Glossary

Term	Meaning
<i>Ambient sound level, $L_a = L_{Aeq,T}$</i>	The A-weighted equivalent continuous sound level of the totally encompassing sound for a given situation and time interval, T.

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Term	Meaning
<i>A-weighting</i>	Frequency weighting applied to measured sound in order to account for the relative loudness perceived by the human ear.
<i>Cable Corridors</i>	Corridors within which the high voltage cables would be constructed.
<i>Decibel (dB)</i>	The logarithmically scaled measurement unit of sound.
<i>Draft Environmental Statement</i>	The Draft Environmental Statement which presents the preliminary environmental information relating to the Proposed Development. The Draft ES has been prepared to present information for formal consultation in accordance with current EIA regulation.
<i>Environmental Statement (ES)</i>	The Environmental Statement which presents the environmental information relating to the Proposed Development. The ES has been prepared to present environmental information in relation to the Application for Development Consent.
$L_{A90,T}$	The A-weighted sound level exceeded for 90% of the measurement period. Often referred to as the background sound level.
$L_{Aeq,T}$	A-weighted equivalent continuous sound level over a given time period. It is the sound level of a steady sound that has the same energy as a fluctuating sound over the same time period.
<i>Long Lane 400kV Substation</i>	The new 400 kilovolt National Grid substation proposed on land immediately east of Long Lane, Brinsworth, S60 4JJ.
<i>Order Limits</i>	Maximum extent of the Proposed Development comprising the Site and Cable Corridors.
<i>Peak Particle Velocity (PPV)</i>	A measure of the magnitude of vibration, representing the greatest instantaneous particle velocity in a given time period. Measured in mm/s.
<i>Rating level, $L_{Ar,Tr}$</i>	The specific sound level plus any adjustment for the characteristic features of the sound.
<i>Scoping Opinion</i>	The opinion in response from the relevant consenting authority to an EIA Scoping Report adopted by the Secretary of State on 3 June 2025 which sets out the aspects to be assessed within an EIA. Informed by consultation with the relevant statutory bodies.
<i>Specific sound level, $L_s = L_{Aeq,Tr}$</i>	The A-weighted equivalent continuous sound pressure level produced by the specific sound source at the reference location over a reference time interval, T.
<i>The Applicant</i>	Whitestone Net Zero Ltd.
<i>The Application</i>	The Application submitted to the Secretary of State for a Development Consent Order.
<i>The Proposed Development</i>	The proposed Whitestone Solar Farm.
<i>The Site</i>	The land planned to be used for solar PV array and associated infrastructure, BESS, substation, and landscaping and habitat enhancement. The Site is split into W1, W2, and W3.
<i>W1</i>	The northern parcels of the Whitestone Solar Farm.
<i>W2</i>	The middle parcels of the Whitestone Solar Farm.

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Term	Meaning
W3	The southern parcels of the Whitestone Solar Farm.

Acronyms

Acronym	Meaning
AGL	Above Ground Level
BESS	Battery Energy Storage System
BPM	Best Practical Means
BGL	Below Ground Level
BNL	Basic Noise Level
CDC	City of Doncaster Council
CEMP	Construction Environmental Management Plan
COPA	Control of Pollution Act
CTMP	Construction Traffic Management Plan
CRTN	Calculation of Road Traffic Noise
DCC	Doncaster City Council
DEMP	Decommissioning Environmental Management Plan
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
EPA	Environmental Protection Act
ES	Environmental Statement
HDD	Horizontal Directional Drilling
LOAEL	Lowest Observed Adverse Effect Level
NEDDC	North East Derbyshire District Council
NML	Noise Monitoring Location
NOEL	No Observed Effect Level
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NPSE	Noise Policy Statement for England
NSIP	Nationally Significant Infrastructure Project
oCEMP	Outline Construction Environmental Management Plan
oCTMP	Outline Construction Traffic Management Plan
oDEMP	Outline Decommissioning Environmental Management Plan
oOEMP	Outline Operational Environmental Management Plan
PPGN	Planning Practice Guidance – Noise
PPV	Peak Particle Velocity
PV	Photovoltaic
RMBC	Rotherham Metropolitan Borough Council

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Acronym	Meaning
SOAEL	Significance Observed Adverse Effect Level
UAEL	Unacceptable Adverse Effect Level
W1	Whitestone 1
W2	Whitestone 2
W3	Whitestone 3

Units

Units	Meaning
<i>dB</i>	Decibel
<i>m</i>	Metre
<i>mm</i>	Millimetre
<i>s</i>	Second

14 NOISE AND VIBRATION

14.1 Introduction

14.1.1 This Chapter of the Environmental Statement (ES) has been prepared on behalf of Whitestone Net Zero Ltd ('the Applicant') to evaluate the potential effects of the construction, operation and maintenance, and decommissioning of Whitestone Solar Farm (the Proposed Development) in relation to Noise and Vibration. The Proposed Development is described in **ES Volume 1, Chapter 5: The Proposed Development [EN0110020/APP/6.5]**.

The Order Limits

14.1.2 The extent of the Order Limits is shown in **ES Volume 3, Figure 3.1: Order Limits [EN0110020/APP/6.19]** and the Proposed Development is described in full in **ES Volume 1, Chapter 5: The Proposed Development [EN0110020/APP/6.5]** and shown spatially on the **Works Plans [EN0110020/APP/2.3]**.

The Proposed Development

14.1.3 The Proposed Development involves the construction, operation and maintenance, and decommissioning of more than 100 megawatts (MW) of solar photovoltaic (PV) array, Battery Energy Storage System (BESS), onsite substations and supporting infrastructure, and grid connection infrastructure. The grid connection infrastructure would connect the Proposed Development to the National Grid at the new 400 kilovolt (kV) National Grid substation proposed on land immediately east of Long Lane, Brinsworth, S60 4JJ (Long Lane 400kV Substation). National Grid have applied to Rotherham Metropolitan Borough Council for the development of this new substation which is intended by National Grid to be operational in time for the Proposed Development to connect in 2029. This substation is therefore not included in the Proposed Development and will be subject to a separate planning application taken forward by National Grid.

14.1.4 As the Proposed Development would have a generating capacity in excess of 100MW, it is considered to be a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008¹.

14.1.5 The Proposed Development would be located within the Order Limits. The Order Limits comprise the Site and Cable Corridors. The Site is specifically the land that is planned to be used for solar PV array and associated infrastructure, BESS, substation, landscaping and habitat enhancement. The Site is split into Whitestone 1 (W1), Whitestone 2 (W2), and Whitestone 3 (W3). The Cable Corridors represent the areas within which the interconnection cables would be constructed. A description of the Site is given in **ES Volume 1, Chapter 3: The Site and Surrounding Area [EN0110020/APP/6.3]**

14.1.1 This Chapter of the ES includes the following sections:

- Legislation, Policy, and Guidance
- Consultation
- Assessment Methodology

- Baseline
- Embedded Mitigation
- Assessment of Effects
- Additional Mitigation and Residual Effects
- Cumulative Effects; and
- Summary

14.1.2 This Chapter is supported by the following figures in **ES Figures [EN0110020/APP/6.19]**:

- **Figure 14.1: Noise Monitoring Locations – W1**
- **Figure 14.2: Noise Monitoring Locations – W2**
- **Figure 14.3: Noise Monitoring Locations – W3**
- **Figure 14.4: Operational Noise Contours – W1, daytime**
- **Figure 14.5: Operational Noise Contours – W1, night-time**
- **Figure 14.6: Operational Noise Contours – W2, daytime**
- **Figure 14.7: Operational Noise Contours – W2, night-time**
- **Figure 14.8: Operational Noise Contours – W3, daytime**
- **Figure 14.9: Operational Noise Contours – W3, night-time**
- **Figure 14.10: Embedded Operational Noise Mitigation – W1; and**
- **Figure 14.11: Embedded Operational Noise Mitigation – W2.**

14.1.3 This Chapter is supported by the following appendices in **ES Appendices [EN0110020/6.20]**:

- **Appendix 14.1: Legislation, Policy and Guidance**
- **Appendix 14.2: Baseline Conditions**
- **Appendix 14.3: Construction Noise and Vibration Assessment; and**
- **Appendix 14.4: Operational Noise Assessment.**

14.1.4 This chapter considers the following potential significant environmental effects:

- Noise and vibration from construction and decommissioning activities i.e. On-site traffic movements, construction of compounds, installation of internal tracks, cut and fill earthworks, solar installation, substation installation, BESS installation, and HV cabling (cable trenching, cable jointing works, and trenchless crossings);
- Noise from off-site construction and decommissioning traffic; and
- Noise generated by the operation of fixed plant associated with the Solar Farm, BESS, and Substations.

14.2 Legislation, Policy and Guidance

14.2.1 The legislation, policy, and guidance related to Noise and Vibration, is detailed in **ES Volume 3, Appendix 14.1: Legislation, Policy and Guidance [EN0110020/APP/6.20]**, and relevant to the Proposed Development, are outlined below.

Legislation

14.2.2 Legislation that has been considered includes:

- Control of Pollution Act 1974 (CoPA)²; and
- Environmental Protection Act 1990 (EPA)³.

National Policy

14.2.3 National policy that has been considered includes:

- Overarching National Policy Statement (NPS) for Energy (EN-1), 2025⁴
- NPS for Renewable Energy Infrastructure (EN-3), 2025⁵
- NPS for Electricity Networks Infrastructure (EN-5) 2025⁶
- National Planning Policy Framework (NPPF) (2024)⁷; and
- Noise Policy Statement for England 2010 (NPSE)⁸.

Local Policy

14.2.4 Local policy that has been considered includes:

- Doncaster Local Plan 2015-2035⁹
- Rotherham Local Plan 2014 – Sites and Policies¹⁰; and
- North East Derbyshire Local Plan 2014 to 2034¹¹.

Guidance

14.2.5 Supporting guidance that has been considered includes:

- Planning Practice Guidance – Noise (2019) (PPGN)¹²
- BS 5228-1:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites – Part 1. Noise (BS 5228-1)¹³
- BS 5228-2:2009 + A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2. Vibration (BS 5228-2)¹⁴
- BS 7385-2:1993 Evaluation and measurement for vibration in buildings – Guide to damage levels from groundborne vibration (BS 7385-2)¹⁵
- BS 4142:2014+A1:2019 – Methods for rating and assessing industrial and commercial sound (BS 4142)¹⁶
- BS 8233:2014 – Guidance on sound insulation and noise reduction for buildings (BS 8233)¹⁷
- ISO 9613-2:2024 – Acoustics – Attenuation of sound during propagation outdoors. Part 2 (ISO 9613)¹⁸
- Design Manual for Roads and Bridges – LA111 Noise and Vibration (DMRB LA111)¹⁹; and
- Calculation of Road Traffic Noise (CRTN)²⁰.

- 14.2.6 More detailed information regarding the above legislation, policy and guidance can be found in **ES Volume 3, Appendix 14.1: Legislation, Policy and Guidance [EN0110020/APP/6.20]**.

14.3 Consultation

- 14.3.1 This section provides a summary of the consultation undertaken to date regarding the Proposed Development.

EIA Scoping

- 14.3.2 The Scoping Report (**ES Volume 3, Appendix 2.2: EIA Scoping Report [EN0110020/APP/6.20]**), submitted 23 April 2025, outlines the technical guidance, standards, best practices, and criteria to be applied in the assessment to identify and evaluate the likely significant effects of the Proposed Development on Noise and Vibration.
- 14.3.3 A Scoping Opinion was sought from the Planning Inspectorate to determine the content of the assessment, as well as the approach and methods to be used. The Scoping Opinion report was received from the Planning Inspectorate on 3 June 2025 (**ES Volume 3, Appendix 2.3: EIA Scoping Opinion [EN0110020/APP/6.20]**).
- 14.3.4 **Table 14-1** summarises how this Chapter of the ES addresses key points from the Environmental Impact Assessment (EIA) Scoping Opinion comments related to Noise and Vibration.

Table 14-1: Scoping Opinion Comments and How They Are Addressed in This ES

Consultee	Issue Raised	How This is Addressed	Where This is Addressed in the ES
<i>The Planning Inspectorate</i>	ID 3.9.1: Road Traffic Noise During Operation: <i>“the Scoping Report proposes to scope this matter out on the basis that no permanent staff will be required for operation of the Proposed Development, and only ‘occasional’ vehicle access will only be required for maintenance. On the basis that the ES confirms that traffic movements required during operation are below appropriate threshold guidance levels so that there would be no likelihood of significant effects, the Inspectorate agrees to scope this matter out.”</i>	Operational traffic noise is scoped out of the assessment. Vehicle numbers during operation are anticipated to be very low and unlikely to result in any perceptible or material change in road traffic noise. This is supported by the Transport assessment in ES Volume 2, Chapter 13: Traffic and Transport [EN0110020/APP/6.13] , which states that anticipated vehicle counts during operation would be well below thresholds in DMRB LA 111 that would trigger the need for assessment.	Table 14-2 presents topics scoped out, including operational traffic noise.
<i>The Planning Inspectorate</i>	ID 3.9.2: Vibration from Equipment During Operation: <i>“the Inspectorate agrees that during operation it is unlikely that the infrastructure would be a significant source of significant vibration and that this matter can be scoped out of further assessment.”</i>	Operational vibration is scoped out of the assessment.	Table 14-2 presents topics scoped out, including operational vibration.
<i>The Planning Inspectorate</i>	ID 3.9.3: Noise from Cable Corridor During Operation: <i>“the Scoping Report states that operational noise from the Cable Corridor is not</i>	There is no recognised peer-reviewed guidance for the assessment or calculation of	Table 14-2 presents topics scoped out, including

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Consultee	Issue Raised	How This is Addressed	Where This is Addressed in the ES
	<p><i>expected during operation. The Inspectorate notes in Scoping Report paragraph 3.5.23 that higher voltage cabling is likely to be laid underground. On the basis the ES confirms and secures that higher voltage cabling above 132kV is buried to a sufficient depth demonstrating appropriate mitigation of any potential significant noise effect the Inspectorate considers that this matter can be scoped out.”</i></p>	<p>ground-borne noise or vibration from underground high-voltage power lines. It is common practice to scope this matter out. Therefore, it is not meaningful to define a depth at which high-voltage cabling would avoid noise impacts. As operational noise and vibration from underground high-voltage cables is typically inaudible, it is appropriate to scope this matter out.</p>	<p>operational noise from the Cable Corridor.</p>
<p><i>The Planning Inspectorate</i></p>	<p>ID 3.9.4: Noise and Vibration from Plant and Equipment Used During Decommissioning: <i>“Scoping Report paragraph 15.4.3 states that impacts during construction would be comparable to those at decommissioning and so a separate assessment for the decommissioning stage is not considered necessary. The Inspectorate does not agree to scope this matter out on the basis that it is scoped in for construction in Table 15.3 and anticipated to be similar to construction suggesting possibility for a LSE. However, the Inspectorate agrees that the conclusions of the construction phase can be applied to the decommissioning phase of the Proposed Development for this matter on the basis that</i></p>	<p>Noise and vibration during the decommissioning phase is not scoped out, however it is assessed on the basis that the impacts would be the same as or less than those during the construction phase.</p>	<p>Section 14.4 presents the assessment methodology for decommissioning noise, highlighting that it is the same as the assessment methodology for construction noise. Section 14.6 presents the Applicant’s commitment to produce an outline Decommissioning Environmental Management Plan (oDEMP) [EN0110020/APP/5.11]. Section 14.7 highlights that</p>

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Consultee	Issue Raised	How This is Addressed	Where This is Addressed in the ES
	<i>the impacts and effects would be comparable. The ES should provide an assessment of significant effects where they are likely to occur or provide sufficient evidence to support scoping out these matters.”</i>		the noise and vibration impacts during decommissioning are likely to be no worse than those during construction and that the impacts for noise and vibration during decommissioning would be Not Significant.
<i>The Planning Inspectorate</i>	ID 3.9.5: Noise from Traffic During Decommissioning: <i>“the Scoping Report proposes to scope this matter out on the basis that increases in noise from road traffic during the decommissioning phase are expected to be similar to those generated during the construction phase. The Inspectorate does not agree to scope this matter out on the basis that it is scoped in for construction in Table 15.3 and anticipated to be similar to construction suggesting possibility for a LSE. The ES should provide an assessment of significant effects where they are likely to occur or provide sufficient evidence to support scoping out these matters.”</i>		
<i>The Planning Inspectorate</i>	ID 3.9.6: Study Area: <i>“the Scoping Report states that the Study Area [for] the assessment of noise and vibration will be refined as the design progresses to the Draft ES stage but does provide an estimated Study Area based upon the experience of similar developments. The ES should clearly define the Study Area used within the assessment based on the zone of influence; this should be informed by appropriate consultation where relevant.”</i>	The Study Area is defined based on the type of noise and vibration generated by the Proposed Development during the construction, operation, and decommissioning phases in relation to distances from noise sensitive receptors at which noise and vibration	Section 14.4 presents the Study Areas

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Consultee	Issue Raised	How This is Addressed	Where This is Addressed in the ES
		<p>has the potential to cause impacts. These areas include:</p> <p>An area extending 300m from noise generating activities during the construction and decommissioning phases to align with BS 5228-1;</p> <p>An area extending 100m from vibration generating activities during the construction and decommissioning phases to align with BS 5228-2;</p> <p>An area extending 50m from construction and decommissioning traffic routes to align with LA 111; and</p> <p>An area extending 2km from noise generating plant during the operational phase which is typical for an assessment of operational noise using BS 4142.</p>	
<p><i>The Planning Inspectorate</i></p>	<p>ID 3.9.7: Vibration Impacts on Waterways and Water Infrastructure: <i>“given the location of the Proposed Development in relation to watercourses such as the Chesterfield Canal</i></p>	<p>Since the submission of the ES Scoping Report in April 2025, the Order limits and extent of solar development</p>	<p>Sections 14.7 includes an assessment of construction vibration impacts at</p>

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Consultee	Issue Raised	How This is Addressed	Where This is Addressed in the ES
	<p><i>and water infrastructure such as Harthill reservoir, the ES should assess potential vibration impacts on the stability and ecology of these receptors. Please see ref 3.5.8 of this Scoping Opinion.”</i></p>	<p>have been withdrawn from the western edge of Harthill reservoir. Construction vibration impacts on Chesterfield Canal and Harthill reservoir are assessed in accordance with BS 5228-2 and BS 7385-2. Noise and vibration impact to ecological receptors is addressed in ES Volume 2, Chapter 6: Biodiversity and Nature Conservation [EN0110020/APP/6.6]</p>	<p>Chesterfield Canal and Harthill reservoir.</p>

Issue Scoped Out of Assessment

14.3.5 Following the scoping exercise, some elements were scoped out of assessment in this ES. **Table 14-2** provides a summary of issues scoped out of assessment.

Table 14-2: Issues Scoped Out of Assessment

Potential Effect / Topic	Development Phase	Rationale
Operational road traffic noise	Operational phase	Vehicle access to any one part of the Site will be limited to occasional visits for maintenance etc. Increases in road traffic due to operation are therefore not expected to occur and have been scoped out of further assessment.
Operational vibration	Operational phase	No Significant vibration generating equipment will be required during operation. Therefore, an operational vibration assessment is scoped out.
Operational noise from Cable Corridor	Operational phase	Operational noise from the Cable Corridor is not expected to be audible. Therefore, an assessment of operational noise from the Cable Corridor is scoped out.

Statutory Consultation

14.3.6 A Statutory Consultation period was held between 16 September and 28 October 2025 in line with Section 47 of the Planning Act 2008. Feedback was sought from the local community and a range of consultee bodies based on the preliminary information and assessments presented in the Draft Environmental Statement (Draft ES).

14.3.7 **Table 14-3** presents feedback from statutory consultees given at Statutory Consultation, and how this is addressed in this ES.

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Table 14-3: Statutory Consultation Feedback from the Statutory Consultation Period

Consultee	Consultee Feedback	How This is Addressed	Where This is Addressed in the ES
Doncaster City Council (24 th October (DCC) 2025)	DCC can advise that the adopted Local Plan (at Appendix 11) makes clear that the target for all new noise generating development should be +0dB above the existing background levels. This should be taken forward in the final technical documents.	Operational noise has been assessed by implementing BS 4142 in the context of NPSE to avoid Significant Adverse effects at +5dB above background depending on context. Embedded mitigation for the Proposed Development is to avoid effects at +5dB above background depending on context. This will be developed as part of detailed design post consent.	Section 14.7 presents the assessment of effects during operation of the Proposed Development. Section 14.8 includes a sensitivity analysis of additional mitigation requirements for compliance of +0dB above background.
Rotherham Metropolitan Borough Council (RMBC) (23 rd October 2025)	RMBC recommends restricting construction start times to 08:00 on weekdays and 09:00 on Saturdays to reduce disturbance.	Construction noise is assessed assuming that construction could take place as early as 07:00 on weekdays or Saturdays.	Section 14.4 presents the assumptions for working hours during the construction period.
	Noise modelling indicates exceedances of noise limits at several receptor locations, requiring further mitigation detailed in the Construction Environmental Management Plan (CEMP), including active noise monitoring.	The outline Construction Environmental Management Plan (oCEMP) [EN0110020/APP/5.9] identifies the mitigation requirements for the construction period.	Section 14.6 presents details of mitigation measures that will be considered as part of the oCEMP [EN0110020/APP/5.9] .

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	<p>Vibration levels predicted at some receptors exceed thresholds likely to cause complaints, necessitating mitigation and liaison with the public.</p>	<p>The oCEMP [EN0110020/APP/5.9] identifies the mitigation requirements for the construction period.</p>	<p>Section 14.6 presents details of mitigation measures that will be considered as part of the oCEMP [EN0110020/APP/5.9].</p>
	<p>Operational noise also exceeds council criteria at some locations, raising concerns about cumulative impacts on rural backgrounds, with a need for rating levels not to exceed background noise.</p>	<p>Operational noise has been assessed by implementing BS 4142 in the context of NPSE to avoid Significant Adverse effects at +5dB above background depending on context. Embedded mitigation for the Proposed Development is to avoid effects at +5dB above background depending on context. This will be considered as part of detailed design post consent.</p>	<p>Section 14.7 presents the assessment of effects during operation of the Proposed Development. Section 14.8 includes a sensitivity analysis of additional mitigation requirements for compliance of +0dB above background.</p>

Other Consultation

14.3.8 Details of consultation to date undertaken outside of the scoping exercise and Statutory Consultation are presented in **Table 14-4**.

Table 14-4: Summary of Other Consultation

Consultee	Date	Summary of Discussion	Where Addressed in the ES
Rotherham Metropolitan Borough Council Consultee Responses	6 May 2025	Noise monitoring locations were agreed.	Baseline conditions are presented in ES Volume 3, Appendix 14.2: Baseline Conditions [EN0110020/APP/6.20] and summarised in Section 14.5 of this Chapter
Rotherham Metropolitan Borough Council Consultee Responses	6 May 2025	Comment from RMBC: the ES must include an assessment of all noise emissions from the proposed solar farms and battery energy storage systems.	Section 14.8 includes an assessment of construction and operational noise from all relevant noise emitting plant.
Rotherham Metropolitan Borough Council Consultee Responses	6 May 2025	Existing background and predicted future noise levels at nearest noise sensitive dwellings have been identified and agreed.	As above.
Rotherham Metropolitan Borough Council Consultee Responses	6 May 2025	Comment from RMBC: the ES must include a written scheme of how the occupants of noise sensitive premises will be protected from noise.	Section 14.6 includes embedded mitigation for the Proposed Development.
Rotherham Metropolitan Borough Council Consultee Responses	6 May 2025	Proposed criteria from RMBC: noise attenuation measures as appropriate to achieve no more than 0dB(A) above the prevailing background levels, outside the boundary of the nearest noise sensitive properties.	Section 14.4 presents the assessment methodology. Operational noise has been assessed by implementing BS 4142 in the context of NPSE to avoid Significant Adverse effects at +5dB above background depending on context. Section 14.7 presents the assessment of effects during operation

Consultee	Date	Summary of Discussion	Where Addressed in the ES
			of the Proposed Development. Section 14.8 includes a sensitivity analysis of additional mitigation requirements for compliance of +0dB above background.
Rotherham Metropolitan Borough Council Consultee Responses	6 May 2025	Comment from RMBC: the ES must include noise model data (1/3 octave band data, source height, positioning and orientation of equipment, acoustic character penalties, and uncertainties within the assessment)	ES Volume 3, Appendix 14.4: Operational Noise Assessment [EN0110020/APP/6.20] presents operational noise modelling assumptions
Rotherham Metropolitan Borough Council Consultee Responses	6 May 2025	Liaison and agreement in relation to representative noise assessment locations	ES Volume 3, Appendix 14.2: Baseline Conditions [EN0110020/APP/6.20] includes assessment locations and baseline monitoring locations.
Rotherham Metropolitan Borough Council	18 May 2026	Meeting to discuss progress on noise assessment and updates to assessment that have been included in the ES submitted with the Application.	Throughout this Chapter.

Targeted Consultation

- 14.3.9 A Targeted Consultation period was held between 4 March and 3 April 2026 on proposed changes to the Order Limits. This included notifying relevant prescribed consultees. Feedback from this Targeted Consultation and the Applicant’s response is included in the **Consultation Report [EN0110020/APP/5.1]**.
- 14.3.10 A second Targeted Consultation was held for any individuals that had been identified as land interests after the Statutory Consultation.
- 14.3.11 No comments were provided by statutory consultees through the Targeted Consultation period in relation to Noise and Vibration.

14.4 Assessment Methodology and Significance Criteria

- 14.4.1 This section sets out the scope and methodology for the assessment of the impacts of the Proposed Development on noise and vibration from the construction, operation and decommissioning phases.

Study Areas

- 14.4.2 The Proposed Development is located within the administrative boundaries of City of Doncaster Council (CDC), Derbyshire County Council (DCC), Rotherham Metropolitan Borough Council (RMBC), and North East Derbyshire District Council (NEDDC).
- 14.4.3 The Study Area is defined based on the type of noise and vibration generated by the Proposed Development during the construction, operation, and decommissioning phases in relation to distances from noise sensitive receptors at which noise and vibration has the potential to cause impacts. These definitions are typical for developments such as the Proposed Development and are consistent with the relevant guidance. These areas include:
- An area extending 300m from noise generating activities during the construction and decommissioning phases in accordance with BS 5228-1
 - An area extending 100m from vibration generating activities during the construction and decommissioning phases in accordance with BS 5228-2
 - An area extending 50m from affected construction and decommissioning traffic routes in accordance with LA 111; and
 - An area extending 2km from noise generating plant during the operational phase which is typical for an assessment of operational noise in accordance with BS 4142.
- 14.4.4 **ES Volume 3, Figures 14.1 – 14.3: Noise Monitoring Locations [EN0110020/APP/6.19]** presents these Study Areas.

Identifying Receptors and Receptor Sensitivity

- 14.4.5 A noise sensitive receptor is any receptor (including dwellings) which has the potential to be impacted by noise. These are typically residential premises but can also include schools, places of worship, recreational areas and noise sensitive commercial premises.
- 14.4.6 Noise sensitive receptors are located adjacent to the Proposed Development. The surrounding land is mostly used for arable farming, woodland and residential purposes.
- 14.4.7 Several noise sensitive receptors in the following residential communities are within the Study Area of the Proposed Development:
- Within 2km of W1: Conisbrough, Clifton, Micklebring, Ravenfield, Old Edlington, and Hooton Roberts
 - Within 2km of W2: Wickersley, Catcliffe, Whiston, Waverley, Thurcroft, Brampton-en-le- Morthen, Ulley, Treeton, Aughton, Aston, Todwick, Swallownest, Laughton Common, Dinnington and Anston
 - Within 2km of W3: Wales, Kiveton Park, High Moor, Harthill, Woodall, and Killamarsh; and
 - Within 300m of the Cable Corridors connecting W1, W2 and W3: South Anston, Thorpe Salvin, Bramley, and Hellaby.
- 14.4.8 Representative noise assessment locations (AL001 to AL146) have been identified to represent receptors within the Study Areas which are highly noise sensitive. These are presented in **Table 14.2.1 of ES Volume 3, Appendix 14.2:**

Baseline Conditions [EN0110020/APP/6.20] and on ES Volume 3, Figures 14.1 – 14.3: Noise Monitoring Locations [EN0110020/APP/6.19].

- 14.4.9 An initial set of assessment locations (AL001 to AL115) was consulted and agreed with Rotherham Metropolitan Borough Council. City of Doncaster Council were consulted on 30th April 2025 regarding these proposed assessment locations, however, there has been no response to date.
- 14.4.10 Additional noise assessment locations (AL116 to AL146) were introduced to the assessment following updates to the design of the Proposed Development since Statutory Consultation. These account for the updated quantitative assessment of the Cable Corridors.

Methodology for the Assessment of Effects

Assessment Criteria

- 14.4.11 Full details of the adopted impact assessment methodology are presented in **ES Volume 3, Appendix 14.3: Construction Noise and Vibration Assessment [EN0110020/APP/6.20]** and **ES Volume 3, Appendix 14.4: Operational Noise Assessment [EN0110020/APP/6.20]**. These are summarised in the subsequent paragraphs and sub-sections of this Chapter.
- 14.4.12 The NPSE requires noise and vibration assessments to identify effects from a development that would result in Significant Adverse impacts on health and quality of life.
- 14.4.13 The NPSE vision is to: *“Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development”*.
- 14.4.14 This long-term vision is supported by three Noise Policy Aims that can be delivered through effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development. These aims are to:
- Avoid Significant Adverse impacts on health and quality of life
 - Mitigate and minimise adverse impacts on health and quality of life; and
 - Where possible, contribute to the improvement of health and quality of life.
- 14.4.15 The NPSE and PPGN effect levels that relate to the likelihood of Significant Adverse effects on health and quality of life are:
- NOEL (No Observed Effect Level): The level below which no effect can be detected
 - LOAEL (Lowest Observed Adverse Effect Level): The level above which adverse effects on health and quality of life can be detected
 - SOAEL (Significant Observed Adverse Effect Level): The level above which Significant Adverse effects on health and quality of life occur; and
 - UAEL (Unacceptable Adverse Effect Level): The level above which adverse effects are unacceptable.
- 14.4.16 The PPGN presents a noise exposure hierarchy table which is presented in **ES Volume 3, Appendix 14.4: Operational Noise Assessment [EN0110020/APP/6.20]** and summarised in **Table 14-5**.

Table 14-5: Summarised PPGN Noise Exposure Hierarchy Table

Response	Examples of Outcomes	Increasing Effect Level	Action
Not present	No effect	NOEL (no observed effect)	No specific measured required
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response.	Below LOAEL (no observed adverse effect)	No specific measured required
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response. Potential for sleep disturbance. Quality of life diminished.	Above LOAEL and below SOAEL (observed adverse effect)	Mitigate and reduce to a minimum
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response. Potential for sleep disturbance. Quality of life diminished.	Above SOAEL and below UAEL	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response.	Above UAEL	Prevent

14.4.17 The NPSE acknowledges that it is not possible to determine a “*single objective*” noise (or vibration) based measure applicable to all sources and receptors to define LOAEL or SOAEL. However, the thresholds for the onset of each of the effect levels can be defined based upon relevant policy, available standards and technical guidance.

14.4.18 Where it is not possible to define the onset of LOAEL and SOAEL from policy, standards or guidance, due to the nature of the assessment methodologies, effect levels have been defined with reference to those previously used for the assessment of other NSIPs in England.

- 14.4.19 For the purposes of this assessment, noise exposure at assessment locations that are below the LOAEL threshold are not considered to constitute a significant effect.
- 14.4.20 Where the noise exposure at an assessment location exceeds the SOAEL threshold, after noise mitigation measures are taken into account, a likely Significant adverse effect in terms of the EIA Regulations is deemed to occur, in addition to a Significant observed adverse effect on health and quality of life in terms of Government noise policy, as stipulated in NPSE.
- 14.4.21 Determining whether a Significant adverse effect occurs where noise exposure lies between the LOAEL and SOAEL thresholds requires consideration of additional quantitative and qualitative factors. These including guiding principles in BS 5228-1 for construction noise and BS 4142 for operational noise, including:
- Noise level – the level of exposure between the LOAEL and SOAEL values
 - Change in noise level – the magnitude of noise level change
 - Acoustic context – features of the noise source (e.g. intermittency, tonality, distinctiveness, etc.) or the existing noise environment; and
 - Receptor type (community population) – the size of population exposed.
- 14.4.22 **Table 14-6** summarises the LOAEL and SOAEL values adopted for the assessment of the Proposed Development, further details are presented in **ES Volume 3, Appendix 14.3: Construction Noise and Vibration Assessment [EN0110020/APP/6.20]** and **ES Volume 3, Appendix 14.4: Operational Noise Assessment [EN0110020/APP/6.20]**.

Table 14-6: Summary of LOAEL and SOAEL Values Adopted for the Proposed Development

Assessment	Period	Lowest Observable Adverse Effect Level (LOAEL)	Significant Observable Adverse Effect (SOEAL)
Construction and decommissioning noise	Daytime	Relevant category threshold ⁽¹⁾	75dB LAeq,T
	Evenings and Weekends	Relevant category threshold ⁽¹⁾	65dB LAeq,T
	Night-time	Relevant category threshold ⁽¹⁾	55dB LAeq,T
Construction and decommissioning vibration	Daytime, evenings, and night-time	1.0 mm/s (Peak Particle Velocity (PPV))	10 mm/s (PPV)
Construction and decommissioning traffic noise	Daytime	55dB LA10,18hr	n/a ⁽²⁾
Operational noise	Daytime, evenings, and night-time	See Paragraph 14.4.31	See Paragraph 14.4.31

(1) Category thresholds are defined in ES Volume 3, Appendix 14.3: Construction Noise and Vibration Assessment [EN0110020/APP/6.20] and summarised in **Table 14-7**.

(2) DMRB LA111 does not seek to propose a SOAEL for construction traffic noise, however it states that construction traffic noise shall constitute a potential Significant effect where the magnitude of impact is either Moderate or Major (see **Table 14-10**)

Construction

Construction Noise

14.4.23 BS 5228-1 provides a calculation and assessment methodology in relation to control of noise from construction sites. It is widely used for assessment of construction noise from developments similar in nature to the Proposed Development. Therefore, construction noise from the Proposed Development has been assessed in accordance with BS 5228-1.

14.4.24 Further details on the assessment methodology and significance criteria are presented in **ES Volume 3, Appendix 14.3: Construction Noise and Vibration Assessment [EN0110020/APP/6.20]**. The values for LOAEL and SOAEL are summarised in **Table 14-6** with the relevant category thresholds summarised in **Table 14-7**.

Table 14-7: Construction Noise Assessment Category Thresholds

Period		Assessment Category (LAeq,T) [dB]		
		A	B	C
Daytime	T=12hr, Weekdays, 07:00-19:00; T=6hr, Saturday, 07:00-13:00	65dB	70dB	75dB

Period		Assessment Category ($L_{Aeq,T}$) [dB]		
		A	B	C
Evenings and weekends	T=4hr, Weekdays 19:00–23:00; T=10hr, Saturdays 13:00-23:00; T=16hr, Sundays 07:00-23:00	55dB	60dB	65dB
Night-time	T=8hr, Every day 23:00-07:00	45dB	50dB	55dB

Construction Vibration

- 14.4.25 BS 5228-2 provides similar concepts to BS 5228-1 but focusses on construction vibration affecting human receptors and buildings. BS 5228-2 provides guidance on typical vibration levels, associated risks, empirical prediction methods, and mitigation strategies. It is widely used for assessment of construction vibration from developments similar in nature to the Proposed Development. Therefore, construction vibration from the Proposed Development has been assessed in accordance with BS 5228-2.
- 14.4.26 Further details on the assessment methodology and significance criteria are presented in **ES Volume 3, Appendix 14.3: Construction Noise and Vibration Assessment [EN0110020/APP/6.20]** and the values for LOAEL and SOAEL are summarised in **Table 14-6**.

Construction Traffic Noise

- 14.4.27 The DMRB LA111 issued by National Highways provides noise assessment guidance relating to the construction traffic on the existing road network. It is widely used for assessment of construction traffic noise from developments similar in nature to the Proposed Development. At this stage, construction traffic noise from the Proposed Development has been assessed qualitatively with reference to the construction traffic noise assessment method and criteria given in the DMRB LA111.
- 14.4.28 Further details on the assessment methodology and significance criteria are presented in **ES Volume 3, Appendix 14.3: Construction Noise and Vibration Assessment [EN0110020/APP/6.20]** and the value for LOAEL is summarised in **Table 14-6**.

Operation and Maintenance

- 14.4.29 In accordance with the title of the document, BS 4142 sets out a “*method for rating and assessing industrial and commercial sound*”, applicable to fixed installations of this nature. The method described in BS 4142 uses outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling used for residential purposes. It is widely used for assessment of noise from developments similar in nature to the Proposed Development. Therefore, operational noise from the Proposed Development has been assessed in accordance with BS 4142.
- 14.4.30 The assessment methodology and significance criteria are presented in **ES Volume 3, Appendix 14.4: Operational Noise Assessment [EN0110020/APP/6.20]**.

14.4.31 BS 4142 does not seek to propose LOAEL or SOAEL, however it states that:

- If the rating level of the specific sound source exceeds the background sound level by around 10dB or more it is likely to be an indication of a Significant Adverse impact depending on the context, and
- If the rating level of the specific sound source exceeds the background sound level by around 5dB or more, it is likely to be an indication of an adverse impact depending on the context.

14.4.32 This provides the basis to determine the initial assessment in accordance with BS 4142. The final designation of significance applies the initial assessment in terms of context:

- The absolute level of sound
- The character and level of the residual sound compared to the character and level of the specific sound; and
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

Decommissioning

14.4.33 The assessment methodology for the decommissioning phase of the Proposed Development aligns with that of the construction phase. This is presented in presented in **ES Volume 3, Appendix 14.3: Construction Noise and Vibration Assessment [EN0110020/APP/6.20]** and the values for LOAEL and SOAEL are summarised in **Table 14-6**.

Significance Criteria

14.4.34 In general terms, negligible and minor impacts indicate that an effect is likely to be Not Significant. Moderate and major impacts indicate that an effect is likely to be Significant.

14.4.35 The final assessment of significance for a specific source of noise is a combination of receptor sensitivity (where applicable), magnitude of impact (either in terms of noise exposure or change in noise exposure, or a combination of the two), and consideration of context (such as duration of exposure or likely perception of impact).

Magnitude of Impact

14.4.36 **Table 14-8** presents the magnitude of impact of construction and decommissioning noise in the context of significance of effect.

14.4.37 It is likely that the decommissioning phase is comparable to or less than the effects presented in the assessment of construction noise, vibration and construction-related traffic in terms of their respective activities. Therefore, any effects arising from the construction assessment will apply to the decommissioning phase.

Table 14-8: Construction and Decommissioning Noise Magnitude of Impact

Magnitude of Impact	Effect Level – See Table 14-5	Significance of Effect and Context
Negligible	5dB or more below the relevant category threshold (LOAEL)	Not Significant
Minor	Up to 5dB below LOAEL	Not Significant subject to implementation of Best Practicable Means (BPM)
Moderate	Above LOAEL but below the category C threshold (SOAEL)	Significant if the impact will occur for 10 or more days or nights in any 15 consecutive days or nights, or a total number of days exceeding 40 in any 6 consecutive months. Noise mitigation measures may be required to avoid Significant adverse effects on health and quality of life.
Major	Above SOAEL	Significant if the impact will occur for more than a matter of hours. Noise mitigation measures may be required to avoid Significant adverse effects on health and quality of life.

14.4.38 Moderate impacts have the potential to constitute a significant effect, subject to additional considerations, such as:

- The magnitude of noise exposure;
- The change in noise exposure as a result of the construction activities; and
- The duration of the noise exposure.

14.4.39 Noise mitigation measures (beyond those defined in BPM) should be applied to minimise adverse effects where the magnitude of impact is Moderate or Major.

14.4.40 **Table 14-9** presents the magnitude of impact of construction and decommissioning vibration in the context of significance of effect.

Table 14-9: Construction and Decommissioning Vibration Magnitude of Impact

Magnitude of Impact	Effect Level – See Table 14-6	Significance of Effect and Context
Negligible	Below 0.3mm/s ⁽¹⁾	Not Significant
Minor	Above 0.3 mm/s ⁽¹⁾ but below 1.0mm/s (LOAEL)	Not Significant subject to implementation of BPM
Moderate	Above LOAEL but below 10mm/s (SOAEL)	Significant if the impact will occur for 10 or more days or nights in any 15 consecutive days or nights, or a total number of days exceeding 40 in any 6 consecutive

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Magnitude of Impact	Effect Level – See Table 14-6	Significance of Effect and Context
		months. Noise mitigation measures may be required to avoid Significant adverse effects on health and quality of life.
Major	Above SOAEL	Significant if the impact will occur for 10 or more days or nights in any 15 consecutive days or nights, or a total number of days exceeding 40 in any 6 consecutive months. Noise mitigation measures may be required to avoid Significant adverse effects on health and quality of life.

¹ Widely regarded as the threshold of perception, as presented in ES Volume 3, Appendix 14.3: Construction Noise and Vibration Assessment [EN0110020/APP/6.20]

14.4.41 **Table 14-10** presents the magnitude of impact of construction and decommissioning traffic noise in the context of significance of effect.

Table 14-10: Construction and Decommissioning Traffic Noise Magnitude of Impact

Magnitude of Impact	Increase in Basic Noise Level (BNL) of Closest Public Road Used for Construction Traffic	Significance of Effect and Context
Negligible	Less than 1.0dB	Not Significant
Minor	Greater than or equal to 1.0dB but less than 3.0dB	Not Significant
Moderate	Greater than or equal to 3.0dB but less than 5.0dB	Significant if the impact will occur for 10 or more days or nights in any 15 consecutive days or nights, or a total number of days exceeding 40 in any 6 consecutive months. Noise mitigation measures may be required to avoid Significant adverse effects on health and quality of life.
Major	Greater than or equal to 5.0dB	Significant if the impact will occur for 10 or more days or nights in any 15 consecutive days or nights, or a total number of days exceeding

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Magnitude of Impact	Increase in Basic Noise Level (BNL) of Closest Public Road Used for Construction Traffic	Significance of Effect and Context
		40 in any 6 consecutive months. Noise mitigation measures may be required to avoid Significant adverse effects on health and quality of life.

14.4.42 **Table 14-11** presents the magnitude of impact of operational noise in the context of significance of effect.

Table 14-11: Operational Noise Magnitude of Impact

Magnitude of Impact	Noise Rating Level (dB L _{Ar,Tr})	Significance of Effect and Context
Negligible	Less than a level of 5dB below prevailing background	Not Significant
Minor	Greater than or equal to a level of 5dB below prevailing background and less than a level of 5dB above background ⁽¹⁾ .	Not Significant, depending on context.
Moderate	Greater than or equal to a level of 5dB above prevailing background and less than a level of 10dB above background.	Potentially Significant, depending on context. Noise mitigation measures may be required in order to avoid Significant adverse effects on health and quality of life.
Major	Greater than a level of 10dB above prevailing background.	Significant, depending on context. Noise mitigation measures are likely to be required in order to avoid Significant adverse effects on health and quality of life.

⁽¹⁾ Greater exceedances of background would be designated Minor magnitude where daytime rating levels are 42dB L_{Ar,Tr} or less, or night-time rating levels are 37dB L_{Ar,Tr} or less – see Error! Reference source not found. and subsequent paragraph.

14.4.43 The maximum allowable noise rating level for Minor magnitude or less is defined at the Minor and Moderate boundary. For operational noise, (using **Table 14-11**) this is defined as less than +5dB above background.

Defining the Effect

14.4.44 For the purposes of this assessment, where Moderate or Major adverse impacts are identified that cannot be mitigated, the effect is considered **Significant**.

Where Negligible or Minor adverse impacts are identified, the effect is considered **Not Significant**. This is consistent with best practice.

- 14.4.45 The effects of the construction and decommissioning phases are generally short-term and only last for the duration of the construction/decommissioning activity. Typically, the noisiest construction and decommissioning activities are carried out during the daytime, however there is potential for some night-time construction activities depending on the construction program and equipment limitations (for example potential continuous usage of trenchless construction methods).
- 14.4.46 Operational noise effects described in this assessment would be long-term and expected to occur throughout the lifetime of the Proposed Development.

Basis of the Assessment

- 14.4.47 **ES Volume 1, Chapter 5: The Proposed Development [EN0110020/APP/6.5]** presents a summary of the design information for the Proposed Development which has been used to inform this assessment. The aspects of the construction phase of the Proposed Development which have potential effects on noise and vibration include:
- Construction activities in the Site areas including cut and fill earthworks, solar installation, substation installation, BESS installation, and High Voltage cabling. These primarily relate to construction of solar PV Infrastructure (Work No. 1), BESS (Work No. 3) and Substations (Work No. 4)
 - Construction compound activities (Work No. 1 and 8)
 - Construction of Cable Corridors (Work No. 2); and
 - Highway works and construction of internal access tracks (Work No. 5).
- 14.4.48 The aspects of the operational phase of the Proposed Development which have potential effects on noise and vibration include:
- Operation of power conversion stations (in relation to Work No. 1)
 - Operation of BESS (in relation to Work No. 3); and
 - Operation of substations (in relation to Work No. 4).
- 14.4.49 Operational noise levels during maintenance activities are likely to be lower than those for the construction phase.
- 14.4.50 **ES Volume 3, Appendix 14.3: Construction Noise and Vibration Assessment [EN0110020/APP/6.20]** presents the construction noise and vibration assessment parameters and **ES Volume 3, Appendix 14.4: Operational Noise Assessment [EN0110020/APP/6.20]** presents the assessment parameters for operational noise and vibration. Both appendices include assumed lists of plant and equipment, and source terms.
- 14.4.51 At this stage, the precise details of decommissioning activities are not available, however it is likely that they would be similar in nature to construction activities.

Assumptions, Exclusions and Limitations

- 14.4.52 The assessment of construction noise has been based on an indicative construction program and plant list based on experience of similar developments. Final details of the precise plant and equipment that will be used for the construction of the Proposed Development will be decided when a construction

contractor has been engaged. These assumptions are detailed in **ES Volume 3, Appendix 14.3: Construction Noise and Vibration Assessment [EN0110020/APP/6.20]**.

- 14.4.53 Noise predictions for construction equipment have been based on standard source levels provided in BS 5228-1.
- 14.4.54 Construction activity is anticipated to commence in 2027 and will continue for a period of 24 to 36 months, noting that activities will be sequential and not occur for extended periods in individual locations. At this stage phasing of works is preliminary until a construction contractor has been appointed. The assessment considers a reasonable worst case for each construction phase based on the preliminary construction program. While the assessment considers the construction noise and vibration impacts for all construction periods, only the period with the highest magnitude of impact is presented in this Chapter, as this represents the worst-case. Impacts of other construction periods are presented in **ES Volume 3, Appendix 14.3: Construction Noise and Vibration Assessment [EN0110020/APP/6.20]**.
- 14.4.55 Construction hours will be between 0700hrs and 1900hrs Monday to Friday, 0700hrs to 1300hrs on Saturdays, and no working on Sundays or bank holidays. Exceptions to this may be required for trenchless crossings or for time sensitive construction activities such as concrete pouring. The relevant local planning authorities will be consulted in relation to exceptional circumstances requiring works outside of the core construction hours.
- 14.4.56 The method of construction of the Cable Corridors is outlined in the **Outline Cable Construction Method Statement [EN0110020/APP/5.19]**. This assessment has considered that either open trench or trenchless construction methods could be implemented anywhere along the Cable Corridor.
- 14.4.57 This assessment considers a reasonable worst case of the collocation of construction plant. This considers that all construction plant could be at the nearest point in the works area to a receptor.
- 14.4.58 Impacts from the Cable Corridors are calculated based on the worst-case noise level exposure. As works are linear, and therefore static construction activities are expected to be minimal, it is expected that exposure to these noise levels would be for a matter of hours. An exception to this is for the above ground level (AGL) plant associated with trenchless horizontal directional drilling (HDD), for which it is assumed that all plant would be installed and operated at the launch pads and not at the receiver pads.
- 14.4.59 This assessment accounts for reasonable worst-case parameters in relation to vibration including plant using the empirical methods proposed in BS 5228-2, which in itself carries a degree of conservatism.
- 14.4.60 This ES considers a Rochdale Envelope approach. An indicative site layout has been developed using the **Works Plans [EN0110020/APP/2.3]** and constraints listed in the **Outline Design Parameters [EN0110020/APP/7.3]** for assessment in an operational noise model. This considers a reasonable worst-case for the location of noise emitting plant within the works areas. This has been refined to support the design of embedded mitigation. The focus of these refinements has been in locations adjacent to receptors most at risk of adverse impacts.
- 14.4.61 Operational plant noise source assumptions (presented in **ES Volume 3, Appendix 14.4: Operation Noise Assessment [EN0110020/APP/6.20]**) are

provisional based on professional experience of equipment specifications of similar developments.

- 14.4.62 Power conversion stations will be operational as part of the Proposed Development. The selection between central container inverters and string inverters has not been made at this stage. This assessment has considered central container inverters as a reasonable worst-case, as it is typical that these generate more noise.
- 14.4.63 It is expected that the power conversion systems would operate at reduced loads during the night, which may produce lower noise levels. This is because inverters will go into sleep mode during the hours of darkness. Inverters may achieve up to 20% power output before 07:00 on sunny mornings in the middle of the year. Therefore, it is inherently assumed that this plant would not operate at a power load greater than 20% between 23:00 and 07:00. This has been factored into noise modelling of the operational Proposed Development.

14.5 Baseline

Baseline Data Sources

- 14.5.1 A baseline noise monitoring survey has been completed to support the assessments of construction and operational noise and vibration of the Proposed Development.
- 14.5.2 Baseline noise monitoring was first conducted between 31 July and 28 August 2025. Additional noise monitoring was carried out between 20 January and 4 February 2026 to provide an additional layer of robustness to the assessment for receptors which were expected to be most at risk of noise impacts.
- 14.5.3 Noise monitoring data from the Common Farm Solar Farm Noise Impact Assessment²¹, Thurcroft Interchange Energy Park Noise Impact Assessment²², and Kiveton Park BESS²³ Noise Impact Assessment has also been used to represent assessment locations where relevant.
- 14.5.4 Full details of the survey methodology and results are presented in **ES Volume 3, Appendix 14.2: Baseline Conditions [EN0110020/APP/6.20]**.

Existing Baseline Conditions

- 14.5.5 The baseline acoustic environment is predominantly characterised by road traffic noise from major road traffic links including M1, M18, and A57. For noise sensitive receptors further from these roads, the baseline acoustic environment consists of minor road links, local roads, railway noise, as well as other industrial noise sources and rural environmental sources such as farming machinery.
- 14.5.6 A representative baseline noise monitoring location (NML) is indicated for each noise assessment location. **Table 14-12** presents a summary of the baseline noise monitoring results. **ES Volume 3, Appendix 14.2: Baseline Conditions [EN0110020/APP/6.20]** presents further details of the baseline noise survey.

Table 14-12: Summary of Measured Noise Levels at Noise Monitoring Locations (NMLs)

NML ID	NML Address	Ambient Sound Level (L _{Aeq,T}) [dB] and Construction Noise Assessment Category (in Accordance with BS 5228-1)			Adopted Representative Background Sound ¹ Level (L _{A90,T}) [dB]	
		Daytime	Evening	Night	Day	Night
NML01	Woodall Way Killamarsh S21 2AB	54 (A)	51 (A)	49 (C)	45	41
NML02	Hard Lane, Harthill, S26 7AG	49 (A)	45 (A)	45 (B)	33	29
NML03	Walseker Lane, Woodall, S26 7YJ	58 (A)	59 (C)	55 (C)	44	43
NML04	Mill Lane South, Anston, S25 5BG	60 (A)	57 (B)	55 (C)	43	32
NML05	New Road, Penny Piece Lane, North Anston, S25 5BG	55 (A)	51 (A)	46 (B)	40	33
NML07	Grange Gardens, Todwick, Sheffield S26 1JQ	54 (A)	52 (A)	49 (C)	43	39
NML09	In the field adjacent to Hardwick Hall Farm, Hardwick Lane, Hardwick, S26 2BE	55 (A)	53 (B)	52 (C)	48	43
NML10	Meadow View, Hawkhill Lane, Thurcroft, S66 9BL	58 (A)	55 (B)	50 (C)	38	31
NML11	Common Lane, Thurcroft, S66 9BE	66 (B)	64 (C)	59 (C)	44	39
NML12	Carr Lane, Ulley, S26 3YA	55 (A)	52 (A)	50 (C)	46	41
NML13	Aughton Lane, Aston, S26 2AJ	49 (A)	47 (A)	44 (B)	39	32
NML14	In the field adjacent to Morthen Lane, Upper Whiston, S60 4NG	64 (B)	61 (C)	57 (C)	54	46
NML15a	In the field adjacent to Pleasley Road, Whiston, S60 4NE	52 (A)	49 (A)	48 (C)	42	37
NML15b	In the field adjacent to Pleasley Road, Whiston, S60 4NE	63 (B)	60 (C)	55 (C)	52	41

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NML ID	NML Address	Ambient Sound Level (L _{Aeq,T}) [dB] and Construction Noise Assessment Category (in Accordance with BS 5228-1)			Adopted Representative Background Sound ¹ Level (L _{A90,T}) [dB]	
		Daytime	Evening	Night	Day	Night
NML17	In the field near Park Lane, Conisbrough Parks, DN12 2BB	55 (A)	51 (A)	45 (B)	33	23
NML18	3 Cherry Grove, Conisbrough, Doncaster, DN12 2JY	n/a	n/a	n/a	n/a	n/a
NML19	Treeton Lane,	48 (A)	47 (A)	41 (A)	36	26
NML20	Aughton, S26 3XP	55 (A)	52 (A)	49 (C)	45	39
NML21	In the field near Shorland Drive, Treeton, S60 5UN	66 (B)	65 (C)	62 (C)	50	45
NML22	Slacks Lane, Bramley Rotherham, S66 1TZ	47 (A)	47 (A)	42 (A)	33	25
NML23	Dapple Grove, Wickersley, S66 1DE	49 (A)	47 (A)	44 (B)	36	29
NML24	Rectory Gardens, Todwick, S26 1JU	66 (B)	64 (C)	61 (C)	57	49
NML25	Wild Fell, York Lane, Morthen, S66 9JH	60 (A)	57 (B)	55 (C)	53	46
NML1-CF	Common Farm, Bookers Lane, Dinnington, S25 1ZX	47 (A)	43 (A)	39 (A)	40	32
NML2-CF	Sunny Bank, Todwick Road, S26 1DP	66 (B)	64 (C)	59 (C)	54	33
NML3-CF	Brookside House, Common Road, S25 4AH	54 (A)	50 (A)	44 (A)	38	32
NML4-CF	Greenland, Long Road, S66 9BJ	55 (A)	52 (A)	46 (A)	37	31
NML1-TI	Parkcliffe Farm, Morthen Road, Wickersley, Rotherham, S66 1EA	n/a (A) ²	n/a (A) ²	n/a (A) ²	51	47
NML2-TI	Orchard House, Morthen Lane, Morthen, Rotherham, S66 9JQ	n/a (A) ²	n/a (A) ²	n/a (A) ²	52	47

NML ID	NML Address	Ambient Sound Level ($L_{Aeq,T}$) [dB] and Construction Noise Assessment Category (in Accordance with BS 5228-1)			Adopted Representative Background Sound ¹ Level ($L_{A90,T}$) [dB]	
		Daytime	Evening	Night	Day	Night
NML1-KP	Hard Lane, Kiveton Park, Sheffield, S26 6RP	61 (A) ³	n/a (B) ³	54 (C)	43	39

¹ The adopted representative background sound was chosen through critical and statistical analysis of the measured background sound level data, including professional judgement through applications of the principles set out in BS 4142.

² $L_{Aeq,T}$ sound pressure level data is not recorded in Thurcroft Interchange Energy Park Noise Impact Assessment, therefore a worst-case designation of category A has been applied for all assessment periods.

³ $L_{Aeq,T}$ sound pressure level data is recorded in Kiveton Park BESS Noise Impact Assessment for the 16-hour daytime period (07:00 to 23:00) as 61dB. It is likely that the L_{Aeq} 12-hour period (07:00 to 19:00) would be no less than this, as noise in this period is typically higher. It is likely that the evening period (19:00 to 23:00) would be no less than the night-time (23:00 to 07:00) L_{Aeq} of 54dB. This corresponds to category B in the evening period.

Future Baseline Conditions

14.5.7 While in principle it is possible that baseline noise levels could change between the current year and the future baseline year, it is unlikely that any changes would alter the outcome of the noise assessment. This is because changes would be relatively small:

- For areas where the existing baseline is characterised by road traffic noise, increases in traffic would need to be significant to make a material difference to baseline noise levels (a 25% increase or 20% decrease for a change of approximately 1dB); and
- For areas where the characterisation of baseline would be impacted by another development, this would be included under an assessment of cumulative effects.

14.5.8 There is a low probability that baseline noise levels would decrease for the future baseline. This means that the current designation of construction and operational criteria is unlikely to become more onerous. Therefore, it is not likely that noise impacts from the Proposed Development would be more adverse than those stated in this ES.

14.5.9 Accordingly, it is considered that the existing baseline noise levels are representative of the future baseline year.

14.6 Embedded Mitigation

14.6.1 The following specific embedded mitigation measures relevant to noise and vibration have been identified and have been considered based on an assessment of noise and vibration impacts.

Construction

- 14.6.2 Mitigation measures will be implemented during the construction phase to minimise disruption and manage the potential for adverse effects of the construction activities.
- 14.6.3 Core working hours are presented in Section 14.4. Any work outside of the core hours would be consulted with the relevant local planning authority prior to carrying out certain operations. Section 61 of the Control of Pollution Act 1974 consents will be obtained where required.
- 14.6.4 An **outline Construction Environmental Management Plan (oCEMP) [EN0110020/APP/5.9]** and an **outline Construction Traffic Management Plan (oCTMP) [EN0110020/APP/5.12]** are submitted with the Application. These documents will form the basis of the Construction Environmental Management Plan (CEMP) and Construction Traffic Management Plan (CTMP), which will be implemented during construction activities for the Proposed Development.
- 14.6.5 The **oCEMP [EN0110020/APP/5.9]** defines the key construction activity principles that will be adhered to and developed during construction activities, including recommendations that represent good practice specific to the noise and vibration assessment, based on the assumed construction plant list and working methodologies. It includes details on roles and responsibilities, working hours, mitigation measures and activities to be undertaken to minimise environmental effects as well as monitoring and record-keeping requirements. It outlines the methodology to be adopted should a complaint be received regarding excessive noise or vibration levels.
- 14.6.6 The following noise and vibration mitigation measures are included in the **oCEMP [EN0110020/APP/5.9]**:
- Scheduling work so that the noisier activities are undertaken, where possible, during the daytime when ambient sound levels are highest, rather than nights when ambient levels are lower
 - Installing exhaust silencers on vehicles and mechanical plant and regularly maintaining them
 - Selecting inherently quiet and / or lower vibration plant where appropriate
 - Installing mufflers or silencers on ancillary pneumatic percussive tools
 - Ensuring that machines are shut down between work periods or throttled down to a minimum
 - Regularly maintaining all equipment used on-site, including maintenance related to noise and vibration emissions
 - Loading vehicles carefully to ensure minimal drop heights
 - Positioning ancillary plant such as generators and pumps to cause minimum noise disturbance and if necessary, provide temporary acoustic screens or enclosures; and
 - Fitting mobile plant with directional white noise reversing alarms to avoid tonal noise from the Site.
- 14.6.7 The following specific embedded mitigation measures are proposed to protect receptors which are most at risk of adverse impact, and would be secured in the **oCEMP [EN0110020/APP/5.9]**:

- Noise and vibration generating equipment will not be used within 10m of receptors for any activities
- On-site construction traffic routes will be selected to ensure that they are no less than 100m from noise and vibration sensitive properties, where practicable, unless it can be demonstrated in the final construction plan that the impact can be managed through alternative means
- High voltage cable installation works will not occur adjacent to sensitive receptors for 10 or more days or nights in any 15 consecutive days or nights, or a total number of days exceeding 40 in any 6 consecutive months, where practicable
- Launch pads for trenchless crossing drilling rigs would be installed not less than 80m from the nearest noise sensitive receptors and will include acoustic site hoardings
- Vibratory compaction will not occur for backfill of open trench Cable Corridors for areas of soft ground. This includes Cable Route B
- Piling in relation to the installation of the solar infrastructure will not occur within 20m of Harthill reservoir
- Temporary acoustic barriers in the form of site-hoardings will be installed around substation construction areas to limit construction noise impacts adjacent to these areas; and
- A management approach will be developed with the appointed construction contractor to ensure that construction vibration levels do not exceed 15 mm/s at Chesterfield Canal. This will be included in the CEMP secured through Schedule 2 of the DCO.

14.6.8 The **oCTMP [EN0110020/APP/5.12]** includes mitigation measures to manage construction traffic routes, schedules and monitor compliance in order to minimise noise from off-site construction traffic. Mitigation measures will include routing off-site construction traffic to avoid roads near to noise and vibration sensitive properties and minor roads, where practicable.

14.6.9 These mitigation measures are subject to confirmation and requirement as the final detailed design of the Proposed Development is developed post consent. Details will be provided in the CEMP secured through Schedule 2 of the DCO which provides that the CEMP has to be carried out substantially in accordance with the outline CEMP.

Operation and Maintenance

14.6.10 Mitigation measures will be implemented during the operational phase to minimise adverse effects of the operation of the Proposed Development.

14.6.11 Operational noise mitigation has been considered primarily within the context of the first aim of the NPSE: to *“avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development”*. **Table 14-11** presents magnitudes of impact in terms of what is likely to result in significance, depending on the context. This stipulates that an increase of less than +5dB above prevailing background noise is not likely to be Significant. This criterion is based on the guiding principles presented in BS 4142.

Works Plan

- 14.6.12 The current design includes flexibility of placement of plant within the areas shown in the **Works Plan [EN0110020/APP/2.3]**. This has been accounted for in an initial noise model using a realistic worst-case placement of plant. This model has been used to identify minimum environmental constraints which must be implemented as part of embedded mitigation of the Works Plan to ensure compliance with the aims of the NPSE to avoid Significant Adverse effects. These minimum environmental constraints apply to the Works Plan only and may differ to the embedded mitigation in the detailed design.
- 14.6.13 The power conversion systems, the BESS equipment, and the substation equipment are expected to be the main sources of noise during operation. The design principles (**ES Volume 1, Chapter 4: Alternatives and Design Evolution [EN0110020/APP/6.4]**) for the Proposed Development have been established to prioritise locating potential sources of noise as far as reasonably practicable from noise sensitive receptors.
- 14.6.14 Minimum distances between plant and assessment locations form part of embedded mitigation. This primarily relates to assessment locations in low background noise environments, where assessment locations are located close to the Works Plan boundary, or both.
- 14.6.15 The following minimum requirements are included for the location of operational plant:
- No BESS units and substations will be located within 300m from any noise sensitive receptor;
 - No central container inverters will be located within 100m of AL026
 - No central container inverters will be located within 200m of AL035
 - No central container inverters will be located within 150m of AL049
 - No central container inverters will be located within 250m of AL084
 - No central container inverters will be located within 400m of AL085
 - No central container inverters will be located within 250m of AL098; and
 - No central container inverters will be located within 150m of AL101.
- 14.6.16 The following minimum requirements are included for attenuation of operational plant:
- All BESS units will be attenuated;
 - The substation in Whitestone 1 will be attenuated
 - All central container inverters in Whitestone 1 will be attenuated
 - All central container inverters within 500m of AL010 will be attenuated
 - All central container inverters within 200m of AL026 will be attenuated
 - All central container inverters within 250m of AL035 will be attenuated
 - All central container inverters within 200m of AL049 will be attenuated
 - All central container inverters within 500m of AL101 will be attenuated; and
 - Minimum attenuation requirements are such that the source terms of each plant do not exceed the attenuated values presented in Table 14.4-2 of **ES**

Volume 3, Appendix 14.4: Operation Noise Assessment [EN0110020/APP/6.20].

14.6.17 The following minimum levels of noise screening are included:

- All central container inverters within 500m of AL098 will be surrounded by 4m acoustic barriers. These acoustic barriers will be constructed within 2m of the footprint of the central container inverters;
- The substation in Whitestone 1 will be surrounded by 4m acoustic barriers. These acoustic barriers will be within 5m of the footprint of the substation; and
- Acoustic barriers will be constructed of a suitable acoustic absorbent material with a minimum reflection loss of 20dB.

14.6.18 **ES Volume 3, Figures 14.10 – 14.12: Embedded Operational Noise Mitigation [EN0110020/APP/6.19]** present embedded mitigation as buffers from the relevant protected assessment locations.

Outline Operational Environmental Management Plan

14.6.19 An **outline Operational Environmental Management Plan (oOEMP) [EN0110020/APP/5.10]** is submitted with the Application. The embedded mitigation for the Works Plan is not included in the oOEMP as these are subject to requirement in the detailed design.

14.6.20 As the detailed design of the Proposed Development progresses, the following mitigation measures may also be considered and implemented where necessary and practicable:

- Reducing noise at source, including enclosures, attenuators and louvres
- Installing vibration generating plant on resilient mounts
- Orientating units so that the main noise and vibration generating elements (such as ventilation openings) are facing away from nearby residential properties; and
- Installing barriers to provide acoustic screening around noise generating plant.

14.6.21 During the operational phase of the Proposed Development, on-site activities will be minimal and will principally relate to the vegetation management, equipment maintenance and servicing, replacement and renewal of any components that fail, and monitoring and inspection, to ensure the continued effective operation of the Proposed Development. Any replacement of the equipment is likely to be lower than the effects predicted for the construction phase. Therefore, no specific mitigation measures are required to limit noise during maintenance activities.

Detailed Design

14.6.22 The stipulated embedded mitigation measures are relevant to the **Works Plan [EN0110020/APP/2.3]** approach which retains engineering flexibility. It may be appropriate to relax the stipulated embedded mitigation requirements for the detailed design, which will no longer be subject to worst-case assumptions of plant placement and selection.

14.6.23 An operational noise assessment containing details of specific plant placement, plant selection, and embedded mitigation will be prepared such that the operational noise rating levels as set out in the environmental statement are to be

complied with and will be submitted to and approved by the relevant local planning authority.

Decommissioning

- 14.6.24 At this stage, the precise details of decommissioning activities are not available. Removal of BESS and substation foundations to 1.2m below ground level (BGL) would be completed subject to landowner agreement. Components of the Proposed Development such as mitigation planting, Site accesses, and ducts for cabling buried beneath plough-depth would be left in place subject to landowner agreement. It is likely that they would be similar in nature to construction activities. As such, mitigation measures incorporated into decommissioning activities are likely to be the same in nature as those described above for construction.
- 14.6.25 An **outline Decommissioning Environmental Management Plan (oDEMP) [EN0110020/APP/5.11]** is submitted with the Application and describes the framework of mitigation measures as identified in the ES to be followed and carried forward into a detailed Decommissioning Environmental Management Plan (DEMP), which accords with the principles of the oDEMP, prior to decommissioning.

14.7 Assessment of Effects

Construction

- 14.7.1 **ES Volume 3, Appendix 14.3: Construction Noise and Vibration Assessment [EN0110020/APP/6.20]** contains the predicted noise impacts of the Proposed Development during construction.

On-site Construction Noise

- 14.7.2 **Table 14-13** summarises typical on-site construction noise impacts for the Proposed Development for the noisiest month with embedded mitigation included. This includes both the main site development area as well as the Cable Corridor.

Table 14-13: Summary of Construction Noise Impacts

Magnitude of Impact	Quantity of Assessment Locations		
	Daytime	Evening	Night-time
Negligible	37	91	60
Minor	33	17	27
Moderate	32	0	21
Major	6	0	0

- 14.7.3 Construction noise impacts are generally predicted to be **Negligible** or **Minor**, however there is potential for **Moderate** or **Major** impacts during the day and night-time periods for some assessment locations, based on the criteria presented in **Table 14-8**.
- 14.7.4 **Major** construction noise impacts are predicted during construction of Cable Route B. This is due to the high noise levels expected from plant at short

distances to receptors in this Cable Corridor. It is expected that the duration of this impact in proximity to receptors would be a matter of hours rather than days or weeks. Therefore, while the impact has the potential to be adverse, it is not expected that the residual effect on health and quality of life would be Significant in terms of the aims of the NPSE.

- 14.7.5 **Moderate** construction noise impacts are predicted to result from high voltage cable installation works, highways alterations and construction of site tracks, and construction of other Cable Corridors. These activities will take place for relatively short periods of time before work moves to another location.
- 14.7.6 Therefore, this assessment considers that noise impacts of construction activities are considered **Not Significant**. This is on the basis that **Major** impacts would be no more than a very brief exposure, and **Moderate** impacts would not occur for 10 or more days or nights in any 15 consecutive days or nights, or a total number of days exceeding 40 in any 6 consecutive months. This is in accordance with best practice application of BS 5228-1.

On-site Construction Vibration

- 14.7.7 **Table 14-14** summarises construction vibration impacts for the Proposed Development with embedded mitigation included. This includes both the Site as well as the Cable Corridor.

Table 14-14: Summary of Construction Vibration Impacts

Magnitude of Impact	Quantity of Assessment Locations
Negligible	0
Minor	16
Moderate	45
Major	0

- 14.7.8 Construction vibration impacts are predicted to be **Moderate** for some assessment locations based on the criteria presented in **Table 14-9**. These impacts are predicted to result from vibratory piling in relation to the installation of the solar infrastructure and Cable Corridor construction works. Impacts would mostly affect receptors closest to the Proposed Development. Like construction noise, activities will occur in the same area for relatively short periods of time before work moves to another location. This impact is likely to be limited to a short exposure. In all cases, impacts would not occur for 10 or more days or nights in any 15 consecutive days or nights, or a total number of days exceeding 40 in any 6 consecutive months. Therefore, this assessment considers that vibration impacts from construction activities would be **Not Significant**. This is in accordance with best practice application of BS 5228-1.
- 14.7.9 An additional construction vibration impact assessment has been carried out in relation to Chesterfield Canal and Harthill reservoir. This assessment refers to potential impacts on structural elements associated with these areas. BS 5228-2 states and BS 7385-2 corroborates that construction vibration is considered Significant in the context of potential cosmetic damage where construction vibration would exceed 15mm/s PPV.

- 14.7.10 The trenchless crossing below Chesterfield Canal would be installed at least 1.5m below the bed of the watercourse. The Applicant will develop a management approach with the appointed construction contractor to ensure that construction vibration levels do not exceed 15mm/s at Chesterfield Canal. This will be included in the CEMP secured through Schedule 2 of the DCO.
- 14.7.11 Levels of vibration at Harthill reservoir would be below 15mm/s on the basis that piling activities for the installation of the solar infrastructure would not be within 20m.
- 14.7.12 Impacts on ecological receptors are considered in **ES Volume 2, Chapter 6: Biodiversity and Nature Conservation [EN0110020/APP/6.6]**.

Construction Traffic Noise

- 14.7.13 **Table 14-13** summarises construction traffic noise impacts for the Proposed Development, after roads with minimal change (<5%) have been screened out. Further justification to the approach of this screening is presented in **ES Volume 3, Appendix 14.3: Construction Noise and Vibration Assessment [EN0110020/APP/6.20]**.

Table 14-15: Summary of Construction Traffic Noise Impacts

Magnitude of Impact	Number of Impacted Road Links
Negligible	6
Minor	0
Moderate	1
Major	0

- 14.7.14 Slacks Lane has the potential to increase in road traffic noise by 8.5dB which corresponds to a **Moderate** impact. The residual noise level at 10m from the road link has been predicted using the NAC²⁴ method as the flow is below 1,000 vehicles per day. The resultant predicted noise level is 42.2dB LAeq,T. This road is adjacent to the M18, where measurement location NML21 captured an average daytime measurement of 66dB LAeq,12-hour. As the noise from Slacks Lane is well below the ambient noise level in this location, the change would be imperceptible. As a result, an assessment of noise impacts at noise sensitive receptors within 50m of this road link is not necessary, and the residual effect is **Not Significant**. This is in accordance with best practice application of LA111.

Operation and Maintenance

Initial Assessment

- 14.7.15 An initial assessment of the operation of the Proposed Development has been carried out using the guidance presented in BS 4142. The initial assessment accounts for embedded mitigation presented in Section 14.6.
- 14.7.16 **ES Volume 3, Appendix 14.4: Operational Noise Assessment [EN0110020/APP/6.20]** presents the calculations steps and outcomes of the initial assessment. **Table 14-16** summarises the outcomes of the initial assessment in terms of the differences between the rating levels and the representative background sound levels for the daytime and night-time periods.

Table 14-16: Summary of the Initial Assessment of Operational Noise

Rating Level	Quantity of Assessment Locations		Magnitude of Impact
	Daytime	Night-time	
Less than 5dB below the background	73	115	Negligible
Greater than or equal to 5dB below background and less than or equal to 0dB above background.	45	17	Minor
Greater than 0dB above background and less than 5dB above background.	18	4	Minor
Greater than or equal to 5dB above background and less than 10dB above background.	0	0	Moderate ¹
Greater than or equal to 10dB above background.	0	0	Major ¹

¹ Depending on context, presented in Section 14.4 and assessed in this Section.

Context and Final Significance

- 14.7.17 **Table 14-15** shows that no assessment locations are expected to experience rating levels which exceed +5dB above background, and therefore not triggering the potential for adverse impacts which could result in Significant effects.
- 14.7.18 The context of the receiving environment is not considered to significantly alter the initial estimate of the impact.
- 14.7.19 **Table 14-17** summarises the final designation of impacts for all assessment locations due to the operation of the Proposed Development, based on the initial assessment in **Table 14-16** and the context presented in Error! Reference source not found..

Table 14-17: Summary of Operational Noise Impacts

Magnitude of impact	Quantity of Assessment Locations	
	Daytime	Night-time
Negligible	73	115
Minor	63	21
Moderate	0	0
Major	0	0

14.7.20 Impacts for all receptors are either **Negligible** or **Minor**, which would be **Not Significant**.

Decommissioning

14.7.21 At this stage, details of works that will be required during decommissioning are not finalised. It is, however, likely that decommissioning works will be of a similar nature to those required during construction, therefore noise and vibration impacts during decommissioning are likely to be no worse than those during construction. For this reason, it is expected that the effects of both noise and vibration during decommissioning would be **Not Significant**.

14.8 Additional Mitigation Measures and Residual Effects

Additional Mitigation

14.8.1 No additional noise and vibration mitigation is proposed for the construction, operation, or decommissioning of the Proposed Development.

Residual Effects

14.8.2 A summary of the potential Noise and Vibration effects is presented in **Table 14-18**.

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Table 14-18 Summary of Residual Effects

Activity and Impact	Embedded Mitigation	Receptor	Sensitivity	Magnitude of Impact	Significance of Effect	Additional Mitigation	Significance of Residual Effect
Construction							
Construction noise	oCEMP	Residential receptors	High	Negligible to Major	Not Significant	None	Not Significant
Construction vibration	oCEMP	Residential receptors	High	Negligible to Moderate	Not Significant	None	Not Significant
Construction traffic noise	oCEMP/oCTMP	Residential receptors	High	Negligible to Moderate	Not Significant	None	Not Significant
Operation							
Noise from Operation of the Proposed Development	Operational plant restrictions including placement in detailed design, attenuation, and screening.	Noise sensitive receptors within 2km of the Proposed Development	High	Negligible or Minor	Not Significant	None	Not Significant
Decommissioning							
Decommissioning noise	oDEMP	Residential receptors	High	Negligible to Major	Not Significant	None	Not Significant
Decommissioning vibration	oDEMP	Residential receptors	High	Negligible to Moderate	Not Significant	None	Not Significant
Decommissioning traffic noise	oDEMP	Residential receptors	High	Negligible to Moderate	Not Significant	None	Not Significant

14.9 Cumulative Effects

- 14.9.1 This section assesses the potential cumulative noise and vibration effects of the Proposed Development. The methodology of this assessment is presented in **ES Volume 1, Chapter 2: EIA Methodology [EN0110020/APP/6.2]**.

Intra-Cumulative Effects

- 14.9.2 Intra-cumulative impacts can be defined as those that occur where a single receptor is affected by more than one source of effect arising from different aspects of the Proposed Development. Where Noise effects have the potential to combine with Ecology and Air Quality effects, these have been considered in **ES Volume 2, Chapter 6: Biodiversity and Nature Conservation [EN0110020/APP/6.6]**. Where Noise effects have the potential to combine with Air Quality, Traffic, and LVIA to cause potential Human Health Impact, an assessment is provided in **ES Volume 2, Chapter 17: Cumulative Effects Assessment [EN0110020/APP/6.17]**.
- 14.9.3 Intra-cumulative noise impacts from construction activities have been assessed inherently within the assessment of construction noise by considering a reasonable worst-case program. Therefore, intra-cumulative noise effects during construction are expected to be no worse than those presented for the assessment of construction noise.
- 14.9.4 The operation of the Proposed Development has been assessed on the basis that all plant would operate concurrently at the highest mode of operation. Therefore, intra-cumulative noise effects during operation are expected to be no worse than those presented for the assessment of operational noise.
- 14.9.5 It is not expected that the construction program would overlap with the operation of the Proposed Development, therefore there is no intra-cumulative noise effect between construction and operation. For further information on intra-cumulative effects and the potential for impacts on human health from the Proposed Development, see **ES Volume 2, Chapter 17: Cumulative Effects Assessment [EN0110020/APP/6.17]**.

Inter-Cumulative Effects

- 14.9.6 Inter-project effects refer to the impacts that arise from other approved developments within reasonable proximity of the Proposed Development, which individually might not be Significant, but when considered together could create a Significant cumulative effect on a shared receptor.
- 14.9.7 An initial screening exercise was carried out based on the long list of cumulative developments presented in **ES Volume 3, Appendix 17.2: Cumulative Long List [EN0110020/APP/6.20]** to determine which other developments within 4km from the Proposed Development have the potential for inter-cumulative noise effects at common receptors. The screening exercise considered whether construction phases are likely to overlap with those of the Proposed Development, and if the development is expected to produce noise during operation. It was concluded that the following developments have the potential for inter-cumulative noise effects with the Proposed Development, and are therefore included in an assessment of inter-cumulative noise effects:
- 24/02106/FULM – Ruddle Lane Motocross Track

- RB2022/1203 – Common Farm Solar Farm
- RB2025/0240 – Kiveton Park BESS
- RB2025/0714 – Thurcroft Interchange Energy Park
- RB2022/1767 – Green Lane BESS
- RB2025/0029 – Piper Lane Solar Farm
- RB2024/0063 – Moat Lane BESS Newton Energi
- RB2024/0321 – Moat Lane BESS Harmony Energy; and
- RB2025/1468 – National Grid Long Lane 400kV Substation.

Ruddle Lane Motocross Track

- 14.9.8 Planning Application 24/02106/FULM (Ruddle Lane Motocross Track) concerns the change of use of land for use as a motocross facility (Sui Generis) with associated engineering and landscaping works, alterations to site access and siting of ancillary portable buildings/containers. The main sources of noise are expected to arise from construction and operation of Ruddle Lane Motocross Track.
- 14.9.9 The noise assessment of Ruddle Lane Motocross Track does not include an assessment of construction noise therefore cumulative construction noise cannot be assessed quantitatively. However, construction impacts are expected to be short term and unlikely to be Significant.
- 14.9.10 The noise assessment of Ruddle Lane Motocross Track includes noise sensitive receptors which are common to the assessment of the Proposed Development. This includes those represented by AL112.
- 14.9.11 Noise from motorsport is beyond the scope of BS 4142 so a comparison of cumulative noise against background levels would not be appropriate. Instead predicted noise levels may be assessed from any increase to the daytime baseline ambient noise levels. It is understood Ruddle Lane Motocross Track will not be operational at night.
- 14.9.12 The daytime baseline ambient noise level $L_{Aeq,T}$ associated with AL112 is 55dB. The predicted operational noise levels $L_{Aeq,T}$ for Ruddle Lane Motocross Track and the Proposed Development are 41dB and 24dB respectively. Combining the baseline ambient and predicted operational noise levels cumulatively results in 55dB; therefore, inter-cumulative noise impacts are expected to be **Not Significant**.

Common Farm Solar Farm

- 14.9.13 Planning Application RB2022/1203 (Common Farm Solar Farm) comprises the installation and operation of a solar energy park and associated infrastructure. The main sources of noise are expected to arise from construction and operation of Common Farm Solar Farm. The proposed plant associated with Common Farm Solar Farm includes 2 transformers, 14 solar inverters, 20 battery inverters and 40 battery HVAC units.
- 14.9.14 It is unlikely that the construction phases of Common Farm Solar Farm and the Proposed Development would overlap therefore only cumulative operational noise has been considered in an assessment of inter-cumulative effects.

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14.9.15 The noise assessment of Common Farm Solar Farm includes noise sensitive receptors which are common to the assessment of the Proposed Development. This includes AL035, AL036, AL039, AL042, and AL044.

14.9.16 **Table 14-19** presents the predicted operational noise rating levels of both Common Farm Solar Farm and the Proposed Development, including the predicted total inter-cumulative noise level.

Table 14-19: Inter-Cumulative Operational Noise Rating Level with Common Farm Solar Farm

Assessment Location / as Included in Assessment of Common Farm Solar Farm	Proposed Development Rating Level, $L_{Ar,Tr}$ dB		Common Farm Solar Farm Rating Level, $L_{Ar,Tr}$ dB		Total Inter-Cumulative Rating Level with Common Farm Solar Farm, $L_{Ar,Tr}$ dB	
	Day	Night	Day	Night	Day	Night
AL035 / ESR3	41	33	33	33	42	36
AL036 / ESR1	34	23	29	29	35	30
AL039 / ESR5	44	29	27	27	44	31
AL042 / ESR6	39	24	26	26	39	28
AL044 / ESR7	32	19	24	24	33	25

14.9.17 **Table 14-20** presents the initial assessment of inter-cumulative operational noise.

Table 14-20: Inter-Cumulative Operational Noise Initial Assessment with Common Farm Solar Farm

Assessment Location	Representative Background Level L_{A90} dB		Total Cumulative Rating Level with Common Farm Solar Farm, $L_{Ar,Tr}$ dB		Rating Level Exceedance of Representative Background Level dB	
	Day	Night	Day	Night	Day	Night
AL035	38	32	42	36	+4	+4
AL036	40	32	35	30	-5	-2
AL039	48	43	44	31	-4	-12
AL042	38	31	39	28	+1	-3
AL044	38	31	33	25	-5	-6

14.9.18 Exceedances of background would be below 5dB for all assessment locations; therefore, inter-cumulative noise impacts are expected to be **Not Significant**.

Kiveton Park BESS

14.9.19 Planning Application RB2025/0240 (Kiveton Park BESS) comprises the installation and operation of a BESS. The main sources of noise are expected to arise from construction and operation of Kiveton Park BESS. The proposed plant associated with Kiveton Park BESS includes battery units, primary transformers and auxiliary transformers.

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- 14.9.20 The noise assessment of Kiveton Park BESS does not include an assessment of construction noise therefore cumulative construction noise cannot be assessed quantitatively. However, construction impacts are expected to be short term and unlikely to be Significant.
- 14.9.21 The noise assessment of Kiveton Park BESS includes noise sensitive receptors which are common to the assessment of the Proposed Development. This includes AL014 and AL015.
- 14.9.22 **Table 14-21** presents the predicted operational noise rating levels of both Kiveton Park BESS and the Proposed Development, including the predicted total inter-cumulative noise level.

Table 14-21: Inter-Cumulative Operational Noise Rating Level with Kiveton Park BESS

Assessment Location / as Included in Assessment of Kiveton Park BESS	Proposed Development Rating Level, $L_{Ar,Tr}$ dB		Kiveton Park BESS Rating Level, $L_{Ar,Tr}$ dB		Total Cumulative Rating Level with Kiveton Park BESS, $L_{Ar,Tr}$ dB	
	Day	Night	Day	Night	Day	Night
AL014 / NSR2	39	23	44	39	45	39
AL015 / NSR1	35	19	44	39	45	39

- 14.9.23 **Table 14-22** presents the initial assessment of inter-cumulative operational noise.

Table 14-22: Inter-Cumulative Operational Noise Initial Assessment with Kiveton Park BESS

Assessment Location	Representative Background Level L_{A90} dB		Total Cumulative Rating Level with Kiveton Park BESS, $L_{Ar,Tr}$ dB		Rating Level Exceedance of Representative Background Level dB	
	Day	Night	Day	Night	Day	Night
AL014	43	39	45	39	+2	0
AL015	43	39	45	39	+2	0

- 14.9.24 Exceedances of background would be below 5dB for all assessment locations; therefore, inter-cumulative noise impacts are expected to be **Not Significant**.

Thurcroft Interchange Energy Park

- 14.9.25 Planning Application RB2025/0714 (Thurcroft Interchange Energy Park) concerns the construction, operation, and subsequent decommissioning of a renewable energy park, comprising ground mounted solar photovoltaic and associated infrastructure. The main sources of noise are expected to arise from the construction and operation of Thurcroft Interchange Energy Park. The proposed plant associated with Thurcroft Interchange Energy Park includes 40 BESS containers, 20 BESS inverters, 1 primary transformer and 3 auxiliary transformers.
- 14.9.26 The noise assessment of Thurcroft Interchange Energy Park does not include an assessment of construction noise therefore cumulative construction noise cannot

be assessed quantitatively. However, construction impacts are expected to be short term and unlikely to be Significant.

14.9.27 The noise assessment of Thurcroft Interchange Energy Park includes noise sensitive receptors which are common to the assessment of the Proposed Development. This includes AL106, AL129, and AL130.

14.9.28 **Table 14-23** presents the predicted operational noise rating levels of both Thurcroft Interchange Energy Park and the Proposed Development, including the predicted total inter-cumulative noise level.

Table 14-23: Inter-Cumulative Operational Noise Rating Level with Thurcroft Interchange Energy Park

Assessment Location / as Included in Assessment of Thurcroft Interchange Energy Park	Proposed Development Rating Level, $L_{Ar,Tr}$ dB		Thurcroft Interchange Energy Park Rating Level, $L_{Ar,Tr}$ dB		Total Inter-Cumulative Rating Level with Thurcroft Interchange Energy Park, $L_{Ar,Tr}$ dB	
	Day	Night	Day	Night	Day	Night
AL106 / NSR5	30	14	41	41	41	41
AL129 / NSR1	33	31	26	26	34	32
AL130 / NSR2	38	38	28	28	38	38

14.9.29 The predicted rating levels of Thurcroft Interchange Energy Park at AL106 are the same as the total predicted inter-cumulative rating levels. The predicted rating levels of the Proposed Development at AL130 are the same as the total predicted inter-cumulative rating levels. Therefore, the total predicted inter-cumulative rating levels at AL106 and AL130 do not indicate a significant increase in predicted noise level when considering both Thurcroft Interchange Energy Park and the Proposed Development cumulatively. AL106 and AL130 have been scoped out of the assessment of inter-cumulative impacts accordingly.

14.9.30 **Table 14-24** presents the initial assessment of inter-cumulative operational noise.

Table 14-24: Inter-Cumulative Operational Noise Initial Assessment with Thurcroft Interchange Energy Park

Assessment Location	Representative Background Level L_{A90} dB		Total Cumulative Rating Level with Thurcroft Interchange Energy Park, $L_{Ar,Tr}$ dB		Rating Level Exceedance of Representative Background Level dB	
	Day	Night	Day	Night	Day	Night
AL129	51	47	34	32	-17	-15

14.9.31 There are no exceedances of background level; therefore, inter-cumulative noise impacts are expected to be **Not Significant**.

Green Lane BESS

14.9.32 Planning Application RB2022/1767 (Green Lane BESS) comprises the installation and operation of a BESS. The main sources of noise are expected to arise from

construction and operation of Green Lane BESS. The proposed plant associated with Green Lane BESS includes 1 transformer, 68 energy storage system cabinets and 17 power inverters.

- 14.9.33 The noise assessment of Green Lane BESS does not include an assessment of construction noise therefore cumulative construction noise cannot be assessed quantitatively. Construction impacts are expected to be short term and unlikely to be Significant. Coordination between Green Lane BESS and the Proposed Development construction programmes may reduce the likelihood of cumulative impacts.
- 14.9.34 The noise assessment of Green Lane BESS includes noise sensitive receptors which are common to the assessment of the Proposed Development. This includes AL106 and AL128.
- 14.9.35 **Table 14-25** presents the predicted operational noise rating levels of both Green Lane BESS and the Proposed Development, including the predicted total inter-cumulative noise level.

Table 14-25: Inter-Cumulative Operational Noise Rating Level with Green Lane BESS

Assessment Location / as Included in Assessment of Green Lane BESS	Proposed Development Rating Level, $L_{Ar,Tr}$ dB		Green Lane BESS Rating Level, $L_{Ar,Tr}$ dB		Total Cumulative Rating Level with Green Lane BESS, $L_{Ar,Tr}$ dB	
	Day	Night	Day	Night	Day	Night
AL106 / R4	30	14	48	42	48	42
AL128 / R3	31	15	47	41	47	41

- 14.9.36 The predicted rating levels of the Proposed Development at AL106 and AL128 are significantly below the predicted rating levels for Green Lane BESS at R4 and R3. The total predicted inter-cumulative rating levels for AL106 and AL128 are the same as the predicted rating levels for Green Lane BESS. Therefore, the total predicted inter-cumulative rating levels do not indicate a significant increase in predicted noise level when considering both Green Lane BESS and the Proposed Development cumulatively. As such, it is expected that the inter-cumulative effect would be **Not Significant**.

Piper Lane Solar Farm

- 14.9.37 Planning Application RB2025/0029 (Piper Lane Solar Farm) concerns the installation and operation of a solar energy park, comprising ground-mounted solar PV arrays, supporting energy infrastructure including BESS, access improvements and ancillary development. The main sources of noise are expected to arise from construction and operation of Piper Lane Solar Farm. The proposed fixed plant includes transformers, solar inverters and BESS units. The proposed construction noise related activities include the creation of access roads, foundations for substations, drop hammer piling and installation of equipment.
- 14.9.38 The noise assessment of Piper Lane Solar Farm includes noise sensitive receptors which are common to the assessment of the Proposed Development. This includes AL041, AL058, AL062, and AL064.

14.9.39 **Table 14-26** presents the predicted construction noise levels of both Piper Lane Solar Farm and the Proposed Development, including the predicted total inter-cumulative noise level.

Table 14-26: Inter-Cumulative Construction Noise Level with Piper Lane Solar Farm

Assessment Location	Proposed Development Construction Noise Level (CP01), $L_{Aeq,T}$ dB	Piper Lane Solar Farm Total Construction Noise Level, $L_{Aeq,T}$ dB	Total Cumulative Construction Noise Level with Piper Lane Solar Farm, $L_{Aeq,T}$ dB
AL041	55	46	56
AL058	63	43	63
AL062	51	43	52
AL064	50	40	50

14.9.40 **Table 14-27** presents the initial assessment of inter-cumulative construction noise. An initial assessment of night-time construction noise could not be undertaken as night variations were not included in the Piper Lane Solar Farm noise assessment.

Table 14-27: Inter-Cumulative Construction Noise Initial Assessment with Piper Lane Solar Farm

Assessment Location	Daytime Assessment Category, $L_{Aeq,T}$ dB (ABC)	Total Cumulative Construction Noise Level with Piper Lane Solar Farm, $L_{Aeq,T}$ dB	Magnitude of Impact
AL041	70 (B)	56	Negligible
AL058	65 (A)	63	Minor
AL062	65 (A)	52	Negligible
AL064	70 (B)	50	Negligible

14.9.41 Inter-cumulative construction noise impacts are expected to be **Not Significant**.

14.9.42 **Table 14-28** presents the predicted operational noise rating levels of both Piper Lane Solar Farm and the Proposed Development, including the predicted total inter-cumulative noise level.

Table 14-28: Inter-Cumulative Operational Noise Rating Level with Piper Lane Solar Farm

Assessment Location / as Included in Assessment of Piper Lane Solar Farm	Proposed Development Rating Level, $L_{Ar,Tr}$ dB		Piper Lane Solar Farm Rating Level, $L_{Ar,Tr}$ dB		Total Inter-Cumulative Rating Level with Piper Lane Solar Farm, $L_{Ar,Tr}$ dB	
	Day	Night	Day	Night	Day	Night
AL041 / R1	39	25	38	40	42	40
AL058 / R5	41	32	32	38	42	39

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AL062 / R4	30	14	32	34	34	34
AL064 / R2	31	19	33	35	35	35

14.9.43 **Table 14-29** presents the initial assessment of inter-cumulative operational noise.

Table 14-29: Inter-Cumulative Operational Noise Initial Assessment with Piper Lane Solar Farm

Assessment Location	Representative Background Level L _{A90} dB		Total Cumulative Rating Level with Piper Lane Solar Farm, L _{A,r,Tr} dB		Rating Level Exceedance of Representative Background Level dB	
	Day	Night	Day	Night	Day	Night
AL041	44	39	42	40	-2	+1
AL058	46	41	42	39	-4	-2
AL062	39	32	34	34	-5	+2
AL064	44	39	35	35	-9	-4

14.9.44 Exceedances of background would be below 5dB for all assessment locations; therefore, inter-cumulative operational noise impacts are expected to be **Not Significant**.

Moat Lane BESS – Newton Energi and Harmony Energy

14.9.45 Planning Application RB2024/0063 (Moat Lane BESS NE) and RB2024/0321 (Moat Lane BESS HE) concern the installation and operation of two BESS developments. The main sources of noise are expected to arise from the construction and operation of both Moat Lane BESS NE and Moat Lane BESS HE.

14.9.46 The proposed plant associated with Moat Lane BESS NE includes 1 transformer, 80 battery containers, and 20 power inverters. The proposed plant associated with Moat Lane BESS HE includes 1 transformer, 68 energy storage system cabinets and 17 power inverters.

14.9.47 The noise assessments of Moat Lane BESS NE and Moat Lane BESS HE do not include an assessment of construction noise therefore cumulative construction noise cannot be assessed quantitatively. Construction impacts are expected to be short term and unlikely to be Significant. Coordination between Moat Lane BESS NE, and Moat Lane BESS HE, and the Proposed Development construction programmes may reduce the likelihood of cumulative impacts.

14.9.48 The noise assessment of Moat Lane BESS NE includes noise sensitive receptors which are common to the assessment of the Proposed Development. This includes AL125. The noise assessment of Moat Lane BESS HE includes noise sensitive receptors which are common to the assessment of the Proposed Development. This includes AL125 and AL126.

14.9.49 **Table 14-30** presents the predicted operational noise rating levels of both Moat Lane BESS NE, Moat Lane BESS HE, and the Proposed Development, including the predicted total inter-cumulative noise level.

Table 14-30: Inter-Cumulative Operational Noise Rating Level with Moat Lane BESS NE

Assessment Location / as Included in Assessment of Moat Lane BESS NE / as Included in Assessment of Moat Lane BESS HE	Proposed Development Rating Level, L _{Ar,Tr} dB		Moat Lane BESS NE Rating Level, L _{Ar,Tr} dB		Moat Lane BESS NE Rating Level, L _{Ar,Tr} dB	Total Inter-Cumulative Rating Level with Moat Lane BESS NE and Moat Lane BESS HE, L _{Ar,Tr} dB		
	Day	Night	Day	Night	Day	Night	Day	Night
AL125 / "Dwelling" / NSR1	36	20	36	20	55	50	55	50
AL126 / n/a / NSR2	33	17	N/A	N/A	52	47	52	47

14.9.50 The predicted rating levels of the Proposed Development at AL125 and AL126 are significantly below the predicted rating levels for Moat Lane BESS HE at NSR1 and NSR2. The total predicted inter-cumulative rating levels for AL125 and AL126 are the same as the predicted rating levels for Moat Lane BESS HE. Therefore, the total predicted inter-cumulative rating levels do not indicate a significant increase in predicted noise level when considering Moat Lane BESS NE, Moat Lane BESS HE and the Proposed Development cumulatively. As such, it is expected that the inter-cumulative effect would be **Not Significant**.

National Grid Long Lane 400kV Substation

- 14.9.51 Planning Application RB2025/1468 (Long Lane 400kV Substation) comprises the installation and operation of 400kV gas insulated switchgear (GIS) substation including gantries, internal access roads, a GIS building and ancillary works. The main sources of noise are expected to arise from construction and operation of Long Lane 400kV Substation. The proposed plant associated with Long Lane 400kV Substation includes 2 super grid transformers, 1 shunt reactor, and power quality filter equipment indicatively consisting of a static compensator.
- 14.9.52 The noise assessment of Long Lane 400kV Substation does not include an assessment of construction noise therefore cumulative construction noise cannot be assessed quantitatively. Construction impacts are expected to be short term and unlikely to be Significant. Coordination between Long Lane 400kV Substation and the Proposed Development construction programmes may reduce the likelihood of cumulative impacts.
- 14.9.53 The noise assessment of Long Lane 400kV Substation includes noise sensitive receptors which are common to the assessment of the Proposed Development. This includes AL115 and AL133.
- 14.9.54 **Table 14-31** presents the predicted operational noise rating levels of both Long Lane 400kV Substation and the Proposed Development, including the predicted total inter-cumulative noise level.

Table 14-31: Inter-Cumulative Operational Noise Rating Level with Long Lane 400kV Substation

Assessment Location / as Included in Assessment of Long Lane 400kV Substation	Proposed Development Rating Level, $L_{Ar,Tr}$ dB		Long Lane 400kV Substation Rating Level, $L_{Ar,Tr}$ dB		Total Inter-Cumulative Rating Level with Long Lane 400kV Substation, $L_{Ar,Tr}$ dB	
	Day	Night	Day	Night	Day	Night
AL115 / "Whiston Vale"	33	32	30	30	35	34
AL133 / "Garnes"	39	38	32	32	40	39

14.9.55 **Table 14-32** presents the initial assessment of inter-cumulative operational noise.

Table 14-32: Inter-Cumulative Operational Noise Initial Assessment with Long Lane 400kV Substation

Assessment Location	Representative Background Level L_{A90} dB		Total Cumulative Rating Level with Long Lane 400kV Substation, $L_{Ar,Tr}$ dB		Rating Level Exceedance of Representative Background Level dB	
	Day	Night	Day	Night	Day	Night
AL115	57	49	35	34	-22	-15
AL133	54	46	40	39	-14	-7

14.9.56 There are no exceedances of background level; therefore, inter-cumulative noise impacts are expected to be **Not Significant**.

14.10 Summary

Statement of Significance

14.10.1 This Chapter has considered short- and long-term noise and vibration impacts arising as a result of the Proposed Development during construction, operation and decommissioning.

- An assessment of the potential construction noise impacts has been undertaken in accordance with BS 5228-1. In light of Proposed Development commitment to embedded mitigation measures to reduce impacts, construction noise impacts are predicted to be negligible to major. Major impacts would be very short term, and moderate impacts would not occur for 10 or more days or nights in any 15 consecutive days or nights, or a total number of days exceeding 40 in any 6 consecutive months, and therefore would be **Not Significant**
- An assessment of the potential construction vibration impacts has been undertaken in accordance with BS 5228-2. In light of Proposed Development commitment to embedded mitigation measures to reduce impacts, construction vibration impacts are predicted to be negligible to moderate. Moderate impacts would not occur for 10 or more days or nights in any 15

consecutive days or nights, or a total number of days exceeding 40 in any 6 consecutive months, and therefore would be **Not Significant**

- An assessment of the potential construction traffic noise impacts has been undertaken in accordance with LA111. In light of Proposed Development commitment to embedded mitigation measures to reduce impacts, construction traffic noise impacts are predicted to be negligible to moderate. However, moderate impact magnitudes would likely be below the local noise environment and therefore would be **Not Significant**
- An assessment of the potential operational noise impacts has been undertaken in accordance with BS 4142. In light of Proposed Development commitment to embedded mitigation measures to reduce impacts, operational noise impacts are predicted to be negligible or minor and therefore would be **Not Significant**; and

It is likely that decommissioning works will be of a similar nature to those required during construction, therefore noise and vibration impacts during decommissioning are likely to be no worse than those during construction. Therefore, impacts during decommissioning would be **Not Significant**.

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