

CONTENTS

9.0	NOISE AND VIBRATION.....	9-1
9.1	Introduction	9-1
9.2	Legislation and Planning Policy.....	9-1
9.3	Assessment Assumptions and Limitations	9-9
9.4	Assessment Methodology	9-10
9.5	Stakeholder Engagement.....	9-16
9.6	Baseline Conditions.....	9-19
9.7	Embedded Design Mitigation	9-20
9.8	Assessment of Likely Impacts and Effects	9-21
9.9	Additional Mitigation and Enhancement Measures.....	9-23
9.10	Residual Effects and Conclusions.....	9-23
9.11	Cumulative Effects	9-24
9.12	References.....	9-24

TABLES

Table 9.1	Planning Practice Guidance Hierarchy of Noise Effects
Table 9.2	Baseline Noise Monitoring Locations
Table 9.3	Thresholds of Potential Effects of Construction Noise at Residential Buildings
Table 9.4	Thresholds of Potential Effects of Construction Traffic Noise at Residential Buildings
Table 9.5	Construction Traffic Noise Criteria
Table 9.6	Operational Noise Assessment Criteria
Table 9.7	Main Matters Raised during Consultation
Table 9.8	Baseline Monitoring Results
Table 9.9	Construction Noise Predictions
Table 9.10	Daytime Operational Noise Assessment
Table 9.11	Evening Operational Noise Assessment
Table 9.12	Night-time Operational Noise Assessment
Table 9.13	Residual Effects

APPENDIX (Refer to PEI Report Volume 3)

Appendix 9A	Noise Survey Results
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9.0 NOISE AND VIBRATION

9.1 Introduction

9.1.1 This chapter of the Preliminary Environmental Information Report (PEI Report) assesses the likely significant environmental impacts of the Proposed Project with respect to noise and vibration.

9.1.2 Described within this chapter are:

- the methods used to identify the noise and vibration impacts and determine the significance of the resultant impacts associated with the Proposed Project;
- the baseline conditions currently existing at the Site and in the surrounding area;
- the mitigation measures required to prevent, reduce or offset any significant adverse noise and vibration impacts; and
- the likely residual impacts after these measures have been adopted.

9.1.3 Impacts are considered during the construction phase and on completion and operation of the Proposed Project. In particular, the chapter considers potential impacts on identified receptors, in terms of:

- predicted noise and vibration levels from the construction works;
- noise from resulting from operation of the Proposed Project; and
- change in noise level associated with changes to road traffic attributed to the Proposed Project.

9.1.4 It has been agreed with PINS that noise and vibration during the decommissioning phase can be scoped out of the assessment (see Table 9.7).

9.2 Legislation and Planning Policy

9.2.1 This section provides an overview of the legislative and planning policy framework against which the Proposed Project will be considered for noise and vibration. These policies identify the need for a site-specific noise assessment to consider the impacts of construction / decommissioning and operational phase noise on local noise-sensitive receptors.

Legislation

Control of Pollution Act 1974

9.2.2 The Control of Pollution Act 1974 (CoPA) requires that Best Practicable Means (BPM), as defined in Section 72 of the CoPA, are adopted to control construction noise on any given site. Sections 60 and 61 of the CoPA provide the main legislation regarding enabling works and construction site noise and vibration. If noise complaints are received, a Section 60 notice may be issued by the Local

Authority imposing requirements as to the way in which the works are to be carried out.

- 9.2.3 Section 61 of the CoPA provides a means to apply for prior consent to carry out noise generating activities during construction and allows the Local Authority to attach conditions to the consent.

Environmental Protection Act 1990

- 9.2.4 The Environmental Protection Act 1990 (EPA) prescribes a statutory nuisance as noise (and vibration) emitted from premises (including land) that is prejudicial to health or a nuisance.
- 9.2.5 Local Authorities are required to investigate any public complaints of noise, and if they are satisfied that a statutory nuisance exists, or is likely to occur or recur, they must serve a noise abatement notice. A notice is served on the person responsible for the nuisance. It requires either simply the abatement of the nuisance or works to abate the nuisance to be carried out, or it prohibits or restricts the activity.
- 9.2.6 In determining if a noise complaint amounts to a statutory nuisance the Local Authority can take account of various guidance documents and existing case law as no statutory noise limits currently exist for defining a statutory nuisance. Demonstrating the use of BPM to minimise noise levels is an accepted defence against failure to comply with a noise abatement notice.

National Planning Policy

- 9.2.7 As outlined in *Chapter 1: Introduction*, the Environmental Impact Assessment (EIA) for the Proposed Project must have regard to the relevant policies of the National Planning Policy Framework (NPPF) and relevant National Policy Statements (NPS). Key aspects of the NPPF and relevant NPSs, which have been considered during the development of this chapter, are outlined below.
- 9.2.8 NPS EN-1 with particular reference to Section 5.11 and Paragraphs 5.11.4 to 5.11.7, states the following in relation to the assessment of noise:
- 5.11.4 “Where noise impacts are likely to arise from the proposed development, the applicant should include the following in the noise assessment: a description of the noise generating aspects of the development proposal leading to noise impacts, including the identification of any distinctive tonal, impulsive or low frequency characteristics of the noise; identification of noise sensitive premises and noise sensitive areas that may be affected; the characteristics of the existing noise environment; a prediction of how the noise environment will change with the proposed development; in the shorter term such as during the construction period; in the longer term during the operating life of the infrastructure; at particular times of the day, evening and night as appropriate. An assessment of the effect of predicted changes in the noise environment on any noise sensitive premises and noise sensitive areas; and measures to be

employed in mitigating noise. The nature and extent of the noise assessment should be proportionate to the likely noise impact.”

- 5.11.5 *“The noise impact of ancillary activities associated with the development, such as increased road and rail traffic movements, or other forms of transportation, should also be considered.”*
- 5.11.6 *“Operational noise, with respect to human receptors, should be assessed using the principles of the relevant British Standards 137 and other guidance. Further information on assessment of particular noise sources may be contained in the technology-specific NPSs. In particular, for renewables (EN-3) and electricity networks (EN-5) there is assessment guidance for specific features of those technologies. For the prediction, assessment and management of construction noise, reference should be made to any relevant British Standards 138 and other guidance which also give examples of mitigation strategies.”*
- 5.11.7 *“The applicant should consult EA and Natural England (NE), or the Countryside Council for Wales (CCW), as necessary and in particular with regard to assessment of noise on protected species or other wildlife. The results of any noise surveys and predictions may inform the ecological assessment. The seasonality of potentially affected species in nearby sites may also need to be taken into account.”*

9.2.9 To aid the regulator in decision making, paragraph 5.11.9 of NPS EN-1 sets out the three aims relating to noise emissions from new developments:

- *“avoid significant adverse impacts on health and quality of life from noise;*
- *mitigate and minimise other adverse impacts on health and quality of life from noise; and*
- *where possible, contribute to improvements to health and quality of life through the effective management and control of noise”.*

9.2.10 NPS EN-3 with particular reference to Paragraphs 2.4.2, states the following in relation to the design of a project to mitigate noise impacts:

- 2.4.2 *“Proposals for renewable energy infrastructure should demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology.”*

9.2.11 Draft versions of NPS EN-1 and EN-3 were published for consultation by the Department for Business, Energy & Industrial Strategy in September 2021. With relation to noise, the draft EN-1 repeats the three aims for decision makers from the 2011 NPS EN-1. Key additional points that expand on requirements in NPS EN-1 and are relevant to the Proposed Project are referenced from paragraph 5.12.4 and require:

- *“an assessment of the effect of predicted changes in the noise environment on any noise-sensitive receptors, including an assessment of any likely impact on health and well-being where appropriate, and noise-sensitive areas”*
- *“measures to be employed in mitigating the effects of noise – applicants should consider using best available techniques to reduce noise impacts”*

9.2.12 Additionally, the draft NPS EN-1 allows for some flexibility in design, stating that:

- *“Some noise impacts will be controlled through environmental permits and parallel tracking is encouraged where noise impacts determined by an environmental permit interface with planning issues (i.e. physical design and location of development)”*.

9.2.13 Draft EN-3 includes the consideration of noise from energy facilities through highlighting the importance of screening noise source. This is achieved for the Proposed Project by locating all noise sources within a consented building envelope (the Consented Development).

9.2.14 NPPF, with particular reference to Paragraph 174 and 185, states the following relevant to noise:

- 174: *“Planning policies and decisions should contribute to and enhance the natural and local environment by:... e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.”*
- 185: *“Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should: a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life; b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason...”*

Noise Policy Statement for England

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

9.2.16 The NPSE sets out the long-term vision of the government’s noise policy, which 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”.

9.2.17 This long-term vision is supported by three aims: *“Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

- “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 improvements of health and quality of life.”*

9.2.18 The ‘Explanatory Note’ within the NPSE provides further guidance on defining ‘significant adverse effects’ and ‘adverse effects’ using the concepts:

- No Observed Effect Level (NOEL) – the level below which no effect can be detected. Below this level, there is no detectable effect on health and quality of life due to noise;
- Lowest Observable Adverse Effect Level (LOAEL) – the level above which adverse effects on health and quality of life can be detected; and
- Significant Observed Adverse Effect Level (SOAEL) – the level above which significant adverse effects on health and quality of life occur.

9.2.19 With reference to the SOAEL, the NPSE states:

“It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.”

9.2.20 For situations where noise levels are between the LOAEL and SOAEL, all reasonable steps should be taken to mitigate and minimise the effects. However, this does not mean that such adverse effects cannot occur.

9.2.21 Some effects might not be significant in EIA noise terms but may be in health/policy terms if they are at or above SOAEL (i.e. where there may be “significant adverse effects on health and quality of life”). Where exceedances of LOAEL have been identified (i.e. where “adverse effects on health and quality of life” can be detected), mitigation measures are proposed to reduce noise as far as reasonably practicable.

9.2.22 Consideration of the interaction of noise with other effects (e.g. land quality, transport, and landscape and visual amenity) is presented in *Chapter 13: Effect Interactions* of this PEI Report.

Local Planning Policy

Slough Local Development Framework – Core Strategy 2006 – 2026 Development Plan Document (2008)

9.2.23 The Slough Core Strategy is the overarching strategic policy document in the Local Development Framework. It sets out the policies for dealing with environmental issues for development across the borough.

9.2.24 Core Policy 8 (Sustainability and the environment) provides information relating to noise through the statement that:

“Development shall not: a) Give rise to unacceptable levels of pollution including air pollution, dust, odour, artificial lighting or noise”.

Slough Local Plan Saved Policies still in use December 2010 (2004)

9.2.25 The Slough Local Plan contains the saved policies that apply to developments in the borough. Policy EMP2 (Criteria for Business Developments) relates to noise from new business developments and states:

“Proposals for business developments will only be permitted if they comply with all of the following criteria: b) It does not significantly harm the physical or visual character of the surrounding area and there is no significant loss of amenities for the neighbouring land uses as a result of noise, the level of activity, overlooking, or overbearing appearance of the new building”.

National Guidance

Planning Practice Guidance Noise

9.2.26 The Planning Practice Guidance Noise (PPGN) advises that:

“Noise needs to be considered when development may create additional noise, or would be sensitive to the prevailing acoustic environment (including any anticipated changes to that environment from activities that are permitted but not yet commenced) ...”.

9.2.27 It also provides guidelines that are designed to assist with the implementation of the NPPF.

9.2.28 The PPG states that local planning authorities should take account of the acoustic environment and in doing so consider:

- *“whether or not a significant adverse effect is occurring or likely to occur;*
- *whether or not an adverse effect is occurring or likely to occur; and*
- *whether or not a good standard of amenity can be achieved.”*

9.2.29 Factors to be considered in determining whether noise is a concern are identified including the absolute noise level of the source, the existing ambient noise climate, time of day, frequency of occurrence, duration, character of the noise, and cumulative effects.

9.2.30 Further details on the hierarchy of noise effects are presented in Table 9.1., which has been reproduced from PPG.

Table 9.1: Planning Practice Guidance Hierarchy of Noise Effects

<i>Perception</i>	<i>Examples of Outcomes</i>	<i>Increasing Effect Level</i>	<i>Action</i>
Not present	No effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to	Significant Observed Adverse Effect	Avoid

sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area

Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent
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British Standard 4142:2014+A1:2019

- 9.2.31 BS 4142 'Methods for Rating and Assessing Industrial and Commercial' can be used to assess the effect of sound from mechanical services plant. The method compares the difference between the 'rating level' of the new sound, with the 'background level' at the receptor position.

British Standard 7445-2:1991

- 9.2.32 BS 7445-2 'Description and Measurement of Environmental Noise' defines the parameters, procedures and instrumentation requirements for noise measurement and analysis.

British Standard 5228:2009+A1:2014

- 9.2.33 BS 5228-1 'Code of practice for noise and vibration control on construction and open sites. Noise' provides a 'best practice' guide for noise control and includes Sound Power Level (L_w) data for individual plant as well as a calculation method for noise from construction activities.
- 9.2.34 BS 5228-2 'Code of practice for noise and vibration control on construction and open sites'. Vibration provides comparable 'best practice' for vibration control, including guidance on the human response to vibration.

Calculation of Road Traffic Noise (1998)

- 9.2.35 The Department of Transport/Welsh Office Memorandum 'Calculation of Road Traffic Noise' (CRTN) describes procedures for traffic noise calculation and is suitable for environmental assessments of schemes where road traffic noise may have an effect.

Design Manual for Road and Bridges (2020)

- 9.2.36 Highways England's 'Design Manual for Road and Bridges Volume 11 Section 3 Part 7 Traffic Noise and Vibration' (DMRB) provides guidance on the appropriate level of assessment to be used when assessing the noise and vibration effects arising from road projects, including construction of new roads, road improvements and road maintenance.

9.3 Assessment Assumptions and Limitations

- 9.3.1 It is considered that the baseline noise measurements are representative of the typical noise environment of identified receptors at the time of preparation of this assessment. There may have been reduced road traffic during this time period due to the lockdown measures for the Covid-19 pandemic, and in turn lower levels of existing ambient noise. However, it is likely that this provides a more conservative assessment as any change associated with the Proposed Project would be more noticeable against a lower background. Consequently, baseline noise data are considered appropriate for use for the assessment of noise effects.
- 9.3.2 Any measurement of existing ambient or background sound levels will be subject to a degree of uncertainty. Environmental sound levels vary between days, weeks, and throughout the year due to variations in source levels and conditions, meteorological effects on sound propagation and other factors. Hence, any measurement survey can only provide a sample of the ambient levels. Every effort has been made such that measurements were undertaken in such a way as to provide a representative sample of conditions, such as avoiding periods of adverse weather conditions, and school holiday periods (which are often considered to result in atypical sound levels). However, a small degree of uncertainty will always remain in the values taken from such a measurement survey.
- 9.3.3 It is expected that construction of the Proposed Project will take two months and run in parallel with construction of the Consented Development. However, the Proposed Project may be retrofitted after the Consented Development is completed. To account for a reasonable worst-case in terms of noise emissions, it is assumed that the Proposed Project will occur alongside the Consented Development. When considering additive construction noise effects as a result of the Consented Development and the Proposed Project, it has been assumed that the noisiest phase of Consented Development construction activities will be taking place.

9.4 Assessment Methodology

Matters scoped in

9.4.1 The noise and vibration assessment considers the following assessments:

- construction noise;
- construction traffic noise; and
- operational noise.

Matters Scoped Out

9.4.2 The following assessments have been scoped out.

Noise Effects on Ecological or Heritage Receptors

9.4.3 Due to the distance from the Proposed Project to ecological or heritage receptors, an assessment of noise effects on has been scoped out. This has been agreed by PINS (see Table 9.2).

Construction Vibration

9.4.4 The scope of construction work for the Proposed Project will not require piling or introduce any additional high vibration generating plant over what is being utilised in the construction of the Consented Development. The Consented Development identified a Negligible effect (not significant) due to construction vibration. As the nearest sensitive receptor is approximately 180m from the Proposed Project (see Table 9.2), construction vibration effects due to the Proposed Project can be considered as equivalent and have been scoped out of the assessment.

Operational Vibration

9.4.5 There are no significant sources of vibration as part of the operational Proposed Project. Combined with the nearest noise sensitive receptor being approximately 180m from the Proposed Project (see Table 9.2), any ground-borne vibration from the Proposed Project will not be perceptible at these locations. Consequently, an assessment of operational vibration is scoped out.

Operational Road Traffic Noise

9.4.6 The Proposed Project would utilise the same fuel type approved for the Consented Development and the maximum hourly fuel throughput will not increase from the Consented Development. The residual waste output will also not change. There will be also be no change in staff numbers, and hence traffic numbers, during the operational phase due to the Proposed Project. Consequently, there will therefore be no change to the number of road traffic trips during the operational phase relative to the Consented Development, so an assessment of operational traffic noise is scoped out.

Decommissioning Noise and Vibration

- 9.4.7 Noise effects during the decommissioning phase of the Proposed Project will be similar to or less than noise effects during the construction phase; therefore a separate assessment of decommissioning impacts is scoped out. The noise assessment presented for the construction phase is considered representative (or an overestimate) of the decommissioning phase.

Study Area

Construction Noise Study Area

- 9.4.8 BS 5228-1 defines a distance of 300m as the distance at which caution should be applied to calculations using the methodology in BS 5228-1. This distance is also referenced in DMRB, which states that:

“A study area of 300m from the closest construction activity is normally sufficient to encompass noise sensitive receptors”.

- 9.4.9 Consequently, based on guidance within BS 5228-1 and DMRB, a study area of 300m from the Site has been defined for construction noise.

Construction Traffic Noise Study Area

- 9.4.10 The construction traffic study area is defined with reference to guidance in DMRB, which defines a distance of 50m from the kerb line of public roads.

Operational Noise Study Area

- 9.4.11 As guidance does not define study area extents for operational noise, the study area has been defined by the LOAEL, which is identified in the NPSE. The LOAEL is defined in PPGN as the level above which, as an average response, adverse effects on health and quality of life can be detected. Noise below the LOAEL is identified in PPGN as No Observed Adverse Effect, which PPGN states that noise can be heard but does not affect the quality of life.
- 9.4.12 For the purposes of providing an assessment of likely significant noise effects the study area for the noise assessment comprises receptors within 500m of the Proposed Project. Receptors farther than 500m are likely to experience levels of operation noise that are unlikely to affect quality of life.

Baseline Monitoring Methodology

- 9.4.13 Assessment locations used in the assessment of the Consented Development were selected for baseline noise monitoring. Although some of these locations are outside the defined study area, they have been retained for consistency.
- 9.4.14 Baseline noise surveys were undertaken at assessment locations to establish the baseline noise environment at nearby receptors to the Site. The assessment locations are those receptors nearest to the Site within the study area, i.e. the receptors that have the most potential to experience likely significant effects due to noise.

9.4.15 The assessment locations have been considered in the assessment of construction noise and operational noise. Although noise may be perceivable at other receptors in the construction noise and operational noise study areas, the effects will not be significant if they are suitably controlled at the identified assessment locations.

9.4.16 Baseline noise surveys were undertaken from 9th to 10th February 2022, comprising short-term (ST) attended noise monitoring to define representative noise conditions during the day (07:00-19:00hrs), evening (19:00-23:00hrs) and night (23:00-07:00hrs) periods. Assessment locations at which noise monitoring was undertaken are described in Table 9.2.

Table 9.2: Baseline Noise Monitoring Locations

<i>Assessment Location ID</i>	<i>Assessment Location</i>	<i>Approximate distance to Site</i>
R1	Rowan Way	230 m
R2	Bodmin Avenue (east side)	180 m
R3	Greenside	300 m
R4	Bodmin Avenue (west side)	190 m
R5	Scaffell Road	410 m
R6	Sandown Road	550 m
R7	Montrose Avenue	400 m
R8	Westgate Crescent	600 m
R9	Northborough Road	490 m

Construction Assessment Methodology

Introduction

9.4.17 Due to the proximity of sensitive receptors to the Site, temporary significant effects may occur at sensitive receptors during the construction programme. The assessment of noise considers the following:

- construction noise emissions from on-site activities; and
- changes in road traffic noise due to construction traffic on the local road network.

Construction Noise

9.4.18 Although there is currently a lack of evidence relating to health effects of construction noise, the method for assessing construction noise effects is defined based on the current industry standard approach. Criteria for assessing construction noise effects are presented in Table 9.3. and were defined with

reference to ‘example method 1 – the ABC method’ as defined in BS 5228 1. Category A criteria in the ABC method are interpreted as LOAEL and Category C criteria are considered equivalent to SOAEL. Although this approach was not applied in the Consented Development, it is the current industry standard and the defined LOAEL and SOAEL for construction noise have been accepted in other EIAs¹

Table 9.3: Thresholds of Potential Effects of Construction Noise at Residential Buildings

<i>Time Period</i>	<i>Threshold Value (LAeq,T dB)</i>	
	<i>LOAEL</i>	<i>SOAEL</i>
Day (07:00 – 19:00)	65	75
Saturday (07:00 – 13:00)		
Evening (19.00 – 23.00)	55	65
Weekends (13.00–23.00 Saturdays and 07.00–23.00 Sundays)		
Night (23.00 – 07.00)	45	55

a) These effects are expected to occur if the programme of works indicates that the relevant threshold values are likely to be exceeded over a period of at least one month. The values apply to a location one metre from a residential building façade containing a window, ignoring the effect of the acoustic reflection from that façade.

Construction Traffic

9.4.19 The Proposed Project has the potential to influence traffic flows on existing roads in the area surrounding the construction sites. Construction traffic noise has been assessed by considering the increase in traffic flows as a result of the Proposed Project as compared to the future baseline (the construction of the Consented Development) during works through calculation of the Basic Noise Level (BNL), as defined in CRTN.

9.4.20 The LOAEL and SOAEL for road traffic noise are defined in Table 9.4. based on guidance in the DMRB.

¹ For example High Speed 2, A14 Cambridge to Huntingdon and Thames Tideway

Table 9.4: Thresholds of Potential Effects of Construction Traffic Noise at Residential Buildings

<i>Time Period</i>	<i>Threshold Value ($L_{Aeq,T}$ dB)</i>	
	<i>LOAEL</i>	<i>SOAEL</i>
07:00 to 23:00 ²	50	63
23:00 to 07:00	40	55

9.4.21 The criteria that are used to define the significance of effect in terms of the changes in road traffic noise are presented in Table 9.5. These criteria are based on guidance for assessing short-term changes in noise from DMRB.

Table 9.5: Construction Traffic Noise Criteria

<i>Significance of Effect</i>	<i>Change in Noise Level</i>
Major	5.0 dB or more
Moderate	3.0 dB – 4.9 dB
Minor	2.0 – 2.9 dB
Negligible	0.1 – 0.9 dB
No change	0.0 dB

9.4.22 Under normal circumstances, Moderate and Major Adverse effects due to change in level of surface access noise are identified as significant. However, DMRB states that:

“Where any do-something absolute noise levels are above the SOAEL, a noise change in the short term of 1.0dB or over results in a likely significant effect”.

9.4.23 Preliminary modelling indicates that changes in noise as a result of the Proposed Project at high noise levels are minimal. As such, the assessment at this stage focuses on the significance of effect due to moderate and major changes in surface access noise. Additional detail will be provided in the Environmental Statement

² LOAEL and SOAEL for the daytime period are calculated from DMRB LA10,18h values by applying a correction of -3 dB to convert from the façade level to a free-field level and by applying a further correction of -2 dB to convert from LA10,18h to LAeq,16h.

(ES) to clarify the change in noise level at receptors where road traffic noise exceeds the SOAEL.

Operational Noise Assessment Methodology

9.4.24 Operational noise has been assessed following BS 4142 guidance, whereby the rating level of noise emissions from activities are compared against the background level of the pre-development noise climate. The relevant parameters in this instance are as follows:

- Background sound level – $L_{A90,T}$ – defined in the Standard as the ‘A’ weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels;
- Specific sound level – $L_{Aeq,Tr}$ – the equivalent continuous ‘A’ weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, Tr; and
- Rating level – $L_{Ar,Tr}$ – the specific sound level plus any adjustment made for the characteristic features of the noise.

9.4.25 BS 4142 recognises that certain acoustic features of a sound source can increase the impact over that expected based purely on the sound level. The standard identifies the following features to be considered:

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

9.4.26 BS 4142 states the following regarding the assessment of impacts, comparing the rating level of the new noise source with the existing background level:

- *"Typically, the greater this difference, the greater the magnitude of the impact."*
- *A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- *A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.*

- *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."*

9.4.27 The criteria for changes in noise levels, based on guidance within BS 4142, and the potential effect on noise sensitive residential receptors are presented in Table 9.6.

Table 9.6: Operational Noise Assessment Criteria

<i>Difference between rating level and background level</i>	<i>Effect Level</i>
Approximately 0 dB	LOAEL
Approximately +10 dB(A)	SOAEL

9.5 Stakeholder Engagement

9.5.1 Consultation undertaken to date in relation to noise and vibration is outlined in Table 9.7.

Table 9.7: Main Matters Raised during Consultation

<i>Consultee</i>	<i>Main matter raised</i>	<i>How has the concern been addressed</i>	<i>Location of response in PEI Report chapter</i>
Planning Inspectorate	The Scoping Report states that noise and vibration effects are considered on human receptors rather than on ecological or heritage receptors on the basis that in-combination effects on ecological receptors will be considered in the Ecology chapter. However, there is no reference to noise and vibration impacts within the Ecology Chapter of the Scoping Report. The ES should ensure that all matters referenced are addressed within the relevant chapters.	Noise effects on ecological or heritage receptors have been scoped out of the assessment	Paragraph 9.4.3

However, considering the distance from ecological and heritage receptors, the Inspectorate agrees that this matter can be scoped out of the ES.

Planning Inspectorate	<p>The Applicant proposes to scope out operational vibration effects as no major vibration sources are envisaged as part of the consented scheme or the Proposed Development during operation.</p> <p>The Inspectorate agrees that this can be scoped out.</p>	Operational vibration has been scoped out of the assessment.	Paragraph 9.4.5
Planning Inspectorate	<p>The Applicant proposes to scope out effects of piling since there will be no piling as part of the Proposed Development.</p> <p>The Inspectorate agrees that this can be scoped out.</p>	There will be no piling and therefore effects of piling have been scoped out of the assessment.	Paragraph 9.4.4
Planning Inspectorate	<p>The Scoping Report proposes to scope out operational noise as no changes in operational noise are likely. It also states that this will be confirmed using sound power level data. In the absence of information to demonstrate that the extended operation will be no worse than currently consented, the Inspectorate cannot agree to scope this matter out at this stage. An assessment of operational noise effects should be provided, unless otherwise justified.</p>	Operational noise effects are assessed during the day, evening and night periods against new background noise data.	Paragraph Error! Reference source not found. to Error! Reference source not found.
Planning Inspectorate	<p>The Inspectorate also notes that the Proposed Development involves an</p>	The assessment of noise considers the Proposed Project	Paragraph Error! Reference source not found. to Error!

	increase in operational hours of c. 10% compared with the consented scheme (see ID 2.1.2 above). As such, the ES should also demonstrate that the increase in operational hours will not result in any likely significant effects in relation to noise.	operating for 24-hours seven days a week. Noise effects are assessed during the day, evening and night periods. The Consented Development was also assessed assuming operating for 24-hours seven days a week and is also allowed to operate every hour of the year.	Reference source not found.
Planning Inspectorate	The Scoping Report proposes that noise effects during the decommissioning phase will not be included in the assessment as the assessment of construction noise will be representative of the decommissioning phase. The Inspectorate agrees that a separate assessment of noise effects during decommissioning can be scoped out on this basis.	Decommissioning noise and vibration has been scoped out of the assessment.	Paragraph 9.4.7
Planning Inspectorate	The Applicant proposes to scope out construction phase vibration due to “the nature of the works to install the Proposed Development”. However, the Scoping Report does not provide detail regarding the proposed construction works. Additionally, the Inspectorate notes that in paragraph 3.4.6 of the Scoping Report the Applicant proposes to include mitigation of noise and vibration within the	Following a review of the activities that will take place and distance to receptors, construction vibration has been scoped out of the assessment. Sensitive receptors are outside the construction vibration study area recommended by industry guidance for when noticeable or	Paragraph 9.4.4

CEMP, which suggests that some impacts during construction are anticipated. significant effects may occur.

As such, the Inspectorate is of the opinion that this matter cannot be scoped out at this stage. The ES should assess the likely significant effects of vibration during the construction phase, as well as any mitigation measures proposed.

9.6 Baseline Conditions

Existing Baseline

- 9.6.1 The Site is within the existing Slough Multifuel site which is located within the Slough Heat and Power Plant on the Slough Trading Estate. The dominant sources of sound in the area are considered to be noise from the remaining operational plant at Slough Heat and Power Plant (SHP), the Trading Estate, and from local road networks. Additionally, when Heathrow is operating on westerlies (approximately 70% of the time), aircraft overfly Slough and contribute to the baseline environment.
- 9.6.2 During noise monitoring the existing plant at the site was operating under normal conditions so noise levels measured at receptor locations can be considered as typical. Noise associated with existing plant at the site is considered to be part of the existing baseline noise climate.
- 9.6.3 A summary of baseline noise measurements undertaken at the locations identified in Table 9.2. is presented in Table 9.8. The results of noise measurements are presented in more detail in PEI Report Volume 3 Appendix 9A.

Table 9.8: Baseline Monitoring Results

<i>ID</i>	<i>Daytime</i>		<i>Evening</i>		<i>Night</i>	
	<i>L_{Aeq,T} dB</i>	<i>L_{A90,T} dB</i>	<i>L_{Aeq,T} dB</i>	<i>L_{A90,T} dB</i>	<i>L_{Aeq,T} dB</i>	<i>L_{A90,T} dB</i>
R1	51	44	49	35	36	35
R2	52	48	48	38	38	36
R3	52	46	44	36	37	34

R4	60	53	57	46	54	45
R5	60	47	61	42	52	41
R6	50	44	51	40	39	37
R7	66	49	63	42	56	40
R8	53	41	52	33	38	32
R9	50	45	51	35	43	29

Future Baseline

- 9.6.4 The Consented Development is planned to be completed and operational in 2024. There are not known to be any new developments prior to 2024 that will result in increased ambient noise levels in the study area. The Consented Development will introduce a new noise source into the area, which may affect ambient noise levels at sensitive receptors. Additionally, natural growth in road traffic and the return to pre-Covid levels of air traffic is likely to result in increased noise levels in future. Consequently, the future baseline may be higher than the present-day baseline (as per Table 9.8 above). Due to uncertainty on the level of natural growth of road traffic and the rate of recovery of the post-Covid aviation industry, there is uncertainty about noise levels which will define the future baseline. As such, the future baseline has not been reassessed and the present-day baseline is used to assess noise from the Proposed Project as it provides a precautionary approach when defining operational noise limits.

9.7 Embedded Design Mitigation

- 9.7.1 This section describes the embedded and good practice mitigation for noise and vibration that has been incorporated into the Proposed Project design or assumed to be in place before undertaking the assessment.

Construction Noise

- 9.7.2 Embedded measures relevant to the construction phase will be described within the Consented Development CEMP, which will be retained for Proposed Project construction works. The CEMP contains details of Best Practicable Means (BPM), as defined in Section 72 of the Control of Pollution Act. Examples of BPM that will be implemented during construction works are:
- Unnecessary revving of engines will be avoided, and equipment will be switched off when not in use;
 - Appropriate routing of construction traffic on public roads and along access tracks;
 - Drop heights of materials will be minimised;

- Plant and vehicles will be sequentially started up rather than all together;
- Plant will always be used in accordance with manufacturers' instructions. Care will be taken to site equipment away from noise-sensitive areas. Where possible, loading and unloading will also be carried out away from such areas;
- Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturer's specifications; and
- Restricting any noisy activities to daytime only.

Operational Noise

- 9.7.3 At this stage no specific noise mitigation measures have been included for operational plant; the Proposed Project will not introduce any new or louder noise sources than the Consented Development.
- 9.7.4 The Consented Development is required by planning permission (Planning Ref.P/00987/051) to meet a SHP site boundary noise level of 60dB $L_{Aeq,T}$ as measured 3.6m from the nearest (to a sensitive receptor) building façade and 2m from ground level. The Consented Development and Proposed Project will be designed to have no tonal, impulsive or intermittent features.
- 9.7.5 The design of the building envelope for the Consented Development will be sufficient to provide a minimum noise transmission loss of 30dB, and this design will not change as a result of the Proposed Project. As the Consented Development design is progressed, the specification of plant and machinery with low noise emission and properly attenuated ventilation routes will help to minimise noise emissions. The use of enclosures, local screening, mufflers, and silencers will also be used as appropriate for the Consented Development.

9.8 Assessment of Likely Impacts and Effects

- 9.8.1 The assessment of effects takes place after considering embedded design mitigation.

Construction and Decommissioning Noise

- 9.8.2 The assessment of the construction of the Proposed Project is expected to last two months in duration and will be in parallel with the construction of the Consented Development. This is anticipated to happen in Q1 2024 during construction of the external building envelope; however, this timeframe is not fixed and may change in future.
- 9.8.3 The Proposed Project will not result in any change to the consented building envelope and architecture with the majority of works taking place internally. The only expected external amendment associated with the Proposed Project to the Consented Development will be the presence of an additional pipe that will be located on a consented pipe rack between the Consented Development boiler

hall/tipping hall and the turbine hall. This work will not require any new or different construction plant than has already been considered and assessed for the Consented Development. Consequently, construction noise will not be any different from that assessed for the Consented Development.

- 9.8.4 The results of the construction noise assessment for building phase construction reported for the Consented Development are presented in Table 9.9. The effect level has been defined based on criteria in Table 9.3.

Table 9.9: Construction Noise Predictions

<i>ID</i>	<i>Construction Noise Prediction $L_{Aeq,T}$ dB</i>	<i>Effect Level</i>
R1	62	Below LOAEL
R2	66	Below LOAEL
R3	64	Below LOAEL
R4	59	Below LOAEL
R5	65	Below LOAEL
R6	60	Below LOAEL
R7	64	Below LOAEL
R8	59	Below LOAEL
R9	61	Below LOAEL

- 9.8.5 Construction noise predictions indicate that noise at nearby sensitive receptors is below the LOAEL. As such, construction and decommissioning noise is **not significant**.

Construction Traffic Noise

- 9.8.6 As a result of the Proposed Project construction works (including additional staff), there will be approximately 20 HGV deliveries over the two-month period, which averages at less than one HGV delivery per day, and two mini-bus journeys per day. The assessment of construction traffic noise for the Consented Development identified a worst-case increase in noise of +0.8 dB due to construction traffic on Buckingham Avenue East during the peak period. As the additional construction traffic for the Proposed Project would not result in a material change in noise for a typical day, the change in road traffic noise will be no worse than identified for the Consented Development. Consequently, construction traffic noise effects are **Negligible** and **not significant**.

Operational Noise

- 9.8.7 It is expected that the Proposed Development will operate for approximately 8,000 hours per annum (to allow for offline periods for maintenance), which is as per the Consented Development. However, for the purpose of the PEIR, assessments have been undertaken on the basis of the Proposed Development operating continually, for twenty-four hours per day, seven days a week (i.e. for a total of 8,760 hours per annum) so that a “worst case scenario” has been assessed. This again is as per the assessments for the Consented Development. The Proposed Project will not lead to an increase in operational hours
- 9.8.8 All new noise generating plant in the Proposed Project will be located internally and will not produce any additional noise than assessed in the Consented Development. Additionally, all new plant will be required to comply with the noise limit of 60dB $L_{Aeq,T}$ at the site boundary as set out in the environmental permit for SHP. As such, noise emissions will be consistent with the Consented Development, which was identified as Negligible and **not significant**. This is equivalent to a noise effect that is below the LOAEL.

9.9 Additional Mitigation and Enhancement Measures

- 9.9.1 No significant construction, operational or decommissioning noise or vibration effects have been identified as a result of the Proposed Project. Consequently, no additional mitigation measures are recommended specific to the Proposed Project.

9.10 Residual Effects and Conclusions

- 9.10.1 Table 9.10 summarises the identified residual effects during the construction period and operational phase of the Proposed Project.

Table 9.10: Residual Effects

<i>Description</i>	<i>Nature of Effect</i>	<i>Geographic Scale</i>	<i>Significance</i>
Demolition and Construction Phase			
Construction and Decommissioning Noise	Below LOAEL Temporary	Local	Not Significant
Construction Traffic Noise	Negligible Temporary	Local, District	Not Significant
Operational Phase			

Operational Noise – Day, Evening and Night	Below LOAEL Permanent	Local	Not Significant
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9.11 Cumulative Effects

- 9.11.1 No cumulative effects are anticipated in respect of noise during the construction and operational phases.
- 9.11.2 There are no cumulative schemes that have been identified in *Chapter 6 Environmental Impact Assessment Methodology* within the study area or which may have impacts within the study area. The Slough Trading Estate has status as a Simplified Planning Zone ('SPZ') Scheme (2014-2024) which allows some demolition and construction activities without planning permission, as described in *Chapter 6 Environmental Impact Assessment Methodology*. Taking into account that the Proposed Project is expected to have no significant noise effects, any impacts associated with SPZ schemes (should any occur) are not expected to interact with the Proposed Project to create significant cumulative effects.

9.12 References

- Her Majesty's Stationery Office (1974); Control of Pollution Act.
- Her Majesty's Stationery Office (1995); Environmental Protection Act.
- Ministry of Housing, Communities & Local Government (MHCLG) (2021) National Planning Policy Framework.
- Department of Energy and Climate Change. (2011) Overarching National Policy Statement for Energy (EN-1).
- Department of Energy and Climate Change (2011) National Policy Statement for Renewable Energy Infrastructure (EN-3).
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- Department for Business, Energy & Industrial Strategy (2021) Draft National Policy Statement for renewable energy infrastructure (EN-3).
- Department for Environment Food and Rural Affairs (2010); Noise Policy Statement for England.
- Slough Borough Council (2008); Slough Local Development Framework - Core Strategy 2006 – 2026 Development Plan Document.
- Slough Borough Council (2008); Slough Local Plan (March 2004) Saved Policies still in use December 2010.

Ministry of Housing, Communities & Local Government (2019); Planning Practice Guidance - Noise.

British Standards Institute (2014 with 2019 amendments); BS 4142 – Methods for rating and assessing industrial and commercial sound, BSi, London.

British Standards Institute (1991); BS 7445 – Description and environment of environmental noise – Part 2: Guide to quantities and procedures, BSi, London.

British Standards Institute (2009 with 2014 amendments) BS 5228:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites. Noise, BSi, London.

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International Standards Organization (Part 1: 1993, Part 2: 1996) ISO 9613 – Acoustics – Attenuation of sound during propagation outdoors, ISO.

British Standards Institute (2014); BS 8233 – Guidance on sound insulation and noise reduction for buildings, BSi, London.