

Chapter 10: Noise

Environmental Impact Assessment
Report for:

Westfield Substation Extension

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10. Noise

10.1 Introduction

- 10.1.1 This chapter has been prepared by Stantec UK. This chapter of the EIAR assesses the likely environmental effects of the Proposed Development with respect to noise. This chapter also describes the methods used to assess the effects; the baseline conditions currently existing at the site, future baselines and surrounding area; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been adopted.
- 10.1.2 Cumulative effects associated with noise have additionally been considered within the EIAR and can be found in **Chapter 12** – Cumulative and Interactive Effects.

10.2 Scope of Assessment and Consultation

- 10.2.1 In July 2024 an EIA Scoping Report was submitted to Fife Council (FC), which outlined the proposed scope and approach for this chapter.
- 10.2.2 A Scoping Opinion (**Technical Appendix 2.1**) was received from FC on 09 September 2024. The scope of the proposed EIA Report was considered to be broadly acceptable to the Council.
- 10.2.3 Further consultation with the Environmental Health Officer ('EHO') at FC was undertaken during October 2024. The consultation is provided in **Technical Appendix 10.1**. The proposed survey methodology was issued to the EHO, who confirmed that the approach was suitable. This included details of both noise sensitive receptor locations and measurement locations.
- 10.2.4 **Table 10.1** highlights the consultee comments related to noise that were raised during consultation and provides a response.

Table 10.1: Consultation

Reference	Consultee Comment	Applicant Response
Scoping Response 09/09/2024 - FC	The LPA confirmed that noise (construction traffic noise and operational noise only) was to be scoped into the EIAR.	Construction traffic and operational activity noise has been scoped into the Environmental Impact Assessment Report (EIAR).
Pre-application response 10/10/2024 - FC	The pre-application response from FC confirmed that 'A noise report should be submitted with any future planning application, and this should set out the anticipated noise emissions from the proposal and provide details of the predicted noise levels at the boundary of nearby residential properties together with any required noise attenuation measures. The noise report should set out whether the noise impact from the proposal would be acceptable or not.'	A noise impact assessment has been provided as part of the submission and is included within Technical Appendix 10.2 .
EHO Consultation 31/10/2024 - FC	The survey methodology was submitted including details of the measurement and receptor locations. The EHO confirmed 'Based on your explanation below your original monitoring points are acceptable.'. The full consultation is provided in Technical Appendix 10.1 .	Baseline measurement positions and receptor locations have been confirmed as acceptable for the purpose of the assessment.

- 10.25 Since the Scoping Report was issued, decommissioning of the 275kV substation has been considered to form part of the Proposed Development. Noise levels generated during decommissioning works are expected to be comparable to those generated during construction works. The Scoping Report noted that noise from construction works could potentially result in significant effects if appropriate mitigation is not implemented. However, as is the case for construction noise, likely effects would be mitigated through the implementation of a construction environmental management plan, which would outline relevant noise mitigation for the decommissioning phase. Noise from decommissioning works has been scoped out of the assessment. These works will not overlap with construction and would be comparable in nature and duration. On this basis, and given receptor distances, no significant effects are anticipated.
- 10.26 Since the Scoping Report was issued, the installation of 33kV underground cabling has been considered to form part of the assessment. The works involve excavating, installing cabling, backfilling and reinstating ground. There will be periods during the works when they are taking place near to noise sensitive receptors, however the works would not take place at night and the duration of works closer to receptors is expected to be limited. As is the case for other construction noise activity, likely effects would be mitigated through the implementation of a construction environmental management plan, which would outline relevant noise mitigation for the works. This includes when underground cabling works are taking place concurrently with other construction activity. Construction activity noise has been scoped out of the assessment. On this basis, no significant effects are anticipated.

10.3 Legislation and Policy Context

National Legislation

Control of Pollution Act 1974

- 10.3.1 The Control of Pollution Act 1974 (CoPA) (HMSO, 1974) covers a wide range of environmental pollution including noise. Parts of the Act have been superseded by the Environmental Protection Act 1990 (EPA) (HMSO, 1990).
- 10.3.2 Section 60 of the Act relates to the 'Control of Noise on Construction Sites' and Section 61 relates to obtaining 'Prior Consent for Work on Construction Sites'. These sections of the Act are often used in conjunction with other standards to determine acceptable noise levels in relation to construction, hours of operation and specific working methods or mitigation.
- 10.3.3 A section 61 application outlines the proposed construction works, hours of operation and a mitigation plan to reduce noise and vibration impact through the use of best practicable means. It allows prior consent to be agreed between the contractor and the council and assists with providing the contractor with a defence against legal action taken under Section 60 of CoPA (HMSO, 1974) or section 80 of the EPA (HMSO, 1990).

Environmental Protection Act 1990

- 10.3.4 The EPA (HMSO, 1990) requires local authorities to investigate noise complaints from premises (land and buildings) and vehicles, machinery or equipment in the road. This includes noise arising from construction sites.
- 10.3.5 If the local authority is satisfied that noise from a development amounts to a statutory nuisance, then the authority must serve an abatement notice on the person responsible or in certain cases the owner or occupier of the property. The notice may require that the noise or nuisance is completely stopped or limited to certain times of the day.

National Planning Policy

National Planning Framework 4

- 10.3.6 The National Planning Framework 4 (LGHD, 2023) (NPF4) was adopted in 2023 and is a long-term plan looking to 2045 that guides spatial development, sets out national planning policies, designates national developments and highlights regional spatial priorities.
- 10.3.7 The statutory development plan consists of NPF4 and the relevant local development plan(s), which in this case is the Fife Local Development Plan 2017 (LDP).
- 10.3.8 With respect to noise, NPF4 Policy 11 states:

"[...]"

e) In addition, project design and mitigation will demonstrate how the following impacts are addressed:

i. impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker;

[...]"

10.3.9 NPF4 Policy 14 states:

"a) Development proposals will be designed to improve the quality of an area whether in urban or rural locations and regardless of scale.

[...]

c) Development proposals that are poorly designed, detrimental to the amenity of the surrounding area or inconsistent with the six qualities of successful places, will not be supported."

10.3.10 NPF 4 Policy 23 states:

"e) Development proposals that are likely to raise unacceptable noise issues will not be supported. The agent of change principle applies to noise sensitive development. A Noise Impact Assessment may be required where the nature of the proposal or its location suggests that significant effects are likely."

10.3.11 Planning Advice Note (PAN) 1/2011: 'Planning and Noise'

10.3.12 Published in March 2011, PAN 1/2011 provides advice on the role of the planning system in helping to prevent and limit adverse effects of noise (Scottish Government, 2011). Information and advice on noise assessment methods are provided in the accompanying Technical Advice Note (TAN 2011). Included within the PAN document and the accompanying TAN are details of the legislation, technical standards, and codes of practice for specific noise issues.

10.3.13 Neither PAN 1/2011 nor the associated TAN provides specific guidance on the assessment of noise from fixed plant, but the TAN includes an example assessment scenario for 'New noisy development (incl. commercial and recreation) affecting a noise sensitive building', which is based on British Standard (BS) 4142:1997: Method for rating industrial noise affecting mixed residential and industrial areas (BSI, 1997). In 2014, BS 4142:1997 was replaced with BS 4142:2014: Methods for rating and assessing industrial and commercial sound with the most up to date iteration provided in 2019 (BSI, 2019).

Local Planning Policy

Fife Local Development Plan - FIFEplan (2017)

10.3.14 FIFEplan (FC, 2017) Policy 10 provides that "Development proposals must demonstrate that they will not lead to a significant detrimental impact on amenity in relation to... noise..." The section on applying Policy 10 sets out that "new development is required to be implemented in a manner that ensures that existing uses and the quality of life of those in the local area are not adversely affected." The planning authority will assess amenity impact on a case-by-case basis, with certain forms of development (including noise-generating or noise-sensitive uses) always requiring an assessment of amenity impacts.

Other Relevant Standards and Guidance

British Standard 4142:2014 + A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound

- 10.3.15 BS 4142:2014 + A1:2019 (BSI, 2019) describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in the standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.
- 10.3.16 The standard is used to determine the rating levels for sources of sound of an industrial and/or commercial nature and the ambient, background and residual sound levels at outdoor locations. These levels could be used for the purposes of investigating complaints; assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and assessing sound at proposed new dwellings or premises used for residential purposes. However, the determination of noise amounting to a nuisance is beyond the scope of the standard.
- 10.3.17 The standard should not be used to assess sound from the passage of vehicles on public roads and railway systems; recreational activities; music and other entertainment; shooting grounds; construction and demolition; domestic animals; people; public address systems for speech and other sources falling within the scopes of other standards or guidance. The standard cannot be applied to the derivation of indoor sound levels arising from sound levels outside, or the assessment of indoor sound levels.
- 10.3.18 The procedure contained in BS 4142 assesses the significance of sound which depends upon the margin by which the rating level of the specific sound sources exceeds the background sound level and the context in which the sound occurs/will occur. It is noted that a BS 4142 assessment is reliant on measuring relevant background sound levels.
- 10.3.19 An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level and considering the following:
- Typically, the greater this difference, the greater the magnitude of the impact;
 - A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
 - A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and
 - 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.
- 10.3.20 In order to consider the context, BS 4142 advises that the following factors should be considered:
- 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 such as:
 - Façade insulation treatment;
 - Ventilation and/or cooling that will reduce the need to have windows open to provide rapid or purge ventilation; and
 - Acoustic screening.

British Standard 7445:2003 'Description and Measurement of Environmental Noise – Part 1: Guide to Quantities and Procedures'

- 10.3.21 BS 7445-1:2003 (BSI, 2003) describes methods and procedures for measuring noise from all sources which contribute to the total noise climate of a community environment, individually and in combination. The results are expressed as equivalent continuous A-weighted sound pressure levels, $L_{Aeq,T}$.
- 10.3.22 BS 7445-1:2003 states that sound level meters that are used should conform to Class 1 (or Class 2 as a minimum) as described in BS EN 61672-1:2013 (BSI, 2013) and should be calibrated according to the instructions of the manufacturer and field calibration should be undertaken at least before and after each series of measurements.

Design Manual for Road and Bridges LA III Traffic Noise and Vibration

- 10.3.23 The Design Manual for Roads and Bridges (DMRB) (Standards for Highways, 2020) is considered to be the regulatory standard for the design of a new road or improvements to an existing road. LA III provides guidance on the environmental assessment of noise and vibration emissions from construction traffic.
- 10.3.24 The document states in 3.15:
- “Construction traffic BNL increases shall be calculated for roads within the construction traffic study area.”*
- 10.3.25 The calculation of the Basic Noise Level (BNL) is described in the CRTN (Department for Transport Welsh Office, 1988), and takes into account traffic speeds, AAWT 18-hour flows and HGV composition.
- 10.3.26 Paragraph 3.17 of DMRB LA III states:
- “Magnitude of impact at noise sensitive receptors of construction traffic shall be determined in accordance with Table 3.17.”*
- 10.3.27 Table 3.17 of DMRB LA III is reproduced below in **Table 10.2**.

Table 10.2: Magnitude of Impact at Receptors

Magnitude of Impact in Noise Terms	Change in Noise Level LA10,18hr (dB) at Noise Sensitive Receptor
Major	≥ 5.0
Moderate	3.0 to 4.9
Minor	1.0 to 2.9
Negligible	< 1.0

10.3.28 Paragraph 3.19 of DMRB LA 111 states:

“Construction noise and construction traffic noise shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding: 1) 10 or more days or nights in any 15 consecutive days or nights; 2) a total number of days exceeding 40 in any 6 consecutive months.”

Calculation of Road Traffic Noise 1988 (CRTN)

10.3.29 The Calculation of Road Traffic Noise (CRTN) (Department for Transport Welsh Office, 1988) describes the standard procedures for the measurement and calculation of traffic noise. It includes consideration of a number of factors including vehicle class, speed, road surface, distance attenuation and barrier attenuation.

10.3.30 Noise levels are measured or predicted in terms of the $L_{A10,1\text{hour}}$ or $L_{A10,18\text{hour}}$. The $L_{A10,18\text{hour}}$ is the arithmetic average of the measured or calculated $L_{A10,1\text{hour}}$ levels for each one-hour period between 06:00 hours and 00:00 hours.

Procedure for the Assessment of Low Frequency Noise Complaints Revision 1 December 2011 (NANR45)

10.3.31 The objective of NANR45 (University of Salford, 2011) is to assist Environmental Health practitioners in handling complaints relating to low frequency noise (LFN), excluding LFN relating to traffic and entertainment sources.

10.3.32 The document details a methodology for assessing complaints which refers to third octave band criteria between 10Hz and 160Hz. At frequencies below 31.5Hz the criteria are based on the average threshold of audibility for steady sounds.

10.3.33 The methodology compares the measured LFN at the location of the complainant with the third octave band criteria between 10Hz and 160Hz. Where the measured LFN exceeds the criteria, then this suggests that there may be an actionable complaint.

10.3.34 The reference values are detailed in **Table 10.3**.

Table 10.3: LFN Criteria – Outside Property

Low Frequency Noise Reference Criterion ($L_{eq,T}$) at Third Octave Band Centre Frequency (Hz)												
10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
92	87	83	74	64	56	49	43	42	40	38	36	34

- 10.3.35 The procedure detailed in NANR45 is intended to assist in the evaluation of existing problems and is not intended as a means of predicting when disturbance might occur. However, in the absence of industry standard guidance with respect to LFN, it is considered that if the assessed sound falls below criteria curve, this is a positive indication that the assessed sound is unlikely to cause LFN complaints.

Local Guidance

Fife Council Policy for Development and Noise (2021)

- 10.3.36 FC's Planning Policy for Development and Noise provides non-statutory guidance to support Local Development Plan policies relating to amenity and environmental protection. The document outlines the Council's expectations regarding the assessment and control of noise impacts arising from or affecting new development. It establishes that both noise-generating and noise-sensitive developments must be designed and located to ensure that unacceptable noise effects are avoided.
- 10.3.37 The guidance sets out a structured approach to noise assessment, including the requirement for baseline surveys, identification of sensitive receptors, and the use of appropriate noise criteria and assessment methodologies. Where relevant, applicants are expected to assess the significance of predicted noise effects by determining the magnitude of change against appropriate benchmarks. A checklist is provided to support consistent reporting and to ensure that proposed mitigation measures are clearly identified and justified. The guidance promotes early engagement with the planning authority and the inclusion of suitably detailed acoustic assessments as part of the planning submission process.

10.4 Assessment Methodology and Significance Criteria

Study Area

- 10.4.1 Based on professional judgement, experience from working on other energy schemes and related guidance and standards, the following study areas have been used within the assessment.

Construction Traffic Noise

- 10.4.2 To evaluate the potential impact of construction-related traffic noise, a study area has been established in accordance with the guidance provided in DMRB, Specifically, Section 3.8 of the guidance states:

"A construction traffic study area shall be defined to include a 50m width from the kerb line of public roads with the potential for a increase in baseline noise level (BNL) of 1 dB(A) or more as a result of the addition of construction traffic to existing traffic levels".

- 10.4.3 On this basis, a study area of 50m from construction traffic routes has been applied. The study area includes local roads but excludes major roads as it is assumed that significant effects due to construction traffic noise are not likely to occur on major roads, which experience high traffic flows.

Operational Noise

- 10.4.4 In this instance the assessment reports the impact at high sensitivity receptors, located within 500m of the site. No significant impacts are identified at distances beyond this.

Receptor Sensitivity

- 10.4.5 The sensitivity of the Noise Sensitive Receptor ('NSR') is estimated in its current state at the time of writing the report. The level of sensitivity is determined with reference to the methodology detailed in The Assessment of Noise: Technical Advice Note (TAN 2011) (EFD, 2011) which considers existing regulations and guidance, societal value, and vulnerability to change. A combination of the assessed value of these three components allows the NSRs' sensitivity to be classified as Low, Medium or High.

Table 10.4: Receptor Sensitivity

Level of Sensitivity	Definition
Low	Receptors where distraction or disturbance from noise is minimal.
	Buildings not occupied during working hours.
	Factories and working environments with existing high noise levels.
	Sports grounds when spectator noise is a normal part of the event.
	Night clubs.
Medium	Receptors moderately sensitive to noise, where it may cause some distraction or disturbance.
	Offices.
	Bars/Cafes/Restaurants where external noise may be intrusive.
	Sports grounds when spectator noise is not a normal part of the event and where quiet conditions are necessary (e.g. tennis, golf, bowls).

Level of Sensitivity	Definition
High	Receptors where people or operations are particularly susceptible to noise. Residential, including private gardens where appropriate. Quiet outdoor areas used for recreation. Conference facilities. Theatres/Auditoria/Studios. Schools during the daytime. Hospitals/residential care homes. Places of worship.

10.4.6 Based on a review of publicly available information, **Table 10.5** presents the nearest noise sensitive receptors relative to the Proposed Development, within the study area. Individual receptors have been identified which are representative of those in the immediate vicinity of the respective receptor. The receptor locations which would experience the worst-case impacts have been selected, where they represent a group of receptors.

Table 10.5: Receptor Sensitivity

Ref	Receptor Description	Use	Eastings	Northings	Distance and Direction to Receptor	Sensitivity
NSR1	Jasmine Cottage, Ballingry	Residential	318659	697574	400 m to the north east	High
NSR2	Capledrae Cottage, Ballingry	Residential	319601	697781	140 m to the west	High
NSR3	Capledrae Farm Cottages, Woodend	Residential	318790	697773	280 m to the west	High
NSR4	Westfield Biomass Plant, Cardenden	Industrial	319010	698121	300 m to the north	Low

10.4.7 An aerial photograph of the location of the identified nearest noise sensitive receptors can be seen in **Figure 10.1**.

Magnitude of Change/Impact

10.4.8 This section summarises the assessment approach and how impacts have been identified. The assessment is based on the following policy and guidance, which is discussed in Section 10.3:

- The National Planning Framework 4 (LGHD, 2023);
- Planning Advice Note (PAN) 1/2011: 'Planning and Noise' (Scottish Government, 2011);
- Fife Local Development Plan – FIFEplan (FC, 2017);

- British Standard 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound (BSI, 2019);
- Design Manual for Roads and Bridges LA 111 Traffic Noise and Vibration (Standards for Highways, 2020); and
- Procedure for the Assessment of Low Frequency Noise Complaints Revision 1 (NANR45) (University of Salford 2011).

Construction Traffic Noise

- 10.4.9 The assessment of noise due to construction traffic is based on the change in noise level at noise sensitive receptors due to a change in the volumes of road traffic generated by the construction of the Proposed Development.
- 10.4.10 The change in noise level has been calculated by comparing the anticipated construction traffic flows with the 2027 future baseline traffic flows.
- 10.4.11 Assessment for this EIAR Chapter uses short-term assessment criteria taken and adapted from DMRB LA 111 to assess the temporary construction impact. DMRB LA 111 provides negligible to major magnitudes of impacts, and does not refer to a magnitude of impact relating to no change. For the purposes of this assessment and to assign an impact of no change, a change of 0 dB in noise levels has been associated with a magnitude of impact of no change. **Table 10.6** details the proposed assessment criteria.

Table 10.6: Change in Noise Levels Due to Construction Traffic

Magnitude of Impact in Noise Terms	Change in Noise Level $L_{A10,18hr}$ (dB) at Noise Sensitive Receptor
Major	≥ 5.0
Moderate	3.0 to 4.9
Minor	1.0 to 2.9
Negligible	0.1 to 1.0
No Change	0

- 10.4.12 Where the impact in noise terms is above negligible, the assessment of effects, and therefore determining whether an effect is significant or not, will take into account the following factors:
- Proximity of calculated change to the minor/moderate boundary;
 - Consideration of the calculated change in the long-term;
 - The context of the specific noise sensitive receptor; and
 - Acoustic context of the area and likely perception of change by the receptor.
- 10.4.13 Based on guidance provided within DMRB LA 111, construction traffic noise has been considered to be a significant effect in EIA terms where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:

- 10 or more days or nights in any 15 consecutive days or nights; and
- A total number of days exceeding 40 in any 6 consecutive months.

Operational Noise Impacts from Static Plant

10.4.14 Based on guidance provided within BS 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound (BSI, 2019) and guidance outlined in PAN 1/2011, the preliminary magnitude of impact definitions for residential receptors are provided in **Table 10.7**. BS 4142:2014+A1:2019 provides assessment of sound levels outside dwellings or premises used for residential purposes, and is not applicable to other types of receptors.

Table 10.7: Preliminary Magnitude of Impact for Operational Plant Noise – Residential Receptors

Preliminary Magnitude of Impact in Noise Terms	Rating Level ($L_{A,T,r}$ dB) at Noise Sensitive Residential Receptor
Major	Greater than 5.0 dB above the typical background sound level, depending on context.
Moderate	3.1 to 5.0 dB above the typical background sound level, depending on context.
Minor	1.1 to 3.0 dB above the typical background sound level, depending on context.
Negligible	Less than 1.0 dB above the typical background sound level, depending on context.
No Change	Less than the typical background sound level, depending on context.

- 10.4.15 The context of the assessment should be used to modify the overall outcome and final magnitude of impact, as necessary.
- 10.4.16 Regarding low frequency noise from the substation, an assessment has also been undertaken in accordance with Procedure for the Assessment of Low Frequency Noise Complaints ('NANR45') (University of Salford, 2011) at high sensitivity receptors. Where the predicted levels exceed NANR45 criteria, this may be considered as significant. Anything below the threshold would be considered as **Not Significant**.
- 10.4.17 Assessment of operational noise has not been undertaken at NSR4 (Westfield Biomass Plant, Cardenden), due to its low sensitivity, noise generation within NSR4 itself, and distance away from the site. Sound levels in and around NSR4 are likely to be affected by operations on the biomass plant site, and therefore sound levels which would be required to result in an impact are expected to need to be very high to result in a significant effect. It is therefore concluded that significant effects would not occur at NSR4.

Significance of Effect

- 10.4.18 After the magnitude of the impact and the sensitivity of the receptor/resource have been determined, the significance of effect for noise and vibration has been classified using the matrix in

Table 10.8. The evaluation of effect significance has been through the recommendations in TAN 2011 and based on professional judgement, considering both sensitivity and magnitude. Effects that are identified as Minor or Negligible are not considered to be significant in EIA terms. Effects that are identified as Major and Moderate (adverse or beneficial) are considered significant in EIA terms. Significant adverse effects will require the consideration of additional mitigation measures.

Table 10.8: Effect Significance Matrix

Receptor Sensitivity	Magnitude of Impact				
	No Change	Negligible	Minor	Moderate	Major
High	Neutral	Minor	Minor/ Moderate	Moderate/ Major	Major
Medium	Neutral	Neutral/Minor	Minor	Moderate	Moderate/Major
Low	Neutral	Neutral/Minor	Negligible/ Minor	Minor	Minor/Moderate

10.4.19 As outlined in DMRB, construction traffic noise is considered to be a significant effect in EIA terms where it is determined that a l, major or moderate magnitude of impact will occur for a duration exceeding:

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

Assessment Limitations and Assumptions

Baseline Sound Survey

10.4.20 The engineer noticed nothing unusual in terms of the sound climate at the time of the survey. This chapter refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections.

Operational Noise Assessment

10.4.21 The assessment in this chapter does not represent an assessment of a detailed developed design. The detailed design of the development should be supported by detailed acoustic assessments and provision of acoustic performance specifications where relevant. However, the assessment has been undertaken based on the project description and considered a worst-case scenario consistent with the approach for applications for planning permission in principle.

10.4.22 Provided the developed design complies with the acoustic assessment criteria detailed in this chapter, noise impacts at the identified receptors are unlikely to exceed those presented.

Construction Traffic Noise

10.4.23 The assessment of construction road traffic noise is based on preliminary information available at the time of writing. Construction traffic volumes, vehicle types, and routing have been estimated

using indicative construction programmes and logistics plans. These estimates are considered representative of a likely worst-case scenario. Noise levels at receptors may vary depending on final routing, timing of vehicle movements, and noise conditions at the time of construction.

10.5 Baseline Conditions

10.5.1 Details of the baseline sound survey can be seen in **Technical Appendix 10.2**.

Current Baseline (2025)

Baseline Road Traffic Flows

10.5.2 Baseline 2025 road traffic flow data, used to inform the construction traffic noise assessment, were provided by the project's transport consultant. The data provided is presented in **Tables 10.10** and **10.11**.

Background Sound Levels – Operational Noise

10.5.3 Based on the results of the environmental sound surveys, a statistical analysis of the background sound levels measured during the sound survey has been undertaken and forms the basis of the operational noise assessment.

10.5.4 The statistical analysis of the $L_{A90,15\text{minutes}}$ has been carried out in accordance with BS 4142:2014+A1:2019. The chosen background sound levels for the daytime and night-time are represented in **Technical Appendix 10.2**.

10.5.5 The measured typical background sound levels are replicated below including the relative receptor locations for each position. The measurement locations were selected to be representative of the identified receptors.

Table 10.9: Background Sound Levels for Assessment

Receptor	Measurement Position ID	Selected Typical Background Sound Level $L_{A90,15\text{minutes}}$ dB	
		Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)
NSR1	LT2	39	33
NSR2	LT2	39	33
NSR3	LT1	41	38

Future Baseline (2027)

Construction

10.5.6 Baseline traffic flows were derived from traffic surveys undertaken on the local road network in 2025. The surveys captured existing traffic volumes, which were then projected to 2027 using standard

growth factors and modelling techniques. This information provided a robust baseline against which the potential impact of construction traffic could be assessed.

Operation

- 10.5.7 The evolution of baseline sound levels in future years is likely to be influenced by various factors, including changes in local infrastructure, economic activity, and population growth.
- 10.5.8 A key contributor to increasing ambient sound is the anticipated rise in road traffic, driven by population growth and associated development. Other environmental sound sources, such as industrial activity and land-use changes, may also shape the overall acoustic environment.
- 10.5.9 Locally, once the Proposed Development is operation, the existing 275kV substation will be decommissioned, and the existing footprint will be reduced. This is expected to occur in 2030. As there will be a reduction in equipment at the existing 275kV substation, noise levels generated by the existing installation are expected to reduce.
- 10.5.10 Based on the experience of the engineer during the sound survey and as reported within **Technical Appendix 10.2**, sound from the existing substation was not audible at the survey measurement locations. On this basis, it is considered unlikely that there would be a significant change in baseline sound conditions due to the existing substation being rationalised.
- 10.5.11 In a wider context, the extent and rate of background sound level changes will depend on local planning decisions, technological advancements, and broader societal trends. Considering these local and regional factors, it is likely that baseline sound levels will rise in the future, which would reduce the impact of the Proposed Development further as the difference between the predictions and ambient sound levels would decrease. These considerations have not been factored into the assessment, as the 2025 background sound levels represent a worst-case baseline level when compared to the potential future sound levels.

10.6 Embedded Mitigation

Construction

- 10.6.1 Construction noise is scoped out of the assessment. The Construction Environmental Management Plan (CEMP) will be developed to include mitigation specific to the site.

Operation

- 10.6.2 The switchgear would be contained within the GIS building, which will minimise noise. The equipment would be installed in accordance with accepted industry standards for noise and ensure impacts are minimised.

10.7 Assessment of Likely Significant Effects

Construction Traffic Noise

10.7.1 The road traffic noise assessment considers the change in ambient noise levels at existing receptors as a result of changes in the 18-hour AAWT traffic flows due to construction traffic during 2027 construction year compared to the baseline. Two scenarios have been proposed for the construction traffic routes and assessment of both scenarios has been presented.

- Scenario 1: 100% traffic arriving from the east; and
- Scenario 2: 50% traffic arriving from the east and 50% traffic arriving from the west.

10.7.2 **Table 10.10** details the proposed change in noise levels from Scenario 1.

Table 10.10: Construction Traffic Noise Assessment – Scenario 1

Road	Baseline Traffic Flow (2027)		Baseline (2027) + Construction Traffic Flow		Calculated Change in Basic Noise Level (BNL dB)	Magnitude of Impact
	Total Traffic Flow	Total HGV	Total Traffic Flow	Total HGV		
Location 1 - B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	5966	1021 (17%)	6044	1099 (18%)	0.2 dB(A)	Negligible
Location 2 - B920 north of Robert Baird and Sons Farm	4116	733 (18%)	4194	811 (19%)	0.3 dB(A)	Negligible
Location 3 - B9097 south of B920 ghost island junction	2804	559 (20%)	2882	637 (22%)	0.4 dB(A)	Negligible
Location 4 - B920 north of Ballingry Crescent, Ballingry	5086	626 (12%)	5086	626 (12%)	0.0 dB(A)	No Change
Location 5 - B921 adjacent Tillcoultry Quarries	4431	609 (14%)	4431	609 (14%)	0.0 dB(A)	No Change
Location 6 - B981 Jamphlars Road adjacent Bowhill Recycling Facility	4853	653 (13%)	4853	653 (13%)	0.0 dB(A)	No Change

Road	Baseline Traffic Flow (2027)		Baseline (2027) + Construction Traffic Flow		Calculated Change in Basic Noise Level (BNL dB)	Magnitude of Impact
	Total Traffic Flow	Total HGV	Total Traffic Flow	Total HGV		
Location 7 - B9149 between Muir Road and B981 Roundabouts	10158	1436 (14%)	10158	1436 (14%)	0.0 dB(A)	No Change

10.7.3 **Table 10.11** details the proposed change in noise levels from Scenario 2.

Table 10.11: Construction Traffic Noise Assessment – Scenario 2

Road	Baseline Traffic Flow (2027)		Baseline (2027) + Construction Traffic Flow		Calculated Change in Basic Noise Level (BNL dB)	Magnitude of Impact
	Total Traffic Flow	Total HGV	Total Traffic Flow	Total HGV		
Location 1 - B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	5966	1021 (17%)	6005	1060 (17.7%)	0.1 dB(A)	Negligible
Location 2 - B920 north of Robert Baird and Sons Farm	4116	733 (18%)	4155	773 (18.6%)	0.2 dB(A)	Negligible
Location 3 - B9097 south of B920 ghost island junction	2804	559 (20%)	2843	599 (21.1%)	0.2 dB(A)	Negligible
Location 4 - B920 north of Ballingry Crescent, Ballingry	5086	626 (12%)	5125	665 (13.0%)	0.2 dB(A)	Negligible
Location 5 - B921 adjacent Tillcoultry Quarries	4431	609 (14%)	4470	648 (14.5%)	0.2 dB(A)	Negligible

Road	Baseline Traffic Flow (2027)		Baseline (2027) + Construction Traffic Flow		Calculated Change in Basic Noise Level (BNL dB)	Magnitude of Impact
	Total Traffic Flow	Total HGV	Total Traffic Flow	Total HGV		
Location 6 - B981 Jamphlars Road adjacent Bowhill Recycling Facility	4853	653 (13%)	4892	692 (14.2%)	0.2 dB(A)	Negligible
Location 7 - B9149 between Muir Road and B981 Roundabouts	10158	1436 (14%)	10197	1475 (14.5%)	0.1 dB(A)	Negligible

- 10.74 The impacts identified in **Table 10.10** and **10.11** are either no change or negligible along all links assessed. Based on receptors with either high (NSR1-3) or low (NSR4) sensitivity, the effects of construction traffic in EIA terms are considered to be Short Term, Neutral/Minor and therefore **Not Significant**.

Operational Noise

- 10.75 An assessment of operational noise has been provided in **Technical Appendix 10.2**. A summary of the assessment of static plant noise can be seen in **Table 10.12** and **Table 10.13**.
- 10.76 **Technical Appendix 10.2** outlines noise limits for transformers of 87 dBA L_w per unit.
- 10.77 As per paragraph 10.4.17, assessment of operational noise has not been undertaken at NSR4, which is an industrial site, due to its low sensitivity and distance away from the site. Significant effects will be avoided at NSR4 by achieving acceptable noise levels at other receptors, which are closer to the Proposed Development and have more stringent criteria applied within the assessment.

Table 10.12: BS 4142:2014+A1:2019 Noise Assessment Results – Daytime (07:00 to 23:00) at 4m height

Receptor	Calculated Rating Level $L_{Ae,1hour}$ (dB)	Background Sound Level ($L_{A90,15mins}$) (dB)	Excess of Rating Level over Background Sound Level (dB)	Magnitude of Impact
NSR1	30	39	-9	No Change
NSR2	36	39	-3	No Change
NSR3	28	41	-13	No Change

Table 10.13: BS 4142:2014+A1:2019 Noise Assessment Results – Night-Time (23:00 to 07:00) at 4m height

Receptor	Calculated Rating Level $L_{Ar,15mins}$ (dB)	Background Sound Level ($L_{A90,15minutes}$) (dB)	Excess of Rating Level over Background Sound Level (dB)	Magnitude of Impact
NSR1	30	33	-3	No Change
NSR2	36	33	+3	Minor
NSR3	28	38	-10	No Change

Context

- 10.7.8 When determining the overall outcome of the assessment it is important to consider the context of the assessment. Section 11 of BS 4142:2014+A1:2019 advises that:

“1) The absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low.

Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.”

- 10.7.9 The background sound levels and rating levels are relatively low, are a contextual factor, and therefore have relevance in the assessment.

Discussion

- 10.7.10 The outcome of the assessment indicates that the rating level at NSR1 is below the background sound level during the day and night, resulting in an impact of no change. Based on NSR1 having a high sensitivity and the contextual factors, this results on a Long Term Neutral Effect, which is **Not Significant**.
- 10.7.11 The outcome of the assessment indicates that the rating level at NSR2 is below the background sound level during the day and 3 dB above the background sound level at night, resulting in a minor impact. Based on NSR2 having a high sensitivity this results on a Long Term Minor/Moderate Effect.
- 10.7.12 Based on the background sound level and rating level being relatively low, the overall effect is considered to be Long Term and Minor, which is **Not Significant**.
- 10.7.13 The outcome of the assessment indicates that the rating level at NSR3 is below the background sound level during the day and night, resulting in an impact of no change. Based on NSR3 having a high sensitivity and the contextual factors, this results on a Long Term Neutral Effect, which is **Not**

Significant.

- 10.7.14 The assessment of low frequency sound at the nearest receptors is also below NANR45 criteria. For further information see Section 4.1 of **Technical Appendix 10.2**.
- 10.7.15 Therefore, the effects of operational noise are considered to be Long Term, Neutral/Minor and **Not Significant**.

Mitigation and Enhancement

Construction

- 10.7.16 As noted in Section 10.6, the CEMP will identify mitigation to control construction activity noise and vibration impacts. No additional mitigation measures are considered to mitigate the effects of construction traffic noise.

Operational Noise

- 10.7.17 The transformers shall be selected and designed as appropriate to achieve 87 dB L_w . Acoustic enclosures may be required to reduce the total sound emissions.

Assessment of Residual Effects

Construction

- 10.7.18 As no additional mitigation measures have been proposed, the residual construction traffic noise effects remain unchanged.
- 10.7.19 The residual construction traffic noise effects in EIA terms are considered to be Short Term, Neutral/Minor and **Not Significant**.

Operational Noise

- 10.7.20 As no additional mitigation measures have been proposed, the residual operational noise effects remain unchanged.
- 10.7.21 The residual operational noise effects in EIA terms are considered to be Long Term, Neutral/Minor and **Not Significant**.

10.8 Future Monitoring of Significant Environmental Effects

- 10.8.1 No significant residual effects have been identified and do not need to be considered any further.

10.9 Summary

- 10.9.1 A noise assessment has been undertaken to determine the likely significant effects from the Proposed Development.

- 10.9.2 The Scoping Response from FC confirmed that construction traffic noise and operational noise should be scoped into the EIAR, and that other impacts can be scoped out.
- 10.9.3 The Pre-application response from FC confirmed that a noise report should be submitted with any future planning application. This report is provided within **Technical Appendix 10.2**.
- 10.9.4 Following the Scoping Response, consultation was undertaken with FC to agree the survey methodologies, as included in **Technical Appendix 10.1**.
- 10.9.5 A series of unattended environmental sound surveys and baseline traffic surveys have undertaken between to determine the existing sound climate at locations considered representative of the nearest noise sensitive receptors.
- 10.9.6 An assessment of noise associated with the Proposed Development has been provided to determine if any significant effects will arise.

Construction

- 10.9.7 The potential noise impact from construction traffic has been assessed. The results of the assessment shows that noise impacts from construction traffic are likely to be Short Term, Negligible on all roads, which is **Not Significant**.

Table 10.14: Summary of Residual Effects During Construction

Road	Effect	Significance (before mitigation)	Supplementary Mitigation	Residual Effect	Significance (after mitigation)
Location 1 - B9097 east of East Brackley Lodge (west RSPB Scotland Loch Leven)	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant
Location 2 - B920 north of Robert Baird and Sons Farm	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant
Location 3 - B9097 south of B920 ghost island junction	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant
Location 4 - B920 north of Ballingry Crescent, Ballingry	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant
Location 5 - B921 adjacent Tillcoultry Quarries	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant

Road	Effect	Significance (before mitigation)	Supplementary Mitigation	Residual Effect	Significance (after mitigation)
Location 6 - B981 Jamphlars Road adjacent Bowhill Recycling Facility	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant
Location 7 - B9149 between Muir Road and B981 Roundabouts	Short Term, Negligible	Not Significant	None	Short Term, Negligible	Not Significant

Operation

- 10.9.8 The potential noise impact from operational element of the scheme on the nearest noise sensitive receptors from the Proposed Development has been assessed. The result of the assessment shows that the residual noise effects from on-site operations are likely to be Long Term, Negligible to Minor at all noise sensitive receptors, which is **Not Significant**.

Table 10.15: Summary of Residual Effects During Operation

Receptor	Effect	Significance (before mitigation)	Supplementary Mitigation	Residual Effect	Significance (after mitigation)
NSR1	Long Term, Neutral	Not Significant	None	Long Term, Neutral	Not Significant
NSR2	Long Term, Minor	Not Significant	None	Long Term, Minor	Not Significant
NSR3	Long Term, Neutral	Not Significant	None	Long Term, Neutral	Not Significant