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Introduction

- 13.1 **Chapter 13: Noise** of the EIA Report for Balmeanach Wind Farm presented the findings of the potential operational noise impacts of the Proposed Development on applicable receptors. This SEI chapter should be read in conjunction with **EIA Chapter 13** and associated Figures and Technical Appendices of the EIA Report. All the information contained in **EIA Chapter 13** and **EIA Technical Appendices 13.1 to 13.4** remains valid for this SEI Report in terms of existing site conditions, assessment methodology and significance of effects, unless otherwise stated.
- 13.2 The purpose of this chapter of the SEI Report is to detail the design alterations and changes in the cumulative wind turbine situation and the influence that these have had on nearby Noise Sensitive Receptors (NSRs).
- 13.3 **Chapter 13** of the EIA Report concluded that no significant effects were anticipated for any receptors in relation to operational noise and cumulative operational noise. Construction noise impacts were scoped out during the EIA in consultation with The Highland Council (THC) due to the temporary nature, hours of activity and large distances between these works and NSRs. The revised layout of the Proposed Development does not alter the rationale for scoping out construction noise and is considered to improve upon the application layout in terms of impacts of noise immissions on NSRs.
- 13.4 This SEI Chapter has been undertaken by Bow Acoustics, the same author of **EIA Chapter 13**.

Consultee Responses to EIA Report

- 13.5 **Table 13-1:** provides a summary of the consultee comments made in relation to the application, with responses and appropriate SEI documentation references, for further information.

Table 13-1: Consultee Responses

Consultee	Summary of Response	Responses to Comments
The Highland Council – Environmental Health	<p>NO OBJECTION</p> <p><u>Construction noise</u></p> <p>It is expected that the Developer/Contractor will employ the best practicable means to reduce the impact of noise from construction activities. The Applicant will be required to submit a scheme demonstrating how this will be implemented as part of their CEMP. The current CEMP has only a brief paragraph with a general reference to implementing the best practicable means. This will need to be expanded upon to be relevant to this development.</p> <p><u>Operational noise</u></p> <p>The Applicant's noise assessment has raised the issue that the cumulative level permitted by existing wind farms in this area has a lower limit of 38dB LA90. This is in line with ETSU-R-97 which suggests that the lower limit should be between 35 and 40 dB LA90 depending on the circumstances. The assessment has identified that the maximum predicted levels from this</p>	<p>Recommended changes to the CEMP will be made when the detailed CEMP is being prepared, post-consent.</p> <p>No other changes required for SEI documentation.</p>

Consultee	Summary of Response	Responses to Comments
	development alone would be 28 dB L _{A90} at any receptor. At this level, the noise would have no impact on a cumulative limit of 38 dB L _{A90} . The assessment includes details of a mitigation scheme that can be introduced should the proposed wind farm be subsequently found to exceed the consented limits. The assessment has not mentioned the proposed substation however, given the separation distance to the nearest receptor, there is no likelihood of any significant noise impact.	

Design Amendments

13.6 The following amendment to the design of the Proposed Development (as detailed in **SEI Chapter 2**) has been considered with respect to operational noise:

- Removal of turbine 1 (T1), track to T1 and associated foundation and crane hardstanding.

Revised Figures

13.7 **Figure 13.1** of the EIA Report illustrated the turbine layout for the Proposed Development, which has been revised as part of the SEI process. Therefore, **EIA Figure 13.1** has been updated to reflect this change and is presented as **SEI Figure 13.1**.

Assessment of Design Amendment Effects

13.8 **Table 13-2** and **Table 13-3** show the daytime and night-time site specific noise limits, the updated predicted wind turbine noise levels (L_{A90}) due to the operation of the revised layout of the Proposed Development and the exceedance levels. **Table 13-2** is an update of EIA Report **Table 13-9** and **Table 13-3** is an update of EIA Report **Table 13-10**. Note that the values in **Table 13-2** and **Table 13-3** are rounded to the nearest whole number, but the calculations were carried out to one decimal place.

Table 13-2: Site Specific Assessment Daytime

NSR ID	Detail	Noise Level, dB L _{A90} , Standardised Integer Wind Speed, m/s								
		4	5	6	7	8	9	10	11	12
NSR1	Site specific noise limit	28	28	28	28	28	28	28	32	37
	Proposed Development wind turbine immission	18	23	28	28	28	28	28	28	28
	Margin	-10	-5	0	0	0	0	0	-4	-9
NSR2	Site specific noise limit	35	35	35	35	35	35	35	36	39

NSR ID	Detail	Noise Level, dB L _{A90} , Standardised Integer Wind Speed, m/s								
		4	5	6	7	8	9	10	11	12
	Proposed Development wind turbine immission	17	22	26	27	27	27	27	27	27
	Margin	-18	-12	-8	-8	-8	-8	-8	-9	-12
NSR3	Site specific noise limit	34	34	34	34	37	40	42	44	45
	Proposed Development wind turbine immission	15	21	25	25	25	25	25	25	25
	Margin	-19	-14	-10	-9	-12	-15	-17	-19	-20

Table 13-3: Site Specific Assessment Night-time

NSR ID	Detail	Noise Level, dB L _{A90} , Standardised Integer Wind Speed, m/s								
		4	5	6	7	8	9	10	11	12
NSR1	Site specific noise limit	28	28	28	28	28	28	28	28	36
	Proposed Development wind turbine immission	18	23	28	28	28	28	28	28	28
	Margin	-10	-5	0	0	0	0	0	0	-8
NSR2	Site specific noise limit	35	35	35	35	35	35	35	35	38
	Proposed Development wind turbine immission	17	22	26	27	27	27	27	27	27
	Margin	-18	-12	-8	-8	-8	-8	-8	-8	-11
NSR3	Site specific noise limit	30	30	30	30	30	30	38	42	46
	Proposed Development wind turbine immission	15	21	25	25	25	25	25	25	25
	Margin	-15	-10	-5	-5	-5	-5	-13	-17	-21

13.9 The Noise Sensitive Receptor (NSR) locations are provided in **Table 13-4**Table 13-4.

Table 13-4: Noise Sensitive Receptors

NSR ID	Name	Easting	Northing
NSR1	9 Balmeanach	133132	843734
NSR2	Allt Ruairidh	132485	843549
NSR3	23 Upper Edinbane	135080	850681

- 13.10 Comparison of **Table 13-2** with EIA Report **Table 13-9** and of **Table 13-3** with EIA Report **Table 13-10** shows that the predicted noise levels for the revised layout of the Proposed Development assessed in this SEI Report are lower than for the application layout presented in the EIA Report.
- 13.11 For all receptors, noise levels due to the operation of the Proposed Development are predicted to not exceed site specific noise limit and are therefore not significant.

Cumulative Development Update

Cumulative Baseline

- 13.12 Since the submission of the application, the cumulative wind farm situation in the study area has changed. The relevant changes to the cumulative baseline are as follows:
- Ben Sca Redesign (application – revised layout)
 - Ben Aketil Repowering and Extension (application)
 - Glen Ullinish II (Redesign) (application)
 - Beinn Mheadhonach Redesign (application)
 - Edinbane Repowering and Extension (scoping)
 - Edinbane – Land at 4 Edinbane (screening)

Cumulative Effects

- 13.13 The combined effects which would result should the Proposed Development be constructed alongside the proposed Ben Sca Redesign Wind Farm, are discussed in full in **Volume 5** of this SEI Report.
- 13.14 The EIA Report set out the appropriate ETSU-R-97 noise limits that applies to the total wind turbine noise level from all wind energy developments in the area. These noise limits comprise two elements:
- a lower fixed value, set in the EIAR at 38 dB L_{A90} ; and
 - a derived relative value equal to the prevailing background curve plus 5 dB(A).
- 13.15 The noise limit will be equal to the greater of these two elements, with separate limits applying during the daytime and night-time. Therefore, the minimum cumulative noise limit is 38 dB L_{A90} at any receptor location.
- 13.16 **Table 13-2** and **Table 13-3** confirm that the wind turbine noise immissions from the Proposed Development with the revised layout do not exceed 28 dB L_{A90} at any receptor location.

- 13.17 As the Proposed Development remains at least 10 dB below the cumulative noise limit of 38 dB L_{A90} , it will not contribute to an overall wind turbine noise level over this total limit. When two noise sources are combined, the total noise level is not a simple arithmetic sum. Instead, the logarithmic nature of the decibel (dB) scale means that a 10 dB difference in noise levels results in the total noise level being dominated by the louder source and the contribution of the Proposed Development to the overall noise level is negligible. The combined noise level will essentially be the same as the higher noise level, which is why the Proposed Development won't push the total noise level over the limit.
- 13.18 Therefore, the revised layout for the Proposed Development would result in a cumulative effect that is not significant in EIA terms.

Summary of Changes to the Significance of Effects

- 13.19 The residual effects of the revised layout of the Proposed Development are sustained as previously reported, with no significant adverse effects predicted for nearby noise sensitive receptors.

Conclusions

- 13.1 The revised layout of the Proposed Development reduces noise operational impacts at nearby NSRs from those reported in the EIA Report (the application layout) and also result in no significant adverse effects. The revised layout therefore improves upon the application layout in terms of impacts of noise immissions on NSRs.