

## **CHAPTER A13: NOISE**

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Figure 13.1: Noise Assessment Locations

## **A.13. NOISE**

### **A.13.1 Executive Summary**

A.13.1.1 The noise assessment of the Proposed Varied Development was set out in Chapter 13 of the EIA Report (January 2019). This Chapter presents an assessment of the construction and operational noise effects as a result of the Proposed Varied Development (Addendum) on nearby dwellings. A comparison of the assessment findings between the Proposed Varied Development (Addendum) and the EIA Report (January 2019) and Consented Development is also provided.

A.13.1.2 This assessment concludes that the changes introduced by the Proposed Varied Development (Addendum) result in negligible changes in the predicted operational noise levels which remain below stringent criteria derived in accordance with current guidance, both for the development in isolation and cumulatively with other nearby wind farms. Operational noise effects are therefore not significant. The noise limit values proposed in Chapter 13 of the EIA Report (January 2019) for the Proposed Varied Development remain applicable to control operational noise levels in practice.

A.13.1.3 The construction noise assessment has determined that the changes introduced by the Proposed Varied Development (Addendum) would result in increased construction noise levels compared to the Proposed Varied Development (EIA Report, January 2019) for some activities, due to the reduced separation distances between some of the construction works and noise-sensitive properties. However, the associated predicted noise levels would remain within acceptable limits such that their temporary effects are considered negligible. Overall, the temporary effects of construction are considered slight at most and therefore not significant.

### **A.13.2 Introduction**

A.13.2.1 This Chapter presents an assessment of the construction and operational noise effects as a result of the Proposed Varied Development (Addendum) on nearby dwellings.

A.13.2.2 The assessment has been carried out by Hoare Lea and in accordance with the code of conduct and best practice guidance published by the Institute of Acoustics. Hoare Lea is one of the largest and longest-established acoustics consultancies in the UK and was involved in the assessment of noise from wind farms since the earliest days of the industry. Hoare Lea engineers were involved in drafting guidance document for the assessment of wind farm noise and have worked on more than 250 wind farm developments, both in the UK and continental Europe. The main author of this report, Matthew Cand (Dipl. Eng., Ph. D.) is a member of the Institute of Acoustics.

### **A.13.3 Consented Development**

A.13.3.1 Unchanged, please refer to Section 13.3 of the EIA Report (January 2019).

### **A.13.4 Scope of Assessment**

A.13.4.1 The scope of the assessment remains as set out in Section 13.4 of the EIA Report (January 2019).

#### ***Consultation Responses***

A.13.4.2 In their response to the 2015 ES, The Highland Council (THC) proposed stringent operational noise limits for the Consented Development to allow for the potential cumulative impacts arising with the operational Gordonbush, Kilbraur and Kilbraur extension turbines. Condition

25 of the Consent applied to the Consented Development provided this noise limit and relevant monitoring and assessment procedures.

A.13.4.3 For the Proposed Varied Development, it was proposed in Section 13.8 of the EIA Report (January 2019) that a similar planning condition would apply but with revised noise limit values, which were set out in Table 13.14 of the EIA Report (January 2019). This effectively limited the operational noise from the combination of the Proposed Varied Development and the existing Gordonbush Wind Farm to a maximum of 30 dB  $L_{A90}$ .

A.13.4.4 In a consultation response dated March 2019, a representative of THC's Environmental Health Department stated no objection to the Proposed Varied Development and that the previous Condition of Consent 25 could be reproduced for the Proposed Varied Development, after being amended to incorporate the proposed noise limits set out in Table 13.14 of the EIA Report (January 2019).

### **A.13.5 Methodology**

A.13.5.1 The methodology and turbine parameters remains as set out in Section 13.5 of the EIA Report (January 2019).

### **A.13.6 Baseline**

A.13.6.1 The baseline noise environment remains as set out in Section 13.6 of the EIA Report (January 2019), which was itself based on the site characterisation presented in the 2015 ES.

A.13.6.2 The relevant noise assessment locations remain those set out in Table 13.2 the EIA Report (January 2019).

### **A.13.7 Potential Effects**

A.13.7.1 The assessment of operational noise remains based on the Vestas V126 3.45MW turbine, as set out in Section 13.7 of the EIA Report (January 2019).

A.13.7.2 Table 13.7 of the EIA Report (January 2019) presented terrain propagation factors used in the calculations for each of the noise assessment locations. These remain mostly the same following the changes introduced by the Proposed Varied Development (Addendum); however, the repositioning of Turbine 4 to T4b leads to a predicted change in the attenuation due to terrain screening for the Keepers Cottage location. At this location, a terrain attenuation of 2 dB was previously assumed due to an interrupted line of sight for this turbine, and this now reduces to no attenuation (0 dB), in accordance with IOA GPG recommendations, although it is acknowledged that this is on a conservative basis.

#### ***Operational Noise Levels and Assessment***

A.13.7.3 The repositioning of Turbine 4 to T4b places it further away from the residential locations considered. Furthermore, Turbine 4 was not one of the closest turbines to the noise-sensitive locations considered, and therefore T4b only has a marginal contribution to the noise levels predicted at neighbouring properties.

A.13.7.4 The operational noise model previously described in the EIA Report (January 2019) was updated to incorporate the change in location to T4b. The predicted levels for the combination of the Proposed Varied Development and the existing Gordonbush Wind Farm did not appreciably change as a result (differences of less than 0.1 dB) at most of the properties considered. The only exception was for Keepers Cottage, where an increase of 0.1 dB in operational noise levels was predicted due to the change in screening described in the previous section. Such an increase is considered negligible.

- A.13.7.5 Table 13.9 of the EIA Report (January 2019) showed that predicted levels for the Gordonbush Wind Farm and Proposed Varied Development were below 30dB  $L_{A90}$ . This remains the case following the changes introduced by the Proposed Varied Development (Addendum) even accounting for the negligible increase at Keepers Cottage described above. These predictions therefore remain clearly below the simplified criteria of 35 dB  $L_{A90}$  set out in ETSU-R-97 at all properties and at all wind speeds.
- A.13.7.6 The changes introduced by the Proposed Varied Development (Addendum) are associated with a negligible increase (less than 0.1dB) in the predicted cumulative operational noise levels, which include the Kilbraur Wind Farm and Extension, at all properties. These predictions therefore remain as presented in Table 13.11 of the EIA Report (January 2019). The cumulative noise predictions therefore remain below the simplified ETSU-R-97 criteria of 35 dB  $L_{A90}$ . This means that operational noise levels can be considered acceptable regardless of baseline noise levels. Cumulative operational levels also remain below the ETSU-R-97 noise limits previously derived in the 2015 ES.
- A.13.7.7 In conclusion, the changes introduced by the Proposed Varied Development (Addendum) correspond to negligible theoretical increases in operational noise levels which remain acceptable and therefore **not significant**. This conclusion is the same as for the Consented Development and the Proposed Varied Development.

### **Construction Noise**

- A.13.7.8 The Addendum changes introduce some differences in the proposed construction activities, some of which will occur in closer proximity to the residential properties considered. This is the case in particular for the new proposed Borrow Pit Search Area (3) and access track to it (where a temporary bailey bridge style crossing will be installed to allow access) as well as the movement of the concrete batching plant area. The associated predicted noise levels are set out in Table A13.1 below. These were determined on a worst-case basis, based on the closest separating distance between the activities and using conservative assumptions, as set out in Section 13.7 and Appendix 13.1 of the 2015 ES.

**Table A13.1: Predicted Construction Noise Levels associated with the changes introduced by the Proposed Varied Development (Addendum)**

<b>Task Name</b>	<b>Plant/Equipment</b>	<b>Upper Collective Sound Emission Over Working Day <math>L_{WA,T}</math> dB(A)</b>	<b>Nearest Receiver</b>	<b>Minimum Distance to Nearest Receiver (m)</b>	<b>Predicted Upper Day-time Noise Levels <math>L_{Aeq,T}</math> dB(A)</b>
Borrow Pit Quarrying	Primary and secondary stone Crushers / excavators / screening systems / pneumatic breakers / conveyors	125	Ascoile	1000	53
Concrete Batching	Batching Plant	110	Ascoile	1400	35

- A.13.7.9 The proposed construction activities will therefore result in a noise level of no more than 55dB  $L_{Aeq,T}$ . Comparing the predicted construction noise levels to the assessment criteria set out in Table 13.2 of the 2015 ES, it is concluded that these would correspond to a negligible effect.

A.13.7.10 Overall, when considering the other construction activities and the noise potentially associated with traffic associated with the construction, the effects associated with the construction phase will remain **slight** at most and therefore **not significant**. This conclusion is the same as for the Consented Development and the Proposed Varied Development.

A.13.7.11 Similarly, decommissioning effects would remain **slight** at most and therefore **not significant**.

### **A.13.8 Mitigation Measures**

A.13.8.1 The mitigation measures previously set out in the 2015 ES, 2016 FEI and the EIA Report (January 2019) would remain applicable.

A.13.8.2 In particular, the revised noise limits proposed in Table 13.14 of the EIA Report (January 2019) would remain applicable to the combination of the Proposed Varied Development and the existing Gordonbush Wind Farm, as the revised predictions remain clearly below the corresponding fixed level of 30 dB L<sub>A90</sub>, allowing for a margin of 2 dB to allow some flexibility for future turbine procurement. This was accepted by THC following the submission of the EIA Report (January 2019).

### **A.13.9 Residual Effects**

A.13.9.1 The residual effects remain as set out in Section 13.9 of the EIA Report (January 2019).

### **A.13.10 Comparison of effects**

A.13.10.1 The comparison set out in Section 13.10 of the EIA Report (January 2019) remains applicable. There are no changes in assessment findings as a result of the Proposed Varied Development (Addendum).

### **A.13.11 Conclusion**

A.13.11.1 The conclusions previously derived in Section 13.11 of the EIA Report (January 2019) are unchanged.

A.13.11.2 Both of the previously derived day time and night time operational noise limits can be satisfied at all receptors assessed across all wind speeds. Furthermore, the simplified fixed noise limit included in ETSU-R-97 was also satisfied in all cases. This assessment includes cumulative effect from other neighbouring schemes, including the existing Gordonbush turbines. Operational noise effects are therefore **not significant**.

A.13.11.3 Although construction noise could be audible at various times throughout the construction programme, noise levels would remain within acceptable limits such that their temporary effects are considered slight at most and therefore **not significant**.