

Save Straiton for Scotland CD 017 019

Compliance Testing Hadyard Hill

Background Summary and conclusion extracted from the main documents:

CD. 017 020 DOC 20230526 EIR 2023 3305 ATTACHMENT 1_Redacted.pdf

CD. 017 021DOC 20230526 EIR 2023 3305 ATTACHMENT 2_Redacted.pdf

**TNEI Client SSE Generation Ltd
Project Hadyard Hill Wind Farm
Document Noise Compliance Monitoring
Date April 2016
Reference 10548-004**

Background

1.2.1 Hadyard Hill Wind Farm is an operational wind farm composed of 52 Bonus 2.3MW wind turbines; of the 52 operational turbines, 43 turbines have a hub height of 58.5m and 9 turbines have a hub height of 68.5m. Each turbine has a rotor diameter of 82.4m.

1.2.2 Noise complaints arising from the operation of Hadyard Hill Wind Farm were submitted by a local resident to South Ayrshire Council (SAC) in summer 2015. In June 2015, SAC asked SSE Generation Ltd (SSE) to investigate and in August 2015 SSE appointed TNEI Services Ltd (TNEI) as the Independent Noise Consultant to undertake noise monitoring at the complainant's property. For clarity, the scope of this appointment (and this report) is to test, by measurement, if the operational noise attributable to the wind farm is in compliance with the agreed noise limits which are detailed in the agreed Protocol (see 1.2.5 and 1.2.6 below).

1.2.3 In October 2015, TNEI undertook a review of the planning conditions and the available resident logs with the aim of setting out an appropriate methodology for the compliance monitoring assessment. Due to the lack of robust planning conditions and agreed background noise levels at the complainant's property, TNEI recommended that the most robust approach would be to measure noise levels at the property during periods of wind turbine shut-down to establish background noise levels which, in turn, would be used to set appropriate ETSUR-97 limits. Noise data collected when the turbines were ON (corrected for background noise) would then be used to establish noise rating levels which would be compared to these limits.

1.2.4 Following a review of the complaints logs available, TNEI considered that there was insufficient detail to enable the establishment of the critical periods which should be considered during the analysis of measured data (ETSU-R-97 page 87). The noise survey started as early as possible, despite the fact that there was no firm agreement with SAC in relation to the critical periods or methodology for data analysis. TNEI requested that additional logs be recorded so that they could be reviewed during the survey to establish the critical conditions.

1.2.5 Resident logs were provided by SAC on behalf of the resident during the survey

on two occasions, first on 01/12/2015 (1.5 months from the survey start) and then on 04/02/2016 (at the end of the survey). The correlation of resident logs with wind conditions was undertaken in February 2016 by TNEI and resulted in a letter dated 01/03/2015 sent to SAC with the aim of agreeing the critical conditions and the methodology. Following a period of consultation, on 14/04/2016 SAC, SSE and TNEI agreed the specific wind conditions to be investigated and a 'Noise Complaint Investigation Protocol', hereinafter referred to as the Protocol. A copy of this Protocol as signed by all parties on 25/04/2016 is included in Annex 4.

Compliance Testing Results Hadyard Hill April 2016

EXECUTIVE SUMMARY

Noise complaints arising from the operation of Hadyard Hill Wind Farm were submitted by a local resident to South Ayrshire Council (SAC) in summer 2015. In June 2015, SAC asked SSE Generation Ltd (SSE) to investigate and in August 2015 SSE appointed TNEI Services Ltd (TNEI) as the Independent Noise Consultant to undertake noise monitoring at the complainant's property. The scope of the appointment (and this report) is to test, by measurement, whether the operational noise attributable to the wind farm is in compliance with the agreed noise limits.

The guidance within ETSU-R-97 and current good practice as contained within the Institute of Acoustics document '*A good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise*' (IOA GPG) has been used where applicable for this assessment.

Prior to the start of the on-site noise survey only basic complaint logs were available. Despite this, the noise survey commenced as early as possible without firm agreement on either the critical periods or methodology for data analysis, with the aim to review more detailed logs to be supplied during the survey. The survey was undertaken between October 2015 and February 2016. Subsequently, a compliant log analysis and "Noise Complaint Investigation Protocol" (the Protocol) were prepared for consideration by SAC. As detailed within ETSU-R-97 and good practice in regards to wind farm noise planning condition (IOA GPG May 2013 Annex B), the analysis of the logs was undertaken to help inform the critical periods (ETSU-R-97 page 87), also referred as meteorological conditions in which the complaints occurred (ETSU-R-97 page 102). These critical conditions and the Protocol were agreed between SAC, SSE and TNEI in April 2016. The Protocol is specific to this investigation and was followed strictly for the data analysis and production of this report.

The measured noise data was correlated with concurrent wind speed, wind direction, rain and operational data from the wind turbines. The noise levels measured during periods when all wind turbines were shut-down were used to establish background levels and accordingly the ETSU-R-97 noise limit. The noise levels measured during periods of normal operation (Total Noise which includes wind turbine noise and other noise) were corrected for background noise which resulted in specific wind turbine noise rating levels. These rating levels were then compared to the ETSU-R-97 noise limit.

The noise rating level results are based on measured data filtered for the critical conditions and averaged via a line of best fit. The process of the assessment has been as transparent as possible and all measured data used and presented in this assessment are available to SAC and the local residents upon request. Please note that the resident's logs were used solely to determine the critical wind conditions.

The results show that the Hadyard Hill wind farm noise levels at the investigated

property exceed the ETSU-R-97 noise limits under specific wind speed and wind directions therefore mitigation is required to reduce wind turbine noise levels to within the agreed noise limits.

CONCLUSIONS

4.1.1 TNEI Services Ltd has undertaken noise monitoring within the amenity area at a property near the operational Hadyard Hill Wind Farm. The scope of the work was to test, by measurement, if the operational noise is in compliance with the agreed noise limits.

4.1.2 Noise monitoring was undertaken at the agreed Noise Monitoring Location (NML) between October 2015 and February 2016.

4.1.3 A Protocol based upon current good practice was prepared by TNEI and agreed by SAC following consultation when the survey was completed and detailed resident logs were available. Complaint logs supplied during the survey were analysed to determine the critical periods to be investigated and the agreed critical periods in the Protocol were as suggested by SAC following consultation.

4.1.4 The recorded noise data was correlated with concurrent wind speed, wind direction, rain and wind turbine operational data, all in accordance with the agreed Protocol.

4.1.5 The results show that the Hadyard Hill wind farm noise levels at the investigated property exceed the ETSU-R-97 noise limits in specific wind speed and wind directions; therefore mitigation is required to reduce wind turbine noise levels to within the agreed noise limits.

4.1.6 The assessment results are based on measured data filtered for the critical conditions and averaged via a line of best fit. The process of the assessment has been as transparent as possible and all measured data used and presented in this assessment is available to SAC and the local residents upon request. Please note that the resident logs were used solely to determine the critical wind conditions as per the scope of this work.

Compliance Testing Results Hadyard Hill July 2016

SSE Generation Ltd

Project Hadyard Hill Wind Farm

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The noise rating level results are based on measured data filtered for the critical conditions and averaged via a line of best fit. The process of the assessment has been as transparent as possible and all measured data used and presented in this assessment are available to SAC and the local residents upon request. Please note that the resident's logs were used solely to determine the critical wind conditions.

The results show that the Hadyard Hill wind farm noise levels at the investigated property exceed the ETSU-R-97 noise limits under specific wind speed and wind directions therefore mitigation is required to reduce wind turbine noise levels to within the agreed noise limits.

4 CONCLUSIONS

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4.1.5 The results show that the Hadyard Hill wind farm noise levels at the investigated property exceed the ETSU-R-97 noise limits in specific wind speed and wind directions; therefore mitigation is required to reduce wind turbine

noise levels to within the agreed noise limits.

4.1.6 The assessment results are based on measured data filtered for the critical conditions and averaged via a line of best fit. The process of the assessment has been as transparent as possible and all measured data used and presented in this assessment is available to SAC and the local residents upon request. Please note that the resident logs were used solely to determine the critical wind conditions as per the scope of this work.