Appendix 9.7 – Alternative Candidate Turbine Type

Contents

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Appendix 9.7: Alternative Candidate Turbine Types

Introduction

The noise assessments for the Proposed Development (solus) and therefore cumulatively (all turbines in the locality) assume as candidate turbine the Siemens Gamesa SG-3.4-132. The application, however, is for a size and rating of wind turbine that would allow for types of up to 6MW nominal capacity. The most likely such turbine is the Siemens Gamesa SG-6.0-155. Table 9.7.1 shows the noise emission characteristics of the two turbine types against wind speed (at a standardised height of 10 m. For the avoidance of doubt, the sound power levels shown include the uncertainties according to the guidance in the Institute of Acoustics Good Practice Guide (the uncertainty added for calculation purposes is the same for either turbine type).

Table 9.7.1 – Turbine Sound Power Levels at Different Wind Speeds (at 10 m Height)

Turbine Type	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
SG-3.4-132	100.1	105.3	108.0	108.3	108.2	108.2	108.2	108.2	108.2
SG-6.0-155	99.5	104.7	107.7	107.7	107.7	107.7	107.7	107.7	107.7

Table 9.7.2 compares the overall noise immission levels from the Proposed Development occurring at R2, Station House, this being the receptor with the minimum average distance from the array of turbines. The results are presented to the nearest 0.1dB for clarity. The difference between the two is also presented in Table 9.7.1.

Table 9.7.2 – Noise Immission Levels at Station House with Alternative Turbine Types

Turbine Type	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
SG-3.4-132	26.8	32.0	34.7	35.0	34.9	34.9	34.9	34.9	34.9
SG-6.0-155	24.6	29.9	32.6	32.6	32.6	32.6	32.6	32.6	32.6
Difference	2.2	2.1	2.1	2.4	2.3	2.3	2.3	2.3	2.3

No allowance is made for directivity, and every turbine is treated as if it were directly upwind of the receptor. Table 9.7.2 shows that the calculated worst-case cumulative noise immission levels in terms of dB $L_{A90,10min}$ against the derived wind speed at 10m height would be just over 2dB lower for the larger and more powerful turbine type.

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