

# 1 Noise Assessment

- 1.1.1 The following information is provided in addition to the noise assessment contained in the Environmental Statement.
- 1.1.2 The original noise assessment was based on installation of an EWT DW54-500kW wind turbine, which is inconsistent with use of an EWT DW54-900kW assumed elsewhere in the ES. The two models are identical size and physical appearance, but the latter has a higher power rating and slightly higher noise emissions.
- 1.1.3 For consistency and for the purpose of modelling the worst case scenario, the noise impacts of the proposal have been reassessed, assuming the installation of an EWT DW54-900kW wind turbine.
- 1.1.4 The approach taken has been identical to that set out in Section 11.1 – 11.5 of the ES (e.g. using measured background noise data from the previous proposal etc.) The assessment, results and conclusions (corresponding to Section 11.6 – 11.7 of the ES), based on the use of the 900kW wind turbine, are presented below.
- 1.1.5 **Appendix 11.2(b)** contains the full assessment undertaken using specialist wind turbine noise software WindPro Decibel for quantifying and addressing noise from wind turbines.
- 1.1.6 This additional, worst case noise assessment demonstrates that the noise levels at the nearest properties to the proposed turbine would not exceed the levels identified in ETSU-R-97 and would comply with the planning condition proposed by Barnsley Council's Environmental Health Officer (18<sup>th</sup> July 2013).

## 1.2 Assessment

- 1.2.1 The EWT DW54 900kW has the following sound power levels. These are based on a data sheet provided by EWT and are warranted values - therefore uncertainty has already been included. The data sheet can be seen in **Appendix 11.1(a)**.

10m Wind Speed (m/s)	Sound Power Level (Lwa dB(A))
5	98.2
6	100.0
7	101.4
8	102.0
9	102.0
10	102.0

**Table 1.1 - EWT 900kW Noise Emission Data**

### 1.3 Results - EWT DW54 900kW

#### Sheephouse Farm

1.3.1 **Table 1.2** presents the noise limits, predicted noise levels and margins between the prediction and limits for the financially involved receptor at Sheephouse Farm. A negative margin indicates that the predicted noise level is lower than the limit.

	Wind Speed at 10m AGL (m/s)								
	4	5	6	7	8	9	10	11	12
	LA90, 10mins dB(A)								
Recorded Noise Levels									
Daytime	32.9	34.9	37.5	40.6	43.9	47.1	49.8	51.3	50.9
Night-time	28.6	31.1	34.1	37.5	41.2	44.8	48.3	51.3	53.8
Noise Limits									
Daytime	45.0	45.0	45.0	45.6	48.9	52.1	54.8	56.3	55.9
Night-time	45.0	45.0	45.0	45.0	46.2	49.8	53.3	56.3	58.8
Predicted Overall Noise Level									
Sheephouse Farm	34.8	36.6	38.4	39.8	40.4	40.4	40.4	40.4	40.4
Daytime Margins									
Sheephouse Farm	-10.2	-8.4	-6.6	-5.8	-8.5	-11.7	-14.4	-15.9	-15.5
Night-time Margins									
Sheephouse Farm	-10.2	-8.4	-6.6	-5.2	-5.8	-9.4	-12.9	-15.9	-18.4

**Table 1.2 - Operational Noise Assessment- Sheephouse Farm**

**Throstle Nest**

1.3.2 **Table 1.3** presents the noise limits, predicted noise levels and margins between the prediction and limits for the receptor at Throstle Nest.

	Wind Speed at 10m AGL (m/s)								
	4	5	6	7	8	9	10	11	12
	LA90, 10mins dB(A)								
Recorded Noise Levels									
Daytime	32.5	34.1	36.1	38.6	41.4	44.1	46.5	48.2	48.6
Night-time	25.8	28.3	31.3	34.5	37.9	41.2	44.4	47.2	49.6
Noise Limits									
Daytime	37.5	39.1	41.1	43.6	46.4	49.1	51.5	53.2	53.6
Night-time	43.0	43.0	43.0	43.0	43.0	46.2	49.4	52.2	54.6
Predicted Overall Noise Level									
Throstle Nest	28.3	30.1	31.9	33.3	33.9	33.9	33.9	33.9	33.9
Daytime Margins									
Throstle Nest	-9.2	-9.0	-9.2	-10.3	-12.5	-12.3	-17.6	-19.3	-19.7
Night-time Margins									
Throstle Nest	-14.7	-12.9	-11.1	-9.7	-9.1	-12.3	-15.5	-18.3	-20.7

**Table 1.3 - Operational Noise Assessment- Throstle Nest**

**Dyson Cote**

1.3.3 **Table 1.4** presents the noise limits, predicted noise levels and margins between the prediction and limits for the receptor at Dyson Cote.

	Wind Speed at 10m AGL (m/s)								
	4	5	6	7	8	9	10	11	12
	LA90, 10mins dB(A)								
Recorded Noise Levels									
Daytime	36.2	37.0	37.8	38.6	39.4	40.3	41.4	41.9	42.7
Night-time	28.8	29.6	30.9	32.9	35.3	38.3	41.5	44.5	47.1
Noise Limits									
Daytime	41.2	42.0	42.8	43.6	44.4	45.3	46.1	46.9	47.7
Night-time	43.0	43.0	43.0	43.0	43.0	43.3	46.5	49.5	52.1
Predicted Overall Noise Level									
Dyson Cote	21.7	23.5	25.3	26.7	27.3	27.3	27.3	27.3	27.3
Daytime Margins									
Dyson Cote	-19.5	-18.5	-17.5	-16.9	-17.1	-18.0	-18.8	-19.6	-20.4
Night-time Margins									
Dyson Cote	-21.3	-19.5	-17.7	-16.3	-15.7	-16.0	-19.2	-22.2	-24.8

**Table 1.4 - Operational Noise Assessment- Dyson Cote**

**Underbank**

1.3.4 **Table 1.5** presents the noise limits, predicted noise levels and margins between the prediction and limits for the receptor at Underbank.

	Wind Speed at 10m AGL (m/s)								
	4	5	6	7	8	9	10	11	12
	LA90, 10mins dB(A)								
Recorded Noise Levels									
Daytime	37.2	38.7	40.1	41.5	42.9	44.3	45.7	47.2	48.6
Night-time	29.9	31.4	33.4	35.6	38.1	40.6	43.0	45.2	47.2
Noise Limits									
Daytime	42.2	43.7	45.1	46.5	47.9	49.3	50.7	52.2	53.6
Night-time	43.0	43.0	43.0	43.0	43.1	45.6	48.0	50.2	52.2
Predicted Overall Noise Level									
Underbank	22.2	24.0	25.8	27.2	27.8	27.8	27.8	27.8	27.8
Daytime Margins									
Underbank	-20.0	-19.7	-19.3	-19.3	-20.1	-21.5	-22.9	-24.4	-25.8
Night-time Margins									
Underbank	-20.8	-19.0	-17.2	-15.8	-15.3	-17.8	-20.2	-22.4	-24.4

**Table 1.5 - Operational Noise Assessment- Underbank**

**Cranberry**

- 1.3.5 Noise data was not collected at Cranberry House. To ensure the property is appropriately assessed, the lowest recorded noise data recorded has been used (this data was collected at Judd Field Farm).
- 1.3.6 **Table 1.6** presents the noise limits, predicted noise levels and margins between the prediction and limits for the receptor at Cranberry.

	Wind Speed at 10m AGL (m/s)								
	4	5	6	7	8	9	10	11	12
	LA90, 10mins dB(A)								
Recorded Noise Levels									
Daytime	29.8	31.5	33.3	35.4	37.5	39.7	41.9	44.0	46.0
Night-time	23.6	25.2	27.3	29.9	32.8	36.0	39.1	41.8	43.8
Noise Limits									
Daytime	35.0	36.5	38.3	40.4	42.5	44.7	46.9	49.0	51.0
Night-time	43.0	43.0	43.0	43.0	43.0	43.0	44.1	46.8	48.8
Predicted Overall Noise Level									
Cranberry	29.2	31.0	32.8	34.2	34.8	34.8	34.8	34.8	34.8
Daytime Margins									
Cranberry	-5.8	-5.5	-5.5	-6.2	-7.7	-9.9	-12.1	-14.2	-16.2
Night-time Margins									
Cranberry	-13.8	-12.0	-10.2	-8.8	-8.2	-8.2	-9.3	-12.0	-14.0

**Table 1.6 - Operational Noise Assessment- Cranberry**

**Sheephouse B**

1.3.7 **Table 1.7** presents the noise limits, predicted noise levels and margins between the prediction and limits for the receptor at Sheephouse B.

	Wind Speed at 10m AGL (m/s)								
	4	5	6	7	8	9	10	11	12
	LA90, 10mins dB(A)								
Recorded Noise Levels									
Daytime	32.9	34.9	37.5	40.6	43.9	47.1	49.8	51.3	50.9
Night-time	28.6	31.1	34.1	37.5	41.2	44.8	48.3	51.3	53.8
Noise Limits									
Daytime	37.9	39.9	42.5	45.6	48.9	52.1	54.8	56.3	55.9
Night-time	43.0	43.0	43.0	43.0	46.2	49.8	53.3	56.3	58.8
Predicted Overall Noise Level									
Sheephouse B	32.1	33.9	35.7	37.1	37.7	37.7	37.7	37.7	37.7
Daytime Margins									
Sheephouse B	-5.8	-6.0	-6.8	-8.5	-11.2	-14.4	-17.1	-18.6	-18.2
Night-time Margins									
Sheephouse B	-10.9	-9.1	-7.3	-5.9	-8.5	-12.1	-15.6	-18.6	-21.1

**Table 1.7 - Operational Noise Assessment- Sheephouse B**

**Sheephouse C & D**

1.3.8 **Table 1.8** presents the noise limits, predicted noise levels and margins between the prediction and limits for the receptor at Sheephouse C & D.

	Wind Speed at 10m AGL (m/s)								
	4	5	6	7	8	9	10	11	12
	LA90, 10mins dB(A)								
Recorded Noise Levels									
Daytime	32.9	34.9	37.5	40.6	43.9	47.1	49.8	51.3	50.9
Night-time	28.6	31.1	34.1	37.5	41.2	44.8	48.3	51.3	53.8
Noise Limits									
Daytime	37.9	39.9	42.5	45.6	48.9	52.1	54.8	56.3	55.9
Night-time	43.0	43.0	43.0	43.0	46.2	49.8	53.3	56.3	58.8
Predicted Overall Noise Level									
Sheephouse C&D	31.5	33.3	35.1	36.5	37.1	37.1	37.1	37.1	37.1
Daytime Margins									
Sheephouse C&D	-6.4	-6.6	-7.4	-9.1	-11.8	-15.0	-17.7	-19.2	-18.8
Night-time Margins									
Sheephouse C&D	-11.5	-9.7	-7.9	-6.5	-9.1	-12.7	-16.2	-19.2	-21.7

**Table 1.8 - Operational Noise Assessment- Sheephouse C & D**

1.3.9 As can be seen in **Table 1.2** to **Table 1.8** , the predicted overall noise levels are lower than the limits (shown through the negative margin) and would therefore comply with requirements were an EWT 900kW turbine to be installed.

**1.4 Summary and Conclusions**

1.4.1 An assessment of the operational noise impacts of the proposed Spring Brook project has been carried out in accordance with appropriate guidance (ETSU-R-97) an EWT DW54 900kW turbine.

1.4.2 The conclusion of the operational noise assessment is that the noise levels at the nearest properties to the proposed turbine would not exceed the levels identified in ETSU-R-97.