Corkey Windfarm Repowering

Technical Appendix A10.1: Survey Record Sheet

Appendix - Volume 3
June 2019

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Noise Survey Record Sheet – Page 1: Location and Equipment Details

Project No.	2606	**Project Name:**	Corkey
Location (x of y)	1	**Installed By:**	Matthew Cassidy
Lat/Long	55.03959, -6.2841	**Location Name**	42 Reservoir Rd
Start Date	12/01/2018	**Start Time**	14:00

Equipment Details	**Make/Model**	**Serial No.**
Sound Level Meter:	Rion NL-52	821105
Calibrator:	Rion NC-74	34104515
Source of Equipment:		ANV
Meter Timestamp (Start/End, GMT/BST):		Start GMT

Description of Sound Source:	Garden area
Distance from façade::	12m (5m to tree)
Noise sources observed:	Wind noise heard. Stream at end of garden - monitor located nearer trees.
Weather conditions	Very windy
Additional notes:	Spoke with resident. Limited choice of locations, considered next to fence in lower field but height of fence was level with top of wind shield.

Noise Survey Record Sheet – Page 2: Visit Record

Project No.	2606	**Location (x of y)**	1

Installation (Visit 1)

Date:	12/01/2018	**Time:**	14:00
Filename:	101	**Calibration level:**	94
Range setting:	20-100	**Meas. period:**	10min
Freq weighting:	A	**Weather station?**	Rain Gauge
Lp Logging	0	**Audio/ 8ve bands?**	0
Notes:	Limited choice of locations, considered next to fence in lower field but height of fence was level with top of wind shield.		

Visit 2

Date:	15/01/2018	**Time:**	11:00
Visited by:	Matthew Cassidy	**Calibration level:**	94
Level pre-calibration	94	**Batts replaced?**	No
Equipment Removed?			No
Notes:	Data download due to nearby visit		

Visit 3

Date:	06/02/2018	**Time:**	10:00
Visited by:	Matthew Cassidy	**Calibration level:**	94
Level pre-calibration	93.7	**Batts replaced?**	N/A
Equipment Removed?			Yes
Notes:	Time drift -16s; calibration drift -0.3dB; rain gauge also removed (though frozen upon visit); resident notified of removal of equipment. Quarry noise could be heard.		

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Noise Survey Record Sheet – Page 3: Photographs

Project No.	2606	Location (x of y)	1

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Noise Survey Record Sheet – Page 1: Location and Equipment Details

Project No.	2606	Project Name:	Corkey
Location (x of y)	2	Installed By:	Matthew Cassidy
Lat/Long	55.03539, -6.28587	Location Name	15 Reservoir Rd
Start Date	12/01/2018	Start Time	15:00

Equipment Details	Make/Model	Serial No.
Sound Level Meter:	Rion NL-52	220558
Calibrator:	Rion NC-74	34104515
Source of Equipment:		ANV
Meter Timestamp (Start/End, GMT/BST):		Start GMT

Description of Sound Source:	Front garden
Distance from façade::	10m
Noise sources observed:	Wind noise
Weather conditions	Very windy
Additional notes:	Resident present

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Noise Survey Record Sheet – Page 2: Visit Record

Project No.	2606	**Location (x of y)**	2

Installation (Visit 1)

Date:	12/01/2018	**Time:**	15:00
Filename:	201	**Calibration level:**	94
Range setting:	20-100	**Meas. period:**	10min
Freq weighting:	A	**Weather station?**	No
Lp Logging	0	**Audio/ 8ve bands?**	0
Notes:	Resident present		

Visit 2

Date:	06/02/2018	**Time:**	10:00
Visited by:	Matthew Cassidy	**Calibration level:**	94
Level pre-calibration	93.6	**Batts replaced?**	N/A
Equipment Removed?			Yes
Notes:	Calibration drift -0.4dB; time drift -9s; quarry audible; resident notified of removal		

Noise Survey Record Sheet – Page 3: Photographs

Project No.	2606	**Location (x of y)**	2

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Noise Survey Record Sheet – Page 1: Location and Equipment Details

Project No.	2606	**Project Name:**	Corkey
Location (x of y)	3	**Installed By:**	Matthew Cassidy
Lat/Long	55.02405, -6.28532	**Location Name**	210 Corkey Rd
Start Date	12/01/2018	**Start Time**	15:00

Equipment Details	**Make/Model**	**Serial No.**
Sound Level Meter:	Rion NL-52	732094
Calibrator:	Rion NC-74	34104515
Source of Equipment:		ANV
Meter Timestamp (Start/End, GMT/BST):		Start GMT

Description of Sound Source:	Side garden area
Distance from façade::	14m
Noise sources observed:	Wind noise (very windy). Distant farm machinery/work
Weather conditions	Very windy
Additional notes:	Resident present. Stream at entrance of house, could not be heard but may be due to wind noise.

Noise Survey Record Sheet – Page 2: Visit Record

Project No.	2606	**Location (x of y)**	3

Installation (Visit 1)

Date:	12/01/2018	**Time:**	15:00
Filename:	301	**Calibration level:**	94
Range setting:	20-100	**Meas. period:**	10min
Freq weighting:	A	**Weather station?**	Rain Gauge
Lp Logging	0	**Audio/ 8ve bands?**	0
Notes:	Resident present. Stream at entrance of house, could not be heard but may be due to wind noise.		

Visit 2

Date:	06/02/2018	**Time:**	11:00
Visited by:	Matthew Cassidy	**Calibration level:**	94
Level pre-calibration	93.9	**Batts replaced?**	N/A
Equipment Removed?			Yes
Notes:	Dead on arrival (died 5-2-18 ~12am); calibration drift -0.1dB; time drift -4s; resident notified of removal. Stream noise heard upon arrival when no wind or blizzard.		

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Noise Survey Record Sheet – Page 3: Photographs

Project No.	2606	Location (x of y)	3

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Noise Survey Record Sheet – Page 1: Location and Equipment Details

Project No.	2606	Project Name:	Corkey
Location (x of y)	4	Installed By:	Matthew Cassidy
Lat/Long	55.03917, -6.28058	Location Name	21 Reservoir Rd
Start Date	15/01/2018	Start Time	11:00

Equipment Details	Make/Model	Serial No.
Sound Level Meter:	Rion NL-52	610205
Calibrator:	Rion NC-74	34104515
Source of Equipment:		ANV
Meter Timestamp (Start/End, GMT/BST):		Start GMT

Description of Sound Source:	Front garden
Distance from façade::	15m (8m garage)
Noise sources observed:	Stream/river noise at other side of garden. Drip from house roof, overhead aircraft
Weather conditions	Slight wind, cold, 90% cloud cover
Additional notes:	River noise, other stream noise to the rear also. Resident present.

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Noise Survey Record Sheet – Page 2: Visit Record

Project No.	2606	**Location (x of y)**	4

Installation (Visit 1)

Date:	15/01/2018	**Time:**	11:00
Filename:	401	**Calibration level:**	94
Range setting:	20-100	**Meas. period:**	10min
Freq weighting:	A	**Weather station?**	No
Lp Logging	No	**Audio/ 8ve bands?**	0
Notes:	River noise, other stream noise to the rear also. Resident present.		

Visit 2

Date:	06/02/2018	**Time:**	09:00
Visited by:	Matthew Cassidy	**Calibration level:**	94
Level pre-calibration	93.6	**Batts replaced?**	N/A
Equipment Removed?			Yes
Notes:	Calibration drift -0.4dB; time drift -13s; no resident present, note left to say kit collected. Quarry noise in distance.		
Notes:			

Noise Survey Record Sheet – Page 3: Photographs

Project No.	2606	**Location (x of y)**	4

Corkey Windfarm Repowering

Technical Appendix A10.2: Cumulative Noise Emission Data

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Technical Appendix A10.2: Cumulative Noise Emission Data

1.

10.2.1 Noise Emission Data used in Background Noise Corrections

2. The following pages present the noise emission data for each operational development included in the correction of measured background noise levels (**Section 10.4** of the ES).

10.2.1.1 Operational Corkey Wind Farm

Table A10.2.1: Noise Emission Data – Nordtank 500/37, 35 m hub height

10 m AGL, Standardised Wind Speed, (ms^{-1})	3	4	5	6	7	8	9	10	11	12
Sound Power Level, dB, L_{WA}	98.7	98.9	99.1	99.3	99.5	99.7	99.9	100.1	100.3	100.5
Sound Power Level, L_{WA}, dB including 2 dB uncertainty allowance	100.7	100.9	101.1	101.3	101.5	101.7	101.9	102.1	102.3	102.5

Table 10.2.2: Nordtank 500/37 Octave-Band Spectrum

Octave Band Centre Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
Octave-Band Sound Power Level, Scaled to 102.5 dB, L_{WA}	83.4	89.9	93.4	97.8	96.1	95.3	88.3	84.7

10.2.1.2 Gruig Wind Farm

Table A10.2.3: Noise Emission Data – Nordex N80, 2.5MW, 60 m hub height

10 m AGL, Standardised Wind Speed, (ms^{-1})	3	4	5	6	7	8	9	10	11	12
Sound Power Level, dB, L_{WA}	92.5	96.5	99.0	101.0	101.7	102.2	102.7	103.0	103.0	103.0
Sound Power Level, L_{WA}, dB including 2 dB uncertainty allowance	94.5	98.5	101.0	103.0	103.7	104.2	104.7	105.0	105.0	105.0

Table 10.2.4: Nordex N80 2.5 MW Octave-Band Spectrum

Octave Band Centre Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
Octave-Band Sound Power Level, Scaled to 105.0 dB, L_{WA}	91.7	98.3	99.1	96.9	96.6	95.7	92.1	84.2

10.2.1.3 Single Turbine at 15 Reservoir Road (D/2011/0043/F)

Table A10.2.5: Noise Emission Data – Vestas V27, 30 m hub height

10 m AGL, Standardised Wind Speed, (ms^{-1})	3	4	5	6	7	8	9	10	11	12
Sound Power Level, dB, L_{WA}	92.6	95.7	96.1	96.4	96.8	97.1	97.5	97.8	98.2	98.5
Sound Power Level, L_{WA}, dB including 3.3 dB uncertainty allowance	95.9	99.0	99.4	99.7	100.1	100.4	100.8	101.1	101.5	101.8

Table 10.2.6: Vestas V27 Octave-Band Spectrum

Octave Band Centre Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
Octave-Band Sound Power Level, Scaled to 101.8 dB, L_{WA}	80.4	87.7	92.2	97.1	97.2	92.1	88.5	81.4

10.2.1.4 Single Turbine at 21 Reservoir Road (D/2013/0081/F)

Table A10.2.7: Noise Emission Data – Enercon E-44, 45 m hub height

10 m AGL, Standardised Wind Speed, (ms^{-1})	3	4	5	6	7	8	9	10	11	12
Sound Power Level, dB, L_{WA}	98.3	98.9	99.5	100.1	100.7	102.3	103.0	103.0	103.0	103.0
Sound Power Level, L_{WA}, dB including 1 dB uncertainty allowance	99.3	99.9	100.5	101.1	101.7	103.3	104.0	104.0	104.0	104.0

Table 10.2.8: Enercon E-44 Octave-Band Spectrum

Octave Band Centre Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
Octave-Band Sound Power Level, Scaled to 104.0 dB, L_{WA}	86.1	91.8	95.2	98.2	99.3	96.0	88.7	81.8

10.2.2 Noise Emission Data used in Cumulative Assessment

3. The following pages present the noise emission data for each assessed cumulative development, including any adjustments required in accordance with Section 10.5.2 of the ES.

10.2.2.1 Altaveedan Wind Farm

Table A10.2.9: Noise Emission Data – Siemens 108-3.2, 81 m hub height

10 m AGL, Standardised Wind Speed, (ms^{-1})	3	4	5	6	7	8	9	10	11	12
Sound Power Level, dB, L_{WA}	81.0	88.9	96.8	102.0	104.5	104.5	104.5	104.5	104.5	104.5
Sound Power Level, L_{WA}, dB including 2 dB uncertainty allowance	83.0	90.9	98.8	104.0	106.5	106.5	106.5	106.5	106.5	106.5
Additional Adjustment for Cumulative Assessment, dB	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Adjusted Sound Power Level, dB, L_{WA} for Cumulative Assessment	85.0	92.9	100.8	106.0	108.5	108.5	108.5	108.5	108.5	108.5

Table 10.2.10: Nordtank 500/37 Octave-Band Spectrum

Octave Band Centre Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
Octave-Band Sound Power Level, Scaled to 108.5 dB, L_{WA}	81.8	91.8	100.5	102.6	102.9	100.3	98.4	92.6

10.2.2.2 Gruig Wind Farm

Table A10.2.11: Noise Emission Data – Nordex N80 2.5MW, 60 m hub height

10 m AGL, Standardised Wind Speed, (ms^{-1})	3	4	5	6	7	8	9	10	11	12
Sound Power Level, dB, L_{WA}	92.5	96.5	99.0	101.0	101.7	102.2	102.7	103.0	103.0	103.0
Sound Power Level, L_{WA}, dB including 2 dB uncertainty allowance	94.5	98.5	101.0	103.0	103.7	104.2	104.7	105.0	105.0	105.0
Additional Adjustment for Cumulative Assessment, dB	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Adjusted Sound Power Level, dB, L_{WA} for Cumulative Assessment	96.5	100.5	103.0	105.0	105.7	106.2	106.7	107.0	107.0	107.0

Table 10.2.12: Nordex N80 2.5 MW, Octave-Band Spectrum

Octave Band Centre Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
Octave-Band Sound Power Level, Scaled to 107.0 dB, L_{WA}	93.7	100.3	101.1	98.9	98.6	97.7	94.1	86.2

10.2.2.3 Single Turbine at 15 Reservoir Road (D/2011/0043/F)

4. As no additional adjustments were required, the turbine emission data for this development remains the same as that presented in **Tables A10.2.5 and A10.2.6** of this Appendix.

10.2.2.4 Single Turbine at 21 Reservoir Road (D/2013/0081/F)

5. As no additional adjustments were required, the turbine emission data for this development remains the same as that presented in **Tables A10.2.7 and A10.2.8** of this Appendix.