



ESB Asset Development UK Limited

Millmoor Rig Wind Farm: Timber Volume Assessment

Technical Appendix 17.2

663320

NOVEMBER 2022

RSK



RSK GENERAL NOTES

Project No.: 663320

Title: Millmoor Rig Wind Farm: Forestry Site Visit

Client: ESB Asset Development UK Limited

Date: 09 November 2022

Office: Glasgow

Status: Final

Author	<u>Adam Paterson</u>	Technical reviewer	<u>Wayne Scurrah</u>
Date:	<u>09/11/2022</u>	Date:	<u>09/11/2022</u>

Project manager	<u>Robert Beck</u>
Date:	<u>09/11/2022</u>

RSK Environment Ltd (RSK) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and RSK. No other warranty, expressed or implied, is made as to the professional advice included in this report.

Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by RSK for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

No part of this report may be copied or duplicated without the express permission of RSK and the party for whom it was prepared.

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK Environment Ltd.

17.2.1 SUMMARY

Infrastructure	Area (ha)	m³ total
Turbine Area		
Construction Compound	1.39	29.01
Turbines	34.65	543.99
Hardstandings	18.9	298.69
Borrow Pit Search Areas	6.88	180.22
Access Tracks	3.58	142.90
Substations	3.44	75.78
Additional Felling Areas (mitigate wind blow risk)	9.05	3039.84
Sub-total	77.79	4310.43
Site Access		
Access Track	3.60	247.16
Additional Felling Areas (mitigate wind blow risk)	0.46	48.54
Sub-total	4.06	295.70
Total	81.96	4606.13

17.2.2 TURBINE AREA

Comp No.	Area (Ha)	Reason Area Lost to (Ha) -	Species	Planting Year	Yield Class	Age	Volume per Ha (m3)	Approx Volume to be removed (m3)	Approx Tonnage to be removed (Conversion factor of 1.08)	Notes	Cummulative areas	Cumulative m3
0018A	0.07	Access Tracks	SS	1973	10	49	408	29.0912445	26.94			
0037A	0.14	Access Tracks	SS	1973	10	49	408	58.44255401	54.11			
0052A	0.00	Hardstandings	SS	1975	12	47	465	1.395221748	1.29			
0043M	0.08	Access Tracks	MB	1976	4	46	179	14.54342275	13.47			
0035A4	0.04	Access Tracks	SS	1976	12	46	465	17.97748859	16.65			
0035W	0.01	Access Tracks	SS	1976	12	46	465	5.915483585	5.48			
0037A5	1.36	Additional Felling Areas (n	SS	1976	12	46	465	631.4157685	584.64			
0037A4	1.72	Additional Felling Areas (n	SS	1976	12	46	465	798.9414247	739.76			
0037A2	1.93	Additional Felling Areas (n	SS	1976	12	46	465	899.2921507	832.68			
0037A6	0.39	Additional Felling Areas (n	SS	1976	12	46	465	183.1206904	169.56			
0037A3	0.55	Additional Felling Areas (n	SS	1976	12	46	465	256.680609	237.67			
0037A7	0.19	Additional Felling Areas (n	SS	1976	12	46	465	89.50115022	82.87			
0047A	0.43	Wind Protection Zone (Tur	SS	2004	14	18	66	28.13539387	26.05	Estimated yield as no yield table data available for age		
0048A1	1.78	Wind Protection Zone (Tur	SS	2004	14	18	66	117.2253646	108.54	Estimated yield as no yield table data available for age		
0048M	0.06	Wind Protection Zone (Tur	MB	2004	No data available	18	15	0.832424246	0.77	Estimated yield as no yield table data available for age		
0048Q	0.00	Access Tracks	QUA	2004	No data available	18	15	0.026830742	0.02	Estimated yield as no yield table data available for age		
0048M	0.09	Access Tracks	MB	2004	4	18	15	1.420241056	1.32	Estimated yield as no yield table data available for age		
0048M	0.00	Additional Felling Areas (n	MB	2004	4	18	15	0.002716835	0.00	Estimated yield as no yield table data available for age		
0048A1	1.85	Additional Felling Areas (n	SS	2004	14	18	66	122.0909464	113.05	Estimated yield as no yield table data available for age		
0048A1	0.85	Additional Felling Areas (n	SS	2004	14	18	66	56.0493084	51.90	Estimated yield as no yield table data available for age	8.13	1754.38
0048A2	0.35	Hardstandings	SS	2004	14	18	66	23.06021547	21.35	Estimated yield as no yield table data available for age		
0043M1	0.00	Access Tracks	MB	2005	No data available	17	15	0.05846361	0.05	Estimated yield as no yield table data available for age		
0043A	0.00	Additional Felling Areas (n	SS	2005	12	17	60	0.250016482	0.23	Estimated yield as no yield table data available for age		
0043M	0.10	Additional Felling Areas (n	MB	2005	4	17	15	1.535973554	1.42	Estimated yield as no yield table data available for age		
0043M	0.01	Hardstandings	MB	2005	4	17	15	0.112688385	0.10	Estimated yield as no yield table data available for age		
0040A4	0.00	Access Tracks	SS	2006	No data available	16	40	0.043888578	0.04	Estimated yield as no yield table data available for age		
0040M3	0.01	Access Tracks	MB	2006	No data available	16	40	0.293413216	0.27	Estimated yield as no yield table data available for age		
0040A4	0.01	Hardstandings	SS	2006	12	16	50	0.30696043	0.28	Estimated yield as no yield table data available for age		
0040M4	0.01	Hardstandings	MB	2006	No data available	16	15	0.192259004	0.18	Estimated yield as no yield table data available for age		
0010A	3.51	Wind Protection Zone (Tur	SS	2007	12	15	30	105.4116989	97.60	Estimated yield as no yield table data available for age		
0010A	0.81	Hardstandings	SS	2007	12	15	30	24.28315143	22.48	Estimated yield as no yield table data available for age		
0041A2	2.62	Hardstandings	SS	2007	12	15	30	78.73622366	72.90	Estimated yield as no yield table data available for age		
0008A1	2.18	Wind Protection Zone (Tur	SS	2008	12	14	30	65.46250446	60.61	Estimated yield as no yield table data available for age		
0009A	0.21	Wind Protection Zone (Tur	SS	2008	12	14	30	6.361245285	5.89	Estimated yield as no yield table data available for age		
0015A1	0.43	Wind Protection Zone (Tur	SS	2008	12	14	30	12.79425395	11.85	Estimated yield as no yield table data available for age		
0016A1	0.00	Wind Protection Zone (Tur	SS	2008	12	14	30	0.018020748	0.02	Estimated yield as no yield table data available for age		
0008A1	0.61	Hardstandings	SS	2008	14	14	40	24.42466166	22.62	Estimated yield as no yield table data available for age		
0016A	2.57	Borrow Pits	SS	2008		14	40	102.63	95.03			
0003A	0.13	Borrow Pits	SS	2008		14	40	5.15	4.77			
0038A	3.71	Wind Protection Zone (Tur	SS	2009	14	13	40	148.5370446	137.53	Estimated yield as no yield table data available for age		
0041A	1.97	Hardstandings	SS	2009	14	13	40	78.94513518	73.10	Estimated yield as no yield table data available for age		
0038A	0.60	Hardstandings	SS	2009	14	13	40	23.85498146	22.09	Estimated yield as no yield table data available for age		
0042A	1.91	Borrow Pits	SS	2009		13	40	76.50	70.83			
0046A	0.19	Borrow Pits	SS	2009		13	40	7.42	6.87			
0046A1	0.07	Borrow Pits	SS	2009		13	40	2.94	2.72			
0041A	0.79	Substation	SS	2009		13	40	31.70	29.36			
0041A2	1.05	Substation	SS	2009		13	40	42.15	39.03			
0055A	0.14	Access Tracks	SS	2012	No data available	10	10	1.403806354	1.30	Estimated yield as no yield table data available for age		
0055A	0.10	Additional Felling Areas (n	SS	2012	No data available	10	10	0.959677504	0.89	Estimated yield as no yield table data available for age		
0017A	2.51	Wind Protection Zone (Tur	SS	2013	No data available	9	5	12.56108504	11.63	Estimated yield as no yield table data available for age		
0049A	2.05	Wind Protection Zone (Tur	SS	2013	No data available	9	5	10.27345128	9.51	Estimated yield as no yield table data available for age		
0049A1	0.00	Wind Protection Zone (Tur	SS	2013	No data available	9	5	0.024824415	0.02	Estimated yield as no yield table data available for age		
0051A	0.25	Wind Protection Zone (Tur	SS	2013	No data available	9	5	1.249664742	1.16	Estimated yield as no yield table data available for age		
0056A	0.36	Wind Protection Zone (Tur	SS	2013	No data available	9	5	1.776157789	1.64	Estimated yield as no yield table data available for age		
0056A1	0.01	Wind Protection Zone (Tur	SS	2013	No data available	9	5	0.031998377	0.03	Estimated yield as no yield table data available for age		

0014A1	0.01	Access Tracks	SS	2013	No data available	9	5	0.049411201	0.05	Estimated yield as no yield table data available for age		
0044M	0.02	Access Tracks	MB	2013	No data available	9	5	0.082088989	0.08	Estimated yield as no yield table data available for age		
0017A	0.22	Access Tracks	SS	2013	No data available	9	5	1.092915834	1.01	Estimated yield as no yield table data available for age		
0049A	0.22	Access Tracks	SS	2013	No data available	9	5	1.124564345	1.04	Estimated yield as no yield table data available for age		
0049M	0.06	Access Tracks	MB	2013	No data available	9	5	0.324878275	0.30	Estimated yield as no yield table data available for age		
0049M1	0.06	Access Tracks	MB	2013	No data available	9	5	0.30399535	0.28	Estimated yield as no yield table data available for age		
0056A1	0.07	Access Tracks	SS	2013	No data available	9	5	0.338044149	0.31	Estimated yield as no yield table data available for age		
0056M1	0.05	Access Tracks	MB	2013	No data available	9	5	0.241694134	0.22	Estimated yield as no yield table data available for age		
0051A	0.31	Hardstandings	SS	2013	No data available	9	5	1.561569602	1.45	Estimated yield as no yield table data available for age		
0017A	1.13	Hardstandings	SS	2013	No data available	9	5	5.64679213	5.23	Estimated yield as no yield table data available for age		
0049A	1.13	Hardstandings	SS	2013	No data available	9	5	5.657776917	5.24	Estimated yield as no yield table data available for age		
0003A	1.74250431	Wind Protection Zone (Tur	SS	2014	No data available	8	5	8.712752156	8.07	Estimated yield as no yield table data available for age		
0003A2	0.91359989	Wind Protection Zone (Tur	SS	2014	No data available	8	5	4.56799945	4.23	Estimated yield as no yield table data available for age		
0003A	1.00	Hardstandings	SS	2014	No data available	8	5	4.978127032	4.61	Estimated yield as no yield table data available for age		
0012A	1.38	Construction Compound	SS	2014		8	5	6.89	6.38		1.38	0
0011A	1.24	Substation	SS	2014		8	5	6.19	5.73			
0012A1	0.36	Substation	SS	2014		8	5	1.80	1.67		3.97	18.39
0040A5	1.52	Wind Protection Zone (Tur	SS	2015	No data available	7	5	7.5753435	7.01	Estimated yield as no yield table data available for age		
0059A	2.05	Wind Protection Zone (Tur	SS	2015	No data available	7	5	10.25392105	9.49	Estimated yield as no yield table data available for age		
0060A1	0.03	Wind Protection Zone (Tur	SS	2015	No data available	7	5	0.131105542	0.12	Estimated yield as no yield table data available for age	18.7845328	94.40
0040A5	0.11	Access Tracks	SS	2015	No data available	7	5	0.546906264	0.51	Estimated yield as no yield table data available for age		
0040A5	0.15	Hardstandings	SS	2015	No data available	7	5	0.774881996	0.72	Estimated yield as no yield table data available for age		
0060A1	0.13	Hardstandings	SS	2015	No data available	7	5	0.666915299	0.62	Estimated yield as no yield table data available for age		
0036A	0.41	Wind Protection Zone (Tur	SS	2016	No data available	6	5	2.058135377	1.91	Estimated yield as no yield table data available for age		
0040A6	0.11	Access Tracks	SS	2016	No data available	6	5	0.543683229	0.50	Estimated yield as no yield table data available for age		
0054A	0.02	Access Tracks	SS	2016	No data available	6	5	0.091017985	0.08	Estimated yield as no yield table data available for age		
0036A	0.15	Access Tracks	SS	2016	No data available	6	5	0.773532095	0.72	Estimated yield as no yield table data available for age		
0011A	0.28	Access Tracks	SS	2016	No data available	6	5	1.406852661	1.30	Estimated yield as no yield table data available for age		
0012A1	0.04	Access Tracks	SS	2016	No data available	6	5	0.208330842	0.19	Estimated yield as no yield table data available for age		
0036A	0.81	Hardstandings	SS	2016	No data available	6	5	4.063720564	3.76	Estimated yield as no yield table data available for age		
0011A	3.08	Hardstandings	SS	2016	No data available	6	5	15.39027874	14.25	Estimated yield as no yield table data available for age		
0012A1	0.90	Hardstandings	SS	2016	No data available	6	5	4.500011875	4.17	Estimated yield as no yield table data available for age		
0032A	3.55	Wind Protection Zone (Tur	SS	2018	No data available	4	0	0	0.00			
0007A1	0.93	Borrow Pits	SS	2018		4		0.00	0.00			
0004A1	1.08	Borrow Pits	SS	2018		4		0.00	0.00		10.39	22.37
0053A	0.03	Wind Protection Zone (Tur	SS	2019	No data available	3	0	0	0.00	Estimated yield as no yield table data available for age		
0057A	2.66	Wind Protection Zone (Tur	SS	2019	No data available	3	0	0	0.00	Estimated yield as no yield table data available for age		
0058A	1.06	Wind Protection Zone (Tur	SS	2019	No data available	3	0	0	0.00	Estimated yield as no yield table data available for age		
0057A1	0.26	Access Tracks	SS	2019	No data available	3	0	0	0.00			
0057A	1.12	Hardstandings	SS	2019	No data available	3	0	0	0.00	Estimated yield as no yield table data available for age		
0058A	1.10	Hardstandings	SS	2019	No data available	3	0	0	0.00	Estimated yield as no yield table data available for age		
0053A	0.00	Hardstandings	SS	2019	No data available	3	0	0	0.00	Estimated yield as no yield table data available for age		
0004A	0.56	Wind Protection Zone (Tur	SS	2020	No data available	2	0	0	0.00			
0045A	2.66	Wind Protection Zone (Tur	SS	2021	No data available	1	0	0	0.00			
0045A	1.01	Hardstandings	SS	2021	No data available	1	0	0	0.00	Estimated yield as no yield table data available for age	22.10	30.48
0037A2	0.12	Access Tracks	SS		No data available		5	0.598909942	0.55	Estimated yield as no yield table data available for age		
0018A1	0.05	Access Tracks	SS		No data available		5	0.227747793	0.21	Estimated yield as no yield table data available for age		
0018A5	0.01	Access Tracks	SS		No data available		10	0.134394265	0.12	Estimated yield as no yield table data available for age		
0035A3	0.03	Access Tracks	SS		No data available		5	0.169505894	0.16	Estimated yield as no yield table data available for age		
0035A	0.00	Access Tracks	SS		No data available		5	0.007289338	0.01	Estimated yield as no yield table data available for age		
0052A	0.00	Access Tracks	SS		No data available		5	0.021820254	0.02	Estimated yield as no yield table data available for age		
0005A1	0.00	Access Tracks	SS		No data available		5	0.00035478	0.00	Estimated yield as no yield table data available for age		
0040M	0.00	Access Tracks	SAB		No data available		5	0.004349384	0.00	Estimated yield as no yield table data available for age		
0040M2	0.00	Access Tracks	SAB		No data available		5	0.000542058	0.00	Estimated yield as no yield table data available for age		
0038A	0.03	Access Tracks	SS		No data available		5	0.142144939	0.13	Estimated yield as no yield table data available for age		
0042A	0.06	Access Tracks	SS		No data available		5	0.290118173	0.27	Estimated yield as no yield table data available for age		
0010A	0.15	Access Tracks	SS		No data available		5	0.761448586	0.71	Estimated yield as no yield table data available for age		
0040M4	0.01	Access Tracks	MB				5	0.051126933	0.05	Estimated yield as no yield table data available for age		
0043A1	0.00	Access Tracks	SS				5	0.00140114	0.00	Estimated yield as no yield table data available for age		
0043M	0.05	Access Tracks	MB				5	0.273940209	0.25	Estimated yield as no yield table data available for age		
0048A1	0.00	Access Tracks	SS				5	0.00743609	0.01			
0008A1	0.01	Access Tracks	SS				5	0.029851683	0.03			
0055A1	0.03	Access Tracks	SS				5	0.128339709	0.12			

0051A	0.00	Access Tracks	SS				5	0.01562621	0.01			
0056M	0.04	Access Tracks	MB				5	0.199895836	0.19			
0003A	0.21	Access Tracks	SS				5	1.06247177	0.98			
0054A1	0.01	Access Tracks	NS				5	0.037441753	0.03			
0012A	0.26	Access Tracks	SS				5	1.314796397	1.22			
0035A7	0.02	Access Tracks	SS				5	0.096480218	0.09			
0034A1	0.07	Access Tracks	SS/NS/DF				5	0.330413425	0.31			
0057A	0.01	Access Tracks	SS				5	0.035829715	0.03			
0058A	0.01	Access Tracks	SS				5	0.032099578	0.03			
0058A1	0.11	Access Tracks	SS				5	0.540696681	0.50			
0004A1	0.00	Access Tracks	SS				5	0.014769481	0.01			
0045A	0.00	Access Tracks	SS				5	0.020872582	0.02			
0048Q	0.03	Hardstandings	QUA				5	0.135761264	0.13		23.54	37.71

Total (Ha)
77.88

Total (m3) Total (Tonnes)
4308.788709 3989.62

17.2.3 ACCESS AREA

Reason Area Lost To	Compartment	Species	Hectares	m3/ha	vol to remove	Cummulative areas	Cumulative m3
Additional Felling Areas	56015	Larch	1.506453107	125	188.30664		
Additional Felling Areas	56015	Pine	0.392334592	150	58.850189		
Additional Felling Areas	56014	Pine	1.103946032	0	0		
Additional Felling Areas	56013	Spruce	0.2462	0	0		
Additional Felling Areas	56013	Pine	0.348458411	0	0	3.597392142	247.1568272
Access Track	56013	Spruce	0.0147	0	0		
Access Track	56013	Pine	0.018581887	0	0		
Access Track	56014	Pine	0.064861047	0	0		
Access Track	56015	Pine	0.111151197	150	16.67268		
Access Track	56015	Larch	0.2549294	125	31.866175	0.46422353	48.53885452
			4.061615672		295.69568		