Annex 7.3

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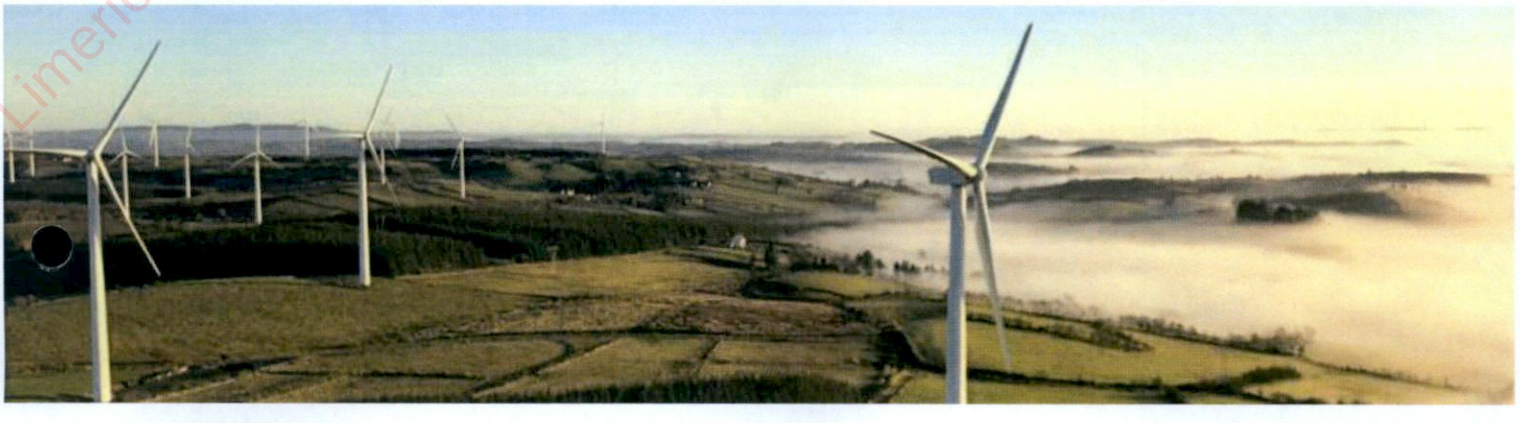

Certificate GB17/873624.07

The management system of

Renewables Operation and Maintenance, SSE plc

Inveralmond House, 200 Dunkeld Road, Perth, PH1 3AQ, UK

has been assessed and certified as meeting the requirements of

ISO 14001:2015

For the following activities

The generation of electricity.

This certificate is valid from 01 July 2021 until 28 June 2024 and remains valid subject to satisfactory surveillance audits.
Recertification audit due a minimum of 60 days before the expiration date.
Issue 3. Certified since 16 October 2006
Expiry date of last certificate: 28 June 2021
End date of last recertification audit: 24 June 2021
This document is part of Certificate GB17/873624.00
The validity of this certificate depends on the validity of the main certificate.
It is the management system of the whole organisation which is certified.

Authorised by

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Annex 8.1

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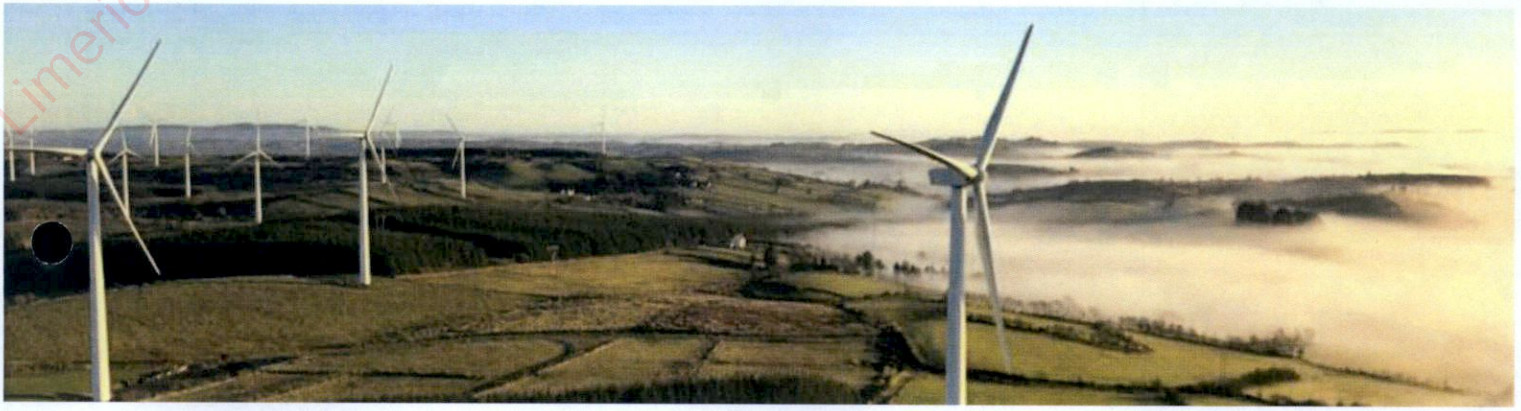

Payback Time and CO_2 emissions • 1RGG-SCP4-L6WR v5

1. Windfarm CO2 emission saving over...	Exp.	Min.	Max.
...coal-fired electricity generation (t CO2 / yr)	7,253	7,205	7,302
...grid-mix of electricity generation (t CO2 / yr)	1,999	1,986	2,013
...fossil fuel-mix of electricity generation (t CO2 / yr)	3,548	3,524	3,571
Energy output from windfarm over lifetime (MWh)	228,636	227,112	230,160

Total CO2 losses due to wind farm (tCO2 eq.)	Exp.	Min.	Max.
2. Losses due to turbine life (eg. manufacture, construction, decomissioning)	5,316	5,316	5,316
3. Losses due to backup	617	617	617
4. Lossess due to reduced carbon fixing potential	8	6	10
5. Losses from soil organic matter	28	-1	36
6. Losses due to DOC & POC leaching	0	0	0
7. Losses due to felling forestry	0	0	0
Total losses of carbon dioxide	5,968	5,938	5,979

8. Total CO2 gains due to improvement of site (t CO2 eq.)	Exp.	Min.	Max.
8a. Change in emissions due to improvement of degraded bogs	0	0	0
8b. Change in emissions due to improvement of felled forestry	0	0	0
8c. Change in emissions due to restoration of peat from borrow pits	0	0	0
8d. Change in emissions due to removal of drainage from foundations & hardstanding	-4	-3	-5
Total change in emissions due to improvements	-4	-3	-5

RESULTS	Exp.	Min.	Max.
Net emissions of carbon dioxide (t CO2 eq.)	5,964	5,933	5,976
Carbon Payback Time			
...coal-fired electricity generation (years)	0.8	0.8	0.8
...grid-mix of electricity generation (years)	3.0	2.9	3.0
...fossil fuel-mix of electricity generation (years)	1.7	1.7	1.7
Ratio of soil carbon loss to gain by restoration (not used in Scottish applications)	6.97	-0.19	11.97
Ratio of CO2 eq. emissions to power generation (g/kWh) (for info. only)	26.09	25.78	26.31

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Carbon Calculator v1.6.1
Knockastanna Location: 52.664975 -8.187674
SSE

Core input data

Input data	Expected value	Minimum value	Maximum value	Source of data
Windfarm characteristics				
Dimensions				
No. of turbines	4	4	4	t
Duration of consent (years)	29	29	29	y
Performance				
Power rating of 1 turbine (MW)	1.5	1.5	1.5	mw
Capacity factor	15	14.9	15.1	%
Backup				
Fraction of output to backup (%)	0.9	0.9	0.9	%
Additional emissions due to reduced thermal efficiency of the reserve generation (%)	10	10	10	Fixed
Total CO2 emission from turbine life (tCO2 MW^{-1}) (eg. manufacture, construction, decommissioning)	Calculate wrt installed capacity	Calculate wrt installed capacity	Calculate wrt installed capacity	
Characteristics of peatland before windfarm development				
Type of peatland	Acid bog	Acid bog	Acid bog	n/a
Average annual air temperature at site (°C)	10.7	10	11	c
Average depth of peat at site (m)	1.5	1.4	1.6	m
C Content of dry peat (% by weight)	19	19	20	%
Average extent of drainage around drainage features at site (m)	0.5	0.4	0.6	m
Average water table depth at site (m)	0.9	0.8	1	m
Dry soil bulk density (g cm^{-3})	0.3	0.2	0.3	g cm-3
Characteristics of bog plants				
Time required for regeneration of bog plants after restoration (years)	15	15	15	y
Carbon accumulation due to C fixation by bog plants in undrained peats (tC ha^{-1} yr^{-1})	0.12	0.11	0.13	tCha-1yr-1
Forestry Plantation Characteristics				
Area of forestry plantation to be felled (ha)	0	0	0	ha
Average rate of carbon sequestration in timber (tC ha^{-1} yr^{-1})	0	0	0	ha
Counterfactual emission factors				
Coal-fired plant emission factor (t CO2 MWh^{-1})	0.92	0.92	0.92	
Grid-mix emission factor (t CO2 MWh^{-1})	0.25358	0.25358	0.25358	
Fossil fuel-mix emission factor (t CO2 MWh^{-1})	0.45	0.45	0.45	
Borrow pits				
Number of borrow pits	0	0	0	0
Average length of pits (m)	0	0	0	m
Average width of pits (m)	0	0	0	m
Average depth of peat removed from pit (m)	0	0	0	m
Foundations and hard-standing area associated with each turbine				
Average length of turbine foundations (m)	2.65	2.6	2.7	m
Average width of turbine foundations (m)	2.65	2.6	2.7	m
Average depth of peat removed from turbine foundations(m)	0.5	0.5	0.5	m
Average length of hard-standing (m)	11.5	11	12	m
Average width of hard-standing (m)	11.5	11	12	m
Average depth of peat removed from hard-standing (m)	0.75	0.75	0.75	m
Volume of concrete used in construction of the ENTIRE windfarm				

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Input data	Expected value	Minimum value	Maximum value	Source of data
Volume of concrete (m^3)	5000	5000	5000	M3
Access tracks				
Total length of access track (m)	3212	3212	3212	m
Existing track length (m)	3212	3212	3212	m
Length of access track that is floating road (m)	0	0	0	m
Floating road width (m)	5	5	5	m
Floating road depth (m)	0.3	0.2	0.4	m
Length of floating road that is drained (m)	0	0	0	m
Average depth of drains associated with floating roads (m)	0	0	0	m
Length of access track that is excavated road (m)	0	0	0	m
Excavated road width (m)	5	5	5	m
Average depth of peat excavated for road (m)	0.75	0.74	0.76	m
Length of access track that is rock filled road (m)	0	0	0	m
Rock filled road width (m)	5	5	5	m
Rock filled road depth (m)	0.3	0.2	0.4	m
Length of rock filled road that is drained (m)	3212	3210	3215	m
Average depth of drains associated with rock filled roads (m)	0.5	0.5	0.5	m
Cable trenches				
Length of any cable trench on peat that does not follow access tracks and is lined with a permeable medium (eg. sand) (m)	0	0	0	m
Average depth of peat cut for cable trenches (m)	0.5	0.5	0.5	m
Additional peat excavated (not already accounted for above)				
Volume of additional peat excavated (m^3)	0	0	0	m3
Area of additional peat excavated (m^2)	0	0	0	m2
Peat Landslide Hazard				
Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments	negligible	negligible	negligible	Fixed
Improvement of C sequestration at site by blocking drains, restoration of habitat etc				
Improvement of degraded bog				
Area of degraded bog to be improved (ha)	0	0	0	ha
Water table depth in degraded bog before improvement (m)	1.5	1.5	1.5	m
Water table depth in degraded bog after improvement (m)	1	0.9	1	m
Time required for hydrology and habitat of bog to return to its previous state on improvement (years)	15	14.9	15	y
Period of time when effectiveness of the improvement in degraded bog can be guaranteed (years)	15	14.9	15	y
Improvement of felled plantation land				
Area of felled plantation to be improved (ha)	0	0	0	ha
Water table depth in felled area before improvement (m)	0	0	0	m
Water table depth in felled area after improvement (m)	0	0	0	m
Time required for hydrology and habitat of felled plantation to return to its previous state on improvement (years)	15	15	15	y
Period of time when effectiveness of the improvement in felled plantation can be guaranteed (years)	2	2	2	y
Restoration of peat removed from borrow pits				
Area of borrow pits to be restored (ha)	0	0	0	ha
Depth of water table in borrow pit before restoration with respect to the restored surface (m)	0	0	0	m
Depth of water table in borrow pit after restoration with respect to the restored surface (m)	0	0	0	m
Time required for hydrology and habitat of borrow pit to return to its previous state on restoration (years)	15	15	15	y
Period of time when effectiveness of the restoration of peat removed from borrow pits can be guaranteed (years)	2	2	2	y

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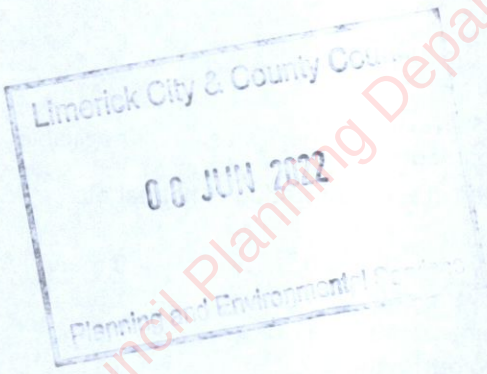
Input data	Expected value	Minimum value	Maximum value	Source of data
Early removal of drainage from foundations and hardstanding				
Water table depth around foundations and hardstanding before restoration (m)	1.5	1.5	1.5	m
Water table depth around foundations and hardstanding after restoration (m)	1	0.9	1	m
Time to completion of backfilling, removal of any surface drains, and full restoration of the hydrology (years)	1	1	1	y
Restoration of site after decomissioning				
Will the hydrology of the site be restored on decommissioning?	No	No	No	
Will you attempt to block any gullies that have formed due to the windfarm?	No	No	No	no
Will you attempt to block all artificial ditches and facilitate rewetting?	No	No	No	no
Will the habitat of the site be restored on decommissioning?	Yes	Yes	Yes	
Will you control grazing on degraded areas?	Yes	Yes	Yes	yes
Will you manage areas to favour reintroduction of species	Yes	Yes	Yes	yes
Methodology				
Choice of methodology for calculating emission factors	Site specific (required for planning applications)			



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Forestry input data

N/A

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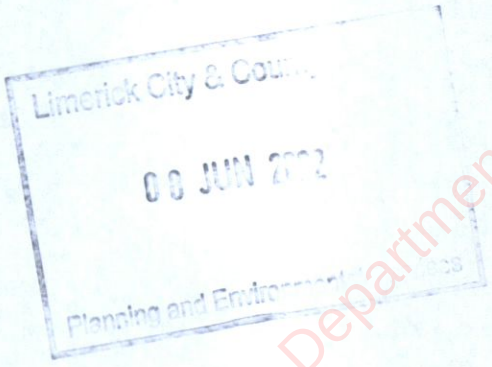
Construction input data

N/A



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