ARCUS

INFINERGY Ltd
a BORALEX company

TORRANCE EXTENSION II WIND FARM

TECHNICAL APPENDIX A16.1

CARBON CALCULATOR RESULTS

FEBRUARY 2023

TABLE OF CONTENTS

PAYBACK TIME AND CO_2 EMISSIONS

Payback Time

Payback Time
Payback Time - ChartsInput Data
1. Windfarm CO2 emission saving 2. CO2 loss due to turbine life 3. CO2 loss due to backup 4. Loss of CO2 fixing potential 5. Loss of soil CO2 (a,b) 5. Loss of soil CO2 (c,d,e) 6. CO2 loss by DOC & POC loss 7. Forestry CO2 loss 8. CO2 gain - site improvement

1. Windfarm CO2 emission saving over...	Exp.	Min.	Max.
...coal-fired electricity generation (t CO2 / yr)	61,500	53,761	65,579
...grid-mix of electricity generation (t CO2 / yr)	11,869	10,375	12,656
...fossil fuel-mix of electricity generation (t CO2 / yr)	26,515	23,178	28,273
Energy output from windfarm over lifetime (MWh)	2,455,099	2,146,130	2,617,908

Total CO2 losses due to wind farm (tCO2 eq.)	Exp.	Min.	Max.
2. Losses due to turbine life (eg. manufacture, construction, decomissioning)	23,903	23,903	23,903
3. Losses due to backup	19,981	0	19,981
4. Lossess due to reduced carbon fixing potential	614	191	2,913
5. Losses from soil organic matter	-5,066	-4,939	-4,868
6. Losses due to DOC & POC leaching	50	28	181
7. Losses due to felling forestry	3,511	2,435	4,591
Total losses of carbon dioxide	42,994	21,617	46,701

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	1,076	1,459	-3,113
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	505	350	-10,049
Total change in emissions due to improvements	1,581	1,809	-13,161

RESULTS	Exp.	Min.	Max.
Net emissions of carbon dioxide (t CO2 eq.)	44,574	8,456	48,509
Carbon Payback Time			
...coal-fired electricity generation (years)	0.7	0.1	0.9
...grid-mix of electricity generation (years)	3.8	0.7	4.7
...fossil fuel-mix of electricity generation (years)	1.7	0.3	2.1
Ratio of soil carbon loss to gain by restoration (not used in Scottish applications)	No gains!	-0.37	No gains!
Ratio of CO2 eq. emissions to power generation (g/kWh) (for info. only)	18.16	3.23	22.60

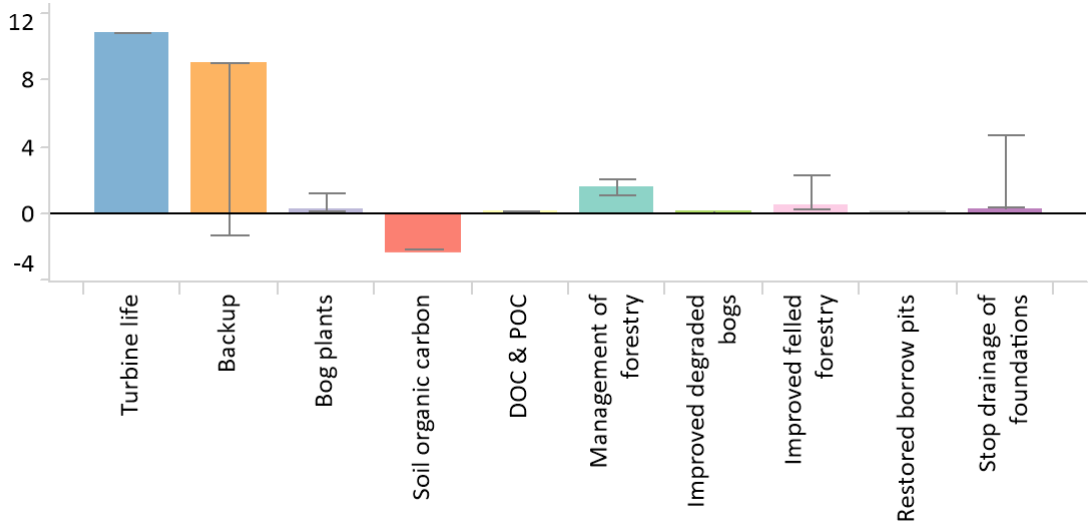
PAYBACK TIME CHARTS

Payback Time - Charts

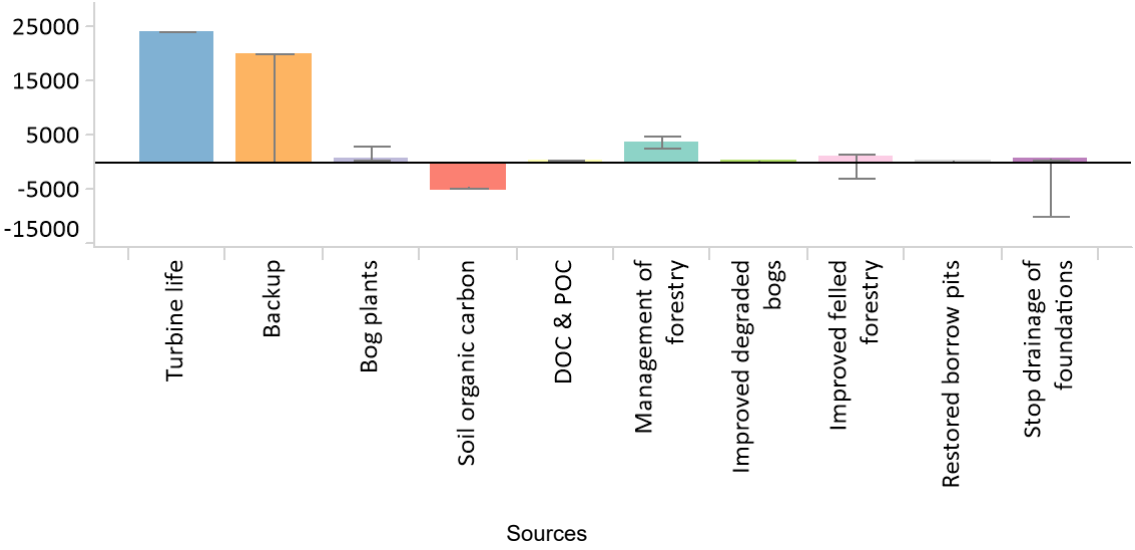
Payback Time

Payback Time - ChartsInput Data

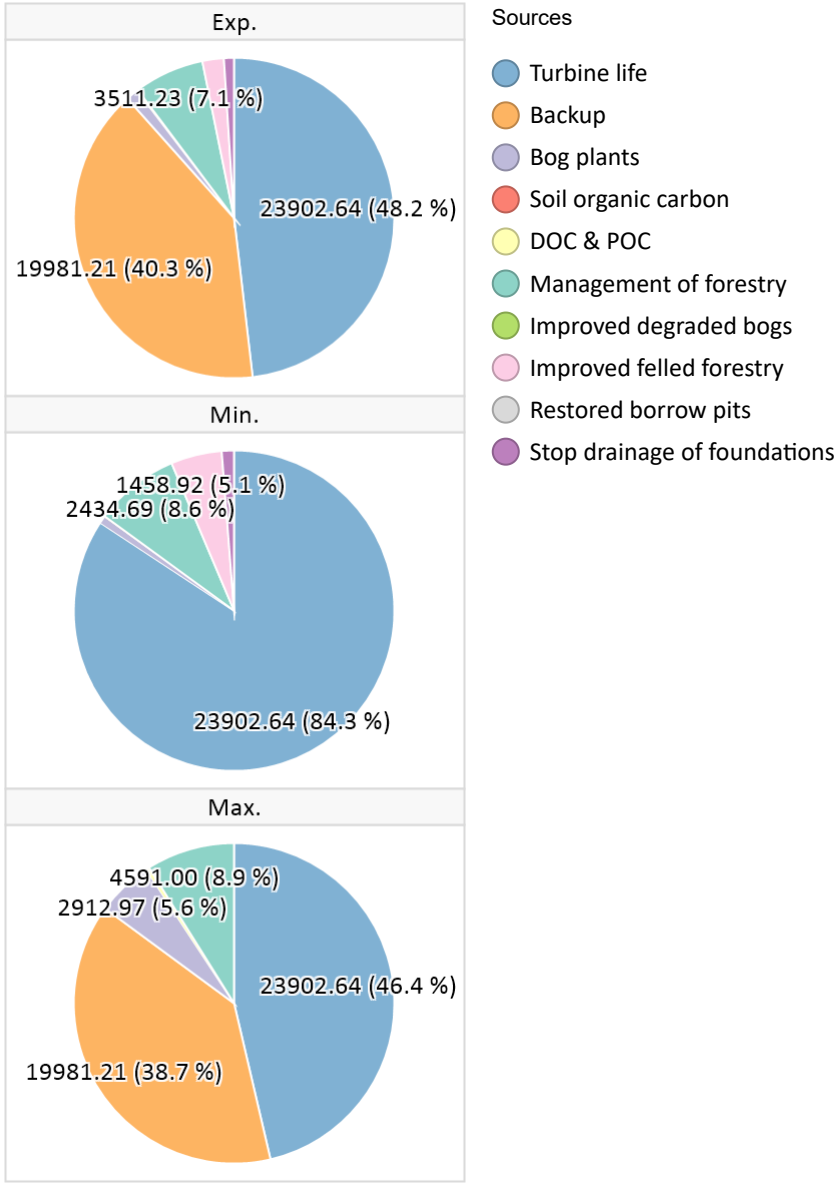
Carbon payback time (months) using fossil-fuel mix as conterfactual



Greenhouse gas emissions (t CO2 eq.)



Proportions of greenhouse gas emissions from different sources



INPUT DATA

Carbon Calculator v1.7.0

Torrance Extension 2 Location: 55.865402 -3.760483

Infinergy Ltd.

Core input data

Input data	Expected value	Minimum value	Maximum value	Source of data
Windfarm characteristics				
Dimensions				
No. of turbines	4	4	4	EIA Report Chapter 3 - Description of Proposed Development
Duration of consent (years)	40	40	40	EIA Report Chapter 3 - Description of Proposed Development
Performance				
Power rating of 1 turbine (MW)	6.6	6.6	6.6	EIA Report Chapter 3 - Description of Proposed Development
Capacity factor	26.54	23.2	28.3	Based on most recent DUKES Statistics and calculated as a rolling average of the past five years using data from the Digest of UK Energy Statistics.
Backup				
Fraction of output to backup (%)	5	0	5	Suggested Inputs
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	Approximately total 5.07 ha of wet modified bog in HSA: 0.06 ha impacted by new access track to turbine location Approximately total 1.43 ha of flush and spring in HSA – acid/neutral: 0.05 ha impacted by new access track to turbine location
Average annual air temperature at site (°C)	7.89	4.77	11.01	Met Office Climate Averages of nearby Observing Station (Salsburgh) https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gcvjzc679
Average depth of peat at site (m)	0.025	0	0.6	EIA Report Chapter 13 - Geology and Peat
C Content of dry peat (% by weight)	55.5	49	62	Scottish Government guidance - Guidance on Developments on Peatland - Site surveys

Input data	Expected value	Minimum value	Maximum value	Source of data
Average extent of drainage around drainage features at site (m)	10	5	50	Technical Estimation - further refined after drainage
Average water table depth at site (m)	0.5	0.4	0.6	Technical Estimation
Dry soil bulk density (g cm^{-3})	0.122	0.09	0.15	Based on Chapman, Artz and Poggio, 2015 report, 'Determination of organic carbon stocks in blanket peat soils in different condition - assessment of peat condition'
Characteristics of bog plants				
Time required for regeneration of bog plants after restoration (years)	6	2	10	Technical estimation - not expected to deviate from standard regeneration timescales
Carbon accumulation due to C fixation by bog plants in undrained peats (tC ha^{-1} yr^{-1})	0.25	0.12	0.31	NatureScot Guidance - Carbon Payback Calculator: Guidelines on Measurements
Forestry Plantation Characteristics				
Area of forestry plantation to be felled (ha)	6.65	6.64	6.66	EIA Report - Chapter 8: Forestry (ESTIMATION)
Average rate of carbon sequestration in timber (tC ha^{-1} yr^{-1})	3.6	2.5	4.7	Scottish Government and NatureScot Guidance
Counterfactual emission factors				
Coal-fired plant emission factor (t CO2 MWh^{-1})	1.002	1.002	1.002	
Grid-mix emission factor (t CO2 MWh^{-1})	0.19338	0.19338	0.19338	
Fossil fuel-mix emission factor (t CO2 MWh^{-1})	0.432	0.432	0.432	
Borrow pits				
Number of borrow pits	0	0	0	None
Average length of pits (m)	0	0	0	n/a
Average width of pits (m)	0	0	0	N/A
Average depth of peat removed from	0	0	0	N/A

Input data	Expected value	Minimum value	Maximum value	Source of data
pit (m)				
Foundations and hard-standing area associated with each turbine				
Average length of turbine foundations (m)	22	22	22	EIA Report Chapter 3 - Description of Proposed Development
Average width of turbine foundations (m)	22	22	22	EIA Report Chapter 3 - Description of Proposed Development
Average depth of peat removed from turbine foundations(m)	0.0001	0.0001	0.0001	actual depth is 0. EIA Report Chapter 13 - Geology and Peat
Average length of hard-standing (m)	200	200	200	EIA Report Chapter 3 - Description of Proposed Development
Average width of hard-standing (m)	57	57	57	EIA Report Chapter 3 - Description of Proposed Development
Average depth of peat removed from hard-standing (m)	0.0001	0.0001	0.0001	actual depth is 0. EIA Report Chapter 13 - Geology and Peat
Volume of concrete used in construction of the ENTIRE windfarm				
Volume of concrete (m^3)	3500	3500	3500	EIA Report Chapter 3 - Description of Proposed Development
Access tracks				
Total length of access track (m)	2900	2899	2901	EIA Report Chapter 3 - Description of Proposed Development
Existing track length (m)	0	0	0	XXX
Length of access track that is floating road (m)	0	0	0	
Floating road width (m)	0	0	0	
Floating road depth (m)	0	0	0	
Length of floating road that is drained (m)	0	0	0	
Average depth of drains associated with floating roads (m)	0	0	0	
Length of access track that is excavated road (m)	2900	2899	2901	EIA Report Chapter 3 - Description of Proposed Development
Excavated road width (m)	5	5	5	EIA Report Chapter 3 - Description of Proposed Development
Average depth of peat excavated for road (m)	0	0	0	EIA Report Chapter 3 - Description of Proposed Development

Input data	Expected value	Minimum value	Maximum value	Source of data
Length of access track that is rock filled road (m)	0	0	0	
Rock filled road width (m)	0	0	0	
Rock filled road depth (m)	0	0	0	
Length of rock filled road that is drained (m)	0	0	0	
Average depth of drains associated with rock filled roads (m)	0	0	0	
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	
Average depth of peat cut for cable trenches (m)	0	0	0	
Additional peat excavated (not already accounted for above)				
Volume of additional peat excavated (m^3)	130	130	130	limited peat cut under access road in on isolated location. Peat depth varies between 0 and 0.5m
Area of additional peat excavated (m^2)	0	0	0	N/A
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	n/a
Water table depth in degraded bog	0.5	0.4	0.6	Technical estimation

Input data	Expected value	Minimum value	Maximum value	Source of data
before improvement (m)				
Water table depth in degraded bog after improvement (m)	0.01	0.005	0.3	Technical estimation
Time required for hydrology and habitat of bog to return to its previous state on improvement (years)	7.5	5	10	Technical estimation
Period of time when effectiveness of the improvement in degraded bog can be guaranteed (years)	40	40	40	Technical estimation
Improvement of felled plantation land				
Area of felled plantation to be improved (ha)	6.4	6.4	6.4	EIA Report Chapter 8 - Forestry
Water table depth in felled area before improvement (m)	0.5	0.4	0.6	Technical estimation
Water table depth in felled area after improvement (m)	0.1	0.01	0.3	Technical estimation
Time required for hydrology and habitat of felled plantation to return to its previous state on improvement (years)	7.5	5	10	Technical estimation
Period of time when effectiveness of the improvement in felled plantation can be guaranteed (years)	40	40	40	Technical estimation
Restoration of peat removed from borrow pits				
Area of borrow pits to be restored	0	0	0	N/A

Input data	Expected value	Minimum value	Maximum value	Source of data
(ha)				
Depth of water table in borrow pit before restoration with respect to the restored surface (m)	0	0	0	N/A
Depth of water table in borrow pit after restoration with respect to the restored surface (m)	0	0	0	N/A
Time required for hydrology and habitat of borrow pit to return to its previous state on restoration (years)	7.5	5	10	N/A
Period of time when effectiveness of the restoration of peat removed from borrow pits can be guaranteed (years)	40	40	40	N/A
Early removal of drainage from foundations and hardstanding				
Water table depth around foundations and hardstanding before restoration (m)	0.5	0.4	0.6	Technical estimation
Water table depth around foundations and hardstanding after restoration (m)	0.1	0.05	0.3	Technical estimation
Time to completion of backfilling, removal of any surface drains, and full restoration of the hydrology (years)	2	1	3	Technical estimation
Restoration of site after decomissioning				
Will the hydrology of the site be	Yes	Yes	Yes	

Input data	Expected value	Minimum value	Maximum value	Source of data
restored on decommissioning?				
Will you attempt to block any gullies that have formed due to the windfarm?	Yes	Yes	Yes	Details on gullies further refined during restoration
Will you attempt to block all artificial ditches and facilitate rewetting?	Yes	Yes	Yes	Details on gullies further refined during restoration
Will the habitat of the site be restored on decommissioning?	No	No	No	
Will you control grazing on degraded areas?	No	No	No	Ongoing management and monitoring activities to enhance biodiversity will be delivered in the Habitat Management Plan.
Will you manage areas to favour reintroduction of species	Yes	Yes	Yes	Ongoing management and monitoring activities to enhance biodiversity will be delivered in the Habitat Management Plan.
Methodology				
Choice of methodology for calculating emission factors	Site specific (required for planning applications)			

Forestry input data

N/A

Construction input data

N/A

1 WINDFARM CO_2 EMISSION SAVING

Capacity Factor - Direct Input	Exp.	Min.	Max.
Capacity factor (%)	26.5	23.2	28.3

Emissions due to turbine life	Exp.	Min.	Max.
RESULTS			
Emissions saving over coal-fired electricity generation (tCO2/yr)	61,500	53,761	65,579
Emissions saving over grid-mix of electricity generation (tCO2/yr)	11,869	10,375	12,656
Emissions saving over fossil fuel - mix of electricity generation (tCO2/yr)	26,515	23,178	28,273

2 CO_2 LOSS DUE TO TURBINE LIFE

Calculation of emissions with relation to installed capacity	Exp.	Min.	Max.
Emissions due to turbine from energy output (t CO2)	5,699	5,699	5,699
Emissions due to cement used in construction (t CO2)	1,106	1,106	1,106

RESULTS	Exp.	Min.	Max.
Losses due to turbine life (manufacture, construction, etc.) (t CO2)	23,903	23,903	23,903
Additional CO2 payback time of windfarm due to turbine life			
...coal-fired electricity generation (months)	5	5	4
...grid-mix of electricity generation (months)	24	28	23
...fossil fuel - mix of electricity generation (months)	11	12	10

3 CO_2 LOSS DUE TO BACKUP

Emissions due to backup power generation	**Exp.**	**Min.**	**Max.**
Reserve energy (MWh/yr)	11,563	0	11,563
Annual emissions due to backup from fossil fuel-mix of electricity generation (tCO2/yr)	500	0	500
RESULTS			
Total emissions due to backup from fossil fuel-mix of electricity generation (tCO2)	19,981	0	19,981

4 LOSS OF CO_2 FIXING POTENTIAL

Emissions due to loss of bog plants	**Exp.**	**Min.**	**Max.**
Area where carbon accumulation by bog plants is lost (ha)	14.57	10.35	51.25
Total loss of carbon accumulation up to time of restoration (tCO2 eq./ha)	42	18	57
RESULTS			
Total loss of carbon fixation by plants at the site (t CO2)	614	191	2,913
Additional CO2 payback time of windfarm due to loss of CO2 fixing potential			
...coal-fired electricity generation (months)	0	0	1
...grid-mix of electricity generation (months)	1	0	3
...fossil fuel - mix of electricity generation (months)	0	0	1

5 LOSS OF SOIL CO_2

5. Loss of Soil CO2	Exp.	Min.	Max.
CO2 loss from removed peat (t CO2 equiv.)	-5,065.74	-4,867.97	-4,939.41
CO2 loss from drained peat (t CO2 equiv.)	0	0	0
RESULTS			
Total CO2 loss from peat (removed + drained) (t CO2 equiv.)	-5,065.74	-4,867.97	-4,939.41
Additional CO2 payback time of windfarm due to loss of soil CO2			
...coal-fired electricity generation (months)	-0.99	-1.1	-0.89
...grid-mix of electricity generation (months)	-5.12	-5.71	-4.62
...fossil fuel - mix of electricity generation (months)	-2.29	-2.56	-2.07

5a. Volume of peat removed	Exp.	Min.	Max.
Peat removed from borrow pits			
Area of land lost in borrow pits (m2)	0	0	0
Volume of peat removed from borrow pits (m3)	0	0	0
Peat removed from turbine foundations			
Area of land lost in foundation (m2)	1,936	1,936	1,936
Volume of peat removed from foundation area (m3)	0.19	0.19	0.19
Peat removed from hard-standing			
Area of land lost in hard-standing (m2)	45,600	45,600	45,600
Volume of peat removed from hard-standing area (m3)	4.56	4.56	4.56
Peat removed from access tracks			
Area of land lost in floating roads (m2)	0	0	0
Volume of peat removed from floating roads (m3)	0	0	0
Area of land lost in excavated roads (m2)	14,500	14,495	14,505
Volume of peat removed from excavated roads (m3)	0	0	0
Area of land lost in rock-filled roads (m2)	0	0	0
Volume of peat removed from rock-filled roads (m3)	0	0	0
Total area of land lost in access tracks (m2)	14,500	14,495	14,505
Total volume of peat removed due to access tracks (m3)	0	0	0
RESULTS			
Total area of land lost due to windfarm construction (m2)	62,036	62,031	62,041
Total volume of peat removed due to windfarm construction (m3)	134.75	134.75	134.75

5b. CO2 loss from removed peat	Exp.	Min.	Max.
CO2 loss from removed peat (t CO2)	33.46	21.79	45.95
CO2 loss from undrained peat left in situ (t CO2)	5,099.19	4,889.76	4,985.36
RESULTS			
CO2 loss attributable to peat removal only (t CO2)	-5,065.74	-4,867.97	-4,939.41

5c. Volume of peat drained	Exp.	Min.	Max.
Total area affected by drainage around borrow pits (m2)	0	0	0
Total volume affected by drainage around borrow pits (m3)	0	0	0
Peat affected by drainage around turbine foundation and hardstanding			
Total area affected by drainage of foundation and hardstanding area (m2)	25,680	12,440	160,400
Total volume affected by drainage of foundation and hardstanding area (m3)	1.28	0.62	8.02
Peat affected by drainage of access tracks			
Total area affected by drainage of access track(m2)	58,000	28,990	290,100
Total volume affected by drainage of access track(m3)	0	0	0
Peat affected by drainage of cable trenches			
Total area affected by drainage of cable trenches(m2)	0	0	0
Total volume affected by drainage of cable trenches(m3)	0	0	0
Drainage around additional peat excavated			
Total area affected by drainage (m2)	0	0	0
Total volume affected by drainage (m3)	0	0	0
RESULTS			
Total area affected by drainage due to windfarm (m2)	83,680	41,430	450,500
Total volume affected by drainage due to windfarm (m3)	1.28	0.62	8.02

5d. CO2 loss from drained peat	Exp.	Min.	Max.
Calculations of C Loss from Drained Land if Site is NOT Restored after Decommissioning			
Total GHG emissions from Drained Land (t CO2 equiv.)	0.32	0.1	2.73
Total GHG emissions from Undrained Land (t CO2 equiv.)	0.32	0.1	2.73
Calculations of C Loss from Drained Land if Site IS Restored after Decommissioning			
Losses if Land is Drained			
CH4 emissions from drained land (t CO2 equiv.)	-91.85	-104.23	398.98
CO2 emissions from drained land (t CO2)	6,970.11	3,370.06	35,801.38
Total GHG emissions from Drained Land (t CO2 equiv.)	0.32	0.1	2.73
Losses if Land is Undrained			
CH4 emissions from undrained land (t CO2 equiv.)	-91.85	-104.23	398.98
CO2 emissions from undrained land (t CO2)	6,970.11	3,370.06	35,801.38
Total GHG emissions from Undrained Land (t CO2 equiv.)	0.32	0.1	2.73
RESULTS			
Total GHG emissions due to drainage (t CO2 equiv.)	0	0	0

5e. Emission rates from soils	Exp.	Min.	Max.
Calculations following IPCC default methodology			
Flooded period (days/year)	178	178	178
Annual rate of methane emission (t CH4-C/ha year)	0.04	0.04	0.04
Annual rate of carbon dioxide emission (t CO2/ha year)	35.2	35.2	35.2
Calculations following ECOSSE based methodology			
Total area affected by drainage due to wind farm construction (ha)	8.37	4.14	45.05
Average water table depth of drained land (m)	0.5	0.4	0.6
Selected emission characteristics following site specific methodology			
Rate of carbon dioxide emission in drained soil (t CO2/ha year)	18.11	19.37	15.89
Rate of carbon dioxide emission in undrained soil (t CO2/ha year)	18.11	19.37	15.89
Rate of methane emission in drained soil (t CH4-C/ha year)	-0.01	-0.02	0.01
Rate of methane emission in undrained soil (t CH4-C/ha year)	-0.01	-0.02	0.01
RESULTS			
Selected rate of carbon dioxide emission in drained soil (t CO2/ha year)	18.11	19.37	15.89
Selected rate of carbon dioxide emission in undrained soil (t CO2/ha year)	18.11	19.37	15.89
Selected rate of methane emission in drained soil (t CH4-C/ha year)	-0.01	-0.02	0.01
Selected rate of methane emission in undrained soil (t CH4-C/ha year)	-0.01	-0.02	0.01

6 CO_2 LOSS BY DOC AND POC LOSS

Emissions due to loss of DOC and POC	Exp.	Min.	Max.
Gross CO2 loss from restored drained land (t CO2)	0	0	0
Gross CH4 loss from restored drained land (t CO2 equiv.)	0	0	0
Gross CO2 loss from improved land (t CO2)	0	0	0
Gross CH4 loss from improved land (t CO2 equiv.)	1,638.14	1,709.27	4,032.20
Total gaseous loss of C (t C)	40.06	68.91	98.61
Total C loss as DOC (t C)	10.42	4.82	39.45
Total C loss as POC (t C)	3.21	2.76	9.86
RESULTS			
Total CO2 loss due to DOC leaching (t CO2)	38.19	17.69	144.63
Total CO2 loss due to POC leaching (t CO2)	11.75	10.11	36.16
Total CO2 loss due to DOC & POC leaching (t CO2)	49.95	27.79	180.79
Additional CO2 payback time of windfarm due to DOC & POC			
...coal-fired electricity generation (months)	0	0	0
...grid-mix of electricity generation (months)	0	0	0
...fossil fuel - mix of electricity generation (months)	0	0	0

7 FORESTRY CO_2 LOSS

Emissions due to forest felling	**Exp.**	**Min.**	**Max.**
Area of forestry plantation to be felled (ha)	6.65	6.64	6.66
Carbon sequestered (t C ha-1 yr-1)	3.6	2.5	4.7
Lifetime of windfarm (years)	40	40	40
Carbon sequestered over the lifetime of the windfarm (t C ha-1)	144	100	188
RESULTS			
Total carbon loss due to felling of forestry (t CO2)	3,511.23	2,434.69	4,591
Additional CO2 payback time of windfarm due to management of forestry			
...coal-fired electricity generation (months)	0.69	0.54	0.84
...grid-mix of electricity generation (months)	3.55	2.82	4.35
...fossil fuel - mix of electricity generation (months)	1.59	1.26	1.95

8 CO_2 GAIN – SITE IMPROVEMENT

Degraded Bog	Exp.	Min.	Max.
1. Description of site			
Area to be improved (ha)	0	0	0
Depth of peat above water table before improvement (m)	0.025	0	0.6
Depth of peat above water table after improvement (m)	0.01	0	0.05
2. Losses with improvement			
Improved period (years)	32.5	35	30
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	0.433	0.48	0.472
CH4 emissions from improved land (t CO2 equiv.)	0	0	0
Selected annual rate of carbon dioxide emissions (t CO2 ha-1 yr-1)	0.125	-0.856	0.877
CO2 emissions from improved land (t CO2 equiv.)	0	0	0
Total GHG emissions from improved land (t CO2 eqiv.)	0	0	0
3. Losses without improvement			
Improved period (years)	32.5	35	30
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	0.358	0.48	0.002
CH4 emissions from improved land (t CO2 equiv.)	0	0	0
Selected annual rate of carbon dioxide emissions (t CO2 ha-1 yr-1)	0.386	-0.856	21.027
CO2 emissions from unimproved land (t CO2 equiv.)	0	0	0
Total GHG emissions from unimproved land (t CO2 eqiv.)	0	0	0
RESULTS			
4. Reduction in GHG emissions due to improvement of site			
Reduction in GHG emissions due to improvement (t CO2 equiv.)	0	0	0

Felled Forestry	Exp.	Min.	Max.
1. Description of site			
Area to be improved (ha)	6.4	6.4	6.4
Depth of peat above water table before improvement (m)	0.025	0	0.6
Depth of peat above water table after improvement (m)	0.025	0	0.01
2. Losses with improvement			
Improved period (years)	32.5	35	30
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	0.358	0.48	0.444
CH4 emissions from improved land (t CO2 equiv.)	1,115.022	1,378.746	1,487.858
Selected annual rate of carbon dioxide emissions (t CO2 ha-1 yr-1)	0.386	-0.856	0.955
CO2 emissions from improved land (t CO2 equiv.)	41.164	-84.228	109.55
Total GHG emissions from improved land (t CO2 eqiv.)	1,156.186	1,294.519	1,597.407

3. Losses without improvement			
Improved period (years)	32.5	35	30
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	0.358	0.48	0.002
CH4 emissions from improved land (t CO2 equiv.)	0	0	0
Selected annual rate of carbon dioxide emissions (t CO2 ha-1 yr-1)	0.386	-0.856	21.027
CO2 emissions from unimproved land (t CO2 equiv.)	80.348	-164.402	4,710.092
Total GHG emissions from unimproved land (t CO2 eqiv.)	80.348	-164.402	4,710.092
RESULTS			
4. Reduction in GHG emissions due to improvement of site			
Reduction in GHG emissions due to improvement (t CO2 equiv.)	-1,075.839	-1,258.921	3,112.685

Borrow Pits	**Exp.**	**Min.**	**Max.**
1. Description of site			
Area to be improved (ha)	0	0	0
Depth of peat above water table before improvement (m)	0	0	0
Depth of peat above water table after improvement (m)	0	0	0
2. Losses with improvement			
Improved period (years)	32.5	35	30
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	0.491	0.48	0.502
CH4 emissions from improved land (t CO2 equiv.)	0	0	0
Selected annual rate of carbon dioxide emissions (t CO2 ha-1 yr-1)	-0.026	-0.856	0.803
CO2 emissions from improved land (t CO2 equiv.)	0	0	0
Total GHG emissions from improved land (t CO2 eqiv.)	0	0	0
3. Losses without improvement			
Improved period (years)	32.5	35	30
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	0.491	0.48	0.502
CH4 emissions from improved land (t CO2 equiv.)	0	0	0
Selected annual rate of carbon dioxide emissions (t CO2 ha-1 yr-1)	-0.026	-0.856	0.803
CO2 emissions from unimproved land (t CO2 equiv.)	0	0	0
Total GHG emissions from unimproved land (t CO2 eqiv.)	0	0	0
RESULTS			
4. Reduction in GHG emissions due to improvement of site			
Reduction in GHG emissions due to improvement (t CO2 equiv.)	0	0	0

Foundations and Hardstandings	Exp.	Min.	Max.
1. Description of site			
Area to be improved (ha)	2.568	1.244	16.04
Depth of peat above water table before improvement (m)	0.025	0	0.6
Depth of peat above water table after improvement (m)	0.025	0	0.05
2. Losses with improvement			
Improved period (years)	38	38	37
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	0.358	0.48	0.272
CH4 emissions from improved land (t CO2 equiv.)	523.117	330.526	2,544.343
Selected annual rate of carbon dioxide emissions (t CO2 ha-1 yr-1)	0.386	-0.856	1.75
CO2 emissions from improved land (t CO2 equiv.)	19.312	-20.192	560.818
Total GHG emissions from improved land (t CO2 eqiv.)	542.429	310.334	3,105.16
3. Losses without improvement			
Improved period (years)	38	38	37
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	0.358	0.48	0.002
CH4 emissions from improved land (t CO2 equiv.)	0	0	0
Selected annual rate of carbon dioxide emissions (t CO2 ha-1 yr-1)	0.386	-0.856	21.027
CO2 emissions from unimproved land (t CO2 equiv.)	37.695	-39.412	13,153.774
Total GHG emissions from unimproved land (t CO2 eqiv.)	37.695	-39.412	13,153.774
RESULTS			
4. Reduction in GHG emissions due to improvement of site			
Reduction in GHG emissions due to improvement (t CO2 equiv.)	-504.734	-349.746	10,048.614