LOCHLUICHART WIND FARM EXTENSION II

SUPPLEMENTARY INFORMATION

APPENDIX 5.A

CARBON CALCULATOR RESULTS

OCTOBER 2019

INFINERGY

Table of Contents

PAYBACK TIME AND CO_2 EMISSIONS

1. Windfarm CO_2 emission saving over...	Exp.	Min.	Max.
...coal-fired electricity generation (t CO_2 / yr)	49,322	47,872	50,773
...grid-mix of electricity generation (t CO_2 / yr)	13,595	13,195	13,995
...fossil fuel-mix of electricity generation (t CO_2 / yr)	24,125	23,415	24,835
Energy output from windfarm over lifetime (MWh)	1,340,280	1,300,860	1,379,700

Total CO_2 losses due to wind farm (tCO_2 eq.)	Exp.	Min.	Max.
2. Losses due to turbine life (eg. manufacture, construction, decommissioning)	15,183	15,183	15,183
3. Losses due to backup	8,870	8,870	8,870
4. Losses due to reduced carbon fixing potential	139	128	150
5. Losses from soil organic matter	8,685	8,112	9,320
6. Losses due to DOC & POC leaching	3	1	21
7. Losses due to felling forestry	673	463	888
Total losses of carbon dioxide	33,553	32,755	34,431

8. Total CO_2 gains due to improvement of site (t CO_2 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	-1,200	-1,200	-925
8d. Change in emissions due to removal of drainage from foundations & hardstanding	-91	0	-94
Total change in emissions due to improvements	-1,290	-1,200	-1,019

RESULTS	Exp.	Min.	Max.
Net emissions of carbon dioxide (t CO_2 eq.)	32,263	31,736	33,231
Carbon Payback Time			
...coal-fired electricity generation (years)	0.7	0.6	0.7
...grid-mix of electricity generation (years)	2.4	2.3	2.5
...fossil fuel-mix of electricity generation (years)	1.3	1.3	1.4
Ratio of soil carbon loss to gain by restoration (not used in Scottish applications)	6.74	7.96	7.78
Ratio of CO_2 eq. emissions to power generation (g/kWh) (for info. only)	24.07	23	25.55

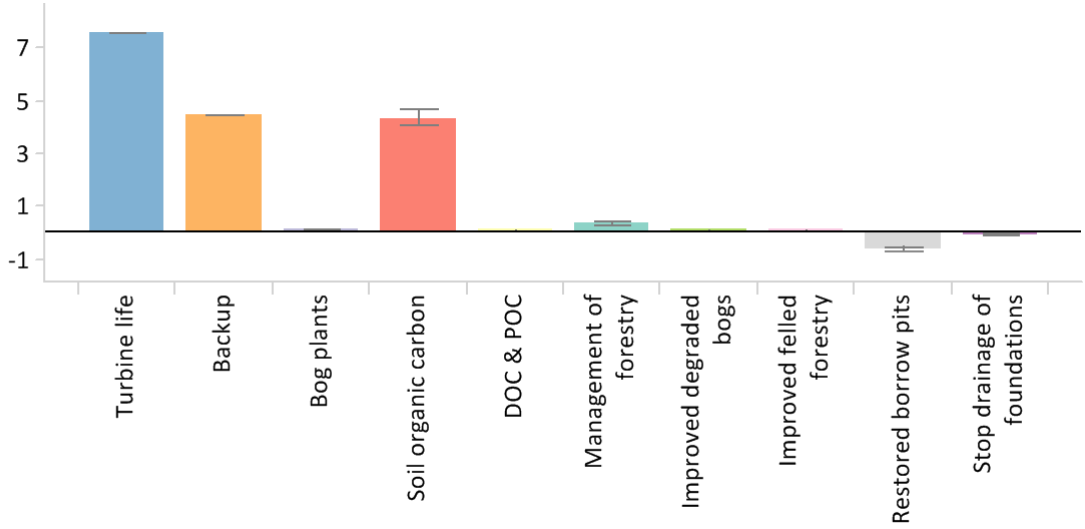
PAYBACK TIME CHARTS

Payback Time - Charts

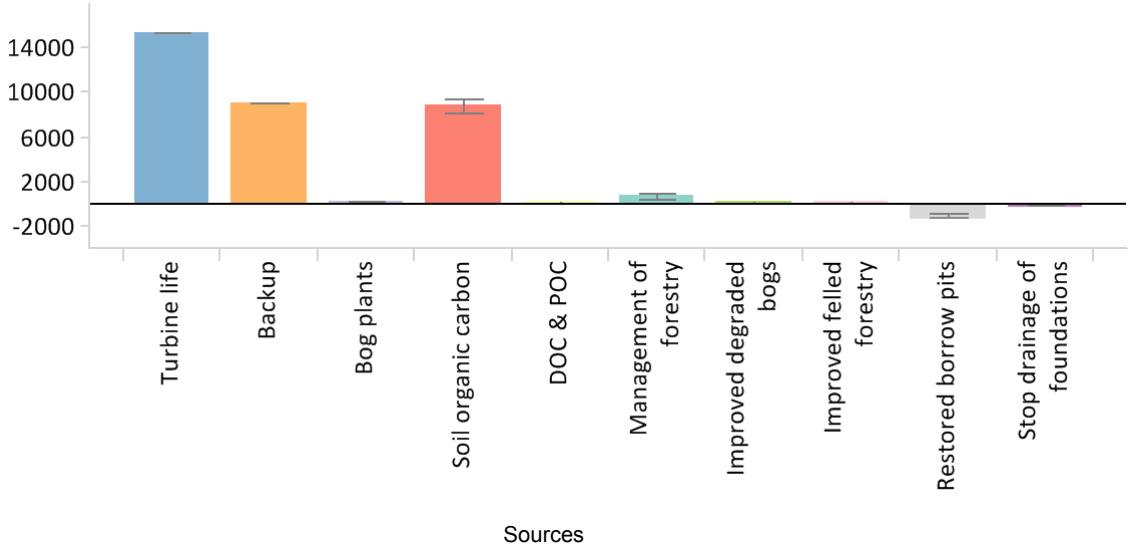
Payback Time

Payback Time - ChartsInput Data

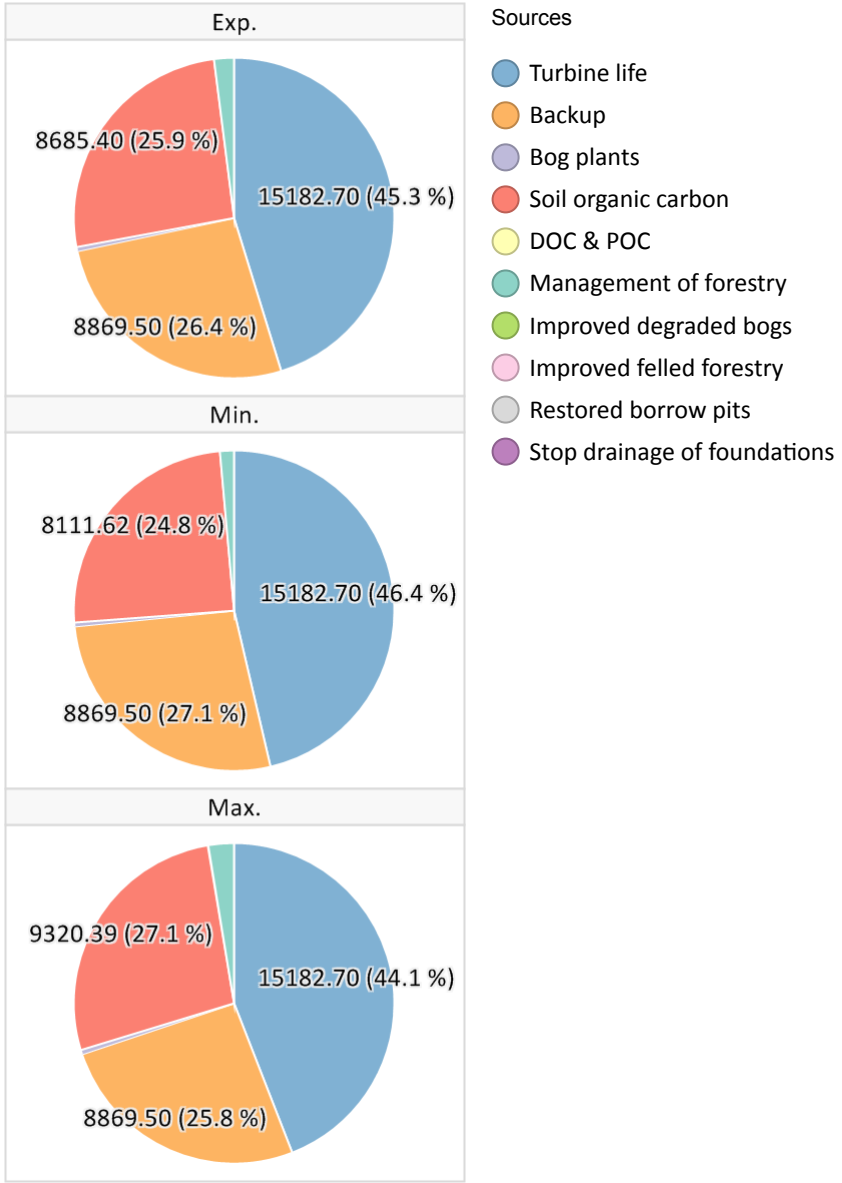
Carbon payback time (months) using fossil-fuel mix as conterfactual



Greenhouse gas emissions (t CO2 eq.)



Proportions of greenhouse gas emissions from different sources



INPUT DATA

Carbon Calculator v1.6.0

Lochluichart Wind Farm Extension II Location: 57.677747 -4.802494

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Core input data

Input data	Expected value	Minimum value	Maximum value	Source of data
Windfarm characteristics				
Dimensions				
No. of turbines	5	5	5	SI Report Chapter 3
Duration of consent (years)	25	25	25	SI Report Chapter 3
Performance				
Power rating of 1 turbine (MW)	3.6	3.6	3.6	SI Report Chapter 3
Capacity factor	34	33	35	SI Report Chapter 3
Backup				
Fraction of output to backup (%)	5	5	5	SI Report Chapter 3
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	PSRA Technical Appendix
Average annual air temperature at site (°C)	1	0.2	1.1	Calculated from climate averages for area.
Average depth of peat at site (m)	0.62	0.61	0.63	SI Report PRSA Technical Appendix
C Content of dry peat (% by weight)	50	49	51	Calculated from climate averages for area.
Average extent of drainage around drainage features at site (m)	3.1	3	3.2	Technical estimation - further refined after drainage installed.
Average water table depth at site (m)	0.17	0.16	0.18	Technical estimation - further refined after drainage installed.
Dry soil bulk density ($g\ cm^{-3}$)	0.24	0.23	0.25	Scottish Government Guidance - Guidance on Developments on Peatland - Site Surveys

Input data	Expected value	Minimum value	Maximum value	Source of data
Characteristics of bog plants				
Time required for regeneration of bog plants after restoration (years)	5	4	6	Technical estimation - further refined later.
Carbon accumulation due to C fixation by bog plants in undrained peats (tC ha^{-1} yr^{-1})	0.24	0.23	0.25	SNH Guidance -Carbon Payback Calculator: Guidelines on Measurements
Forestry Plantation Characteristics				
Area of forestry plantation to be felled (ha)	2.04	2.02	2.06	SI Report Chapter 11
Average rate of carbon sequestration in timber (tC ha^{-1} yr^{-1})	3.6	2.5	4.7	Scottish Government and SNH Guidance
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	2	2	2	EIA Report Borrow Pit Assessment Technical Appendix
Average length of pits (m)	124	124	124	EIA Repor Borrow Pit Assessment Technical Appendix
Average width of pits (m)	95	95	95	EIA Report Borrow Pit Assessment Technical Appendix
Average depth of peat removed from pit (m)	0.7	0.7	0.7	SI Report PSRA Technical Appendix.
Foundations and hard-standing area associated with each turbine				
Average length of turbine foundations (m)	23	23	23	SI Report Chapter 3
Average width of turbine foundations (m)	23	23	23	SI Report Chapter 3
Average depth of peat removed from turbine foundations(m)	0.5	0.5	0.5	SI Report PSRA Technical Appendix.
Average length of hard-standing (m)	50	50	50	SI Report Chapter 3
Average width of hard-standing (m)	20	20	20	SI Report Chapter 3
Average depth of peat removed from hard-standing (m)	0.6	0.6	0.6	SI Report PSRA Technical Appendix.
Volume of concrete used in construction of the ENTIRE windfarm				
Volume of concrete (m^3)	2222	2222	2222	SI Report Chapter 3
Access tracks				

Input data	Expected value	Minimum value	Maximum value	Source of data
Total length of access track (m)	7902	7900	7904	SI Report Chapter 3
Existing track length (m)	5065	5065	5065	SI Report Chapter 3
Length of access track that is floating road (m)	150	149	151	SI Report Chapter 3
Floating road width (m)	5.5	5.5	5.5	SI Report Chapter 3
Floating road depth (m)	0.5	0.4	0.6	SI Report Chapter 3
Length of floating road that is drained (m)	37.5	37.4	37.6	SI Report Chapter 3
Average depth of drains associated with floating roads (m)	0.5	0.5	0.5	SI Report Chapter 3
Length of access track that is excavated road (m)	0	0	0	Not applicable
Excavated road width (m)	5	5	5	Not applicable
Average depth of peat excavated for road (m)	0	0	0	Not applicable
Length of access track that is rock filled road (m)	2687	2686	2688	Not applicable
Rock filled road width (m)	5	5	5	Not applicable
Rock filled road depth (m)	0	0	0	Not applicable
Length of rock filled road that is drained (m)	0	0	0	Not applicable
Average depth of drains associated with rock filled roads (m)	0	0	0	Not applicable
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	Not applicable
Average depth of peat cut for cable trenches (m)	0	0	0	Not applicable
Additional peat excavated (not already accounted for above)				
Volume of additional peat excavated (m^3)	0	0	0	Not applicable
Area of additional peat excavated (m^2)	0	0	0	Not applicable
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	Not applicable
Water table depth in degraded bog before improvement (m)	0	0	0	Not applicable
Water table depth in degraded bog after improvement (m)	0	0	0	Not applicable

Input data	Expected value	Minimum value	Maximum value	Source of data
Time required for hydrology and habitat of bog to return to its previous state on improvement (years)	5	5	5	Technical estimation.
Period of time when effectiveness of the improvement in degraded bog can be guaranteed (years)	20	20	20	Technical estimation.
Improvement of felled plantation land				
Area of felled plantation to be improved (ha)	0	0	0	Not applicable.
Water table depth in felled area before improvement (m)	0	0	0	Not applicable.
Water table depth in felled area after improvement (m)	0	0	0	Not applicable.
Time required for hydrology and habitat of felled plantation to return to its previous state on improvement (years)	2	2	2	Not applicable.
Period of time when effectiveness of the improvement in felled plantation can be guaranteed (years)	20	20	20	Not applicable.
Restoration of peat removed from borrow pits				
Area of borrow pits to be restored (ha)	4.5	4.5	4.5	EIA Report Borrow Pit Assessment Technical Appendix
Depth of water table in borrow pit before restoration with respect to the restored surface (m)	2	1	3	Technical average used.
Depth of water table in borrow pit after restoration with respect to the restored surface (m)	0.1	0	0.11	Technical estimation - refined when restoration taken place.
Time required for hydrology and habitat of borrow pit to return to its previous state on restoration (years)	5	5	5	Technical average used.
Period of time when effectiveness of the restoration of peat removed from borrow pits can be guaranteed (years)	20	20	20	Technical average used.
Early removal of drainage from foundations and hardstanding				
Water table depth around foundations and hardstanding before restoration (m)	1	0.9	1.1	Technical estimation
Water table depth around foundations and hardstanding after restoration (m)	0.9	0.8	1	Technical estimation
Time to completion of backfilling, removal of any surface drains, and full restoration of the hydrology (years)	0.1	0.1	0.1	Technical estimation.
Restoration of site after decomissioning				
Will the hydrology of the site be restored on decommissioning?	Yes	Yes	Yes	

Input data	Expected value	Minimum value	Maximum value	Source of data
Will you attempt to block any gullies that have formed due to the windfarm?	Yes	Yes	Yes	Worst case scenario.
Will you attempt to block all artificial ditches and facilitate rewetting?	Yes	Yes	Yes	Worst case scenario
Will the habitat of the site be restored on decommissioning?	No	No	No	
Will you control grazing on degraded areas?	n/a	n/a	n/a	Not applicable to the Development.
Will you manage areas to favour reintroduction of species	No	No	No	Not applicable to the Development.
Methodology				
Choice of methodology for calculating emission factors	Site specific (required for planning applications)			

Forestry input data

N/A

Construction input data

N/A

Input data	Expected value	Minimum value	Maximum value	Source of data
Will you attempt to block any gullies that have formed due to the windfarm?	Yes	Yes	Yes	Worst case scenario.
Will you attempt to block all artificial ditches and facilitate rewetting?	Yes	Yes	Yes	Worst case scenario
Will the habitat of the site be restored on decommissioning?	No	No	No	
Will you control grazing on degraded areas?	n/a	n/a	n/a	Not applicable to the Development.
Will you manage areas to favour reintroduction of species	No	No	No	Not applicable to the Development.
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 (%)	34	33	35

	Exp.	**Min.**	**Max.**
Annual energy output from windfarm (MW/yr)			
RESULTS			
Emissions saving over coal-fired electricity generation (tCO_2/yr)	49,322	47,872	50,773
Emissions saving over grid-mix of electricity generation (tCO_2/yr)	13,595	13,195	13,995
Emissions saving over fossil fuel - mix of electricity generation (tCO_2/yr)	24,125	23,415	24,835

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 CO_2)	2896	2896	2896
Emissions due to cement used in construction (t CO_2)	702	702	702

RESULTS	**Exp.**	**Min.**	**Max.**
Losses due to turbine life (manufacture, construction, etc.) (t CO_2)	15183	15183	15183
Additional CO_2 payback time of windfarm due to turbine life			
...coal-fired electricity generation (months)	4	4	4
...grid-mix of electricity generation (months)	13	14	13
...fossil fuel - mix of electricity generation (months)	8	8	7

3 CO_2 LOSS DUE TO BACKUP

	Exp.	Min.	Max.
Reserve energy (MWh/yr)	7,884	7,884	7,884
Annual emissions due to backup from fossil fuel-mix of electricity generation (tCO_2/yr)	355	355	355
RESULTS			
Total emissions due to backup from fossil fuel-mix of electricity generation (tCO_2)	8,870	8,870	8,870

4 LOSS OF CO_2 FIXING POTENTIAL

	Exp.	**Min.**	**Max.**
Area where carbon accumulation by bog plants is lost (ha)	5.25	5.22	5.27
Total loss of carbon accumulation up to time of restoration (tCO_2 eq./ha)	26	24	28
RESULTS			
Total loss of carbon fixation by plants at the site (t CO_2)	139	128	150
Additional CO_2 payback time of windfarm due to loss of CO_2 fixing potential			
...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

5 LOSS OF SOIL CO_2

5. Loss of CO_2	**Exp.**	**Min.**	**Max.**
CO_2 loss from removed peat (t CO_2 equiv.)	8421.56	7874.66	9021.68
CO_2 loss from drained peat (t CO_2 equiv.)	263.84	236.97	298.71
RESULTS			
Total CO_2 loss from peat (removed + drained) (t CO_2 equiv.)	8685.4	8111.62	9320.39
Additional CO_2 payback time of windfarm due to loss of soil CO_2			
...coal-fired electricity generation (months)	2.11	2.03	2.2
...grid-mix of electricity generation (months)	7.67	7.38	7.99
...fossil fuel - mix of electricity generation (months)	4.32	4.16	4.5

5a. Volume of Peat Removed	**Exp.**	**Min.**	**Max.**
Peat removed from borrow pits			
Area of land lost in borrow pits (m^2)	23560	23560	23560
Volume of peat removed from borrow pits (m^3)	16492	16492	16492
Peat removed from turbine foundations			
Area of land lost in foundation (m^2)	2645	2645	2645
Volume of peat removed from foundation area (m^3)	1322.5	1322.5	1322.5
Peat removed from hard-standing			
Area of land lost in hard-standing (m^2)	5000	5000	5000
Volume of peat removed from hard-standing area (m^3)	3000	3000	3000
Peat removed from access tracks			
Area of land lost in floating roads (m^2)	825	819.5	830.5
Volume of peat removed from floating roads (m^3)	412.5	327.8	498.3
Area of land lost in excavated roads (m^2)	0	0	0
Volume of peat removed from excavated roads (m^3)	0	0	0
Area of land lost in rock-filled roads (m^2)	13435	13430	13440
Volume of peat removed from rock-filled roads (m^3)	0	0	0
Total area of land lost in access tracks (m^2)	14260	14249.5	14270.5
Total volume of peat removed due to access tracks (m^3)	412.5	327.8	498.3
RESULTS			
Total area of land lost due to windfarm construction (m^2)	45465	45454.5	45475.5
Total volume of peat removed due to windfarm construction (m^3)	21227	21142.3	21312.8

5b. CO_2 Loss from Removed Peat	**Exp.**	**Min.**	**Max.**
CO_2 loss from removed peat (t CO_2)	9339.96	8736.78	9963.82
CO_2 loss from undrained peat left in situ (t CO_2)	918.4	862.13	942.15
RESULTS			
CO_2 loss atributable to peat removal only (t CO_2)	8421.56	7874.66	9021.68

5c. Volume of Peat Drained	**Exp.**	**Min.**	**Max.**
Total area affected by drainage around borrow pits (m^2)	2792.48	2700	2885.12
Total volume affected by drainage around borrow pits (m^3)	977.37	945	1009.79
Peat affected by drainage around turbine foundation and hardstanding			
Total area affected by drainage of foundation and hardstanding area (m^2)	3788.2	3660	3916.8
Total volume affected by drainage of foundation and hardstanding area (m^3)	1136.46	1098	1175.04
Peat affected by drainage of access tracks			
Total area affected by drainage of access track(m^2)	438.75	430.1	447.44
Total volume affected by drainage of access track(m^3)	109.69	107.53	111.86
Peat affected by drainage of cable trenches			
Total area affected by drainage of cable trenches(m^2)	0	0	0
Total volume affected by drainage of cable trneches(m^3)	0	0	0
Drainage around additional peat excavated			
Total area affected by drainage (m^2)	0	0	0
Total volume affected by drainage (m^3)	0	0	0
RESULTS			
Total area affected by drainage due to windfarm (m^2)	7019.43	6790.1	7249.36
Total volume affected by drainage due to windfarm (m^3)	2223.52	2150.53	2296.69

5d. CO_2 Loss from Drained Peat	**Exp.**	**Min.**	**Max.**
Calculations of C Loss from Drained Land if Site is NOT Restored after Decomissioning			
Total GHG emissions from Drained Land (t CO_2 equiv.)	978.36	888.68	1073.71
Total GHG emissions from Undrained Land (t CO_2 equiv.)	714.52	651.71	775
Calculations of C Loss from Drained Land if Site IS Restored after Decomissioning			
Losses if Land is Drained			
CH4 emissions from drained land (t CO_2 equiv.)	-14.92	-15.66	-15.69
CO_2 emissions from drained land (t CO_2)	209.08	191.27	223.77
Total GHG emissions from Drained Land (t CO_2 equiv.)	978.36	888.68	1073.71
Losses if Land is Undrained			
CH4 emissions from undrained land (t CO_2 equiv.)	1.24	-2.64	4.28
CO_2 emissions from undrained land (t CO_2)	140.55	131.43	145.91
Total GHG emissions from Undrained Land (t CO_2 equiv.)	714.52	651.71	775
RESULTS			
Total GHG emissions due to drainage (t CO_2 equiv.)	263.84	236.97	298.71

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 CO_2/ha year)	35.2	35.2	35.2
Calculations following ECOSSE based methodology			
Total area affected by drainage due to wind farm construction (ha)	0.7	0.68	0.72
Average water table depth of drained land (m)	0.32	0.32	0.32
Selected emission characteristics following site specific methodology			
Rate of carbon dioxide emission in drained soil (t CO_2/ha year)	9.93	9.71	9.96
Rate of carbon dioxide emission in undrained soil (t CO_2/ha year)	3.26	3.48	2.85
Rate of methane emission in drained soil (t CH4-C/ha year)	-0.02	-0.03	-0.02
Rate of methane emission in undrained soil (t CH4-C/ha year)	0.03	0.02	0.04
RESULTS			
Selected rate of carbon dioxide emission in drained soil (t CO_2/ha year)	9.93	9.71	9.96
Selected rate of carbon dioxide emission in undrained soil (t CO_2/ha year)	3.26	3.48	2.85
Selected rate of methane emission in drained soil (t CH4-C/ha year)	-0.02	-0.03	-0.02
Selected rate of methane emission in undrained soil (t CH4-C/ha year)	0.03	0.02	0.04

6 CO_2 LOSS BY DOC AND POC LOSS

	Exp.	Min.	Max.
Gross CO_2 loss from restored drained land (t CO_2)	0	0	0
Gross CH4 loss from restored drained land (t CO_2 equiv.)	0	0	0
Gross CO2 loss from improved land (t CO_2)	0	0	0
Gross CH4 loss from improved land (t CO_2 equiv.)	113.49	93.58	471.64
Total gaseous loss of C (t C)	2.78	2.29	11.53
Total C loss as DOC (t C)	0.72	0.16	4.61
Total C loss as POC (t C)	0.22	0.09	1.15
RESULTS			
Total CO_2 loss due to DOC leaching (t CO_2)	2.65	0.59	16.92
Total CO_2 loss due to POC leaching (t CO_2)	0.81	0.34	4.23
Total CO_2 loss due to DOC & POC leaching (t CO2)	3.46	0.92	21.15
Additional CO_2 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

	Exp.	Min.	Max.
Area of forestry plantation to be felled (ha)	2.04	2.02	2.06
Carbon sequestered (t C ha-1 yr-1)	3.6	2.5	4.7
Lifetime of windfarm (years)	25	25	25
Carbon sequestered over the lifetime of the windfarm (t C ha-1)	90	62.5	117.5
RESULTS			
Total carbon loss due to felling of forestry (t CO_2)	673.21	462.92	887.52
Additional CO_2 payback time of windfarm due to management of forestry			
...coal-fired electricity generation (months)	0.16	0.12	0.21
...grid-mix of electricity generation (months)	0.59	0.42	0.76
...fossil fuel - mix of electricity generation (months)	0.33	0.24	0.43

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	0	0
Depth of peat above water table after improvement (m)	0	0	0
2. Losses with improvement			
Improved period (years)	15	15	15
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	0.467	0.464	0.467
CH4 emissions from improved land (t CO_2 equiv.)	0	0	0
Selected annual rate of carbone dioxide emissions (t CO_2 ha-1 yr-1)	-1.859	-2.072	-1.832
CO_2 emissions from improved land (t CO_2 equiv.)	0	0	0
Total GHG emissions from improved land (t CO_2 eqiv.)	0	0	0
3. Losses without improvement			
Improved period (years)	15	15	15
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	0.467	0.464	0.467
CH4 emissions from improved land (t CO_2 equiv.)	0	0	0
Selected annual rate of carbone dioxide emissions (t CO_2 ha-1 yr-1)	-1.859	-2.072	-1.832
CO_2 emissions from unimproved land (t CO_2 equiv.)	0	0	0
Total GHG emissions from unimproved land (t CO_2 eqiv.)	0	0	0
RESULTS			
4. Reduction in GHG emissions due to improvement of site			
Reduction in GHG emissions due to improvement (t CO_2 equiv.)	0	0	0

Felled Forestry	**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)	18	18	18
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	0.467	0.464	0.467
CH4 emissions from improved land (t CO_2 equiv.)	0	0	0
Selected annual rate of carbone dioxide emissions (t CO_2 ha-1 yr-1)	-1.859	-2.072	-1.832
CO_2 emissions from improved land (t CO_2 equiv.)	0	0	0
Total GHG emissions from improved land (t CO_2 eqiv.)	0	0	0
3. Losses without improvement			
Improved period (years)	18	18	18
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	0.467	0.464	0.467
CH4 emissions from improved land (t CO_2 equiv.)	0	0	0
Selected annual rate of carbone dioxide emissions (t CO_2 ha-1 yr-1)	-1.859	-2.072	-1.832
CO_2 emissions from unimproved land (t CO_2 equiv.)	0	0	0
Total GHG emissions from unimproved land (t CO_2 eqiv.)	0	0	0
RESULTS			
4. Reduction in GHG emissions due to improvement of site			
Reduction in GHG emissions due to improvement (t CO_2 equiv.)	0	0	0

Borrow Pits	**Exp.**	**Min.**	**Max.**
1. Description of site			
Area to be improved (ha)	4.5	4.5	4.5
Depth of peat above water table before improvement (m)	0.7	0.7	0.7
Depth of peat above water table after improvement (m)	0.1	0.11	0
2. Losses with improvement			
Improved period (years)	15	15	15
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	0.112	0.093	0.467
CH4 emissions from improved land (t CO_2 equiv.)	113.488	93.579	471.641
Selected annual rate of carbone dioxide emissions (t CO_2 ha-1 yr-1)	0.527	0.659	-1.832
CO_2 emissions from improved land (t CO_2 equiv.)	18.231	22.784	-63.369
Total GHG emissions from improved land (t CO2 eqiv.)	131.719	116.363	408.272
3. Losses without improvement			
Improved period (years)	15	15	15
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	-0.033	-0.036	-0.033
CH4 emissions from improved land (t CO_2 equiv.)	0	0	0
Selected annual rate of carbone dioxide emissions (t CO_2 ha-1 yr-1)	19.722	19.509	19.748
CO_2 emissions from unimproved land (t CO_2 equiv.)	1331.222	1316.859	1333.017
Total GHG emissions from unimproved land (t CO_2 eqiv.)	1331.222	1316.859	1333.017
RESULTS			
4. Reduction in GHG emissions due to improvement of site			
Reduction in GHG emissions due to improvement (t CO_2 equiv.)	1199.503	1200.495	924.745

Foundations and Hardstandings	**Exp.**	**Min.**	**Max.**
1. Description of site			
Area to be improved (ha)	0.379	0	0.392
Depth of peat above water table before improvement (m)	0.62	0.61	0.63
Depth of peat above water table after improvement (m)	0.62	0.61	0.63
2. Losses with improvement			
Improved period (years)	24.9	24.9	24.9
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	-0.033	-0.036	-0.033
CH4 emissions from improved land (t CO_2 equiv.)	-4.642	0	-4.752
Selected annual rate of carbone dioxide emissions (t CO_2 ha-1 yr-1)	18.687	18.317	18.864
CO_2 emissions from improved land (t CO_2 equiv.)	90.307	0	94.258
Total GHG emissions from improved land (t CO_2 eqiv.)	85.665	0	89.507
3. Losses without improvement			
Improved period (years)	24.9	24.9	24.9
Selected annual rate of methane emissions (t CH4-C ha-1 yr-1)	-0.033	-0.036	-0.033
CH4 emissions from improved land (t CO_2 equiv.)	0	0	0
Selected annual rate of carbone dioxide emissions (t CO_2 ha-1 yr-1)	18.687	18.317	18.864
CO_2 emissions from unimproved land (t CO_2 equiv.)	176.267	0	183.98
Total GHG emissions from unimproved land (t CO_2 eqiv.)	176.267	0	183.98
RESULTS			
4. Reduction in GHG emissions due to improvement of site			
Reduction in GHG emissions due to improvement (t CO_2 equiv.)	90.602	0	94.474