

Balmeanach Wind Farm SEI - Volume 4
SEI TA15.1 - Carbon Calculator Outputs

	Exp.	Min.	Max.
1. Windfarm CO₂ emission saving over...			
...coal-fired electricity generation (tCO ₂ yr ⁻¹)	142153	140812	150870
...grid-mix of electricity generation (tCO ₂ yr ⁻¹)	31138	30845	33048
...fossil fuel - mix of electricity generation (tCO ₂ yr ⁻¹)	63781	63179	67692
Energy output from windfarm over lifetime (MWh)	6017069	5960304	6386040
Total CO₂ losses due to wind farm (t CO₂ eq.)			
2. Losses due to turbine life (eg. manufacture, construction, decomissioning)	36619	36619	36619
3. Losses due to backup	30085	30085	30085
4. Losses due to reduced carbon fixing potential	1866	568	10029
5. Losses from soil organic matter	34534	10313	116586
6. Losses due to DOC & POC leaching	129	0	1220
7. Losses due to felling forestry	41056	38775	43337
Total losses of carbon dioxide	144290	116361	237876
8. Total CO₂ gains due to improvement of site (t CO₂ eq.)			
8a. Change in emissions due to improvement of degraded bogs	-11945	0	-64194
8b. Change in emissions due to improvement of felled forestry	-3045	0	-16364
8c. Change in emissions due to restoration of peat from borrow pits	0	0	-216
8d. Change in emissions due to removal of drainage from foundations & hardstanding	-922	0	-12411
Total change in emissions due to improvements	-15911	0	-93185

RESULTS	Exp.	Min.	Max.
Net emissions of carbon dioxide (t CO₂ eq.)	128379	23176	237876
Carbon Payback Time			
...coal-fired electricity generation (years)	0.9	0.15	1.7
...grid-mix of electricity generation (years)	4.1	0.7	7.7
...fossil fuel - mix of electricity generation (years)	2.0	0.34	3.8
Ratio of soil carbon loss to gain by restoration (TARGET ratio (Natural Resources Wales) < 1.0)	No gains! No gains! No gains!		
Ratio of CO₂ eq. emissions to power generation (g / kWh) (TARGET ratio by 2030 (electricity generation) < 50 g /kWh)	21	4	40

