



APPENDIX 10-1

Carbon Calculations

Total (Tonnes)	Years 1954 - 2020	Average annual production
3,903,076	66	59,138

Specific Volumes

YEAR	Tonnes	Carbon from extraction tC/yr	Carbon from extraction tCO2/yr	Extraction Area (ha)	Carbon from bare peat surface tC/yr	Carbon from bare peat surface tCO2/yr	Total Length of Drains	Total area of Drains (ha)	Carbon from open drains tCO2/yr	Carbon from Surfacewater run off (POC and DOC) tCO2/yr	Direct CH4 from surface tCO2 eq/yr	N2O Direct from surface tCO2eq/yr	Fuel Usage tCO2eq/yr	Total tCO2/yr	Total tCO2
1954	4,474	1,013	3,717	540	948	3,478	239	23.9	16.2	3,316	108	205.2	38.2	10,878	
1955	15,447	3,497	12,834	540	948	3,478	239	23.9	16.2	3,316	108	205.2	131.8	20,088	
1956	15,447	3,497	12,834	540	948	3,478	239	23.9	16.2	3,316	108	205.2	131.8	20,088	
1957	15,447	3,497	12,834	540	948	3,478	239	23.9	16.2	3,316	108	205.2	131.8	20,088	
1958	15,447	3,497	12,834	540	948	3,478	239	23.9	16.2	3,316	108	205.2	131.8	20,088	
1959	34,280	7,760	28,480	1046	1,835	6,736	462	46.2	31.4	6,422	209.2	397.5	292.4	42,570	
1960	48,052	10,878	39,922	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	409.9	59,075	
1961	48,052	10,878	39,922	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	409.9	59,075	
1962	48,052	10,878	39,922	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	409.9	59,075	
1963	44,934	10,172	37,332	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	383.3	56,458	
1964	51,973	11,766	43,180	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	443.3	62,366	
1965	50,018	11,323	41,556	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	426.7	60,725	
1966	44,414	10,054	36,900	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	378.9	56,022	
1967	40,907	9,261	33,986	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	348.9	53,078	
1968	55,157	12,486	45,825	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	470.5	65,039	
1969	49,370	11,176	41,017	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	421.1	60,182	
1970	44,416	10,055	36,901	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	378.9	56,023	
1971	55,685	12,606	46,264	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	475.0	65,482	
1972	51,933	11,757	43,147	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	443.0	62,333	
1973	39,763	9,002	33,036	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	339.2	52,118	
1974	43,116	9,761	35,821	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	367.8	54,932	
1975	45,869	10,384	38,109	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	391.3	57,443	
1976	58,293	13,196	48,431	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	497.2	67,671	
1977	44,980	10,183	37,370	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	383.7	56,497	
1978	61,526	13,928	51,117	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	524.8	70,385	
1979	62,698	14,194	52,090	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	534.8	71,368	
1980	49,815	11,277	41,387	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	424.9	60,555	
1981	58,698	13,333	48,913	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	502.4	68,179	
1982	45,855	10,381	38,097	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	391.1	57,231	
1983	58,496	13,242	48,599	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	499.0	67,841	
1984	35,044	7,933	29,115	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	298.9	48,157	
1985	89,356	20,228	74,238	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	762.2	93,744	
1986	56,585	12,810	47,012	1421	2,494	9,151	628	62.8	42.7	8,725	284.2	540.0	482.7	66,237	
1987	56,585	12,810	47,012	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	482.7	69,311	
1988	56,585	12,810	47,012	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	482.7	69,311	
1989	56,585	12,810	47,012	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	482.7	69,311	
1990	90,583	20,506	75,258	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	772.7	97,847	
1991	86,190	19,512	71,608	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	735.2	94,160	
1992	92,744	20,995	77,053	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	791.1	99,660	
1993	104,742	23,711	87,021	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	893.4	109,731	
1994	110,074	24,919	91,451	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	938.9	114,206	
1995	104,384	23,630	86,724	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	890.4	109,430	
1996	111,260	25,187	92,437	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	949.1	115,202	
1997	97,800	22,140	81,254	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	834.2	103,904	
1998	102,495	23,203	85,154	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	874.3	107,845	
1999	86,749	19,638	72,073	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	740.0	94,629	
2000	98,702	22,344	82,003	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	841.9	104,661	
2001	98,702	22,344	82,003	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	841.9	104,661	
2002	28,640	6,484	23,795	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	244.3	45,855	
2003	59,737	13,523	49,630	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	509.6	71,956	
2004	48,956	11,083	40,673	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	417.6	62,907	
2005	59,251	13,413	49,227	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	505.4	71,548	
2006	68,069	15,409	56,553	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	580.6	78,950	
2007	47,637	10,784	39,578	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	406.3	61,800	
2008	51,829	11,753	43,060	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	442.1	65,319	
2009	27,721	6,275	23,031	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	236.5	45,084	
2010	81,062	18,351	67,347	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	691.5	89,855	
2011	64,951	14,704	53,962	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	554.0	76,333	
2012	17,095	3,870	14,203	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	145.8	36,165	
2013	108,605	24,586	90,231	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	926.4	112,973	
2014	77,968	17,650	64,777	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	665.1	87,258	
2015	62,267	14,096	51,732	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	531.1	74,080	
2016	39,730	8,994	33,008	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	338.9	55,164	
2017	51,844	11,736	43,073	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	442.2	65,331	
2018	89,839	20,338	74,640	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	766.3	97,222	
2019	42,115	9,534	34,990	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	359.2	57,165	
2020	37,782	8,553	31,390	1654	2,902	10,652	731	73.1	49.7	10,156	330.8	628.5	322.3	53,528	

1,870,202 1954 to 1987

2,703,053 1988 to 2020

Total Carbon	3,242,733	633,368	2956.0	603,863	19,670	37,373	33,293	4,573,255 1954 to 2020
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Extraction Area estimate	
Ballivor	540 Ha
Bracklyn	506 Ha
Lislogher east	375 Ha
Carranstown	233 Ha

Notes:

- 1954 to 1962 is a pro rata calc based on an estimate of the production area on the three bogs , the year the bog came into production and the average tonnage over the 1962 to 1971 period
- Average moisture content of 53.8% and carbon content of 49%
- Assume once brought into production that carbon emits from the surface for the entire period (i.e even if production ceases and revegetation occurs)
- 540 km of drains for Ballivor, carranstown and Bracklyn - assume ratio is 0.422km per ha of production area 0.442
- Assume drains are 1m wide
- Combining the values for DOC and POC (= 6.14 tCO2-eq ha-1 yr-1) 6.14
- CH4 from surface eq 0.2 tCO2eq/yr
- N2O Direct emissions from surface 0.38 tCO2eq/yr
- Average Production during 2009 to 2020 was 58,415 tonnes. Average fuels usage was 121,701 ag diesel and 64,161 deriv - this resulted in an average of 498.8 tCO2/yr

Ratio of 0.00853 tCO2/ton of peat