

Annex A - Combined approach under the 'common stack' definition

A.1 National Plan Emission Bubbles

This section contains the National Plan data for the UK for a 'Combined Approach' under the 'common stack' definition.

Table A.1a presents a profile of existing LCPs in the UK which were operational in 2000. This includes plant identification, plant capacity, thermal input, operating time and emissions data.

Table A.1b presents the detailed fuel consumption data for these plants.

The input data for these tables is based on a detailed survey of individual operating companies and a data verification exercise.

These two tables replace the equivalent tables in the National Plan published in February 2007.

Table A.2 contains the calculated waste gas flow rates for each LCP, as well as the Emission Limit Values (ELVs) for each relevant pollutant and compliance period. The ELVs for existing plants are stated in Part A of Annexes III to VII of the LCPD, together with specific provisions in relevant Articles.

This table replaces the equivalent table in the National Plan published in February 2007.

Table A.3 contains the calculated emission bubbles for each relevant pollutant and compliance period for each LCP. These are calculated by multiplying the ELVs by the calculated waste gas flow rate. The total emission bubbles for the UK are also given in this table.

This table replaces the equivalent table in the National Plan published in February 2007.

Please note that due to the changes in the number of LCPs within the national plan (e.g. due to plant closures, corrections under the common stack definition, etc) some of the previous Plant Reference numbers from the earlier February 2007 (and February 2006) national plan(s) have changed. The table below provides a quick reference to these changes.

Table A.0 Comparison of Plant Reference numbers in February 2006, February 2007 and July 2007 National Emission Reduction Plans

	Jul 07	Feb 07	Feb 06	Jul 07	Feb 07	Feb 06	Jul 07	Feb 07	Feb 06
1		1	1	34	27	29	66	59	62
2		2	2	35	28	30	67	60	63
3		3	3	36	29	31	Not 'existing' plant	61	64
4		4	4	37	30	32	68	62	65
5		5	5	38	31	33	69	63	66
6		6	6	39	32	34	70	64	67
7		7	7	40	33	35	71	65	68
8		8	8	41	34	36	72	66	69
9		9	9	42	35	37	73	67	70
10		10	10	43	36	38	74	68	71
11		11	11	44	37	40	75	69	72
12		12	12	45	38	41	76	70	73
13		13	13	46	39	42	77	71	75
14 (multiple LCPs)		14	14	47	40	43	78	72	76
15 (" ")		14		48	41	44	79	73	77
16 (" ")		14		49	42	45	80	74	78
17 (" ")		14		50	43	46	81	75	79
18 (" ")		14		51	44	47	82	76	80
19 (" ")		14		52	45	48	83	77	81
20 (" ")		14		53	46	49	Not 'existing' plant	78	83
21 (" ")		14		54	47	50	84	79	84
22		15	15	55	48	51	85	80	86
23		16	16	56	49	52	86	81	87

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24	17	17	57	50	53	87	82	88
25	18	18-20	58	51	54	88	83	89
26	19	21	59	52	55	89	84	90
27	20	22	60	53	56	90	85	91
28	21	23	61	54	57	91	86	92
29	22	24	Removed	55	58	92	87	93
30	23	25	62 (multiple LCPs)	56	59	93	88	94
31	24	26	63 (“ “)	56	59	94	89	95
32	25	27	64	57	60	Removed	90	97
33	26	28	65	58	61	95	91	98

Note: Not 'existing' refers to a clarification of the date the LCP was granted a licence – i.e. after 1987. Any gaps in numbering between the February 2007 and February 2006 NERPs are due to LCPs being removed or reclassified under the Limited Life Derogation or ELV approaches.

Table A.1a Profile of existing large combustion plants in the UK's National Plan in operation in the year 2000

Sector	Country	Operating Company	Site (notes 1)	Plant Reference for Table A.1b only	Annual av capacity - 1996 to 2000 (MWth)	Annual av thermal input from fuels - 1996 to 2000 (GJ)	Annual av operating time – 1996 to 2000 (hours)	Annual emissions of SO ₂ in 2001 (tpa)	Annual emissions of NO _x in 2001 (tpa)	Annual emissions of dust in 2001 (tpa)
EGI	England	Drax Power Ltd	Drax Power Station, Selby	1	>500	226,989,284	>2000	45,700	58,500	181
EGI	England	British Energy	Eggborough Power Station, Goole	2	>500	72,584,297	>2000	57,532	18,653	2,967
EGI	Scotland	Scottish and Southern Energy	Peterhead Power Station, Peterhead	3	>500	70,305,534	NR	1,244	1,010	0
EGI	Scotland	Scottish Power plc	Longannet Power Station, Kincardine of Forth	4	>500	99,732,156	>2000	65,460	22,530	1,494
Pet Ref	England	Petroplus Refining (formerly BP Oil Ltd)	Coryton Refinery, Essex, Boiler 4/5	5	171	4,059,006	NR	729	390	71
Pet Ref	England	Petroplus Refining (formerly BP Oil Ltd)	Coryton Refinery,Boiler 6, Essex	6	110	2,159,122	NR	67	178	35
Pet Ref	England	Petroplus Refining (formerly BP Oil Ltd)	Coryton Refinery,Fuels Stack, Essex	7	195	4,973,937	NR	681	319	0
Pet Ref	England	Petroplus Refining (formerly BP Oil Ltd)	Coryton, Cracking Stack, Essex	8	146	2,613,631	NR	201	159	0
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 1 (ST101)	9	102	2,600,383	NR	131	283	0
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 2 (ST301)	10	492	6,931,759	NR	21	612	0
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 3 (ST201)	11	155	3,312,459	NR	10	287	0
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 4 (ST3401)	12	50	98,407	NR	0	7	0
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 5 (H6301/2/3/4/5)	13	129	2,102,307	NR	6	130	0

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Sector	Country	Operating Company	Site (notes 1)	Plant Reference for Table A.1b only	Annual av capacity - 1996 to 2000 (MWth)	Annual av thermal input from fuels - 1996 to 2000 (GJ)	Annual av operating time – 1996 to 2000 (hours)	Annual emissions of SO ₂ in 2001 (tpa)	Annual emissions of NO _x in 2001 (tpa)	Annual emissions of dust in 2001 (tpa)
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (SP4)	14	378	15,074,526	NR	8,299	3,401	200
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PS/PV3)	15	164	4,910,272	NR	1,426	396	20
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PH-1)	16	83	1,841,409	NR	284	139	3
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PH-2)	17	165	3,251,286	NR	184	84	2
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (ENSR)	18	69	1,290,642	NR	141	47	1
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PS-2)	19	69	1,773,099	NR	647	78	11
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PS/PV-1)	20	62	1,421,815	NR	293	71	2
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (GTG WHB)	21	86	1,395,731	NR	107	152	2
Pet Ref	England	Total Lindsey Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme, (A1) South Stack	22	172	4,632,232	NR	1,187	586	53
Pet Ref	England	Total Lindsey Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme, (A2) North Stack	23	158	3,061,785	NR	25	183	0
Pet Ref	England	Total Lindsey Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme, (A3) Stage 3/4	24	211	4,301,937	NR	1,099	488	0
Pet Ref	England	Total Lindsey Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme, (A4,5&6) West A,B,C	25	315	6,486,052	NR	716	283	30
Pet Ref	England	Total Lindsey Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme (A8) GT	26	220	3,957,470	NR	6	140	0

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Sector	Country	Operating Company	Site (notes 1)	Plant Reference for Table A.1b only	Annual av capacity - 1996 to 2000 (MWth)	Annual av thermal input from fuels - 1996 to 2000 (GJ)	Annual av operating time – 1996 to 2000 (hours)	Annual emissions of SO ₂ in 2001 (tpa)	Annual emissions of NO _x in 2001 (tpa)	Annual emissions of dust in 2001 (tpa)
Pet Ref	England	Petroplus Refining UK Ltd	Petroplus.Oil Unit Furnace, North Tees Works, Middlebrough	27	87	2,316,479	NR	279	267	9
Pet Ref	England	ConocoPhillips	Seal Sands, Middlesbrough	28	208	3,125,528	NR	5	167	0
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 1 (Crude Distiller 3)	29	98	2,285,174	NR	560	244	65
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 2 (Crude Distiller 4)	30	220	5,240,990	NR	756	483	118
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 3 (HP Boiler House)	31	625	13,457,569	NR	4,753	1,325	251
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 4 Secondary Processes (Aromatics, HIV, HDS2)	32	142	3,858,046	NR	758	423	103
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 6 (Platformer 3/HDT3 Stack)	33	106	2,643,809	NR	7	293	0
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 6 (SHOP)	34	64	1,368,228	NR	28	161	0
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (2CDU/2DHT)	35	87	2,241,930	NR	305	224	19
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (3CDU/3DHT)	36	130	3,109,849	NR	682	328	37
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (2VDU/Hydrocracker)	37	160	3,467,208	NR	408	249	26
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (Cat Reformer Main Heaters)	38	107	2,227,294	NR	283	154	17
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (Boilers 9&10)	39	242	4,843,302	NR	818	375	43

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Sector	Country	Operating Company	Site (notes 1)	Plant Reference for Table A.1b only	Annual av capacity - 1996 to 2000 (MWth)	Annual av thermal input from fuels - 1996 to 2000 (GJ)	Annual av operating time – 1996 to 2000 (hours)	Annual emissions of SO ₂ in 2001 (tpa)	Annual emissions of NO _x in 2001 (tpa)	Annual emissions of dust in 2001 (tpa)
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (Boilers 11,12&13)	40	363	9,977,459	NR	1,275	591	67
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (Boilers 14&15)	41	396	6,648,066	NR	994	466	53
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (G4 Ethylene WF4A&B)	42	117	1,690,473	NR	7	97	6
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (G4 Ethylene WF5)	43	67	638,685	NR	0	37	2
Pet Ref	Wales	Total Fina Elf	Milford Haven Refinery 1 (Duct A)	44	97	2,891,116	NR	22	118	13
Pet Ref	Wales	Total Fina Elf	Milford Haven Refinery 2 (Duct B, C and D)	45	332	7,130,992	NR	993	732	155
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke (A1/A2)	48	271	3,605,607	NR	650	521	75
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke (A3/A4)	49	188	3,540,858	NR	272	416	30
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke (A6)	50	84	2,338,658	NR	2	123	59
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke (A7/A8/A9/A10)	51	288	7,497,822	NR	8	399	62
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke, (A11/A12)	52	167	3,862,623	NR	5	154	5
Iron & Steel	England	Corus UK Ltd	Teesside Works, Redcar	53	>500	12,524,848	>2000	908	404	0
Iron & Steel	England	Corus UK Ltd	Scunthorpe Works 1 (Central Power Station)	54	265	7,506,909	NR	742	184	45

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Sector	Country	Operating Company	Site (notes 1)	Plant Reference for Table A.1b only	Annual av capacity - 1996 to 2000 (MWth)	Annual av thermal input from fuels - 1996 to 2000 (GJ)	Annual av operating time – 1996 to 2000 (hours)	Annual emissions of SO ₂ in 2001 (tpa)	Annual emissions of NO _x in 2001 (tpa)	Annual emissions of dust in 2001 (tpa)
Iron & Steel	England	Corus UK Ltd	Scunthorpe Works 2 (Turbo Blower House - Boilers 1-4)	55	156	3,930,589	NR	73	29	17
Iron & Steel	England	Corus UK Ltd	Scunthorpe Works 3 (Turbo Blower House - Boilers 5-6)	56	108	2,721,177	NR	48	19	11
Iron & Steel	Wales	Corus UK Ltd	Port Talbot Works 1 (Service Boilers)	58	114	2,086,727	NR	182	74	10
Iron & Steel	Wales	Corus UK Ltd	Port Talbot Works 2 (Mitchell Boiler)	59	81	1,587,710	NR	86	56	3
Iron & Steel	Wales	Corus UK Ltd	Port Talbot Works 3 (A5 Boiler)	60	50	730,776	NR	41	28	14
Iron & Steel	Wales	Corus UK Ltd	Port Talbot Works 4 (6&7 Boiler)	61	268	7,722,319	NR	525	300	18
Other	England	Humber Energy	Grimsby, Chimney 1	62	96	2,256,740	NR	225	90	0
Other	England	Humber Energy	Grimsby, Chimney 2	63	120	3,086,160	NR	275	110	0
Other	England	BASF plc	Seal Sands, Middlesbrough 1	64	130	759,625	NR	163	656	26
Other	England	BASF plc	Seal Sands, Middlesbrough 2	65	130	1,302,530	NR	0	536	22
Other	England	BASF plc	Seal Sands, Middlesbrough 3	66	130	1,215,989	NR	0	459	18
Other	England	Coors Brewers	Bass Burton C Brewery, Burton-on-Trent	67	92	490,136	NR	12	51	10
Other	England	BP Chemicals	Saltend, Hull	68	96	1,064,127	NR	1	28	1
Other	England	British Sugar plc	Wissington, Stoke Ferry	69	136	1,287,522	NR	0	1	0

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Sector	Country	Operating Company	Site (notes 1)	Plant Reference for Table A.1b only	Annual av capacity - 1996 to 2000 (MWth)	Annual av thermal input from fuels - 1996 to 2000 (GJ)	Annual av operating time – 1996 to 2000 (hours)	Annual emissions of SO ₂ in 2001 (tpa)	Annual emissions of NO _x in 2001 (tpa)	Annual emissions of dust in 2001 (tpa)
Other	England	British Sugar plc	York Factory	70	100	970,318	NR	0	133	0
Other	England	British Sugar plc	Bury St Edmunds, Plant 1	71	56	594,120	NR	0	0	0
Other	England	British Sugar plc	Bury St Edmunds, Plant 2	72	56	581,287	NR	0	0	0
Other	England	British Sugar plc	Newark Sugar factory	73	83	921,390	NR	1	118	0
Other	England	SembCorp Utilities	Wilton	74	>500	17,186,841	>2000	7,322	6,026	282
Other	England	Enviroenergy Ltd	Nottingham	75	50	375,341	NR	0	9	0
Other	England	Ford Motor Co Ltd	Main Site, Dagenham	76	307	2,026,640	NR	5	93	10
Other	England	Sabic UK Petrochemicals Holdings Ltd	No 1 Aromatics, North Tees, Middlesbrough	77	298	6,050,207	NR	3,502	854	84
Other	England	Sabic UK Petrochemicals Holdings Ltd	No 2 Aromatics, North Tees, Middlesbrough	78	167	4,010,241	NR	3,901	422	37
Other	England	Sabic UK Petrochemicals Holdings Ltd	Olefins Boilers, Wilton, Middlesbrough	79	194	2,484,964	NR	1	204	0
Other	England	Huntsman Tioxide Europe Ltd	Greatham Works, Hartlepoll	80	81	1,054,441	NR	9	98	5
Other	England	Ineos Chlor Ltd	Weston Point Power Station, Runcorn	81	403	5,477,556	NR	29	585	0
Other	England	Ineos Silicas Ltd	South Bank Works, Warrington	82	98	591,965	NR	0	11	0

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Sector	Country	Operating Company	Site (notes 1)	Plant Reference for Table A.1b only	Annual av capacity - 1996 to 2000 (MWth)	Annual av thermal input from fuels - 1996 to 2000 (GJ)	Annual av operating time – 1996 to 2000 (hours)	Annual emissions of SO ₂ in 2001 (tpa)	Annual emissions of NO _x in 2001 (tpa)	Annual emissions of dust in 2001 (tpa)
Other	England	Kodak Ltd	Harrow 1 (Boilers 1, 3 & 4)	83	101	874,428	NR	0	102	0
Other	England	Scottish & Newcastle UK Ltd	Berkshire Brewery, Reading	84	72	590,242	NR	34	48	10
Other	England	Solvay Interox Ltd	Warrington	85	70	748,034	NR	8	44	1
Other	England	St Regis Paper Co Ltd	Central Power Services, Darwen	86	60	744,578	NR	1	48	1
Other	England	St Regis Paper Co Ltd	Wansbrough Paper Mill, Watchet	87	74	1,155,651	NR	14	32	14
Other	Scotland	Allied Distillers Ltd	Strathclyde Distillery, Glasgow	88	76	656,863	NR	8	35	1
Other	Scotland	UPM-Kymmene	Irvine	89	96	1,165,679	NR	578	159	3
Other	Scotland	Ciba Speciality Chemicals	Paisley	90	62	696,502	NR	0	46	1
Other	Scotland	Michelin Tyre plc	Dundee	91	58	534,595	NR	8	40	1
Other	Scotland	Polimeri Europa	Grangemouth	92	83	796,261	NR	37	44	1
Other	Scotland	International Paper UK Ltd	Inverurie Mills, Inverurie, Aberdeenshire	93	118	1,350,713	NR	0	50	0
Other	Wales	Shotton Paper Company plc	Shotton, Deeside	94	126	1,309,048	NR	134	275	45
Other	Northern Ireland	Invista Textiles (UK) Ltd	Maydown Works, Londonderry	95	80	1,745,493	NR	743	286	15
TOTAL								220,132	130,354	7,013

Notes for Table A.1a and A.1b

1. NR - Not Required.

Table A.1b Fuel consumption data (Annual average consumption, 1996 to 2000, tpa)

Plant Reference for Tables A.1b only (refer above)	Coal	Oil	Natural Gas	Refinery Fuel Gas	Blast Furnace Gas	Coke Oven Gas	Other Gas	Site Produced Liquid Fuel	Other Solids
1	9,398,870	35,885	0	0	0	0	0	0	0
2	2,902,854	36,508	0	0	0	0	0	0	0
3	0	24,595	2,038,596	0	0	0	0	0	0
4	4,125,215	29,873	130,832	0	0	0	0	0	0
5	0	47,003	0	45,879	0	0	0	0	0
6	0	23,273	0	27,134	0	0	0	0	0
7	0	0	2,546	121,667	0	0	0	0	0
8	0	0	0	73,821	0	0	0	0	0
9	0	0	0	53,130	0	0	3,090	0	0
10	0	0	0	148,116	0	0	0	0	0
11	0	0	0	70,816	0	0	0	0	0
12	0	0	0	2,103	0	0	0	0	0
13	0	0	0	44,926	0	0	0	0	0
14	0	0	0	127,419	0	0	0	230,917	0
15	0	0	0	97,283	0	0	0	13,365	0
16	0	0	0	41,002	0	0	0	0	0
17	0	0	0	72,396	0	0	0	0	0
18	0	0	0	28,738	0	0	0	0	0

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Plant Reference for Tables A.1b only (refer above)	Coal	Oil	Natural Gas	Refinery Fuel Gas	Blast Furnace Gas	Coke Oven Gas	Other Gas	Site Produced Liquid Fuel	Other Solids
19	0	0	0	28,460	0	0	0	12,221	0
20	0	0	0	31,659	0	0	0	0	0
21	0	0	0	31,078	0	0	0	0	0
22	0	0	0	66,284	0	0	0	40,876	0
23	0	0	0	68,177	0	0	0	0	0
24	0	0	0	69,710	0	0	0	28,922	0
25	0	0	0	74,651	0	0	0	77,371	0
26	0	0	86,531	17,203	0	0	0	0	0
27	0	0	0	13,758	0	0	0	41,941	0
28	0	0	26,458	45,485	0	0	0	0	0
29	0	0	0	31,220	0	0	0	17,980	0
30	0	0	0	75,300	0	0	0	37,080	0
31	0	0	0	65,380	0	0	0	247,260	0
32	0	0	0	53,140	0	0	0	26,220	0
33	0	0	0	53,560	0	0	0	0	0
34	0	0	0	20,020	0	0	0	9,020	0
35	0	11,941	0	25,137	0	0	0	11,381	0
36	0	29,940	0	38,361	0	0	0	0	0
37	0	21,011	0	53,357	0	0	0	0	0
38	0	16,086	0	32,060	0	0	0	0	0

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Plant Reference for Tables A.1b only (refer above)	Coal	Oil	Natural Gas	Refinery Fuel Gas	Blast Furnace Gas	Coke Oven Gas	Other Gas	Site Produced Liquid Fuel	Other Solids
39	0	67,272	0	41,292	0	0	0	826	0
40	0	105,369	0	80,022	0	0	0	41,688	0
41	0	82,332	0	66,318	0	0	0	0	0
42	0	1,314	0	31,923	0	0	0	0	0
43	0	0	0	12,450	0	0	0	0	0
44	0	0	0	60,994	0	0	0	0	0
45	0	0	0	20,210	0	0	0	35,239	0
46	0	0	0	40,733	0	0	0	27,805	0
47	0	0	0	36,604	0	0	0	0	0
48	0	0	0	59,964	0	0	0	18,360	0
49	0	0	0	51,617	0	0	0	26,690	0
50	0	0	0	48,769	0	0	0	0	0
51	0	0	0	149,945	0	0	0	7,287	0
52	0	0	0	80,196	0	0	0	0	0
53	0	10,358	0	0	4,159,977	48,999	0	0	0
54	0	20,767	0	0	1,761,430	60,642	0	0	0
55	0	1,207	0	0	1,558,508	3,493	0	0	0
56	0	835	0	0	1,078,967	2,418	0	0	0
57	0	3,465	0	0	826,803	3,539	0	0	0
58	0	1,620	0	0	603,400	15,920	0	0	0

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Plant Reference for Tables A.1b only (refer above)	Coal	Oil	Natural Gas	Refinery Fuel Gas	Blast Furnace Gas	Coke Oven Gas	Other Gas	Site Produced Liquid Fuel	Other Solids
59	0	2,250	650	0	599,000	2,370	0	0	0
60	0	690	680	0	270,000	1,325	0	0	0
61	0	13,740	25,600	0	2,031,400	31,720	0	0	0
62	2,735	0	44,590	0	0	0	0	0	0
63	0	7,715	56,527	0	0	0	0	0	0
64	0	14,379	0	0	0	0	0	12,559	0
65	0	410	17,075	0	0	0	0	29,660	0
66	0	58	17,869	0	0	0	0	21,888	0
67	0	201	10,422	0	0	0	0	0	0
68	0	0	21,175	0	0	0	7,430	0	0
69	0	401	27,469	0	0	0	0	0	0
70	0	581	19,461	0	0	0	29	0	0
71	0	157	12,709	0	0	0	0	0	0
72	0	183	12,409	0	0	0	0	0	0
73	0	144	19,798	0	0	0	0	0	0
74	256,619	77,482	148,166	0	0	0	13,180	1,465	0
75	0	0	7,794	0	0	0	0	0	0
76	23,144	176	29,700	0	0	0	0	0	0
77	0	123,495	22,651	0	0	0	0	0	0
78	0	81,906	15,156	0	0	0	0	0	0

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Plant Reference for Tables A.1b only (refer above)	Coal	Oil	Natural Gas	Refinery Fuel Gas	Blast Furnace Gas	Coke Oven Gas	Other Gas	Site Produced Liquid Fuel	Other Solids
79	0	0	49,586	0	0	0	0	0	0
80	0	376	22,451	0	0	0	0	0	0
81	0	864	83,137	0	0	0	11,231	0	0
82	0	19	12,785	0	0	0	0	0	0
83	0	133	18,786	0	0	0	0	0	0
84	0	1,503	11,375	0	0	0	0	0	0
85	0	814	14,468	0	0	0	0	0	0
86	0	63	16,669	0	0	0	0	0	0
87	0	229	25,997	0	0	0	0	0	0
88	0	18	14,190	0	0	0	0	0	0
89	27,117	2,834	3,322	0	0	0	0	0	20,904
90	0	344	14,741	0	0	0	0	0	0
91	0	1,964	9,819	0	0	0	0	0	0
92	0	4,870	12,902	0	0	0	0	0	0
93	0	46	29,502	0	0	0	0	0	0
94	0	6,700	17,571	0	0	0	0	0	39,425
95	62,117	0	0	0	0	0	0	0	0

Table A.2 Waste gas flow rates and ELVs used in determining emission bubbles

Sector	Country	Operating Company	Site	Annual average waste gas flow rate from 1996 to 2000 (Nm ³ pa)	SO ₂ ELV (mg/Nm ³)	NO _x ELV from 2008 to 2015 (mg/Nm ³)	NO _x ELV from 2016 to 2017 (mg/Nm ³)	NO _x ELV from 2018 (mg/Nm ³)	Dust ELV (mg/Nm ³)
EGI	England	Drax Power Ltd	Drax Power Station, Selby	83,907,867,401	400	499	201	201	50
EGI	England	British Energy	Eggborough Power Station, Goole	26,849,541,813	400	498	204	204	50
EGI	Scotland	Scottish and Southern Energy	Peterhead Power Station, Peterhead	20,334,346,815	40	203	203	203	6
EGI	Scotland	Scottish Power plc	Longannet Power Station, Kincardine of Forth	36,198,633,619	382	484	202	202	48
Pet Ref	England	Petroplus Refining (formerly BP Oil Ltd)	Coryton Refinery, Essex, Boiler 4/5	1,185,531,948	1,000	441	441	441	47
Pet Ref	England	Petroplus Refining (formerly BP Oil Ltd)	Coryton Refinery, Boiler 6, Essex	626,982,522	1,000	431	431	431	44
Pet Ref	England	Petroplus Refining (formerly BP Oil Ltd)	Coryton Refinery, Fuels Stack, Essex	1,468,573,778	1,000	300	300	300	5
Pet Ref	England	Petroplus Refining (formerly BP Oil Ltd)	Coryton, Cracking Stack, Essex	765,414,951	1,000	300	300	300	5
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 1 (ST101)	736,023,503	1,000	300	300	300	5
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 2 (ST301)	1,962,176,265	1,000	300	300	300	5
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 3 (ST201)	938,139,951	1,000	300	300	300	5
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 4 (ST3401)	27,863,531	1,000	300	300	300	5
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 5 (H6301/2/3/4/5)	595,162,592	1,000	300	300	300	5
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (SP4)	4,425,077,153	1,000	450	450	450	50

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Sector	Country	Operating Company	Site	Annual average waste gas flow rate from 1996 to 2000 (Nm ³ pa)	SO ₂ ELV (mg/Nm ³)	NO _x ELV from 2008 to 2015 (mg/Nm ³)	NO _x ELV from 2016 to 2017 (mg/Nm ³)	NO _x ELV from 2018 (mg/Nm ³)	Dust ELV (mg/Nm ³)
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PS/PV3)	1,398,808,611	1,000	333	333	333	15
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PH-1)	521,118,691	1,000	300	300	300	5
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PH-2)	920,114,050	1,000	300	300	300	5
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (ENSR)	365,251,557	1,000	300	300	300	5
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PS-2)	510,201,028	1,000	384	384	384	30
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PS/PV-1)	402,373,552	1,000	300	300	300	5
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (GTG WHB)	394,991,857	1,000	300	300	300	5
Pet Ref	England	Total Lindsey Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme, (A1) South Stack	1,339,064,816	1,000	407	407	407	37
Pet Ref	England	Total Lindsey Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme, (A2) North Stack	866,485,153	1,000	300	300	300	5
Pet Ref	England	Total Lindsey Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme, (A3) Stage 3/4	1,237,360,824	1,000	382	382	382	30
Pet Ref	England	Total Lindsey Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme, (A4,5&6) West A,B,C	1,888,822,633	1,000	445	445	445	48
Pet Ref	England	Total Lindsey Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme (A8) GT	1,399,955,081	1,000	300	300	300	5
Pet Ref	England	Petroplus Refining UK Ltd	Petroplus.Oil Unit Furnace, North Tees Works, Middlebrough	684,439,862	1,700	450	450	450	50

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Sector	Country	Operating Company	Site	Annual average waste gas flow rate from 1996 to 2000 (Nm ³ pa)	SO ₂ ELV (mg/Nm ³)	NO _x ELV from 2008 to 2015 (mg/Nm ³)	NO _x ELV from 2016 to 2017 (mg/Nm ³)	NO _x ELV from 2018 (mg/Nm ³)	Dust ELV (mg/Nm ³)
Pet Ref	England	ConocoPhillips	Seal Sands, Middlesbrough	884,524,415	1,000	300	300	300	5
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 1 (Crude Distiller 3)	659,288,180	1,000	398	398	398	34
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 2 (Crude Distiller 4)	1,512,093,899	1,000	388	388	388	31
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 3 (HP Boiler House)	3,983,256,406	1,000	400	400	400	50
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 4 Secondary Processes (Aromatics, HIV, HDS2)	1,067,749,355	1,000	384	384	384	30
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 6 (Platformer 3/HDT3 Stack)	748,053,266	1,000	300	300	300	5
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 6 (SHOP)	393,349,978	1,000	383	383	383	30
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (2CDU/2DHT)	651,810,751	1,550	437	437	437	46
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (3CDU/3DHT)	901,260,722	1,369	420	420	420	41
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (2VDU/Hydrocracker)	996,078,787	874	376	376	376	28
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (Cat Reformer Main Heaters)	641,700,108	1,035	390	390	390	32
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (Boilers 9&10)	1,418,875,270	1,700	450	450	450	50
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (Boilers 11,12&13)	2,927,123,464	1,291	450	450	450	50
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (Boilers 14&15)	1,939,627,868	1,076	450	450	450	50

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Sector	Country	Operating Company	Site	Annual average waste gas flow rate from 1996 to 2000 (Nm ³ pa)	SO ₂ ELV (mg/Nm ³)	NO _x ELV from 2008 to 2015 (mg/Nm ³)	NO _x ELV from 2016 to 2017 (mg/Nm ³)	NO _x ELV from 2018 (mg/Nm ³)	Dust ELV (mg/Nm ³)
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (G4 Ethylene WF4A&B)	479,301,762	139	309	309	309	8
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (G4 Ethylene WF5)	180,747,855	35	300	300	300	5
Pet Ref	Wales	Total Fina Elf	Milford Haven Refinery 1 (Duct A)	818,185,715	1,000	300	300	300	5
Pet Ref	Wales	Total Fina Elf	Milford Haven Refinery 2, 3 and 4 (Duct B, C and D)	2,060,693,821	1,000	405	405	405	37
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke (A1/A2)	1,035,694,607	1,000	361	361	361	44
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke (A3/A4)	1,021,900,667	1,000	390	390	390	62
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke (A6)	663,501,045	1,000	300	300	300	5
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke (A7/A8/A9/A10)	2,127,291,439	1,000	312	312	312	12
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke, (A11/A12)	1,091,076,277	1,000	300	300	300	5
Iron & Steel	England	Corus UK Ltd	Teesside Works, Redcar	5,150,686,524	787	207	207	207	18
Iron & Steel	England	Corus UK Ltd	Scunthorpe Works 1 (Central Power Station)	2,808,524,179	900	317	317	317	27
Iron & Steel	England	Corus UK Ltd	Scunthorpe Works 2 (Turbo Blower House - Boilers 1-4)	1,710,225,886	811	302	302	302	12
Iron & Steel	England	Corus UK Ltd	Scunthorpe Works 3 (Turbo Blower House - Boilers 5-6)	1,184,002,536	811	302	302	302	12
Iron & Steel	Wales	Corus UK Ltd	Port Talbot Works 1 (Service Boilers)	828,228,405	829	305	305	305	24
Iron & Steel	Wales	Corus UK Ltd	Port Talbot Works 2 (Mitchell Boiler)	687,259,554	837	309	309	309	15
Iron & Steel	Wales	Corus UK Ltd	Port Talbot Works 3 (A5 Boiler)	313,590,084	800	306	306	306	14
Iron & Steel	Wales	Corus UK Ltd	Port Talbot Works 4 (6&7 Boiler)	2,988,128,219	743	311	311	311	19

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Sector	Country	Operating Company	Site	Annual average waste gas flow rate from 1996 to 2000 (Nm ³ pa)	SO ₂ ELV (mg/Nm ³)	NO _x ELV from 2008 to 2015 (mg/Nm ³)	NO _x ELV from 2016 to 2017 (mg/Nm ³)	NO _x ELV from 2018 (mg/Nm ³)	Dust ELV (mg/Nm ³)
Other	England	Humber Energy	Grimsby, Chimney 1	648,691,193	98	310	310	310	8
Other	England	Humber Energy	Grimsby, Chimney 2	883,559,661	206	315	315	315	10
Other	England	BASF plc	Seal Sands, Middlesbrough 1	176,891,265	1,700	450	450	450	50
Other	England	BASF plc	Seal Sands, Middlesbrough 2	255,647,778	608	352	352	352	20
Other	England	BASF plc	Seal Sands, Middlesbrough 3	260,326,335	476	340	340	340	17
Other	England	Coors Brewers	Bass Burton C Brewery, Burton-on-Trent	138,848,524	63	303	303	303	6
Other	England	BP Chemicals	Saltend, Hull	301,148,069	35	300	300	300	5
Other	England	British Sugar plc	Wissington, Stoke Ferry	364,663,548	57	302	302	302	6
Other	England	British Sugar plc	York Factory	275,027,710	78	304	304	304	6
Other	England	British Sugar plc	Bury St Edmunds, Plant 1	168,245,292	53	302	302	302	5
Other	England	British Sugar plc	Bury St Edmunds, Plant 2	164,631,621	56	302	302	302	6
Other	England	British Sugar plc	Newark Sugar factory	260,853,939	46	301	301	301	5
Other	England	SembCorp Utilities	Wilton	5,477,967,874	1,000	523	292	292	50
Other	England	Enviroenergy Ltd	Nottingham	106,221,471	35	300	300	300	5
Other	England	Ford Motor Co Ltd	Main Site, Dagenham	629,845,367	403	396	396	396	35
Other	England	Sabir UK Petrochemicals Holdings Ltd	No 1 Aromatics, North Tees, Middlesbrough	1,796,388,099	1,388	422	422	422	42
Other	England	Sabir UK Petrochemicals Holdings Ltd	No 2 Aromatics, North Tees, Middlesbrough	1,191,471,427	1,388	422	422	422	42

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Sector	Country	Operating Company	Site	Annual average waste gas flow rate from 1996 to 2000 (Nm ³ pa)	SO ₂ ELV (mg/Nm ³)	NO _x ELV from 2008 to 2015 (mg/Nm ³)	NO _x ELV from 2016 to 2017 (mg/Nm ³)	NO _x ELV from 2018 (mg/Nm ³)	Dust ELV (mg/Nm ³)
Other	England	Sabic UK Petrochemicals Holdings Ltd	Olefins Boilers, Wilton, Middlesbrough	703,739,729	35	300	300	300	5
Other	England	Huntsman Tioxide Europe Ltd	Greatham Works, Hartlepoll	298,683,608	61	302	302	302	6
Other	England	Ineos Chlor Ltd	Weston Point Power Station, Runcorn	1,551,124,862	41	301	301	301	5
Other	England	Ineos Silicas Ltd	South Bank Works, Warrington	167,539,490	37	300	300	300	5
Other	England	Kodak Ltd	Harrow 1 (Boilers 1, 3 & 4)	247,560,892	46	301	301	301	5
Other	England	Scottish & Newcastle UK Ltd	Berkshire Brewery, Reading	168,131,057	216	316	316	316	10
Other	England	Solvay Interox Ltd	Warrington	212,316,814	113	307	307	307	7
Other	England	St Regis Paper Co Ltd	Central Power Services, Darwen	210,776,532	41	301	301	301	5
Other	England	St Regis Paper Co Ltd	Wansbrough Paper Mill, Watchet	327,162,198	49	301	301	301	5
Other	Scotland	Allied Distillers Ltd	Strathclyde Distillery, Glasgow	185,904,538	37	300	300	300	5
Other	Scotland	UPM-Kymmene	Irvine	409,804,968	1,711	546	546	546	82
Other	Scotland	Ciba Speciality Chemicals	Paisley	197,363,166	71	303	303	303	6
Other	Scotland	Michelin Tyre plc	Dundee	152,659,564	286	323	323	323	12
Other	Scotland	Polimeri Europa	Grangemouth	228,735,854	452	338	338	338	16
Other	Scotland	International Paper UK Ltd	Inverurie Mills, Inverurie, Aberdeenshire	382,242,268	37	300	300	300	5
Other	Wales	Shotton Paper Company plc	Shotton, Deeside	394,435,394	700	382	382	382	31

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Sector	Country	Operating Company	Site	Annual average waste gas flow rate from 1996 to 2000 (Nm ³ pa)	SO ₂ ELV (mg/Nm ³)	NO _x ELV from 2008 to 2015 (mg/Nm ³)	NO _x ELV from 2016 to 2017 (mg/Nm ³)	NO _x ELV from 2018 (mg/Nm ³)	Dust ELV (mg/Nm ³)
Other	Northern Ireland	Invista Textiles (UK) Ltd	Maydown Works, Londonderry	645,832,528	2,000	600	600	600	100

Table A.3 Determination of UK emission bubbles under a National Plan

Sector	Country	Operating Company	Site	Contribution to emission bubble for SO ₂ (tpa)	Contribution to emission bubble for NO _x from 2008 to 2015 (tpa)	Contribution to emission bubble for NO _x from 2016 to 2017 (tpa)	Contribution to emission bubble for NO _x from 2018 (tpa)	Contribution to emission bubble for dust (tpa)
EGI	England	Drax Power Ltd	Drax Power Station, Selby	33,563	41,901	16,887	16,887	4,195
EGI	England	British Energy	Eggborough Power Station, Goole	10,740	13,371	5,478	5,478	1,342
EGI	Scotland	Scottish and Southern Energy	Peterhead Power Station, Peterhead	815	4,124	4,124	4,124	114
EGI	Scotland	Scottish Power plc	Longannet Power Station, Kincardine of Forth	13,845	17,533	7,328	7,328	1,732
Pet Ref	England	Petroplus Refining (formerly BP Oil Ltd)	Coryton Refinery, Essex, Boiler 4/5	1,186	522	522	522	56
Pet Ref	England	Petroplus Refining (formerly BP Oil Ltd)	Coryton Refinery, Boiler 6, Essex	627	270	270	270	28
Pet Ref	England	Petroplus Refining (formerly BP Oil Ltd)	Coryton Refinery, Fuels Stack, Essex	1,469	441	441	441	7
Pet Ref	England	Petroplus Refining (formerly BP Oil Ltd)	Coryton, Cracking Stack, Essex	765	230	230	230	4
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 1 (ST101)	736	221	221	221	4
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 2 (ST301)	1,962	589	589	589	10
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 3 (ST201)	938	281	281	281	5
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 4 (ST3401)	28	8	8	8	0
Pet Ref	England	ConocoPhillips Ltd	Humber Refinery, South Killingholme 5 (H6301/2/3/4/5)	595	179	179	179	3
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (SP4)	4,425	1,991	1,991	1,991	221

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Sector	Country	Operating Company	Site	Contribution to emission bubble for SO ₂ (tpa)	Contribution to emission bubble for NO _x from 2008 to 2015 (tpa)	Contribution to emission bubble for NO _x from 2016 to 2017 (tpa)	Contribution to emission bubble for NO _x from 2018 (tpa)	Contribution to emission bubble for dust (tpa)
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PS/PV3)	1,399	466	466	466	21
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PH-1)	521	156	156	156	3
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PH-2)	920	276	276	276	5
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (ENSR)	365	110	110	110	2
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PS-2)	510	196	196	196	15
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (PS/PV-1)	402	121	121	121	2
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (GTG WHB)	395	118	118	118	2
Pet Ref	England	Total Lindsey Refinery Ltd	Oil Lindsey Oil Refinery, Killingholme, (A1) South Stack	1,339	545	545	545	50
Pet Ref	England	Total Lindsey Refinery Ltd	Oil Lindsey Oil Refinery, Killingholme, (A2) North Stack	866	260	260	260	4
Pet Ref	England	Total Lindsey Refinery Ltd	Oil Lindsey Oil Refinery, Killingholme, (A3) Stage ¾	1,237	472	472	472	37
Pet Ref	England	Total Lindsey Refinery Ltd	Oil Lindsey Oil Refinery, Killingholme, (A4,5&6) West A,B,C	1,889	840	840	840	92
Pet Ref	England	Total Lindsey Refinery Ltd	Oil Lindsey Oil Refinery, Killingholme (A8) GT	1,400	420	420	420	7
Pet Ref	England	Petroplus Refining Ltd	UK Petroplus.Oil Unit Furnace, North Tees Works, Middlebrough	1,164	308	308	308	34

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Sector	Country	Operating Company	Site	Contribution to emission bubble for SO ₂ (tpa)	Contribution to emission bubble for NO _x from 2008 to 2015 (tpa)	Contribution to emission bubble for NO _x from 2016 to 2017 (tpa)	Contribution to emission bubble for NO _x from 2018 (tpa)	Contribution to emission bubble for dust (tpa)
Pet Ref	England	ConocoPhillips	Seal Sands, Middlesbrough	885	265	265	265	4
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 1 (Crude Distiller 3)	659	262	262	262	23
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 2 (Crude Distiller 4)	1,512	586	586	586	47
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 3 (HP Boiler House)	3,983	1,593	1,593	1,593	199
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 4 Secondary Processes (Aromatics, HIV, HDS2)	1,068	410	410	410	32
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 6 (Platformer 3/HDT3 Stack)	748	224	224	224	4
Pet Ref	England	Shell (UK) Ltd	Stanlow Manufacturing Complex 6 (SHOP)	393	151	151	151	12
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (2CDU/2DHT)	1,011	285	285	285	30
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (3CDU/3DHT)	1,234	379	379	379	37
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (2VDU/Hydrocracker)	871	374	374	374	28
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (Cat Reformer Main Heaters)	664	250	250	250	21
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (Boilers 9&10)	2,412	638	638	638	71
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (Boilers 11,12&13)	3,777	1,317	1,317	1,317	146

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Sector	Country	Operating Company	Site	Contribution to emission bubble for SO ₂ (tpa)	Contribution to emission bubble for NO _x from 2008 to 2015 (tpa)	Contribution to emission bubble for NO _x from 2016 to 2017 (tpa)	Contribution to emission bubble for NO _x from 2018 (tpa)	Contribution to emission bubble for dust (tpa)
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (Boilers 14&15)	2,087	873	873	873	97
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (G4 Ethylene WF4A&B)	67	148	148	148	4
Pet Ref	Scotland	Ineos Manufacturing (Scotland) Limited	Grangemouth Refinery (G4 Ethylene WF5)	6	54	54	54	1
Pet Ref	Wales	Total Fina Elf	Milford Haven Refinery 1 (Duct A)	818	245	245	245	4
Pet Ref	Wales	Total Fina Elf	Milford Haven Refinery 2, 3 and 4 (Duct B, C and D)	2,061	836	836	836	76
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke (A1/A2)	1,036	374	374	374	45
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke (A3/A4)	1,022	399	399	399	64
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke (A6)	664	199	199	199	3
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke (A7/A8/A9/A10)	2,127	663	663	663	26
Pet Ref	Wales	Chevron (Texaco) Ltd	Pembroke Plant, Pembroke, (A11/A12)	1,091	327	327	327	5
Iron & Steel	England	Corus UK Ltd	Teesside Works, Redcar	4,052	1,065	1,065	1,065	93
Iron & Steel	England	Corus UK Ltd	Scunthorpe Works 1 (Central Power Station)	2,528	889	889	889	77
Iron & Steel	England	Corus UK Ltd	Scunthorpe Works 2 (Turbo Blower House - Boilers 1-4)	1,387	516	516	516	20
Iron & Steel	England	Corus UK Ltd	Scunthorpe Works 3 (Turbo Blower House - Boilers 5-6)	960	357	357	357	14
Iron & Steel	Wales	Corus UK Ltd	Port Talbot Works 1 (Service Boilers)	686	252	252	252	20
Iron & Steel	Wales	Corus UK Ltd	Port Talbot Works 2 (Mitchell Boiler)	575	212	212	212	10

Sector	Country	Operating Company	Site	Contribution to emission bubble for SO ₂ (tpa)	Contribution to emission bubble for NO _x from 2008 to 2015 (tpa)	Contribution to emission bubble for NO _x from 2016 to 2017 (tpa)	Contribution to emission bubble for NO _x from 2018 (tpa)	Contribution to emission bubble for dust (tpa)
Iron & Steel	Wales	Corus UK Ltd	Port Talbot Works 3 (A5 Boiler)	251	96	96	96	4
Iron & Steel	Wales	Corus UK Ltd	Port Talbot Works 4 (6&7 Boiler)	2,219	929	929	929	56
Other	England	Humber Energy	Grimsby, Chimney 1	63	201	201	201	5
Other	England	Humber Energy	Grimsby, Chimney 2	182	279	279	279	8
Other	England	BASF plc	Seal Sands, Middlesbrough 1	301	80	80	80	9
Other	England	BASF plc	Seal Sands, Middlesbrough 2	155	90	90	90	5
Other	England	BASF plc	Seal Sands, Middlesbrough 3	124	88	88	88	4
Other	England	Coors Brewers	Bass Burton C Brewery, Burton-on-Trent	9	42	42	42	1
Other	England	BP Chemicals	Saltend, Hull	11	90	90	90	2
Other	England	British Sugar plc	Wissington, Stoke Ferry	21	110	110	110	2
Other	England	British Sugar plc	York Factory	21	84	84	84	2
Other	England	British Sugar plc	Bury St Edmunds, Plant 1	9	51	51	51	1
Other	England	British Sugar plc	Bury St Edmunds, Plant 2	9	50	50	50	1
Other	England	British Sugar plc	Newark Sugar factory	12	79	79	79	1
Other	England	SembCorp Utilities	Wilton	5,478	2,865	1,599	1,599	274
Other	England	Enviroenergy Ltd	Nottingham	4	32	32	32	1
Other	England	Ford Motor Co Ltd	Main Site, Dagenham	254	250	250	250	22
Other	England	Sabic Petrochemicals Holdings Ltd	UK No 1 Aromatics, North Tees, Middlesbrough	2,493	758	758	758	75

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Sector	Country	Operating Company	Site	Contribution to emission bubble for SO ₂ (tpa)	Contribution to emission bubble for NO _x from 2008 to 2015 (tpa)	Contribution to emission bubble for NO _x from 2016 to 2017 (tpa)	Contribution to emission bubble for NO _x from 2018 (tpa)	Contribution to emission bubble for dust (tpa)
Other	England	Sabic Petrochemicals Holdings Ltd	UK No 2 Aromatics, North Tees, Middlesbrough	1,654	503	503	503	50
Other	England	Sabic Petrochemicals Holdings Ltd	UK Olefins Boilers, Wilton, Middlesbrough	25	211	211	211	4
Other	England	Huntsman Europe Ltd	Tioxide Greatham Works, Hartlepool	18	90	90	90	2
Other	England	Ineos Chlor Ltd	Weston Point Power Station, Runcorn	64	467	467	467	8
Other	England	Ineos Silicas Ltd	South Bank Works, Warrington	6	50	50	50	1
Other	England	Kodak Ltd	Harrow 1 (Boilers 1, 3 & 4)	11	75	75	75	1
Other	England	Scottish & Newcastle UK Ltd	Berkshire Brewery, Reading	36	53	53	53	2
Other	England	Solvay Interlox Ltd	Warrington	24	65	65	65	2
Other	England	St Regis Paper Co Ltd	Central Power Services, Darwen	9	63	63	63	1
Other	England	St Regis Paper Co Ltd	Wansbrough Paper Mill, Watchet	16	99	99	99	2
Other	Scotland	Allied Distillers Ltd	Strathclyde Distillery, Glasgow	7	56	56	56	1
Other	Scotland	UPM-Kymmene	Irvine	701	224	224	224	34
Other	Scotland	Ciba Speciality Chemicals	Paisley	14	60	60	60	1
Other	Scotland	Michelin Tyre plc	Dundee	44	49	49	49	2
Other	Scotland	Polimeri Europa	Grangemouth	103	77	77	77	4

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Sector	Country	Operating Company	Site	Contribution to emission bubble for SO ₂ (tpa)	Contribution to emission bubble for NO _x from 2008 to 2015 (tpa)	Contribution to emission bubble for NO _x from 2016 to 2017 (tpa)	Contribution to emission bubble for NO _x from 2018 (tpa)	Contribution to emission bubble for dust (tpa)
Other	Scotland	International Paper UK Ltd	Inverurie Mills, Inverurie, Aberdeenshire	14	115	115	115	2
Other	Wales	Shotton Company plc	Paper Shotton, Deeside	276	151	151	151	12
Other	Northern Ireland	Invista Textiles Ltd	(UK) Maydown Works, Londonderry	1,292	387	387	387	65
TOTAL				141,227	109,337	64,959	64,959	9,881

A.2 Emission reductions to comply with UK bubbles

Table A.4 illustrates the minimum annual emission reductions required to comply with the emission bubbles, compared to emissions in 2001. This is calculated by subtracting the emission bubbles from the annual emissions for that year.

This table replaces Table 4 in the National Plan published in February 2007.

Table A.4 Determination of emission reductions to comply with emission bubbles

Parameter	Compliance period	Emissions (tpa)		
		SO ₂	NO _x	Dust
Annual emissions from plants in the National Plan in 2001	Not relevant	220,132	130,354	7,013
Annual emissions bubble	1 January 2008 to 31 December 2015	141,227	109,337	9,881
	1 January 2016 to 31 December 2017	141,227	64,959	9,881
	1 January 2018 onwards	141,227	64,959	9,881
Minimum annual emissions reductions compared to year 2001 reported emissions to comply with emission bubbles	1 January 2008 to 31 December 2015	78,904	21,017	-2,868
	1 January 2016 to 31 December 2017	78,904	65,395	-2,868
	1 January 2018 onwards	78,904	65,395	-2,868

Additional Information

The following tables confirm the plant that have opted to take the emissions limit value (ELV) approach to LCPD implementation (Table A.5) and the plant that have opted for a limited-life derogation (Table A.6).

Table A.5 Plant Opting for Emission Limit Values (N.B all on basis of common stack definition)

Sector	Country	Operating Company	Site	Additional Notes
EGI	England	EDF Energy	Cottam Power Station, Retford	None
EGI	England	Scottish & Southern Energy	Ferrybridge C Power Station, Knottingley	Units 3 & 4
EGI	England	Scottish & Southern Energy	Fiddlers Ferry Power Station, Warrington	None
EGI	England	RWE npower (was Innogy)	Fawley Power Station, Southampton	Units 2 & 4
EGI	England	E.On UK	Ratcliffe on Soar Power Station, Nottingham	None
EGI	England	E.On UK	High Marnham Power Station, Newark	None
EGI	England	International Power	Rugeley Power Stations, Rugeley	None
EGI	England	EDF Energy	West Burton Power Station, Retford	None
EGI	England	E.On UK	Drakelow B Power Station, Burton on Trent	None
EGI	Wales	RWE npower (was Innogy)	Aberthaw Power Station, Nr Barry	None
EGI	Wales	Uskmouth Power	Uskmouth Power Station	None
EGI	Northern Ireland	AES Kilroot Power Ltd	Kilroot Power Station, Carrickfergus	None
Pet Ref	Scotland	BP Exploration Ltd.	Kinneil Terminal (formally part of Grangemouth Refinery), Train 3 crude oil pre-heater	None
Pet Ref	Scotland	BP Exploration Ltd.	Grangemouth Refinery, Kinneil Trains 1&2 Auxiliary burners	None
Other	Scotland	ExxonMobil Chemicals	Mossmorran, Fife, Furnace	None
Other	Scotland	Glaxo Smith Kline	Irvine	None
Other	Scotland	DSM Nutritional Products (UK) Ltd	Ayrshire	None
Other	Scotland	Fortum O &M (UK) Ltd (Sullom Voe)	Sullom Voe Terminal, Shetland	None

Table A.6 Plant Opting for a Limited Life Derogation (N.B all on basis of common stack definition)

Sector	Country	Operating Company	Site	Additional Notes
EGI	England	E.On UK	Grain Power Station, Rochester	
EGI	England	E.On UK	Kingsnorth Power Station, Rochester	
EGI	England	E.On UK	Ironbridge Power Station, Telford	
EGI	England	RWE npower (was Innogy)	Tilbury Power Station, Tilbury	
EGI	England	RWE npower (was Innogy)	Littlebrook D Power Station, Dartford	
EGI	England	RWE npower (was Innogy)	Didcot A Power Station, Didcot	
EGI	England	RWE npower (was Innogy)	Fawley Power Station, Southampton	Units 1 & 3
EGI	England	Scottish & Southern Energy	Ferrybridge C Power Station, Knottingley	units 1 & 2
EGI	Scotland	Scottish Power plc	Cockenzie Power Station, East Lothian	
EGI	Northern Ireland	Premier Power Ltd	Ballylumford Power Station, Larne	Existing units are opted out. There is a new CCGT at the site
Pet Ref	England	BP Oil Ltd (was Mobil Oil Co Ltd)	Coryton Refinery, Stanford-Le-Hope	Only boiler 3
Other	England	Slough Heat & Power Ltd	Slough	Boiler 15, 16 & waste heat boiler
Other	Scotland	Tullis Russell and Co Ltd	Markinch, Glenrothes, Fife	
Other	England	E.On UK	Workington	Standby boilers only