

United Kingdom National Emission Reduction Plan for implementation of the revised Large Combustion Plants Directive (2001/80/EC)

February 2006

UPDATE No. 2, April 2009

The UK's National Emission Reduction Plan (NERP) was submitted to the European Commission at the end of February 2006 for evaluation in accordance with Article 4(6)(c) of the Large Combustion Plants Directive (LCPD). In September 2006, the European Commission responded that 'it appears the plan contains the main elements of Article 4(6) of the LCPD', but that a few matters were insufficiently addressed. These mainly concerned the need for full details of a few plants and for clarification of a few interpretational details.

The UK had in any case the intention of checking plant details. Accordingly, consultants were commissioned to carry out an exercise in late 2006 and the first part of 2007 to review evidence to support the plant operational data previously submitted by each operator.

The December 2007 update set out a **complete replacement** for Section 9 of the February 2006 NERP. But it **scarcely differs**. In bold text, it shows small amendments to sections 9.3, 9.9 and 9.12 as suggested in the Commission's evaluation. It also shows in bold text an additional paragraph in section 9.4 on the approach regulators should take to calculating the reduction in allowance in the year that a plant closes.

Update No 2 (April 2009) sets out revised versions **completely replacing** the tables contained in Annex A to the December 2007 NERP. Table A.3 in this revised version shows the emission allowance allocated by the Secretary of State to each plant participating in the NERP. It constitutes the information he must provide to the Environment Agency under regulation 5(1)(b) of the Large Combustion Plants (National Emission Reduction Plan) Regulations 2007.

It is envisaged that there will be further although infrequent revisions of the tables, principally in order to incorporate plant operational changes or closures.

The NERP is implemented through the Large Combustion Plants (National Emission Reduction Plan) Regulations 2007 (SI 2007 No. 2325), in fulfilment of

what is said in section 4.2.1 of the February 2006 NERP. These Regulations contain provisions regarding the trading scheme, allocation mechanisms and plant closure as foreseen in sections 4.2.2 and 4.2.3 of the February 2006 NERP.

Regarding what is said in section 4.2.4 of the February 2006 NERP about 'non-compliance penalties', regulation 3 envisages that each participating plant will have a "NERP provision" as a condition in its permit. Regulators will be directed to include such a condition in permits. Breach of that condition in any way, notably through failure to comply with emission allowances, will therefore render the operator liable to enforcement action which could result in criminal sanctions including fines. However, there is currently no provision for civil financial penalties and no definite plan to introduce them.

Update record

Document	Date of update	Update summary
UK NERP	February 2006	<u>Base document</u>
UK NERP Update No. 1	December 2007	Complete replacement section 9 and complete replacement annex A
UK NERP Update No. 2	April 2009	Complete replacement of Annex A

9. Interpretations of the LCPD

9.1 Definitions of “combustion plant”

- *The meaning of “combustion plant” as defined in Article 2(7) of the Directive.*

UK’s INTERPRETATION

The UK NERP is based on the “common stack” definition of “combustion plant”, whereby existing plants whose waste gases are *de facto* discharged through a common stack should be considered as a single plant for the purposes of the Directive. Accordingly, when a group of boiler discharge their waste gases through a common stack, the term “existing combustion plant” should be interpreted as that group of boilers. When only one boiler vents through one stack, an existing plant should be interpreted as that boiler.

9.2 Meaning of “operational hours” - limited operating time derogation

- *Whether start-up and shut-down periods should be taken into account for the purposes of calculating the number of “operational hours” in the following provisions of the Directive-*
 - Article 4(4) (“limited operating life” derogation);*
 - “Actual annual operating time” in Article 4(6) (“national emission reduction plan”);*
 - Hours that a plant “operates” in Article 5(1) (limited annual operation); and*
 - Footnote 2 to Part A of Annex VI (“low load factor” derogation for NO_x).*
- *Meaning of operational hours for the purposes of calculating the 20,000 operational hours in Article 4(4) of the Directive.*

UK’s INTERPRETATION

Start-up and shut-down periods should not be taken into account for the purposes of calculating the operational hours in the provisions mentioned above.

The condition of the limited-life derogation in Article 4(4) is expressed in terms of the hours of operation of a “combustion plant”. Accordingly, the whole plant will be regarded as operating when *any part of it* operates (irrespective of the number of units forming part of that combustion plant). Otherwise, a plant would not be regarded as operating unless it were running at full capacity.

Equally, the operation of any number of units simultaneously for 1 hour, represents 1 hour of operation of the combustion plant as a whole.

9.3 Application of derogations to national emissions reduction plan

- *Application of the various derogations in the Directive allowing less stringent provisions (in particular, Article 5(1) and the nota bene in Part A of Annex III) for the purposes of calculating the total emissions bubble of any national emissions reduction plan*

UK's INTERPRETATION

Each of the following derogations apply to existing plants subject to the NERP and will be taken into account when calculating the total emissions bubble under that plan:

- (a) **Article 5(1)** – “low load factor” derogation for “plants” allowing less stringent ELVs for SO₂ (solid fuels) than those specified in Part A of Annex III.
- (b) **Nota bene in Part A of Annex III** – fuel characteristics derogation for “plants” allowing specified desulphurisation rates as an alternative to the ELVs for SO₂ (solid fuels) in Part A of Annex III.
- (c) **Footnote 2 to Part A of Annex VI** – “low load factor” derogation for existing plants subject to Article 4(3) allowing less stringent ELVs for NO_x than those specified in Part A of Annex VI.
- (d) **Footnote 3 to Part A of Annex VI** – fuel characteristics derogation for “plants” allowing less stringent ELVs for NO_x than those specified in Part A of Annex VI.
- (e) **Footnote 1 to Part A of Annex VII** - fuel characteristics derogation for “plants” allowing less stringent ELVs for dust than those specified in Part A of Annex VII.

With the exception of the derogation in footnote 2 to Part A of Annex VI, the derogations referred to above should be applied on the basis of a plant's operation (i.e. hours of operation, fuel characteristics) during the five-year period from 1996 to 2000. The fact that a plant meets the conditions of any of these derogations at any time after 2000 is irrelevant and will not lead to adjustment of the bubble. This results from the final words of the second paragraph of Article 4(6). An illustration, in relation to the derogation in article 5(1) (“low load factor”), is set out in brackets below.

As noted above, the exceptional case is footnote 2 to Part A of Annex VI. The bubble will need to be adjusted from 2008 where any plant **participating in the NERP opts** for that derogation. This is because, as an exception to the general rule set out at the end of the second paragraph of article 4(6), the wording to footnote 2 expressly requires regard to be had to operating hours after 2008, including for plants subject to the NERP. Apart from this adjustment based on rolling averages over five year periods, (and the effect of any plant closures –

see below), no new adjustment criteria will need to be taken into account until 2016 and then again in 2018, when it should be adjusted to take account of tightened ELVs and derogations in Article 5(1) and Part A of Annex VI. The rolling average for this derogation would be calculated from actual activity in the previous 4 years, and the level of activity permitted for the year to come by condition in the plant's permit.

The original bubble will also need to be adjusted if any operators exercise the Article 4 (4) (a) "opt-out".

(Example : Article 5(1) derogation:

- (a) The decision in 2008 as to whether the less stringent ELV of 800 mg/Nm³ should be applied in calculating the plant's contribution to the bubble, should be made by reference to the plant's operating hours in the period 1996 to 2000.
- (b) The application of this derogation to an existing plant will be initially assessed by asking whether the plant operated on average no more than 2000 hours during the 1996-2000 period. But from 01 January 2016, the continued application of that derogation will depend on whether it operated no more than 1500 hours a year (average over the period 1996-2000). The use of the words "rolling average over a period of five years" might suggest at first that in assessing whether the derogation applies every year the running hours of the previous four years are calculated in order to determine if the plant can benefit from the derogation for the next year period if its hours are restricted to the necessary level. However, in the context of a national emissions reduction plan, and as noted above, this is overridden by the express reference to the period 1996-2000 in Article 4(6), read with the full out text to Article 4(3))

9.4 Plant closures and national emissions reduction plan

- *Plants to be included in the calculation of the total emissions bubbles under a national emissions reduction plan*
- *Effect of plant closure on the calculation/adjustment of the national emissions reduction plan.*
- *Definition of "plant closure" for the purposes of the third paragraph of Article 4(6).*

UK's INTERPRETATION

Plants to be included in the original calculation of the bubble

The size of the "bubble" under any national emissions reduction plan is to be calculated initially by reference to all existing plants in operation in the year 2000, irrespective of whether any of those plants have closed by the time the "bubble" is calculated. This includes any plants that were in operation in the year 2000 but closed down before the end of that year, or in the case of the combined approach

existing plants that were in operation in the year 2000 but are not included in the NERP.

Readjustment to the original bubble: Meaning of the word “increase” in Article 4(6)

An “increase”, for the purposes of paragraph 3 of Article 4(6), means an increase over the total emissions which would have been made by the remaining plants in the relevant year if the closed plant, or the plant not included in the final NERP, had not been included in the original calculation of the bubble. In other words, when a plant which was included in the calculation of the bubble closes, or it is not included in the final NERP, the bubble shall be reduced by the amount attributable to that plant’s inclusion in the original calculation.

In determining that reduction, the regulator should start with a “straight line” assessment (i.e. taking no account of the actual emissions of the plant prior to its closure). So, for example, if a plant with an annual allocation of 1200 tonnes has a formal date of closure (as notified to the regulator) of 14 September – day 257 of the year – then its allocation would be reduced to $1200 \times 257 / 365 = 845$ tonnes. But the regulator may take into account seasonal or other characteristics of the plant’s operation. For the hypothetical example above, a plant with a notified closure date of 30 September, but known to operate only within the period 1 November to 28 February each year, would have an allocation of 1200 reduced to 600 since the closure would halve operation in that calendar year even though notified nearly three-quarters of the way through it.

Definition of plant closure

“Closure” of a plant under Article 4(6) will include both permanent and temporary closure.

A plant will be “closed” -

- (i) when an operator ceases operations with a view to that cessation being permanent; or alternatively
- (ii) when, although it is intended that the plant will at a later stage resume operations, the period of closure will be appreciably longer than would be regarded as normal in an industry in which temporary closure of plants is inevitable e.g. with a view to remedial work, or in some cases reducing capacity to match demand (e.g. on regular or seasonal basis).

In deciding what is a “normal” closure for the purposes of (ii) above, account is to be taken of periods of closure of existing plants during the five year period 1996-2000 (since the initial size of the bubble will have taken into account, and been reduced by, any period of closure during 1996-2000 of plants which were operating at any time during the years in question).

Accordingly, it is necessary to include bubble readjustment mechanisms to cover circumstances where: -

- (i) temporary closure is long enough to merit downward adjustment; and
- (ii) existing plants temporarily closed for the purposes of Article 4(6) become operational again, requiring readjustment the other way.

The fact that the plant continues to hold a valid permit/authorisation for PPC/IPC purposes and that it continues to meet the requirements of such permit/authorisation whilst being mothballed shall not affect the plant being considered as “closed” for the purposes of Article 4(6).

Finally, the question of what ultimately constitutes a “temporary closure” will need to be decided by the environmental regulator in the light of the facts of a particular case and in accordance with the guidelines provided above.

These are a few examples of temporary closures which would not give rise to an adjustment to the bubble (for the purposes of the definition above): -

- (i) Breakdown, malfunction or closing for routine or emergency maintenance;
- (ii) Plant not operating because there is no demand for its services (the plant is “mothballed”) for periods that are normal in the industry.

Examples of permanent closures or temporary closures giving rise to an adjustment of the bubble would be the following: -

- (i) Mothballing exceeding the average periods, normal to the particular industry;
- (ii) Closure of a plant to be dismantled, thus losing its ability to operate.

The closure of a *substantial part* of a plant would not be regarded as “closure” of that plant (since a plant is to be regarded under the Directive as “operating” when any part of the plant operates).

9.5 Stand-by generators – supplementary firing

- *Application of the LCPD to stand-by generators – Aggregation rules*
- *Application of the LCPD to gas turbines with supplementary firing.*

UK’s INTERPRETATION

Stand-by generators – Supplementary Firing

For the purposes of this interpretation-

- (i) a “stand-by generator” (SBG) includes those generators used as back-up equipment or for the purpose of boosting performance (e.g. in cases of breakdown, malfunction, etc) ; and
- (ii) a “supplementary firing apparatus” (SFA), includes any appliances used to boost performance of a plant;

and none of the definitions above shall include any apparatus being used in the normal operation of the plant.

Although the appliances are used for different purposes, the interpretation below is equally applicable to each of those cases.

If the stand-by generator or supplementary firing apparatus is part of the “combustion plant”, and could be used at the same time as the rest of the plant, then its rated thermal input should be included in the total rated thermal input (or capacity) of the plant.

The Directive applies to “combustion plants” with a rated thermal input of 50 MWth or more (see Article 1).

Standby generators or supplementary firing apparatus will therefore fall within the scope of the LCPD if the following three requirements are met:-

- (i) do such items (SBG or SFA) form part of the Combustion Plant? The answer will be yes, if in the case of existing plants they form part or assist in the operation of the boiler. In the case of new plants, the answer will be yes, if they vent through a common stack with the other units;
- (ii) what is the “potential” thermal input of the plant, including the SBGs or SFAs?; If equal to or exceeding 50 MWTh, it will fall within the definition in Article 1 (subject to the following paragraph);
- (iii) are the SBGs or SFAs merely substituting other parts or operating in addition to all those parts, for example to boost performance? There will be circumstances in which standby generators are simply there as back up generators and they will not be used in normal circumstances but only in emergency or breakdown of other equipment. If the units are used in all cases to substitute existing parts, then, they will “use-up” the allocation of that part they are substituting for aggregation purposes and their rated thermal input will not be counted towards calculation of the total. However, if the SBGs or SFAs parts are used to boost performance in certain cases (as well as at times substituting), they will need to be counted towards the total calculation of the rated thermal input.

Gas Turbines – Supplementary firing

If gas turbines are used as part of the supplementary firing process, the following factors will apply in deciding whether that process falls within the definition of “combustion plant” for the purposes of the LCPD.

(a) If the gas turbines are licensed before 27 November 2002:

- (i) These turbines will not be taken into account for the purposes of calculating the thermal input of the plant.
- (ii) If the boilers need the supplementary thermal input of the gas turbines in order to reach the 50 MWTh threshold and since gas turbines are not included for the purposes of the calculation, the boilers may not fall within the thermal input requirements for the purposes of the LCPD.

If the boiler alone cannot reach the 50 MWTh threshold, it will not constitute a combustion plant. If alternatively, the boiler is a combustion plant, it will be necessary to work out a system to estimate what emissions are originated from the boiler alone (since the gas turbine emissions should not be taken into

account for the purposes of the LCPD). This will need to be decided by the regulator.

(b) *If the gas turbines are licensed after 27 November 2002:*

These gas turbines will fall within the scope of the LCPD if:

- (i) they comply with the requirements of the definition of “combustion plant” in Article 2(7) of the LCPD; and
- (ii) their thermal input is equal to or exceeds 50 MWTh; or
- (iii) although they do not reach the 50 MWTh threshold alone, they form part of a combustion plant that does.

In this case, both the boiler and the turbine will form part of the combustion plant and all emissions will be taken into account for the purposes of the LCPD.

The LCPD will apply to emissions from gas turbines subject to the provisions in Annex VIB.

9.6 Standby fuel – derogation under article 7(3)

- *Application of Article 7(3) of the LCPD to the use of standby fuel*

UK's INTERPRETATION

The use of standby fuel (i.e. fuel which is only used when the supply of the usual fuel has been interrupted) would be covered by either Article 7(2) or (3), where the specified conditions are met. Otherwise, the plant would have to comply with the ELVs applying to the fuel under the LCPD (assuming that the fuel is used to “fire” the plant).

9.7 Fixed national emissions reduction plan cap

- *Annual compliance with the fixed national emissions reduction plan cap (Emission Limit Values under the national emission reduction plan - Article 4(6))*

UK's INTERPRETATION

There are three distinct compliance periods for existing plants in the revised LCPD: (1) 01 January 2008 to 31 December 2015; (2) 01 January 2016 to 31 December 2017; and (3) 01 January 2018 onwards.

It is a necessary implication of the Directive that the amount of the bubble, or cap, calculated for a particular compliance period must be complied with annually for the duration of that period.

The original bubble will be calculated by reference to all existing plants in operation in 2000 (with any necessary adjustment to take account of plants that are not included in the plan, subsequently close or “opt-out” of the NERP under Article 4(4)). This bubble will take effect from 01 January 2008 and will apply until 31 December 2015, subject to any necessary adjustment due to plant closures

during this period or adjustments based on the “rolling average” over a five year period in connection with the derogation in footnote 2 to Part A of Annex VI.

The bubble for the first compliance period will need to be adjusted with effect from 01 January 2016, and then again with effect from 01 January 2018, to reflect any plant closures during the relevant compliance period, taking into account any necessary adjustments based on Article 5(1) and Annex VI.

9.8 “Opt-out” derogation in article 4(4)

- *Effect of existing plants reaching the end of the limited-life derogation period under Article 4(4) of the LCPD (31 December 2015)*

UK’s INTERPRETATION

Plants that opt for the Article 4(4) derogation which either use up their 20,000 operational hours, or seek to have the derogation disappplied before that point, cannot continue to operate as an existing plant. They may be allowed to continue to operate (or close and subsequently re-open) if they re-licence under “new-new” plant conditions (that is, plants licensed after 27 November 2002 as provided in Article 4(2) of the Directive).

Article 4(4) does not allow for a plant that has “opted-out” of the ELVs/NERP regime but not used up its 20,000 operational hours, to “opt-back in” as an existing plant subject to Article 4(3).

9.9 Gas turbines – application of directive

- *Application of the Directive to existing Gas Turbines*

UK’s INTERPRETATION

Article 2(7)(j) of the Directive excludes from its scope gas turbines which are licensed or the subject of a full request for a “licence” before 27 November 2002. The reference to a “licence” in Article 2(7)(j) would include a construction licence. This is because combustion plants covered by the Directive must be either “new plants” or “existing plants”, and these are defined in Article 2(9) and (10) by reference to the date of a plant’s original construction or operating licence. **To qualify for exclusion, such a gas turbine must have been put into operation before 27 November 2003.**

9.10 “Multi-fuel firing unit”

- *If a plant uses a small amount of oil (for start-up and improved ignition) in a combustion plant designed primarily to burn coal-*
 - consideration as a "multi-fuel firing unit" for the purposes of Article 2(8), or treating the oil as de minimis.*
 - the practical effect of a plant being classified as a multi-fuel firing unit with regard to the determination of the applicable emission limit values.*

UK's INTERPRETATION

Classification of the plant as a multi-fuel firing unit

Whether or not the plant is classified as a multi-fuel firing unit will depend on the purpose of using the oil. If the oil contributes to the firing of the plant, then the plant will be regarded as a multi-fuel firing unit, regardless of the amount used.

Article 2(8) of the Directive defines a “multi-fuel firing unit” as:

“any combustion plant which may be fired simultaneously or alternately by two or more types of fuel”.

“Fuel” is defined in Article 2(6) as:

“any solid, liquid or gaseous combustible material used to fire the combustion plant with the exception of waste covered by [Council Directives 89/369/EEC, 89/442/EEC, 94/67/EC or any subsequent Community act repealing or replacing [the same]].”

The question is therefore whether the oil is used to “fire” the combustion plant. This is not defined in the Directive.

The use of the oil for the purpose of “start-up and improved ignition” of a combustion plant would fall into this category. There is no basis in the Directive (in particular, Articles 2 or 8) for implying that a de minimis threshold was intended. This is supported by the fact that the definition of “fuel” contains an express exception for waste, implying that an express exception would also be needed for any de minimis threshold.

Emission limit values – Multi-fuel firing units

If the oil is used only for start-up, and to the extent that start-up periods will not be taken into account for the purposes of calculating either:-

- (i) the NERP bubble (as explained in question 2 above); or
- (ii) the emission limit values under Article 14 of the LCPD,

the emission limit values will be determined and measured as if the plant were not a multi-fuel firing unit.

If on the other hand, the oil is used for purposes other than start-up, the classification of the plant as a multi-fuel firing unit will normally affect the way in which the emission values are determined and measured.

9.11 LCPD and IPPC

- *Application of the IPPC regime to Large Combustion Plants*

UK's INTERPRETATION

The LCPD provides that its requirements are subject to meeting the requirements of the IPPC Directive. For existing plants, this is the case whether they are subject to individual ELVs or a national emissions reduction plan or have “opted out” of both under Article 4(4).

Recital (8) states generally that:

“Compliance with the emission limit values laid down by this Directive should be regarded as a necessary but not sufficient condition for compliance with the requirements of [the IPPC Directive] regarding the use of best available techniques. Such compliance may involve more stringent emission limit values, emission limit values for other substances and other media, and other appropriate conditions.”

The provisions of the Directive concerning existing plants (i.e. Article 4(3), (4) and (6)) are all expressly without prejudice to the IPPC Directive.

9.12 Article 8(3) – ELVs for multi-fuel refineries

- *Interpretation of Article 8(3) (Multi-fuel refineries).*
- *Meaning of “average emission limit values” for SO₂ “averaged over all such plants in the refinery” (Article 8(3) (a) and (b)).*

PROPOSED UK APPROACH

Article 8(3) envisages that an “aggregate emission limit value” approach be taken rather than applying individual ELVs to individual plants within a refinery.

The “aggregate emission limit value ” approach would apply as follows, **in all cases using in the calculation the appropriate standard conditions for the level of excess oxygen for the various fuels:**

- (i) For existing refineries: all existing plants within a refinery would have a collective average ELV for SO₂ of 1000 mg/Nm³, and all new plants within the refinery (i.e. any plants added to the refinery post 27 November 2002) would have a collective average ELV for SO₂ of 600 mg/Nm³.
- (ii) For any new refineries (i.e. those put into operation post 27 November 2002): all plants within the refinery would have a collective average ELV for SO₂ of 600 mg/Nm³.
- (iii) The average rate of SO₂ emissions (i.e. the volume of SO₂ in waste gases) from existing plants within the refinery at any time must not exceed 1000 mg/Nm³. Similarly, the average rate of SO₂ emissions from new plants within the refinery at any time must not exceed 600 mg per Nm³.

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.

LCPD NERP April 2009 update

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 July 2007 and April 2009 National Emission Reduction Plans.

Apr-09	Jul-07	Feb-07	Feb-06	Apr-09	Jul-07	Feb-07	Feb-06	Apr-09	Jul-07	Feb-07	Feb-06
1	1	1	1	34	34	27	29	66	66	59	62
2	2	2	2	35	35	28	30	67	67	60	63
3	3	3	3	36	36	29	31	Not 'existing'	Not 'existing' plant	61	64
4	4	4	4	37	37	30	32	68	68	62	65
5	5	5	5	38	38	31	33	69	69	63	66
6	6	6	6	39	39	32	34	70	70	64	67
7	7	7	7	40	40	33	35	71	71	65	68
8	8	8	8	41	41	34	36	72	72	66	69
9	9	9	9	42	42	35	37	73	73	67	70
10	10	10	10	43	43	36	38	74	74	68	71
11	11	11	11	44	44	37	40	75	75	69	72
12	12	12	12	45	45	38	41	76	76	70	73
13	13	13	13	Merged with 45	46	39	42	77	77	71	75
14 (multiple LCPs)	14 (multiple LCPs)	14	14	Merged with 45	47	40	43	78	78	72	76
15 (" ")	15 (" ")	14		48	48	41	44	79	79	73	77
16 (" ")	16 (" ")	14		49	49	42	45	80	80	74	78
17 (" ")	17 (" ")	14		50	50	43	46	Removed	81	75	79
18 (" ")	18 (" ")	14		51	51	44	47	82	82	76	80
19 (" ")	19 (" ")	14		52	52	45	48	83	83	77	81

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20 (“ “)	20 (“ “)	14		53	53	46	49	Not 'existing'	Not 'existing' plant	78	83
21 (“ “)	21 (“ “)	14		54	54	47	50	84	84	79	84
22	22	15	15	55	55	48	51	85	85	80	86
23	23	16	16	56	56	49	52	Removed	86	81	87
24	24	17	17	Removed	57	50	53	87	87	82	88
25	25	18	18-20	58	58	51	54	Removed	88	83	89
26	26	19	21	59	59	52	55	89	89	84	90
27	27	20	22	60	60	53	56	90	90	85	91
28	28	21	23	61	61	54	57	91	91	86	92
29	29	22	24	Removed	Removed	55	58	92	92	87	93
30	30	23	25	62 (multiple LCPs)	62 (multiple LCPs)	56	59	93	93	88	94
31	31	24	26	63 (“ “)	63 (“ “)	56	59	94	94	89	95
32	32	25	27	64	64	57	60	Removed	Removed	90	97
33	33	26	28	65	65	58	61	95	95	91	98
								96*			

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 July 2007 and April 2009 NERPs are due to LCPs being removed or reclassified under the Limited Life Derogation or ELV approaches.

* Previously included in 62 and 63

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)	13	82	1,195,847	NR	3	68	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 ¾	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			<i>[Reference number not used]</i>	26						

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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, Middlesbrough	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	7,130,993	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 Silicas Ltd	South Bank Works, Warrington	82	98	591,965	NR	0	11	0
Other	England	Kodak Ltd	Harrow 1 (Boilers 1, 3 & 4)	83	101	874,428	NR	0	102	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	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	Wansbrough Paper Mill, Watchet	87	74	1,155,651	NR	14	32	14
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, Invenurie, Aberdeenshire	93	76	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
Other	England	Humber Energy	Grimsby, Chimney 3	96						
TOTAL								219,635	129,370	6,991

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

1. NR - Not Required.

- Figures included in 62 and 63.

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
19	0	0	0	28,460	0	0	0	12,221	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
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
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

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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
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	97,547	0	0	0	63,044	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									
58	0	1,620	0	0	603,400	15,920	0	0	0
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

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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
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
79	0	0	49,586	0	0	0	0	0	0
80	0	376	22,451	0	0	0	0	0	0
81									
82	0	19	12,785	0	0	0	0	0	0
83	0	133	18,786	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
84	0	1,503	11,375	0	0	0	0	0	0
85	0	814	14,468	0	0	0	0	0	0
86									
87	0	229	25,997	0	0	0	0	0	0
88									
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
96*									

- Figures included in 62 and 63.

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)	338,417,615	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
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

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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-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	Petroplus Refining UK Ltd	Petroplus.Oil Unit Furnace, North Tees Works, Middlesbrough	684,439,862	1,700	450	450	450	50
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

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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 (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
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 (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	Humber Energy	Grimsby, Chimney 3*						
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	Sabic UK Petrochemicals Holdings Ltd	No 1 Aromatics, North Tees, Middlesbrough	1,796,388,099	1,388	422	422	422	42
Other	England	Sabic 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 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 Interrox Ltd	Warrington	212,316,814	113	307	307	307	7
Other	England	St Regis Paper Co Ltd	Wansbrough Paper Mill, Watchet	327,162,198	49	301	301	301	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, Invenurie, 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
Other	Northern Ireland	Invista Textiles (UK) Ltd	Maydown Works, Londonderry	645,832,528	2,000	600	600	600	100

- **Figures included in 62 and 63**

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))	338	102	102	102	2
Pet Ref	England	Esso Petroleum Company Ltd.	Esso Fawley Refinery, Southampton (SP4)	4,425	1,991	1,991	1,991	221
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

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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-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 Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme, (A1) South Stack	1,339	545	545	545	50
Pet Ref	England	Total Lindsey Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme, (A2) North Stack	866	260	260	260	4
Pet Ref	England	Total Lindsey Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme, (A3) Stage ¾	1,237	472	472	472	37
Pet Ref	England	Total Lindsey Oil Refinery Ltd	Lindsey Oil Refinery, Killingholme, (A4,5&6) West A,B,C	1,889	840	840	840	92
Pet Ref	England	Petroplus Refining UK Ltd	Petroplus.Oil Unit Furnace, North Tees Works, Middlesbrough	1,164	308	308	308	34
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

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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 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
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 (Duct B, C and D))	2061	817	817	817	70
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
Iron & Steel	Wales	Corus UK Ltd	Port Talbot Works 3 (A5 Boiler)	251	96	96	96	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)
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	40	78	78	78	2
Other	England	Humber Energy	Grimsby, Chimney 2	109	214	214	214	6
Other	England	Humber Energy	Grimsby, Chimney 3	80	156	156	156	4
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 UK Petrochemicals Holdings Ltd	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 UK Petrochemicals Holdings Ltd	No 2 Aromatics, North Tees, Middlesbrough	1,654	503	503	503	50
Other	England	Sabic UK Petrochemicals Holdings Ltd	Olefins Boilers, Wilton, Middlesbrough	25	211	211	211	4
Other	England	Huntsman Tioxide Europe Ltd	Greatham Works, Hartlepool	18	90	90	90	2
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	Wansbrough Paper Mill, Watchet	16	99	99	99	2
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
Other	Scotland	International Paper UK Ltd	Inverurie Mills, Inverurie, Aberdeenshire	14	115	115	115	2
Other	Wales	Shotton Paper Company plc	Shotton, Deeside	276	151	151	151	12
Other	Northern Ireland	Invista Textiles (UK) Ltd	Maydown Works, Londonderry	1,292	387	387	387	65
TOTAL				138,662	107,741	63,363	63,363	9,856

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
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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	
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.	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	Boilers 7 & 8
EGI	England	RWE npower (was Innogy)	Tilbury Power Station, Tilbury	Boilers 9 & 10
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	Power Station comprises two large combustion plants. One comprises units 1 and 2 and the other Units 3 and 4.
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