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# Draft EPR Guidance on Chapter III (large combustion plants) of the industrial emissions Directive

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This would replace Version 3.0 (March 2010) of the guidance at:
***http://archive.defra.gov.uk/environment/policy/permits/documents/ep2010largecombustionplants.pdf***

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# 1. Introduction

**1.1.** Chapter III of the industrial emissions Directive sets out special provisions for combustion plants. Those provisions concern emissions to air of sulphur dioxide ($SO_2$), nitrogen oxides ($NO_X$) carbon monoxide (CO) and dust (particulate matter). The combustion plants concerned are those with an aggregate rated thermal input of 50 MW or more, irrespective of the type of fuel used, excepting those plants listed in Article 28 of the Directive. Although the term appears only once[1] within the Articles of the Directive and not at all in the Annexes, plants subject to Chapter III are referred to in this guidance and more generally as "large combustion plants" (LCPs).

**1.2.** It must be noted that, since all LCPs by definition have a rated thermal input of 50 MW or more, their operation will also constitute an activity under point 1.1 of Annex I of the Directive and so be subject to the requirements of Chapter II. Chapter III prescribes only the minimum requirements in respect of emission limit values (ELVs) which the regulator must set in permits. The regulator may find, in particular cases, that the requirements of Chapter II compel the imposition of more stringent ELVs than the minima set in Chapter III. Chapter II will also drive the imposition of other permit conditions concerning the operation of LCPs.

**1.3.** Chapter III contains largely distinct requirements for "existing" and "new" LCPs. In accordance with the Directive, Schedule 15A of the Regulations defines "existing combustion plant" as 'any combustion plant in respect of which a permit has been granted before 7th January 2013, or in respect of which the operator has submitted a duly-made application for a permit before that date, provided that the plant is put into operation no later than 7th January 2014'. "New" combustion plant is simply any which is not an existing combustion plant.

**1.4.** Existing LCPs are subject to less stringent "minimum" ELVs than new LCPs. Furthermore, existing LCPs do not become subject to any of the requirements (and associated derogations) in Chapter III until 1 January 2016. Until that date, they remain subject to the relevant requirements of the large combustion plants Directive (2001/80/EC). For that reason, Schedule 15 of the Regulations remains in force and unchanged until that date, and Version 3.0 (March 2010) of this guidance[2] remains applicable until separately amended. However, this [Version 4.0] of the guidance will be relevant considerably before 2016 to the regulator and operator of any existing plant which is to remain in operation after 1 January 2016, particularly in respect of the various derogations which are available.

[1] In Article 73(1), concerning reviews by the European Commission.

[2] At http://archive.defra.gov.uk/environment/policy/permits/documents/ep2010largecombustionplants.pdf

**1.5.** New combustion plants become subject to Chapter III from 7 January 2013 and Schedule 15A applies in respect of them from that date, along with this Version [4.0] of the guidance.

**1.6.** Schedule 15A and this Version of the guidance (unless amended in the meantime) will apply to all LCPs from 1 January 2016.

**1.7.** Schedules 15A and (for convenience) 15 to the Regulations [*will be*] reproduced in Annex 1; a copy of Chapter III of the industrial emissions Directive [*will be*] provided in Annex 2 and a copy of Annex V to the industrial emissions Directive, which relates to emission limit values and monitoring, [*will be*] provided in Annex 3.

## 2. Scope of the Directive

**2.1.** Article 28 of the industrial emissions Directive applies Chapter III of the Directive to 'combustion plants, the total rated thermal input of which is equal to or greater than 50 MW, irrespective of the type of fuel used'. But Article 28 of the industrial emissions Directive also lists types of combustion plant which are excluded from the provisions of Chapter III:

- plants in which the products of combustion are used for the direct heating, drying, or any other treatment of objects or materials e.g. reheating furnaces, furnaces for heat treatment;
- post-combustion plants, i.e. any technical apparatus designed to purify the waste gases by combustion which is not operated as an independent combustion plant;
- facilities for the regeneration of catalytic cracking catalysts;
- facilities for the conversion of hydrogen sulphide into sulphur;
- reactors used in the chemicals industry;
- coke battery furnaces;
- cowpers;
- any technical apparatus used in the propulsion of a vehicle, ship or aircraft;
- gas turbines and gas engines used in offshore platforms; and
- plants which use any solid or liquid waste as a fuel other than certain biomass wastes referred to in point (b) of point 31 of the Directive's Article 3 (such plants will be subject to the requirements of Chapter IV of the Directive concerning waste incineration and waste co-incineration plants).

**2.2.** Subject to those exclusions, any “common stack” through which individual combustion plants with a rated thermal input (RTI) of 15 MW or more discharge constitutes a separate LCP if the aggregate RTI of the individual plants is 50 MW or more. “Stack” is defined in Article 3(26) of the Directive as ‘a structure containing one or more flues providing a passage for waste gases in order to discharge them into the air’.

**2.3.** Where two or more separate combustion plants which have been granted a permit for the first time on or after 1 July 1987,or the operators of which have submitted a complete application for a permit on or after that date, are installed in such a way that, taking technical and economic factors into account, their waste gases could, in the judgement of the regulator, be discharged through a common stack, the combination formed by such plants has to be considered as a single combustion plant and their capacities added for the purpose of calculating the total rated thermal input.

## Standby generators and supplementary firing

**2.4.** A stand-by generator (SBG) includes those generators used as back-up equipment (e.g. in cases of breakdown, malfunction, etc), for “black start” purposes or for the purpose of boosting performance. A supplementary firing apparatus (SFA) includes any appliance used to boost the performance of a plant. Neither of these definitions includes any apparatus being used in the normal operation of the plant.

**2.5.** 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.

**2.6.** Standby generators or supplementary firing apparatus will therefore fall within the scope of the industrial emissions Directive if, in the case of existing plants, they form part of, or assist in the operation of, the boiler. In the case of new plants, they will be covered if they discharge through a common stack with the other units. If the ‘potential’ rated thermal input of the plant, including the SBGs or SFAs is equal to or exceeds 50 MW, it will fall within the definition in Article 28 (subject to the following paragraph).

**2.7.** If the regulator is satisfied that standby generators will be used only in the case of an emergency or breakdown of other equipment, such that they replace the thermal input of that part for which they are substituting, their rated thermal input should not be counted towards calculation of the total. However, if the SBGs or SFAs are used to boost performance in certain cases (as well as, at times, substituting), they will need to be counted towards the total rated thermal input.

# 3. Permitting requirements

**3.1.** This chapter describes the Directive requirements that environmental permits for LCPs must deliver or take into account and how the Regulations apply these requirements.

## Existing plant – Article 30(2)

**3.2.** For plants which were granted a permit before 7 January 2013, or the operators of which submitted a complete application for a permit before that date, provided that such plants are put into operation no later than 7 January 2014, the regulator must ensure that permits contain conditions ensuring compliance with ELVs at least as stringent as those set out in Part 1 of Annex V unless (i) the operator opts for one of the derogations available in Articles 32 or 33, or (ii) Articles 31 or 40 apply[3].

**3.3.** If a plant granted a "limited life derogation" under Article 4(4) of the LCPD (and so by definition an "existing plant") is to continue in operation after 20,000 hours operation or, in any case, after 31 December 2015, the regulator must ensure that its permit contains conditions ensuring compliance with ELVs at least as stringent as those set out in Part 2 of Annex V of the industrial emissions Directive.

## New plant - Article 30(3)

**3.4.** The regulator ensure that permits for new plants contain conditions ensuring compliance with the ELVs at least as stringent as those set out in Part 2 of Annex V.

**3.5.** Waste gases from combustion plants shall be discharged in a controlled fashion by means of a stack (Article 30(1)). The regulator must therefore ensure that new plants conform[4], in particular by ensuring that the stack height is calculated by the operator in such a way as to safeguard health and the environment.

## Temporary derogations: Articles 30(5) and (6)

**3.6.** For both new and existing plants, Article (30)5 contains a derogation from Annex V Parts 1 and 2, for sulphur dioxide only. The regulator may grant such a derogation for a plant which normally uses a low sulphur fuel but is unable to do so, as a result of an interruption in supply owing to a serious shortage, for a maximum of six months. Where the regulator allows such a suspension it must inform the Secretary of State or the Welsh Government immediately.

**3.7.** Under Article 30(6), the regulator may grant a derogation from the obligation to comply with the ELVs set in Annex V for plants which normally burn only gaseous fuel, and which would otherwise need to be equipped with a waste gas purification facility, but have to resort exceptionally to a standby fuel as a result of a sudden interruption of the gas supply. This derogation must not last for more than 10 days except where there is an over-riding need to maintain energy supplies. The regulator must inform the Secretary of State or Welsh Government immediately of each specific case at the outset as soon as the need arises, .

[3] Articles 34 and 35 also provide "derogations" and the regulator must apply them in the very unlikely event (in England and Wales) that either is relevant.

[4] The regulator may also need to check conformity when existing plants are modified.

## Desulphurisation rate

**3.8.** On the imitative of the operator, the regulator will need to consider whether the Article 31 provision for plants firing 'indigenous solid fuel' applies. The regulator must take into account the definition of that term in Article 3(29). The regulator must also validate the technical justification of the need for the use of Article 31 before applying it, and must bear in mind that, under Article 72(4)(a), that justification will have to be reported, via Defra as the UK lead Department, to the European Commission.

## Article 32: Transitional National Plan

**3.9.** The Transitional National Plan (TNP):

- can cover only whole LCPs which were first permitted by the regulator before 27 November 2002 or for which a permit application had been made by that date and which were put into operation within a year of that date;

- cannot include those plants which to which the "limited life derogation" provided in Article 33 of the Directive applies (note that operators have until 1 January 2014 to provide the environmental regulator with the written declaration as regards operation after 1 January 2016 which is necessary for that derogation to apply); and

- cannot include large combustion plants 'within refineries firing low calorific gases from the gasification of refinery residues or the distillation and conversion residues from the refining of crude oil for own consumption, alone or with other fuels'.

**3.10.** LCPs can be placed in the TNP in respect of one, two or all three of the pollutants that the TNP can cover. In these cases, the ELVs set under Article 30(2) of the Directive will apply to the other pollutant(s). The TNP does not apply to carbon monoxide (CO) emissions - the CO limits in Annex V will apply irrespective of whether or not the plant is included in the TNP.

**3.11.** All LCPs in the TNP will continue to be subject to ELVs which are at least as stringent as those in place in permits on 31 December 2015. Those ELVs will have been set by the regulator as appropriate to meet the requirements of the IPPC Directive and, from 7 January 2014, the requirements of Chapter II of the industrial emissions Directive. Furthermore, plants placed in the TNP will remain subject to the requirements of Chapter II of the industrial emissions Directive and so the regulator may need to set more stringent ELVs based on BAT and taking account of particular environmental circumstances, irrespective of the annual emissions ceilings applying to TNP plant or the ELVs prescribed in Annex V of the Directive.

**3.12.** Commission Implementing Decision 2012/115/EU of 10 February 2012[5] lays down rules concerning the TNP. A draft TNP for the United Kingdom as a whole [is being constructed according to these rules] [was submitted on # 2012 to the European Commission for evaluation under the terms of Article 32(5)] *This paragraph will be updated when this Guidance is finalised.*

[5] At http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:052:0012:0025:EN:PDF

## Article 33: “limited life” derogation

**3.13.** A plant is eligible for a limited lifetime derogation if the operator undertakes, in a written declaration submitted to the regulator by 1 January 2014 at the latest, not to operate the plant for more than 17,500 operating hours, starting from 1 January 2016 and ending no later than 31 December 2023. Such plants will continue to be subject to ELVs which are at least as stringent as those in place in permits on 31 December 2015. Those ELVs will have been set by the regulator as appropriate to meet the requirements of the IPPC Directive and, from 7 January 2014, the requirements of Chapter II of the industrial emissions Directive. Furthermore, such plants will remain subject to the requirements of Chapter II of the industrial emissions Directive and so the regulator may need to set more stringent ELVs based on BAT and taking account of particular environmental circumstances, irrespective of the ELVs prescribed in Annex V of the Directive. Moreover, LCPs with a total rated thermal input of more than 500 MW firing solid fuels and which were granted their first permit after 1 July 1987 must comply with the emission limit values for nitrogen oxides set out in Part 1 of Annex V.

**3.14.** Operators of LCPs for which limited life derogations have been granted, in accordance with the criteria above, must submit an annual report to the regulator detailing the number of hours for which the plant has operated since the commencement of the derogation period.

**3.15.** “Operating hours” are defined in Article 3(27) of the Directive as excluding start-up and shut-down periods. Those periods are in turn defined according to the implementing rules established under Article 41 of the Directive and adopted under Article 75(2)….(#*to be completed when the rules are finalised*). Note that, where combustion plant(s) of less than 15 MW rated thermal input discharge through the common stack which defines the LCP, any periods in which it or they alone are operating must be discounted from the record of operating hours.

## Breakdown or malfunction of abatement equipment - Article 37

**3.16.** The regulator must ensure that permit conditions include provision for procedures relating to malfunction or breakdown of the abatement equipment (Article 37(1)). In case of a breakdown, the regulator must require the operator to reduce or close down operations if a return to normal operation is not achieved within 24 hours, or to operate the plant using low polluting fuels.

**3.17.** In any case, the operator must notify the regulator within 48 hours of such malfunction or breakdown. The cumulative duration of unabated operation in any twelve-month period must not exceed 120 hours but the regulator may allow exceptions to the limits of 24 hours and 120 hours above in cases where:

- there is an overriding need to maintain energy supplies, or
- the plant with the breakdown would be replaced by another plant which would cause an overall increase in emissions.

**3.18.** The abatement equipment is considered to have malfunctioned when the combustion plant fails to comply with ELVs across the common stack, owing to the malfunction or breakdown of part or all of the abatement equipment.

**3.19.** Breakdown is considered to have occurred where all the abatement equipped fitted to a combustion plant has broken down. However, abatement equipment not operating because of a previously agreed maintenance programme is excluded from the breakdown requirements. The term “unabated operation” means that the abatement equipment is not operating because it has broken down.

## The need to maintain energy supplies – Article 37(2)

**3.20.** Where the regulator must make a judgement under Article 37(2) as to whether there is an overriding need to maintain energy supplies, that judgement must be referred to the Secretary of State or the Welsh Government, depending upon the location of the plant. The regulator must follow any decision made by Government.

## Multi-fuel firing units - Article 40

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

**3.22.** Article 3(32) of the industrial emissions 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 3(24) as: ‘any solid, liquid or gaseous combustible material’, but the question arises as to whether the use of oil for the purpose of start-up and improved ignition of a combustion plant falls into this category.

**3.23.** 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 the emission limit values under Article 3(27) of the industrial emissions Directive, 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 limit values are determined and measured.

**3.24.** In the case of LCPs with a multi-fuel firing unit involving the simultaneous use of two or more fuels (Article 40(1)), the regulator should set the emission limit values as follows:

- firstly, by taking the emission limit value relevant for each individual fuel and pollutant corresponding to the rated thermal input of the combustion plant as given in Annex V;
- secondly, by determining fuel-weighted emission limit values, which are obtained by multiplying the above individual emission limit value by the thermal input delivered by each fuel, the product of multiplication being divided by the sum of the thermal inputs delivered by all fuels;
- thirdly, by aggregating the fuel-weighted limit values.

**3.25.** In multi-fuel firing units using the distillation and conversion residues from crude oil refining for own consumption, alone or with other fuels, two procedures for calculating the emission limit values apply depending on the proportion contributed to the total thermal input of the fuels by the determinative fuel.

**3.26.** The determinative fuel is defined (Article 3(30)) as the fuel which has the highest emission limit value as set out in Part 1 of Annex V, or, in the case of several fuels having the same emission limit value, the fuel having the highest thermal input amongst those fuels.

**3.27.** If, during the operation of the combustion plant, the proportion of the total thermal input contributed by the determinative fuel is at least 50% the emission limit value set out in Part 1 of Annex V for that fuel shall apply (Article 40(2)).

**3.28.** Where the proportion of the total thermal input contributed by the determinative fuel is lower than 50%, the emission limit value is determined on a pro rata basis of the heat input supplied by the individual fuels in relation to the sum of the thermal inputs delivered by all fuels as follows:

- firstly, by taking the emission limit value relevant for each individual fuel and pollutant corresponding to the rated heat input of the combustion plant as given in Part 1 of Annex V;
- secondly, by calculating the emission limit value of the determinative fuel and, in the case of two fuels having the same emission limit value, the fuel with the higher thermal input. This value is obtained by multiplying the emission limit value laid down in Part 1 of Annex V for that fuel by a factor of two, and subtracting from this product the emission limit value of the fuel with the lowest emission limit value;
- thirdly, by determining the fuel-weighted emission limit values, which are obtained by multiplying the calculated fuel emission limit values for each fuel by their respective thermal inputs, the product of multiplication being divided by the sum of the thermal inputs delivered by all fuels;
- fourthly, by aggregating the fuel-weighted emission limit values.
- In the case of multi-fuel firing combustion plants covered by Article 30(2) using the distillation and conversion residues from crude oil refining for own consumption, alone or with other fuels the average emission limit values for sulphur dioxide set out in Part 7 of Annex V may be applied instead of the emission limit values calculated as described above.

**3.29.** In the case of plants with a multi-fuel firing unit involving the alternative use of two or more fuels, the regulator should apply the emission limit values set out in Part 1 of Annex V corresponding to each fuel.

## Changes to operations - Article 30(7)

**3.30.** Where a combustion plant is extended the emission limit values set out in Part 2 of Annex V shall apply to the extended part of the plant affected by the change and shall be fixed in relation to the total rated thermal input of the entire plant (Article 30(7)).

**3.31.** In the case of a change to a combustion plant which may have consequences for the environment and which affects a part of the plant with a rated thermal input of 50 MW or more the emission limit values set out in Part 2 of Annex V shall apply to the part of the plant which has changed, in relation to the total rated thermal input of the entire combustion plant.

## Monitoring- Article 38

**3.32.** The regulator should include in the environmental permit provisions to ensure that the operator undertakes the monitoring of emissions, in accordance with Part 3 of Annex V. The regulator must determine the location of the sampling or measurement points to be used for the monitoring of emissions.

**3.33.** The regulator shall include in the environmental permit, provisions to ensure that the operator informs it within specified time limits about:

- the results of the continuous measurements;
- the checking of the measuring equipment;
- the individual measurements; and
- all other measurements carried out in order to assess compliance with the industrial emissions Directive.

## Compliance with emission limits - Article 39

**3.34.** The regulator must use the criteria set out in Part 4 of Annex V for assessing compliance with emission limit values.

**3.35.** In the case of continuous measurements, the emission limit values set out in Parts 1 and 2 of Annex V shall be regarded as having been complied with if the evaluation of the measurement results indicates, for operating hours within a calendar year, that all of the following conditions have been met:

(a) no validated monthly average value exceeds the relevant emission limit values set out in Parts 1 and 2 of Annex V;

(b) no validated daily average value exceeds 110 % of the relevant emission limit values set out in Parts 1 and 2 of Annex V;

(c) in cases of combustion plants composed only of boilers using coal with a total rated thermal input below 50 MW, no validated daily average value exceeds 150 % of the relevant emission limit values set out in Parts 1 and 2 of Annex V,

(d) 95 % of all the validated hourly average values over the year do not exceed 200 % of the relevant emission limit values set out in Parts 1 and 2 of Annex V.

**3.36.** The validated average values are determined as set out in point 10 of Part 3 of Annex V. For the purpose of the calculation of the average emission values, the values measured during the periods referred to in Article 30(5) and (6) (standby fuel derogations) and

Article 37 (breakdown of abatement equipment) as well as during the start-up and shut-down periods (Article 41) shall be disregarded.

**3.37.** The regulator should set out rules for determining compliance in cases where only discontinuous measurements or other appropriate procedures for determination are required. The emission limit values set out in Annexes Parts 1 and 2 of Annex V shall be regarded as having been complied with if the results of each of the series of measurements or of the other procedures defined and determined according to the rules laid down by the regulator do not exceed the emission limit values (Article 39).

## Carbon capture and storage readiness – Article 36

**3.38.** The regulator must ensure that operators of all LCPs with a rated electrical output of 300 megawatts or more, for which the permit was issued after the 5 June 2009 when Directive 2009/31/EC on the geological storage of carbon dioxide entered into force, have assessed whether the following conditions are met:

- suitable storage sites are available;
- transport facilities are technically and economically feasible; and
- it is technically and economically feasible to retrofit for carbon dioxide capture.

**3.39.** If the conditions set out above are met, the regulator must set permit conditions so that suitable space on the installation site for the equipment necessary to capture and compress carbon dioxide is set aside. The regulator must determine whether the conditions are met on the basis of the assessment referred to in paragraph 4.39 and other available information, particularly concerning the protection of the environment and human health.

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***[To be added]***

**Annex 1:** Schedules 15 and 15A to the Environmental Permitting (England and Wales)_Regulations 2010 (as amended)

**Annex 2:** Chapter III of the industrial emissions Directive

**Annex 3:** Annex V of the industrial emissions Directive