Environment Agency

Review of an Environmental Permit under the Environmental Permitting (England & Wales) Regulations 2016

Decision document recording our decision-making process following review of a permit

The Permit number is:	EPR/FP3139FN
The Operator is:	Essar Oil (UK) Limited
The Installation is:	Stanlow Manufacturing Complex
This Variation Notice number is:	EPR/FP3139FN/V008

A Variation Notice EPR/ FP3139FN/V008 has been issued to consolidate all previous variations to the conditions of permit FP3139FN.

What this document is about

All Environmental permits which permit the operation of large combustion plant (LCP), need to be varied to implement the specific provisions for LCP (as defined by articles 28 and 29 of the IED), given in the Industrial Emissions Directive (IED), Chapter III (Ch III), which introduce new Emission Limit Values (ELVs) and monitoring requirements that are set out in Annex V, Part 1 of which is applicable to existing LCP (as defined in Article 30(2)). This is covered in Part One of this document.

Article 32 of the IED provides a period of transition towards the new ELVs for some combustion plants via, the Transitional National Plan (TNP), however this is not applicable to refinery combustion plants.

In order to assess the operator's ability to comply with IED Ch III, in relation to refinery combustion plants, we issued a notice requiring information, under regulation 60(1) of the Environmental Permitting Regulations (EPR). The information requested for each permitted LCP included details of the type and size of the unit and the types of fuels which it burns. A copy of the regulation 60 notices and the operator's response is available on the public register.

In addition there have also been changes including two minor operational changes, updates and additions made to Table S1.3 Improvement Requirements, addition to Table S3.4 (a) with an annual limit for sulphur dioxide for 2017 onwards and a revised and consolidated Schedule 4 – Reporting. These amendments are described in Part Two of this document.

This is our decision document, which explains the conditions of the consolidated variation notice that we have issued and is a record of our decision-making process that shows how we have taken into account all relevant factors in reaching our position. This document has been separated into two sections:
Part 1: Decision making in relation to large combustion plant
Part 2: Decision making in relation to other changes

How Part 1 of this document is structured

Glossary
1. Our decision
2. Part One - How we reached our decision
3. Part One - The legal framework
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GLOSSARY

BAT	best available techniques
BREF	best avalable techniques reference document
ELV	emission limit value set out in either IED or LCPD
DEFRA	Department for the Environment, Food and Rural Affairs
EIONET	Environmental Information and Observation Network
ELV	Emission limit value set out in either IED or LCPD
EPR	Environmental Permitting (England and Wales) Regulations 2016
IED	Industrial Emissions Directive 2010/75/EC (as published in the Official Journal of the European Union, OJ L 334, 17.12.2010, p. 17–119)
LCP	large combustion plant – combustion plant subject to Chapter III of IED
LCPD	large combustion plant directive 2001/80/EC
MCR	maximum continuous rating
MFF	multi fuel fired
MFF Protocol	IED Chapter III Protocol for Multi-fuel Firing Refinery Combustion Plants granted a Permit prior to 7th January 2013, version 5.
NERP	National Emissions Reduction Plan

1 Our decision

We have decided to issue Variation Notice FP3139FN/V008 to the Operator. This permits them to continue to operate the Installation, subject to the conditions in the notice.

We consider that, in reaching this decision, we have taken into account all relevant considerations and legal requirements and that the varied permit will ensure that a high level of protection is provided for the environment and human health.

2 How we reached our decision

2.1 Requesting information relating to the requirements of Chapter III and Annex V of the IED

We issued notices under Regulation 60(1) of the Environmental Permitting (England and Wales) Regulations 2010 (Regulation 60 Notice) on 05/08/2015 requiring the Operator to provide information for each large combustion plant (LCP) at Stanlow Manufacturing Complex, including:

- The type, size and configuration of the combustion plant
- Specification of the fuels which the LCP can fire and for multi-fuel fired plant the range of fuel firing ratios that could be used by the plant
- Details of the proposed method for assigning periods of start-up and shutdown
- For multi-fuel fired plants; a proposed methodology for assessing which ELVs should apply, as calculated in accordance with Articles 40(2), or set according to Article 40(3) and procedure for verifying compliance with the relevant ELV

The responses to the Regulation 60 Notices were received from the Operator on 30/09/2015. We considered the responses were in the correct form and contained sufficient information for us to begin our determination of the permit reviews.

The Operator made no claim for commercial confidentiality. We have not received any information in relation to the Regulation 60 Notice responses that appears to be confidential in relation to any party.

3 The legal framework

The Variation Notice will be issued under Regulations 18 and 20 of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an '*installation'* as described by the IED;
- subject to aspects of other relevant legislation.

We consider that, in issuing the Consolidated Variation Notice, this will ensure that the operation of the Installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

We explain how we have addressed specific statutory requirements more fully in the rest of this document.

Meeting the requirements of the IED Chapter III

The table below shows how relevant requirements of IED ChIII have been addressed by the permit conditions.

IED Article Reference	IED requirement	Permit condition
30(2)	Setting emission limit values for plant granted a permit before 7 January 2013	3.1.2
30(6)	If there is an interruption in the supply of gas, an alternative fuel may be used and the permit emission limits deferred for a period of up to 10 days, except where there is an overriding need to maintain energy supplies. The Environment Agency (EA) shall be notified immediately.	2.3.3
37	Notification of malfunction and breakdown of abatement equipment	4.3.1 and Schedule 5
38	Monitoring of air emissions in accordance with Annex V Pt 3	3.6
39	Application of compliance criteria to emission limit values in accordance with Annex V Part 4	Schedule 3, Table S3.1
40	Multi-fuel firing	Schedule 3, Table S3.1
41(a)	Determination of start-up and shut-down periods	2.3.4 Schedule 1, Table S1.2
Annex V Pt 1	Emission limit values for plant permitted before 7th January 2013	Schedule 3, Table S3.1
Annex V Pt 1(6(1))	Definition of natural gas	Schedule 6
Annex V Pt7	Refinery multi-fuel firing SO_2 derogation	Schedule 3, Table S3.1

4 Key Issues

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

The table below summarised the amendments to permit conditions and related tables and schedules following the issue of the variation and consolidation. Detailed information is provided in the subsequent paragraphs.

Conditions	
2.3.3	Template IED condition added relating to the limited use of back up fuel in LCPs.
2.3.4 and Table S1.2	Condition added relating to specification of start-up and shutdown periods for LCP as specified in Table S1.2
2.3.5 and Table S1.4	Condition added relating to requirements before start-up of specified units
3.6.1	Template condition added relating to monitoring requirements under IED for LCP.
3.6.2	Template condition added relating to action required in the event of CEMS monitoring results for > 10 days a year being invalid.
3.6.7	Template IED condition added relating to CEMS monitoring requirements for LCP.
Table S1.3	A new Improvement Condition (IC37) has been added to the Improvement Programme Requirements: The operator shall submit, to the Environment Agency, a written technical report in relation to the high pressure boiler house (HPBH) which addresses the following: • identify the operating envelope of the HPBH, including fuel mixes and maximum and minimum firing rates. • Associated with this operating envelope, the operator shall quantify the emissions of oxides of nitrogen from the HPBH (LCP 138, emission point REF-A 4). • identify changes in operating philosophy, improvements to existing oxides of nitrogen reduction technology and/or further reduction techniques. This should include an assessment of the level of reduction in nitrogen oxide releases which will be achieved through application of these modifications. • a project plan, including timescales, for implementation of the improvements identified in 3 above • The plan presented in 4 above shall be implemented by the operator, following approval by the Environment Agency.
Table S1.4	Two new Pre-operational Conditions (POC3 & POC4) have been added to the Pre-operational measures for future development: POC3 - In relation to the operation of Operation of Crude Distillation Unit 3 (LCP138): At least 3 months prior to commencement of start-up of Crude Distillation Unit 3 the operator shall submit a report for approval by the Environment Agency describing in detail any changes in operating techniques and fuels used, when compared to the techniques and fuels described in the '*reference relevant documents in the operating techniques table*'. The operator shall also submit a periodic monitoring plan for the unit; for approval, which will be implemented within one month of stable unit operation POC4 - Operation of HVI unit (LCP141 - HVI part only): At least 3 months prior to commencement of start-up of HVI, the operator shall submit a report for approval by the Environment Agency describing in detail any changes in operating techniques and fuels used, when compared to the techniques and fuels described in the '*reference relevant documents in the operating techniques table*'. The operator shall also submit a periodic monitoring plan for the unit; for approval, which will be implemented within one month of stable unit operation

Conditions	
Table S2.1	Updated to specify no liquid firing on: REF-A-5 - Platformer 3 & & HDT3 (LCP142) REF-A-6 – Aromatics & HDS2 (LCP143) Updated to specify that back up liquid firing is allowed for 240hours on REF-A-4 – Crude Distillation unit 4 (CD4) (LCP139)
Table S3.1	Table amended to include new LCPs references for emission points and inclusion of LCP emission limit values and monitoring requirements in line with IED. Notes to table: • removed where no longer relevant; • added to reflect IED requirements; and • added to show units subject to Pre-operational Conditions
Table S3.4	Table re-named from Table 3.4(a). Sulphur dioxide annual mass limit updated. Oxides of nitrogen (2017 onwards) from emission point REF-A-4 Crude Distillation unit 4 (LCP139) annual mass limit added.
	Table S3.4b - Table deleted as NERP allocation is no longer relevant.
Table S4.1 & S4.5	Updated and re-numbered to include monitoring and reporting (including reporting forms) for LCP plant
Table S4.4	IED Chapter III Performance Parameter reporting requirements table added
Schedule 6	Interpretations amended/added to incorporate terms relevant IED

Where relevant and appropriate, we have incorporated the techniques described by the Operator in their Regulation 60 Notice response as specific operating techniques required by the permit, through their inclusion in Table S1.2 of the Consolidated Variation Notice.

The variation notice uses updated LCP numbers in accordance with the most recent DEFRA EIONET LCP reference numbers. The LCP references are now as follows:

	Description of unit	Operator's reference
• **LCP 138**	Crude Distillation Unit 3	REF-A-1
• **LCP 139**	Crude Distillation Unit 4	REF-A-2
• **LCP 140**	High Pressure Boiler House	REF-A-4
• **LCP 141**	Secondary Processes	REF-A-6
• **LCP 142**	Platformer 3 and HDT3	REF-A-5
• **LCP 143**	SHOP	SHO-A-4

The table below summarises the rating, configuration and fuel options for each LCP:

LCP Number and source	Unit rating MW	Configuration	Total stack MW	Fuel options
LCP 138 Crude Distillation Unit 3	1 x 33.2 1 x 37.7 1 x 27.9	Vent via a single windshield at emission point REF-A-1	98.8	Capable of multi-fuel firing Operates on a mixture of gaseous and liquid fuels. Currently mothballed
LCP 139 Crude Distillation Unit 4	2 x 58.9 1 x 49 1 x 53.3	Vent via a single windshield at emission point REF-A-2	220.1	Capable of multi-fuel firing Operates on 100% gaseous fuels with occasional liquid fuel during periods of abnormal operation
LCP 140 High Pressure Boiler House	6 x 104	3 x vent via a single windshield at emission point REF-A-4	624 – limited to <500	Capable of multi-fuel firing Operates on a mixture of gaseous and liquid fuels.
LCP 142 Platformer 3 and HDT3	1 x 30.4 1 x 42.4 1 x 26.8 2 x 16.8	Vent via a single windshield at emission point REF-A-5	135.2	Capable of gas firing only. Operates on 100% gaseous fuels.
LCP 141 Secondary Processes	3 x 44.5 1 x 5.6	Vent via a single windshield at emission point REF-A-6	139.1	Capable of multi-fuel firing. **Aromatics & HDS2** - Operates on 100% gaseous fuels. **Aromatics, HDS2 & HVI** - Operates on a mixture of gaseous and liquid fuels. HVI currently mothballed
LCP 143 SHOP	1 x 64	Vent via a single windshield at emission point SHO-A-4	64	Capable of multi-fuel firing Operates on a mixture of gaseous and liquid fuels

Fuel Options

Gaseous fuels include refinery fuel gas (RFG) in a ring main and natural gas.
Liquid fuels include flushing oil and refinery liquid fuel (RFO).

RFG fuel classification

Residue is not defined for the purpose of Article 40, but is generally viewed as something which is left over after an element of greater worth has been removed. The provisions of Part 7 of annex V specifically excludes gas turbines and gas engines, which suggests that other combustion plants using gaseous distillation and conversion residues, are covered. RFG is a gaseous fuel derived from distillation and conversion processes and therefore can be considered a distillation and conversion residue from the refining of crude oil.

Where RFG is burned in combination with another fuel, e.g. natural gas, the SO_2 emission limits in Section 7 of Annex V can apply; which for plant granted a permit before 27 November 2002 is 1000mg/m^3.

Application of Article 40(3) instead of Articles 40(1) or 40(2) is discretionary. We decided to apply that discretion to RFG firing taking into account general

government policy, broader economic considerations, such as security of supply and whether there was any legitimate expectation raised with the industry sector that the Industrial Emissions Directive would result in little change for UK Refineries.

Net Rated Thermal Input

Some of the ELVs set in Annex V vary according to the Net Rated thermal input of the combustion plant. In other words how much fuel it is designed to burn. The Applicant has provided the Net Thermal Input for each LCP, as above, along with historical evidence of fuel usage to support these values.

Minimum start up load and Minimum shut-down load

Article 14(1)(f) of IED requires that provision is made in the permit conditions for other than normal operating conditions such as start-up and shut down operations. We have addressed this in section 2.3 'Operating Techniques' of the permit. It is necessary therefore to define the period of start-up or shut-down. The Operator has defined the "minimum start-up load" and "minimum shut-down load" for each LCP in their response to question 2f of the Regulation 60 Notice, in terms of three criteria that suit the technical characteristics of the plant, which can be met at the end of start-up or start of shut-down.

We agree with all of these definitions. Reference to the definitions in the Regulation 60 response have been incorporated into the operating techniques specified in Table 1.2 which are referenced in standard permit condition 2.3.4 which defines the period of start-up and shut-down.

Compliance Route

Article 32(1)(b), excludes LCPs firing distillation and conversion residues from the refining of crude oil, from inclusion in the transitional national plan.

The above LCPs are covered by IED Article 30(2) which applies to all permits for installations containing combustion plants which have been granted a permit before 7 January 2013. Annex V Part 1 sets out emission limit values (ELVs) for combustion plants referred to in Article 30(2); unless a derogation or special provision, such as that given in article 40(3) for MFF plant firing distillation and conversion residues, applies

The operator has not applied to rely on any derogation provision in article 30, from the ELVs specified in Annex V. Details of the sections of the IED that are relevant for setting emission limit values are summarised below.

Emission Limit Values

Emission Limit Values have been set in accordance with the values specified in Annex V Part 1 of the IED, except for the SO_2 ELV from RFG firing, which is specified in Annex V Part 7.

These emission limit values shall be calculated at a temperature of 273,15 K, a pressure of 101,3 kPa and after correction for the water vapour content of the waste gases and at a standardised O_2 content of 6% for solid fuels and 3% for liquid and gaseous fuels. For this purpose, refinery fuel gas (RFG) is a gaseous fuel.

As previously, in addition to emission limits set at a combustion unit level, we will continue to impose site-wide annual mass emission limits for SO_2. The MFF units will need to be fired such that, in combination with other sources of SO_2, site-wide emissions remain within the current annual mass emission limit. In this way gains in

the reduction of SO_2 to air will be maintained. This delivers our obligations to protect and improve the environment and is consistent with the principle of 'no-deterioration'

Multifuel firing emission limits

All combustion plants covered by this decision document are multifuel fired and use distillation and conversion residues from the refining of crude oil as a fuel. Article 40(2) makes specific provision for determination of the applicable ELVs for such plant, which may be applied at the discretion of the competent authority. We recognise the differences between refinery fuels and commercial fuels, in relation to their composition and variability, which will have an impact on their associated combustion emissions, so we have decided to apply the calculation methodology provided in article 40(2) to these combustion plants, for emissions of NO_x, dust and where relevant CO:
The methodology is as follows:

(a) where, during the operation of the combustion plant, the proportion contributed by the determinative fuel to the sum of the thermal inputs delivered by all fuels is 50 % or more, the emission limit value set in Part 1 of Annex V for the determinative fuel;

(b) where the proportion contributed by the determinative fuel to the sum of the thermal inputs delivered by all fuels is less than 50 %, the emission limit value determined in accordance with the following steps:

(i) *taking the emission limit values set out in Part 1 of Annex V for each of the fuels used, corresponding to the total rated thermal input of the combustion plant;*

(ii) *calculating the emission limit value of the determinative fuel by multiplying the emission limit value, determined for that fuel according to point (i), by a factor of two, and subtracting from this product the emission limit value of the fuel used with the lowest emission limit value as set out in Part 1 of Annex V, corresponding to the total rated thermal input of the combustion plant;*

(iii) *determining the fuel-weighted emission limit value for each fuel used by multiplying the emission limit value determined under points (i) and (ii) by the thermal input of the fuel concerned and by dividing the product of this multiplication by the sum of the thermal inputs delivered by all fuels;*

(iv) *aggregating the fuel-weighted emission limit values determined under point (iii).*

The determinative fuel is; the fuel with the highest ELV set out in Part 1 of Annex V, or where 2 fuels both have the highest ELV, whichever has the highest thermal input.

When calculating the applicable ELVs for the MFF units, we have taken into account the following:

- Gas and liquid fuel flow rates into individual furnaces are measured in real time.
- Gaseous fuels are mixed in the ring main not at the burner tip, therefore the actual ratio of the gaseous fuels cannot be measured at the burner front and is considered to be constant throughout the ring main.
- The calorific value of the refinery fuels is calculated using a variety of historical data sources and some calculation factors;
- The proportion of natural gas in the gaseous fuel mix never exceeds 50%. The remainder is made up from process gases such as refinery fuel gas, recovered flare gas and distillation off gases.

In principal the ELV should vary over time "dynamically" according to the actual fuel ratio fired in that instance; however, this is not always practicable and in these cases a representative fixed ELV has been determined according to section 6(III) of the 'IED Chapter III Protocol for Multi-fuel Firing Refinery Combustion Plants granted a Permit prior to 7th January 2013'. For a specific combustion plant where a dynamic ELV is not practicable, the reasons for which are discussed in the table below.

Additional provision is made for SO_2 emissions from plants firing distillation and conversion residues from the refining of crude oil, in Article 40(3) and Part 7 of Annex V. All these plants were granted a permit before 27 November 2002, therefore the applicable emission limit is 1 000 mg/Nm^3.

Compliance with Emission Limit Values

Part 3 of Annex V requires that SO_2, NO_x, dust and CO are monitored continuously for combustion plants with a rated thermal input of > 100MW

Part 4 of Annex V specifies the compliance criteria for emissions measured continuously as follows:

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

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

(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,*

(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.*

Points (a),(b) & (d) are reflected in the emission limit value set for the relevant reference period (see table below). Point (c) is not relevant to any of the combustion plants covered by this decision document.

The table below summarises the emission limits and monitoring requirements for each LCP, making reference to relevant sections of Annex V of the IED and pertinent technical characteristics:

Emission Point	Parameter	Existing ELV & Monitoring Method (mg/m3)	IED Annex V relevant sections	New ELV (mg/m3) and reference period where relevant	Monitoring
REF-A-1 Crude Distillation Unit 3 **LCP 138** <100MWth	NOx	450 mg/m^3 Periodic 6 monthly BS EN 14792	Part 1 (4) Note 1 and Part 1 (6) Note 4 Part 3 (3) and Part 3 (8)	300 - 450 mg/m^3	Periodic At least every 6 months BS EN 14792 or TGN M21
	Dust	100 mg/m^3 Periodic 6 monthly BS EN 13284-1	Part 1 (7) Note 1 and Part 8 Part 3 (3) and Part 3 (8)	5 - 50 mg/m^3.	Periodic At least every 6 months BS EN 13284-1
	CO	No limit set.	Part 1 (6) Part 3 (3) and Part 3 (8)	No limit set	Periodic At least every 6 months BS EN 15058
	SO2	2600 mg/m^3 Periodic 6 monthly BS EN 14791 or TGN M21	Part 7 Part 3 (3) and Part 3 (8)	1000 mg/m^3	Periodic At least every 6 months BS EN 14791 or TGN M21
	Crude Distillation Unit 3 (CD3) was first permitted before the 27th November 2002 and comprises three furnaces with a rated thermal input of below 100MWth. Therefore continuous monitoring is not required and the concessionary limits given in Part 1 (4) Note 1 and Part 1 (6) Note 4 for NOx and Part 1 (7) Note 1 and Part 8 for Dust are applicable. The furnaces can run on a combination of refinery fuel gas, refinery liquid fuel and flushing oil and therefore considered to be a plant that routinely uses liquid and gaseous fuels. As this is MFF plant, the ELVs for NOx and dust are given as a range of values and the applicable ELV will be determined at the time when periodic monitoring is undertaken, based on the average fuel mix fired for the duration of the extractive monitoring in line with the MFF Protocol Section 6 Part III A. CD3 is currently mothballed. Condition 2.3.5 and Table S1.4 Pre-operational measures for future development POC3 requires the operator to demonstrate the unit's ability to comply with the conditions of the permit before bringing it back into operation.				

Emission Point	Parameter	Existing ELV & Monitoring Method (mg/m3)	IED Annex V relevant sections	New ELV (mg/m3) and reference period where relevant	Monitoring
REF-A-2 Crude Distillation Unit 4 **LCP 139** >100MWt	Gas firing NO_X	450 mg/m^3 Periodic quarterly BS EN 14792	Part 1 (6) Note 4 (gas firing) Part 3 (1) and 3 (8) Part 4(1)	300 mg/m^3 Calendar monthly mean of validated hourly averages	CEMS installed and operational for all parameters including oxygen. BS EN 14181
				330 mg/m^3 Daily mean of validated hourly average	
				600 mg/m^3 95% of validated hourly averages within a calendar year	
	Gas firing Dust	100 mg/m^3 Periodic quarterly BS EN 13284-1	Part 1 (8) (gas firing) Part 3 (1) and 3 (8) Part 4(1)	5 mg/m^3 Calendar monthly mean of validated hourly averages	
				5.5 mg/m^3 Daily mean of validated hourly average	
				10 mg/m^3 95% of validated hourly averages within a calendar year	
	Gas firing SO_2	2600 mg/m^3 Periodic quarterly BS EN 14791 or TGN M21	Part 7 Part 3 (1) and 3 (8) Part 4(1)	1000 mg/m^3 Calendar monthly mean of validated hourly averages	
				1000 mg/m^3 daily mean of validated hourly average	
				1000 mg/m^3 95% of validated hourly averages within a calendar year	
	Back up fuel NO_X	N/A	Part 1 (4) Note 1 (liquid firing) Part 3 (1) and 3 (8) Part 4(1)	450 mg/m^3 Calendar monthly mean of validated hourly averages	
				495 mg/m^3 Daily mean of validated hourly average	
				900 mg/m^3 95% of validated hourly averages within a calendar year	
	Back up fuel Dust	N/A	Part 1 (7) Note 1 (liquid firing) Part 3 (1) and 3 (8) Part 4(1)	50 mg/m^3 Calendar monthly mean of validated hourly averages	
				55 mg/m^3 Daily mean of validated hourly average	
				100 mg/m^3 95% of validated hourly averages within a calendar year	
	Back up fuel SO_2	N/A	Part 7 Part 3 (1) and 3 (8) Part 4(1)	1000 mg/m^3 Calendar monthly mean of validated hourly averages	
				1000 mg/m^3 daily mean of validated hourly average	

Emission Point	Parameter	Existing ELV & Monitoring Method (mg/m3)	IED Annex V relevant sections	New ELV (mg/m3) and reference period where relevant	Monitoring
				1000 mg/m^3 95% of validated hourly averages within a calendar year	
	CO	No limit set	Part 1 (6) Part 3 (1) and 3 (8) Part 4(1)	No limit set	
	Crude distillation unit 4 (CD4) was first permitted before the 27th November 2002. It is a unit with a total rated thermal input of 220.1MWth. Whilst being capable of being a MFF unit burning RFG, RFO and flushing oil, the Operator has confirmed that the CD4 unit will only fire on RFG with liquid fuel only being used in an abnormal situation as a backup fuel. RFG is confirmed therefore as the determinative fuel and the REF-A-2 has gas firing ELVs set accordingly following the MFF Protocol (Section 6 Part 2 II) for NOx and dust. There are restrictions placed on back up liquid firing which are detailed in Condition 2.3.3 and TableS2.1 Raw Materials and Fuels. REF-A-2 also has additional ELVs set for back up liquid firing. These ELVs are different because the liquid fuel will then become the determinative fuel (as greater than 50% liquid fired) so the MFF Protocol Section 6 Part III B has been used to set these ELVs.				

Emission Point	Parameter	Existing ELV & Monitoring Method (mg/m3)	IED Annex V relevant sections	New ELV (mg/m3) and reference period where relevant	Monitoring
REF-A-4 HP Boilers **LCP 140** >100MWth	NO_X	600 mg/m^3 Periodic 6 monthly BS EN 14792	Part 1 (4) Note 1 and Part 1 (6) Note 4 Part 3 (1) and 3 (8) Part 4(1)	411 mg/m^3 Calendar monthly mean of validated hourly averages 452 mg/m^3 Daily mean of validated hourly average 822 mg/m^3 95% of validated hourly averages within a calendar year	CEMS installed and operational for all parameters including oxygen. BS EN 14181
	Dust	100 mg/m^3 Periodic quarterly BS EN 13284-1	Part 1 (7) Note 1 and Part 8 Part 3 (1) and 3 (8) Part 4(1)	37 mg/m^3 Calendar monthly mean of validated hourly averages 41 mg/m^3 Daily mean of validated hourly average 74 mg/m^3 95% of validated hourly averages within a calendar year	
	SO_2	2600 mg/m^3 Periodic 6 monthly BS EN 14791 or TGN M21	Part 7 Part 3 (1) and 3 (8) Part 4(1)	1000 mg/m^3 Calendar monthly mean of validated hourly averages 1000 mg/m^3 daily mean of validated hourly average 1000 mg/m^3 95% of validated hourly averages within a calendar year	
	CO	No limit set.	Part 1 (6) Part 3 (1) and 3 (8) Part 4(1)	No limit set	

The HP Boilers (HPBH) is a unit first permitted before the 27th November 2002 and comprising 3 x a pair of boilers each discharging through a flue within a combined windshield. Following the EA's interpretation of capacity of combustion plant given in RGN2 (v3.1), the total MWth of the combined HPBH is >500MWth at 624MWth.

The Operator confirmed in correspondence dated 15th December 2015 that the HPBH total MWth was restricted by software interlock to routinely operating with the a capacity of <500MWth from 1st January 2016. The Operator has provided evidence of the infrequent (typically 1-2 times a year) scenario of the loss of the CO Boiler which would require intervention and emergency ramping up of other combustion plant so the 500MWth threshold could be exceeded for typically 1-2 hours. This scenario falls within that described in the MFF Protocol Section 4 on Thermal Capacity. Therefore the ELVs set reflect those for <500MWth LCPs.

The HPBH is a complex MFF LCP firing mix of natural gas, RFG and RFO. Therefore we would expect to set ELVs which vary in accordance with the variation in fuel mix. However this is not possible for the HPBH at this time.

The main purpose of the HPBH is to meet the steam demand of the refinery, which can vary considerably, in the most efficient manner possible. The Operator has provided evidence of this variability in their correspondence of 6th October 2016.

The operator has also provided evidence that due to the number of boilers, range

Emission Point	Parameter	Existing ELV & Monitoring Method (mg/m3)	IED Annex V relevant sections	New ELV (mg/m3) and reference period where relevant	Monitoring
	of fuel mixes available and operating mode to ensure site steam supply that an ELV that varies in accordance with the variation in fuel mix is not practicable. Following the MFF Protocol (Section 6 Part III (b)), a fixed ELV for NOx and Dust has been set based on data provided by the Operator from NOx over the period 01/07/2015 – 01/09/2016 which gave a monthly median for NOx of 411mg/m3 and 37mg/3 for Dust. In addition to this, an annual NOx limit has been set of 1311tonnes. This annual NOx limit has been based on data provided by the Operator and based on annual performance since the introduction of natural gas to the HPBH and is representative. This delivers our obligations to protect and improve the environment and is consistent with the principle of 'no-deterioration'.				

Emission Point	Parameter	Existing ELV & Monitoring Method (mg/m3)	IED Annex V relevant sections	New ELV (mg/m3) and reference period where relevant	Monitoring
REF-A-45 Platformer 3 & HDT 3 **LCP 142** >100MWth	NO_X	500 mg/m^3 Periodic quarterly BS EN 14792	Part 1 (6) Note 4 Part 3 (1) and 3 (8) Part 4(1)	300 mg/m^3 Calendar monthly mean of validated hourly averages	CEMS installed and operational for all parameters including oxygen. BS EN 14181
				330mg/m^3 Daily mean of validated hourly average	
				600 mg/m^3 95% of validated hourly averages within a calendar year	
	Dust	No limit set.	Part 1 (8) Part 3 (1) and 3 (8) Part 4(1)	5 mg/m^3 Calendar monthly mean of validated hourly averages	
				5.5 mg/m^3 Daily mean of validated hourly average	
				10 mg/m^3 95% of validated hourly averages within a calendar year	
	SO_2	Subject to refinery bubble By calculation as agreed with Agency	Part 7 Part 3 (1) and 3 (8) Part 4(1)	1000 mg/m^3 Calendar monthly mean of validated hourly averages	
				1000 mg/m^3 daily mean of validated hourly average	
				1000 mg/m^3 95% of validated hourly averages within a calendar year	
	CO	No limit set.	Part 1 (6) Part 3 (1) and 3 (8) Part 4(1)	No limit set	
	This unit was first permitted before the 27th November 2002 and has a combined thermal input of greater than >100MWth. It comprises emissions from Platformer 3 and HDS 3 plants discharging through one windshield. This LCP is refinery gas fired only. The ELVs for NOX and Dust applied follow the MFF Protocol Section 6 Part I as RFG is the determinative fuel.				

Emission Point	Parameter	Existing ELV & Monitoring Method (mg/m3)	IED Annex V relevant sections	New ELV (mg/m3) and reference period where relevant	Monitoring
REF-A-6 Secondary Processes (Aromatics, HDS 2 and HVI) **LCP 141** >100MWth	Aromatics & HDS 2 ONLY NO_X	450 mg/m^3 Periodic quarterly BS EN 14792	Part 1 (4) Note 1 Part 3 (1) and 3 (8) Part 4(1)	300 mg/m^3 Calendar monthly mean of validated hourly averages	CEMS installed and operational for all parameters including oxygen. BS EN 14181
				330 mg/m^3 Daily mean of validated hourly average	
				600 mg/m^3 95% of validated hourly averages within a calendar year	
	Aromatics & HDS 2 ONLY Dust	100 mg/m^3 Periodic quarterly BS EN 13284-1	Part 8 Part 3 (1) and 3 (8) Part 4(1)	5 mg/m^3 Calendar monthly mean of validated hourly averages	
				5.5 mg/m^3 Daily mean of validated hourly average	
				10 mg/m^3 95% of validated hourly averages within a calendar year	
	Aromatics & HDS 2 ONLY SO_2	2600 mg/m^3 Periodic quarterly BS EN 14791 or TGN M21	Part 7 Part 3 (1) and 3 (8) Part 4(1)	1000 mg/m^3 Calendar monthly mean of validated hourly averages	
				1000 mg/m^3 daily mean of validated hourly average	
				1000 mg/m^3 95% of validated hourly averages within a calendar year	
	Aromatics & HDS 2 ONLY CO	No limit set.	Part 1 (6) Part 3 (1) and 3 (8) Part 4(1)	No limit set	
	The Secondary Processes LCP is made up of emission from three units and was first permitted before the 27th November 2002: Aromatics, HDS2 and HVI. All three units discharge through one windshield, REF-A-6 and have a combined thermal input of >1000MWth. However, HVI is currently mothballed and therefore ELVs have been set for Aromatics and HDS2 only. Aromatics and HDS2 units still have a combined thermal input of >100Mth. Whilst being capable of being a MFF unit burning RFG, RFO and flushing oil, the Operator has confirmed that Aromatics & HDS2 units will only fire on RFG so RFG is confirmed therefore as the determinative fuel. The emission point REF-A-6 (Aromatics & HDS2 ONLY) has been set gas firing ELVs accordingly following the MFF Protocol (Section 6 Part 2 I) for NOx and dust. Should the Operator wish to operate the HVI part of this LCP, Condition 2.3.5 and Table S1.4 Pre-operational measures for future development POC4 requires the operator to demonstrate the unit's ability to comply with the conditions of the permit before bringing it back into operation. Depending on the outcomes of the POC4 submission, ELVs will need to be re-evaluated for the unit when running all three unit together: Aromatics, HDS2 and HVI using Sections 5 and 6 of the MFF Protocol. This is reflected in Table S3.1 Note 6.				

Emission Point	Parameter	Existing ELV & Monitoring Method (mg/m3	IED Annex V relevant sections	New ELV (mg/m3) and reference period where relevant	Monitoring
SHO-A-4 SHOP **LCP 3** <100Mth	NOx	450 mg/m^3 Periodic 6 monthly BS EN 14792	Part 1 (4) Note 1 and Part 1 (6) Note 4 Part 3 (3) and Part 3 (8)	300 - 450 mg/m^3	Periodic At least every 6 months BS EN 14792 or TGN M21
	Dust	No limit set	Part 1 (7) Note 1 and Part 8 Part 3 (3) and Part 3 (8)	5 - 50 mg/m^3.	Periodic At least every 6 months BS EN 13284-1
	CO	No limit set.	Part 1 (6) Part 3 (3) and Part 3 (8)	No limit set	Periodic At least every 6 months BS EN 15058
	SO2	150 mg/m^3 Periodic 6 monthly BS EN 14791 or TGN M21	Part 3 (3) and Part 3 (8)	150 mg/m^3	Periodic At least every 6 months BS EN 14791 or TGN M21
	SHOP comprises one furnace that has a rated thermal input of below 100MWth and it was first permitted before the 27th November 2002. Therefore continuous monitoring is not required and the concessionary limits given Therefore continuous monitoring is not required and the concessionary limits given in Part 1 (4) Note 1 and Part 1 (6) Note 4 for NOx and Part 1 (7) Note 1 and Part 8 for Dust are applicable. The furnace can run on a combination of refinery fuel gas, refinery liquid fuel and waste oil and therefore it is considered to be a plant that routinely uses liquid and gaseous fuels. As this is a MFF plant, the ELVs for NOx and dust are given as a range of values and the applicable ELV will be determined at the time when periodic monitoring is undertaken, based on the average fuel mix fired for the duration of the extractive monitoring in line with the MFF Protocol Section 6 Part III A. Whilst IED Annex V Part 7 is the reference point for setting the ELV for SOx, this remains at 150mg/m^3 consistent with the principle of 'no-deterioration'.				

Monitoring & standards

Standards for assessment of the monitoring location and for measurement of oxygen have been added to the permit template for clarity.

Reporting

Tables S4.1, S4.4 and S4.5 have been updated to include the reporting requirements and associated reporting forms to meet the requirements of the IED chapter III.

Operator Performance Risk Assessment (OPRA)

The OPRA spreadsheet has been reviewed to include amended and additional activities and emissions. The amended spreadsheet has been uploaded to PAS and will form the basis of future subsistence charges. The overall score has been amended from 665 to 717 following the changes described in Part 2 of this document.

Decision Document FP3139FN V008 PART 2

Below is a summary of the corrections, amendments and minor operational changes which have been included in this Variation determination.

Conditions

2.3.5, 2.3.8, 2.3.9, 2.3.10, 2.3.11, 2.3.12, 2.3.13, 2.3.14, 2.3.15, 3.5.5

Minor amendments to text of the conditions to ensure that it is clear that this Condition applies to the operation of the waste incinerator, ERP by the insertion of the phrase "For the following activity referenced in schedule1, table S1.1: "incineration of hazardous waste"". This wording has been used as it reflects the existing text in schedule 1, table S1.1

Schedule 1 – Operations

Table S1.1 Activities Table

1. SDAF, Unit 78 and PDAF were incorrectly assigned listed activities for non-hazardous waste treatment. The activities in Table S1.1 have been replaced by the equivalent hazardous waste treatment activities.

   PDAF description has also been corrected to reflect that it discharges to controlled water

Table S1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
S5.3 A1 (a) (i)	SDAF: Biological treatment of waste waters and storage of sludge >50t/day	From collection and treatment of process effluent including: Surface waters from storages West and East of Gowy, the distillation department and non process effluents arising from HF Alkylation unit and subsequent physical and biological treatment to the discharge point to controlled waters.

Table S1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
S5.3 A1 (a) (ii)	Unit 78: Physico-chemical treatment of waste waters and storage of sludge >50t/day	From collection and treatment of process effluent including: Process effluents arising from chemicals units located at north and south sites and effluent by pipeline from Argent Energy (UK) Limited (EPR/LP3233DK) is subject to pH correction and physical treatment prior to discharge point to sewer.
S5.3 A1 (a) (ii)	PDAF: Physico-chemical treatment of waste waters and storage of sludge >50t/day	From collection and treatment of process effluent including: Process effluents from refinery operation and subsequent treatment to joint discharge point with surface waters from refinery operations (N38) to controlled waters.

2. An additional 2 listed activities have been added to reflect the de-sludging and de-watering activities that occur on site as part of routine maintenance e.g. N38 and CT2. These are described as Storage (Maintenance) and Effluent (Maintenance).

Table S1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
S5.3 A1 (a) (ii)	Storage (Maintenance): Disposal of hazardous waste (other than by incineration or landfill) in a facility with a capacity of more than 10 tonnes per day.	The desludging together with the dewatering and/or de-oiling of hazardous sludge including; tank/vessel bottoms, oil water separators and interceptors. Recovered oil to be directed to existing tankage. Recovered water to be discharged via an effluent emission point listed in Sched 3 Table S3.2
S5.4 A1 (a) (ii)	Effluent (Maintenance): Physico-chemical treatment of non- hazardous waste >50t/day	The desludging and dewatering of non-hazardous sludge from the demineralisation plant (CT2) and component parts of the effluent management system (including settlement ponds, grit chambers and channels). Recovered water to be discharged via an effluent emission point listed in Sched 3 Table S3.2

3. The operator requested by email dated 26/11/15 the amendment to the Directly Associated Activity of nitrogen generation. It has been amended to reflect the change of provision of nitrogen by a third party. Previously nitrogen was provided on to site by pipeline but this has been superseded by on site generation.

Table S1.1 activities		
Limits of specified activity		
Nitrogen generation	Onsite generation by third party	From the production facility piped to the respective plants.

4. The operator requested by email dated 29/11/16 the amendment to the description of the activity of Unit 78. Unit 78 will now receive effluent from Argent Energy (UK) Limited (EPR/LP3233DK). There is no change to the operation of unit 78 from the addition of this effluent stream. Unit 78 discharges to sewer.

Table S1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
S5.3 A1 (a) (ii)	Unit 78: Physico-chemical treatment of waste waters and storage of sludge >50t/day	From collection and treatment of process effluent including: Process effluents arising from chemicals units located at north and south sites and effluent by pipeline from Argent Energy (UK) Limited (EPR/LP3233DK) is subject to pH correction and physical treatment prior to discharge point to sewer.

Table S1.2 Activities Table

Updated to reflect the Minor Operational Changes advised by the operator under Condition 2.3.1:

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Minor operational change	By email - Changing in nitrogen generation & supply by third party	26/11/15
Minor operational change	By email – Receiving effluent by pipeline from Argent Energy (UK) Limited (EPR/LP3233DK) via Unit 78 before discharging to sewer.	29/11/16

Table S1.3 Improvement Programme Requirements

Table S1.3 has been updated in the consolidated permit following the issuing of FP3139FN S007. Since the issuing of S007, the Improvement Programme Requirements have had the following revisions:

- Improvement Programme Requirements - Changes

Reference	Change or CAR Form Ref:	Revised Date
IC1	Completion date revised to reflect timescale for implementation of changes required under IED Chapter III	3 months from the date of issue of the Variation to implement the special provisions for LCP under Chapter III of IED
IC2	Completion date revised the reflect changes to IC34	To be delivered through IC34
IC9	Extension agreed to allow improvements to be implemented. CAR ref: FP3139FN/0244055 followed by subsequent discussions with the Operator	30/04/17
IC10	Extension agreed to allow for the transition to CEMs and for remaining non-LCP units NOx factors to be reviewed CAR ref: FP3139FN/02454450 followed by subsequent discussions with the Operator Text of IC10 has also been amended to make it clear that this IC is now in relation to non-LCP unit activities.	30/07/17
IC12	Extension agreed to allow for the transition to CEMs CAR ref: FP3139FN/0253226 followed by subsequent discussions with the Operator.	30/06/17
IC19	Completion date revised the reflect changes to IC34	To be delivered through IC34
IC34	Completion date to be agreed following site visit in March 2017 by Regulatory officer and Groundwater & Contaminated Land Specialist	Date to be confirmed by Environment Agency by 31/03/17

- Improvement Programme Requirements - Completed

Reference	Outcome:
IC5	Regulatory officer confirmed IC5 completed on 30/09/16
IC27	Final submission received from the Operator on 22/12/16

- Improvement Programme Requirements – New - Regulatory Officer requested

Reference	Change or CAR Form Ref:	Revised Date
IC38	The Operator shall undertake an impact assessment in accordance with the methodology in the Environment Agency H1 screening tool for all determinands listed in Schedule 3 Table S3.2 for emissions points to water W1, W2, W3 and W4. Based on the outcomes of the H1 screening and IC5, the Operator shall propose a revised Table S3.2, including applicable emission limit values, a monitoring schedule, and a revised Table S3.4 annual limit for oil in water (total). These shall be submitted in writing to the Environment Agency for approval.	31/03/2017

Schedule 3 – Emissions and Monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements

- Minor amendments to the text for Oxides of Sulphur reference period now made consistent across emission points: REF-A-3, REF-A-7 and REF-A-9.
- Emission point reference SHO-A-1 now included having been previously omitted
- The monitoring requirements for REF-A-11 CO Boiler have now changed as continuous monitoring has replaced periodic monitoring. The changes are described in detail in a letter to Essar dated 10th December 2015. There is also an additional Note to the table (Note 7) in relation to particulate monitoring as this ELV excludes periods of soot blowing. This is in line with the requirements of the 2014 Refineries BREF.
- Note 1 “Compliance is demonstrated by quarterly manual sampling, unless otherwise stated, until such time that CEMs conform to the requirements of BS EN 14181:2005 which included annual surveillance testing” at the end of Table S3.1 in V006 is no longer valid as the CEMs confirm to the required standards.. This was confirmed by the LCP Air OMA undertaken in 2015 and therefore this note has now been removed
- Throughout references to Particulate have been replaced by Dust for consistency with the term used in the refining mineral oil and gas BREF.

Table S3.1(a) Point source emissions to air during abnormal emissions of incineration plant – emission limits and monitoring requirements

- References to Particulate have been replaced by Dust for consistency.

Table S3.1(b) Point source emissions to air – "refinery bubble"

- Table amended to remove Monthly monitoring frequency as this ceased to be applicable on 31/12/08.

Table S3.2 Point source emissions to water – emission limits and monitoring requirements

- Whilst IC3 has been closed out as confirmed in S008, the suspended solids emission limit values for all emission points have been retained as 45mg/l and the previous Note 2, relating to IC3, removed and the Notes re-numbered. The original ELV has been retained, as whilst IC3 has been closed out, the improvement in effluent treatment performance will not be delivered until 2020 by the treatment of process effluent offsite by a third party (via sewer).
- pH has been added as a determinand to emission point W4, for consistency. The operator has routinely monitored and reported this information and therefore there is no increased reporting burden.
- Note 3 has been removed and replaced by a new Note2: "Emission limit value under review subject to completion of IC 38".

Table S3.3 Point source emissions to sewer, effluent treatment plant or other transfers off-site – emission limits and monitoring requirements

- The sources of effluents that are discharged through emission point S1 has been amended to include the process effluent generated by Argent Energy (UK) Limited at the Argent Energy Biodiesel Stanlow plant as described in their permit EPR/LP3233DK.

Table S3.4 Annual Limits

- The annual limit for sulphur dioxide required amending as it expired at the end of 2016. The limit has been maintained at 7400 tonnes and Table S3.4 has been amended to reflect this. This is consistent with the approach taken across the Refineries sector and was agreed at a meeting with the operator on 8th September 2016.

- The previous Note 1 was not clear. This has been deleted and replaced by two new notes to provide clarity:

  Note 1: Comparison between influent and effluent concentrations
  Note 2: Emission limit value under review subject to completion of IC 38

Schedule 4

Tables S4.1 Reporting of monitoring data

- Where previously the monitoring reporting period was monthly this has now been amended to quarterly. This change reflects consistency within the sector. The start date for this change of reporting period is 01/04/17.
- A correction has been made throughout the table to reference condition 3.5.1, which relates to monitoring, not 3.6.1
- The changes in monitoring requirements in Table S3.1 for emission point REF-A-11 described above have also been reflected in Table S4.1 to include Dust and CO.
- Reporting of sour gas combustion products from emission points REF-A-14 and SHO-A-1 from flaring, as required by the letter to Essar of 11th August 2015, have been now been included
- Emissions to water have been updated to reflect the reporting already under taken by the Operator. The reporting frequency has been revised from monthly to quarterly. In addition, Table S4.1 has been updated to include the reporting requirements to match the monitoring described in Table S3.1:

Table S4.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Emissions to water – Flow Parameters as required by condition 3.5.1	W1, W2, W3, W4	Quarterly	01/04/17
Emissions to water – Temperature Parameters as required by condition 3.5.1	W1, W2, W3	Quarterly	01/04/17
Emissions to water – pH Parameters as required by condition 3.5.1	W1, W2, W3, W4	Quarterly	01/04/17
Emissions to water – Suspended solids Parameters as required by condition 3.5.1	W1, W2, W3, W4	Quarterly	01/04/17
Emissions to water – Hydrocarbon oil Parameters as required by condition 3.5.1	W1, W2, W3, W4	Quarterly	01/04/17

- Annual LCP reporting has been removed from Table S4.1 as an equivalent reporting requirement has been introduced under IED ChIII (discussed in the main body of the decision document)
- NERP Quarterly reporting has been removed as the National Emissions Reduction Plan closed at the end of 2015 and so is no longer required
- The reporting requirements associated with NOx factors have been amended to reflect the outcomes of IC10.

Tables S4.5 Reporting forms or other form as agreed in writing by the Agency

This table has been re-numbered from Table S4.4, 'Reporting forms'.

There have been considerable changes to the reporting forms to reflect what is currently reported and to make reporting more consistent. Reporting form numbers have been amended, consolidated and re-numbered accordingly:

Table S4.5 Reporting forms or other form as agreed in writing by the Agency		
Media/parameter	**Reporting format**	**Date of form**
Air – Sulphur Balance, SRU performance, Bubble & Annual Total	Form Air – 5: Refinery Sulphur Balance, SRU availability and efficiency, Refinery bubble and Annual SOx compliance or other form as agreed in writing by the Agency	01/01/08
Air – Fuels	Form Air – 6: Fuels used, sulphur contents, NOx factors and energy factors or other form as agreed in writing by the Agency	01/01/08
Air – Flares	Form Air – 7: Report of the sour gas and H_2S released from flaring. or other form as agreed in writing by the Agency	01/01/08
Air – ERP	Form Air – 8: Discontinuous monitoring on ERP or other form as agreed in writing by the Agency	31/12/2016
Air – CO, SO_2, NOx, Dust	Form Air – 9: Continuous monitoring on CO Boiler or other form as agreed in writing by the Agency	10/12/15
Air – SOx	Form Air – 10: Flaring report or other form as agreed in writing by the Agency	11/08/15
Water	Form Water – 1: or other form as agreed in writing by the Agency Flow, pH, temperature, Suspended solids, COD, Hydrocarbon Oil, Total Nitrogen and Phenols, Sulphide, Fluoride, Cyanide and Metals	31/12/2016
Other performance indicators: Table S3.5 Table S3.6 Table S4.2 Table S4.3	Form Performance 1: or other form as agreed in writing by the Agency	01/01/08