

## Notice: Variation of Permit

This permit has been varied by the Scottish Environment Protection Agency (SEPA) in exercise of its powers under Regulation 46 of the Pollution Prevention and Control (Scotland) Regulations 2012 (“the Regulations”). The terms used in this notice, unless otherwise defined, have the same meaning as in the Regulations.

<b>Permit Number:</b>	PPC/A/1013141/CON01
<b>Site address:</b>	Petroineos Manufacturing Scotland Limited (PIMSL) PO Box 21 Bo'ness Road Grangemouth Stirlingshire FK3 9XH
<b>Operator:</b>	Petroineos Manufacturing Scotland Limited (PIMSL) SC010612 PO Box 21 Bo'ness Road Grangemouth Stirlingshire FK3 9XH
<b>Variation Number:</b>	VAR03
<b>Effective Date of Variation:</b>	Xx/xx/xxxx
<b>Details of Variation:</b>	The permit is varied as specified in the Schedule attached.

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## Schedule

The permit has been varied as follows:

- Table 5.1 is deleted and replaced as follows:

**Table 5.1 – Emissions to Air ELVs**

<b>Source of Emission</b>	<b>Emission point number</b>	EP-CDU3-1	EP-CRU-1	EP-CRU-2
	<b>Emission source</b>	CDU3/DHT combined (BA-101 & BA-301)	CRU Main Heater & WHB common stack (S-110)	CRU 1 <sup>st</sup> Interheater Unit (B-109)
	<b>Large Combustion Plant</b>	Yes (124 MWth)	Yes (127 MWth)	Yes (63 MWth)
	<b>Stack height/diameter (m)</b>	79 / 3.7	95.7 / 2.7	67.5 / 2.4
	<b>Location on Figure 5.1</b>	1	2	5
	<b>NGR</b>	NS 9485 8183	NS 9487 8166	NS 9462 8182
<b>Monitoring Details</b>	<b>Type of Monitoring</b>	C, SS	C, SS	C, SS
	<b>Sampling Location</b>	Stack	Stack	Stack
<b>Limits for Parameters from Emission Source</b>	<b>Carbon Monoxide</b>	Refer to Table 6.1		
	<b>Oxides of Nitrogen (as NO<sub>2</sub>)</b>			
	<b>Sulphur Dioxide</b>			
	<b>Particulate</b>			
	<b>Smoke</b>			
	<b>Dioxin/Furans</b>	-	As specified in Condition 5.4.3	-

Note: where “ - ” is used no emission limit has been set.

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**Table 5.1 (cont'd) – Emissions to Air ELVs**

<b>Source of Emission</b>	<b>Emission point number</b>	EP-FLARE-1	EP-FLARE-2
	<b>Emission source</b>	No. 1 Flare	No. 2 Flare
	<b>Large Combustion Plant</b>	No	No
	<b>Stack height/diameter (m)</b>	91.5 / 1.075	91.5 / 1.075
	<b>Location on Figure 5.1</b>	3	4
	<b>NGR</b>	NS 9501 8172	NS 9494 8159
<b>Monitoring Details</b>	<b>Type of Monitoring</b>	C (flow only)	C, SS (flow only)
	<b>Sampling Location</b>	Not required	Not required
	<b>Oxides of Nitrogen (as NO<sub>2</sub>)</b>	-	-
	<b>Sulphur Dioxide</b>	-	-
	<b>Smoke</b>	As specified in Condition 4.5.8	

Note: where “ - ” is used no emission limit has been set.

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**Table 5.1 (cont'd) – Emissions to Air ELVs**

<b>Source of Emission</b>	<b>Emission point number</b>	EP-CDU1-1	EP-CDU1-2	EP-CDU2-1
	<b>Emission source</b>	No. 1 CDU B1 Heater	No. 1 CDU B1A Heater	No.2 CDU / No.2 DHT (combined)
	<b>Large Combustion Plant</b>	No (29MW)	No (19MW)	Yes (87 MW)
	<b>Stack height/diameter (m)</b>	42.3 / 1.37	56.4 / 1.58	61 / 3.38
	<b>Location on 5.2</b>	1	2	3
	<b>NGR</b>	NS 9452 8196	NS 9454 8194	NS 9462 8182
	<b>Fuel</b>	Fuel gas	Fuel gas	Fuel gas
<b>Monitoring Details</b>	<b>Type of Monitoring</b>	SS	SS	C, SS
	<b>Sampling Location</b>	Stack	Stack	Stack
<b>Limits for Parameters from Emission Source</b>	<b>Carbon Monoxide mg/m<sup>3</sup></b>	100	100	Refer to Table 6.1
	<b>Oxides of Nitrogen (as NO<sub>2</sub>) mg/m<sup>3</sup></b>	150 note 4	150 note 4	
	<b>Sulphur Dioxide mg/m<sup>3</sup></b>	500 note 1	500 note 1	
		35 note 2,3	35 note 2,3	
	<b>Particulates mg/m<sup>3</sup></b>	-	-	
	<b>Smoke</b>	Not to exceed Ringelmann shade 2 within the first 10 minutes from start-up from cold		
	Not to exceed Ringelmann shade 1 at any other time, as determined by BS 2742:1969 or its addendum (1972) other than short term excursions associated with soot blowing, load or fuel changes			

Note: where “ - ” is used no emission limit has been set.

Note 1: Until 31 December 2024

Note 2: From 01 January 2025

Note 3: During TAR periods, amine scrubber maintenance or scheduled CRU Regeneration events a higher monthly limit of 70mg/m<sup>3</sup> applies. Each period must be agreed in writing in advance.

Note 4: During periods when Hydrogen levels in the fuel gas main exceed 50% an ELV of 200 mg/m<sup>3</sup> applies. All periods must be reported to SEPA on a quarterly basis as agreed in writing. (This does not apply to VDU-2 when pre-heat is in operation).

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**Table 5.1 (cont'd) – Emissions to Air ELVs**

<b>Source of Emission</b>	<b>Emission point number</b>	EP-HFU-1
	<b>Emission source</b>	Hydrofiner combined heater & stripper boilers
	<b>Large Combustion Plant</b>	No (18.3 + 12.3MW)
	<b>Stack height/diameter (m)</b>	80 / 1.35
	<b>Location on Figure 5.2</b>	4
	<b>NGR</b>	NS 9450 8179
	<b>Fuel</b>	Fuel Gas
<b>Monitoring Details</b>	<b>Type of Monitoring</b>	SS
	<b>Sampling Location</b>	Stack
<b>Limits for Parameters from Emission Source</b>	<b>Carbon Monoxide mg/m<sup>3</sup></b>	100
	<b>Oxides of Nitrogen (as NO<sub>2</sub>) mg/m<sup>3</sup></b>	150 note 4
	<b>Sulphur Dioxide mg/m<sup>3</sup></b>	500 note 1
		35 note 2, 3
	<b>Particulates mg/m<sup>3</sup></b>	-
	<b>Smoke</b>	Not to exceed Ringelmann shade 2 within the first 10 minutes from start-up from cold
Not to exceed Ringelmann shade 1 at any other time, as determined by BS 2742:1969 or its addendum (1972) other than short term excursions associated with soot blowing, load or fuel changes		

Note: where “ - ” is used no emission limit has been set.

Note 1: Until 31 December 2024

Note 2: From 01 January 2025

Note 3: During TAR periods, amine scrubber maintenance or scheduled CRU Regeneration events a higher monthly limit of 70mg/m<sup>3</sup> applies. Each period must be agreed in writing in advance.

Note 4: During periods when Hydrogen levels in the fuel gas main exceed 50% an ELV of 200 mg/m<sup>3</sup> applies. All periods must be reported to SEPA on a quarterly basis as agreed in writing. (This does not apply to VDU-2 when pre-heat is in operation).

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**Table 5.1 (cont'd) – Emissions to Air ELVs**

<b>Source of Emission</b>	<b>Emission point number</b>	EP-HYDX-1		EP-HCU-2	EP-HYD-2
	<b>Emission source</b>	S – 601 No.2 VDU and HCU heaters (combined)		Mild Vacuum Column Reboiler (stack H-370)	Hydrogen Plant Reforming Furnace H201 (stack S-602)
	<b>Stack height/diameter (m)</b>	85 / 3.5		70 / 1.5	84 / 4.19
	<b>Large Combustion Plant</b>	Yes VDU2 Charge Heater H-101 (65MW) + H-301 (24 MW) + H-302 (80MW)		No (20MW)	No (118MW– steam reforming furnace)
	<b>Location on Figure 5.3</b>	1		5	7
	<b>NGR</b>	NS 9462 8182		NS 9477 8137	NS 9471 8154
	<b>Fuel</b>	Refer to Table 6.1		Fuel Gas	Fuel Gas
<b>Monitoring Details</b>	<b>Monitoring Point Number</b>	EP-VDU-1 (H101)	EP-HCU-1 (H301 & 302)	-	-
	<b>Type of Monitoring</b>	C, SS	C, SS	SS	C, SS
	<b>Sampling Location</b>	VDU2 duct to stack	HCU duct to stack	Duct to stack	Duct to stack
<b>Limits for Parameters from Emission Source</b>	<b>Carbon Monoxide mg/m<sup>3</sup></b>	Refer to Table 6.1		100	100
	<b>Oxides of Nitrogen (as NO<sub>2</sub>) mg/m<sup>3</sup></b>	Refer to Table 6.1		150 note 4	300
	<b>Sulphur Dioxide mg/m<sup>3</sup></b>	Refer to Table 6.1		500 note 1	500 note 1
		Refer to Table 6.1		35 note 2, 3	35 note 2
	<b>Particulate mg/m<sup>3</sup></b>	Refer to Table 6.1		-	-
	<b>Smoke</b>	Not to exceed Ringelmann shade 2 within the first 10 minutes from start-up from cold			
	Not to exceed Ringelmann shade 1 at any other time, as determined by BS 2742:1969 or its addendum (1972) other than short term excursions associated with soot blowing, load or fuel changes				

Note: where “-” is used no emission limit has been set.

Note 1: Until 31 December 2024

Note 2: From 01 January 2025

Note 3: During TAR periods, amine scrubber maintenance or scheduled CRU Regeneration events a higher monthly limit of 70mg/m<sup>3</sup> applies. Each period must be agreed in writing in advance.Note 4: During periods when Hydrogen levels in the fuel gas main exceed 50% an ELV of 200 mg/m<sup>3</sup> applies. All periods must be reported to SEPA on a quarterly basis as agreed in writing. (This does not apply to VDU-2 when pre-heat is in operation).

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**Table 5.1 (cont'd) - Emissions to Air ELVs**

<b>Source of Emission</b>	<b>Emission point number</b>	EP-HYD-1	EP-SRU-2	EP-SRU-4	EP-FLARE-3
	<b>Emission source</b>	Catacarb Regenerator Atmospheric Vent (V-205)	SRU5 J-50701A/B Eductors vent	SRU6 J-60701A/B Eductors vent	No. 3 Flare
	<b>Stack height/diameter (m)</b>	84 / 4.2	16.5 / 0.08	16.5 / 0.08	91.5 / 1.075
	<b>Large Combustion Plant</b>	No	No	No	No
	<b>Location on 5.3</b>	6	Not shown	Not shown	2
	<b>NGR</b>	NS 9471 8154	NS 9479 8153	NS 9475 8161	NS 9485 8145
<b>Monitoring Details</b>	<b>Type of Monitoring</b>	C, SS	-	-	C (flow only)
	<b>Sampling Location</b>	Duct to stack	-	-	Not required
<b>Limits for Parameters from Emission Source</b>	<b>Carbon Monoxide, mg/m<sup>3</sup></b>	-	-	-	-
	<b>Oxides of Nitrogen (as NO<sub>2</sub>), mg/m<sup>3</sup></b>	-	-	-	-
	<b>Sulphur Dioxide mg/m<sup>3</sup></b>	-	-	-	-
	<b>Particulates, mg/m<sup>3</sup></b>	-	-	-	-
	<b>Smoke</b>	-	-	-	As specified in Condition 4.5.8

Note: where "-" is used no emission limit has been set.

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**Table 5.1 (cont'd) – Emissions to Air ELVs**

<b>Source of Emission</b>	<b>Emission point number</b>	EP-SRU-1	EP-SRU-3
	<b>Emission source</b>	H – 50704 Sulphur Recovery Unit 5	H – 60704 Sulphur Recovery Unit 6
	<b>Stack height/diameter (m)</b>	70 / 0.91	70 / 0.91
	<b>Large Combustion Plant</b>	No	No
	<b>Location on 5.3</b>	3	4
	<b>NGR</b>	NS 9479 8153	NS 9475 8161
<b>Monitoring Details</b>	<b>Type of Monitoring</b>	C, SS	C, SS
	<b>Sampling Location</b>	Stack	Stack
<b>Limits for Parameters from Emission Source</b>	<b>Carbon Monoxide, mg/m<sup>3</sup></b>	-	-
	<b>Oxides of Nitrogen (as NO<sub>2</sub>), mg/m<sup>3</sup></b>	-	-
	<b>Sulphur Dioxide, mg/m<sup>3</sup></b>	1 tonne per day Note 1	
	<b>Particulates, mg/m<sup>3</sup></b>	-	-
	<b>Hydrogen Sulphide, mg/m<sup>3</sup></b>	-	-
	<b>Smoke</b>	Not to exceed Ringelmann shade 2 within the first 10 minutes from start-up from cold	
	Not to exceed Ringelmann shade 1 at any other time, as determined by BS 2742:1969 or its addendum (1972)		

Note: where “-” is used no emission limit has been set.

Note 1: The limits apply except for:

- (i) periods of start-up and shutdown of either SRU and the TGTU;
- (ii) periods of planned preventative maintenance of TGTU notified in advance in writing to SEPA;
- (iii) in the case of Incidents solely involving the TGTU and its control and shutdown system (and without prejudice to Condition 2.4.1) where the cumulative duration of non-operation of TGTU does not exceed 7 days in a calendar year.



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2. Table 6.1 has been deleted and replaced as follows:

**Table 6.1 – Emissions to Air ELVs**

<b>Source of Emission</b>	<b>Emission point number</b>	EP-CDU3-1	EP-CRU-1	EP-CRU-2	EP-CDU2-1	EP-HYDX-1	
	<b>Emission source</b>	CDU3/DHT combined (BA-101 & BA-301)	CRU Main Heater & WHB common stack (S-110)	CRU 1st Interheater Unit (B-109)	No.2 CDU / No.2 DHT (combined)	S – 601 No.2 VDU and HCU heaters H-101, H-301 & H-302 (combined)	
	<b>Large Combustion Plant &amp; EIONET LCP Number</b>	Yes (124 MWth) EIONET No. 3	Yes (127 MWth) EIONET No. 41	Yes (63 MWth) EIONET No. 40	Yes (87 MW) EIONET No. 1	Yes (169MW) EIONET No. 2	
	<b>Stack height/diameter (m)</b>	79 / 3.7	95.7 / 2.7	67.5 / 2.4	61 / 3.38	85 / 3.5	
	<b>Location (Figure Number)</b>	1 (Figure 5.1 in Schedule 5)	2 (Figure 5.1 in Schedule 5)	5 (Figure 5.1 in Schedule 5)	3 (Figure 6.1 in Schedule 6)	1 (Figure 7.1 in Schedule 7)	
	<b>NGR</b>	NS 9485 8183	NS 9487 8166	NS 9490 8175	NS 9463 8184	NS 9463 8137	
	<b>Fuel</b>	Fuel gas	Fuel gas	Fuel gas	Fuel gas	Fuel gas	
<b>Monitoring Details</b>	<b>Monitoring Point Number</b>					EP-VDU-1	EP-HCU-1
	<b>Type of Monitoring</b>	C, SS	C, SS	C, SS	C, SS	C, SS	C, SS
	<b>Sampling Location</b>	Duct to Stack	Duct to Stack	Stack	Ducts to Stack	VDU2 duct to stack	HCU duct to stack

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Limits for Parameters from Emission Source	Emission point number	EP-CDU3-1	EP-CRU-1	EP-CRU-2	EP-CDU2-1	EP-HYDX-1
	CO mg/m <sup>3</sup>	100	100	100	100	100
	NOx mg/m <sup>3</sup> (Monthly Mean)	150	150 Note 4	150 Note 4	150 Note 4, 5	150–200 Note 4, 6
	SO <sub>2</sub> mg/m <sup>3</sup>	500 Note 1	500 Note 1	500 Note 1	500 Note 1	500 Note 1
		35 Note 2	35 Note 2, 3	35 Note 2, 3	35 Note 2, 3	35 Note 2, 3
	Particulate mg/m <sup>3</sup>	5	5	5	5	5
Smoke	Not to exceed Ringelmann shade 2 within the first 10 minutes from start-up from cold					
	Not to exceed Ringelmann shade 1 at any other time, as determined by BS 2742:1969 or its addendum (1972) other than short term excursions associated with soot blowing, load or fuel changes					

**Note: where “ - ” is used no emission limit has been set.**

Note 1: Until 31 December 2024

Note 2: From 01 January 2025

Note 3: During TAR periods, amine scrubber maintenance or scheduled CRU Regeneration events a higher monthly limit of 70mg/m<sup>3</sup> applies. Each period must be agreed in writing in advance.

Note 4: During periods when Hydrogen levels in the fuel gas main exceed 50% an ELV of 200 mg/m<sup>3</sup> applies. All periods must be reported to SEPA on a quarterly basis as agreed in writing. (This does not apply to VDU-2 when pre-heat is in operation).

Note 5: During periods when CDU2 is not operational DHT 2 Daily Limit is increased to 250mg/m<sup>3</sup>. The monthly ELV continues to apply.

Note 6: ELV calculated from ratio of fuel gas usage between VDU-2 and HCU, VDU-2 has an ELV of 200mg/m<sup>3</sup>, provided that air pre-heat greater than 200°C is in use (if air pre-heat greater than 200°C is not in use an ELV of 150 mg/m<sup>3</sup> applies) and HCU has an ELV of 150mg/m<sup>3</sup>. See lookup Table 6.7.

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3. Annex I has been deleted and replaced as follows:

## ANNEX I – SULPHUR DIOXIDE DEROGATION

### 1 The Regulation

Regulation 25(6) of the Regulations provides that SEPA must include emission limit values that ensure that emissions do not exceed the levels associated with the best available techniques (BAT-AEL) laid down in the BAT Conclusions.

Regulation 25(12) of the Regulations states:

“SEPA may set a less strict emission limit value... for an installation if –

- (i) an assessment shows that achievement of the emission levels associated with the best available techniques as described in any BAT Conclusions would lead to disproportionately higher costs compared to environmental benefits due to the –
- (ii) the geographical location or local environmental conditions of the installation, or
- (iii) technical characteristics of the installation, ...”

Regulation 25(2)(c) provides that where a less strict value is set ("derogation"); it is a requirement that "the permit specifies the reasons for setting the value, including the result of the assessment and the justification for the conditions imposed". The purpose of this Appendix is to satisfy those requirements.

### 2 The Derogation Used

SEPA has decided to set ELVs that derogate from the BAT-AEL range in the BAT Conclusions in respect of Sulphur Dioxide.

Parameter	BAT-AEL <sup>1</sup> in the BATc	Derogated ELV	Applicability
Sulphur Dioxide – fuel gas firing	35mg/Nm <sup>3</sup>	500mg/Nm <sup>3</sup>	All gas fired units until 31 December 2024

<sup>1</sup> BAT-AELs as specified in Tables 6, 13 and 14 of the Refining of mineral oil and gas BREF.

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### **3 Basis for the Derogation**

SEPA has set this emission limit value on the grounds that achievement of emissions within the BAT-AEL range would lead to disproportionately higher costs compared to environmental benefits due to the technical characteristics of the installation:

The technical characteristics of the installation mean that achievement of Sulphur Dioxide emissions within the BAT-AEL range would lead to disproportionately higher costs due to the need to:

- (i) Configuration of the plant within the site results in practical difficulties and increased time and costs for the construction of additional plant.
- (ii) The history of recent investment in techniques designed to reduce emissions.
- (iii) The remaining operational life of the plant.

A Cost Benefit Analysis carried out by SEPA gave the result that achievement of emissions for in the case of Sulphur Dioxide within the BAT-AEL range would lead to disproportionately higher cost for the reasons given above.

### **4 Justification for the Conditions Imposed**

SEPA has included an ELV of 500mg/Nm<sup>3</sup> for Sulphur Dioxide on the grounds that SEPA considers it:

- represents BAT for the installation;
- ensures no significant pollution of the environment will be caused and that a high level of protection of the environment as a whole will be achieved;
- does not exceed any emission limit value set out in the Annex V to the Industrial Emissions Directive; and,

is time limited for planned upgrades to 31 December 2024 (500mg/Nm<sup>3</sup> for gas firing).