

Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Solutia UK Limited

Newport Chemical Complex
Corporation Road
Newport
South Wales
NP19 4XF

Permit number

EPR/BR9715IB

Newport Chemical Complex

Permit number EPR/BR9715IB

Introductory note

This introductory note does not form a part of the permit

The main features of the permit are as follows:

Solutia's chemical manufacturing installation operates under Schedules 4.1 (A)1(a), 1.1 A(1)(a) and 5.4 A(1)(a). Four production plants using organic processes are operated. Techniques used include pyrolysis, aqueous or anhydrous reactions, esterification, hydrogenation, drying, distillation and filtering. The four production plants incorporate modern technology including automated process control.

Dequest ® is a range of organic phosphonates used mainly as scale inhibitors in water treatment, and sequestrants (preventing metals in solution causing discoloration) in the detergent industries.

Biphenyl is produced by the pyrolysis of Benzene. It is sold as an intermediate to produce optical brighteners and is also a constituent of heat transfer liquids.

The **Therminol** ® range of products are made from polyphenols and are used mainly as high temperature heat transfer liquids. The Installation comprises of 2 Therminol plants (TH2 and TH3). The Therminol 2 plant (TH2) has been re-commissioned after a period of inactivity.

Saflex ® plasticizer S2075 is used as the plasticizer for the safety interlayer in car windscreens and side windows to prevent shattering and allows absorption of head impact in the event of an accident.

Point source emissions to air include combustion products (oxides of carbon and nitrogen) from the site's boilers which produce steam and some electricity for site operations. These emissions are released to the atmosphere from tall stacks, this assists with dispersion and dilution.

On the **Dequest** ® plant, water scrubbers are used to prevent emissions of acidic gases. The handling of volatile liquids, particularly at high temperatures is carried out in closed systems for safety reasons and to contain the liquids. The main bulk storage tank for Benzene employs a vapour return system during deliveries to minimise losses to atmosphere.

The Installation modified an existing boiler by fitting a gas turbine and generator, this can generate 4MWe. The existing site boiler has also been modified and is used in conjunction with the gas turbine to produce approximately 19 tonnes of steam per hour, when the boiler operates independently from the turbine it can produce 30 tonnes of steam per hour. A condensing economiser will be fitted to the boiler to re-use waste heat. It will take the place of the condensing economiser on the Carbon Water Exchange plant.

The Installation ran a project – the Carbon Water Exchange Project, whereby novel technology was used to reduce the emissions of oxides of Nitrogen, carbon monoxide and carbon dioxide. This project has now ended and is no longer carried out on-site.

Fugitive releases to air are mainly VOC's which are released from valve glands, pump seals and emergency vents. Annual checks are carried on the plants that handle volatile liquids to minimise these losses.

Aqueous point source emissions consist of surface water run-off, process effluents from the production plants and site sewerage. The effluent is discharged through a 5km underground pipeline to the Severn Estuary, where rapid dilution occurs at low tide (no discharge may take place +/- 3 hours of low tide).

The Installation operates a Biological Effluent Treatment plant, this treats the effluent from 2 processes operated on the site. However, this plant is now in a 'mothball' phase as the 2 processes that used the Effluent Treatment Plant are no longer carried out on-site. However, the plant has been retained on-site in case it is needed in the future.

The discharge of 'red list' substances in the site's effluent is a result of historic PCB, PCP & Chlorine manufacture on site. These activities left a legacy of soil contamination. A comprehensive survey was completed in 1992 to determine if these activities had resulted in unacceptable risk. The assessment concluded that the site was stable and posed no threat to human health or the environment. A risk management strategy was developed to ensure this stability was maintained and some voluntary remediation work was completed in 1996. There are further plans to incorporate a reed bed system on-site to further help with historic pollution on-site.

Solutia has an Environmental Management System accredited to ISO 14001 and operates to EMAS.

A partial surrender was carried out in 2014 to surrender an area of the site which is now permitted separately to allow the operation of a Hydrogen plant operated by BOC Limited.

The status log of the permit sets out the permitting history, including any changes to the permit reference number

Status Log of the permit		
Detail	Date	Comments
Application BR9715IB	Received 31/03/03	
Response to request for information	Request dated 01/08/03	Response dated 12/09/03
Request to extend determination	Request dated 25/07/03	Request accepted 28/07/03
Request to extend determination	Request dated 25/11/03	Request accepted 05/12/03
Permit determined	28/01/04	
Application YP3435XB	Duly made 18/01/08	
Variation determined	17/04/08	
Variation notice YP3436XB Issued	17/04/08	
Application JP3132XJ	Duly made 31/03/08	

Status Log of the permit

Detail	Date	Comments
Request for extension of determination	18/08/08	Response dated 19/08/08
Variation determined	24/12/08	
Variation notice JP3132XJ Issued	24/12/08	
Application EPR/BR9715IB/V004 (pas reference No. BP3734HN)	23/12/10	Duly made 10/01/11
Variation EPR/BR9715IB/V004 Issued	31/03/11	
Agency variation determined EPR/BR9715IB/V005	25/03/12	Environment Agency variation to implement the changes introduced by IED
Variation application EPR/BR9715IB/V006	Duly made 20/11/13	Application to add TH3 plant and Carbon Water Exchange plant
Additional information requested	12/02/14	
Additional information received	14/02/14, 19/02/14, 03/03/14, 07/03/14, 14/03/14, 21/03/14	Responses to questions 1 – 4 of the schedule 5 notice
Additional information requested	02/04/14	
Additional information received	04/04/14	Schedule 5 notice answered in full
Variation determined EPR/BR9715IB/V006	21/08/14	Variation issued to Solutia UK Limited
Partial surrender application EPR/BR9715IB/V007	Duly made 09/10/14	Partial surrender of land to allow for a hydrogen plant to be built and operated by the BOC Group Ltd.
Partial surrender application EPR/BR9715IB/S007 determined	19/11/14	
Variation application EPR/BR9715IB/V008	Duly made 12/06/18	
Additional information received	30/10/18	Schedule 5 notice answered in full, providing air quality modelling
Variation determined EPR/BR9715IB/V008	05/12/18	

Other Part A installation permits relating to this installation

Operator	Permit number	Date of issue
The BOC Group Limited	EPR/VP3736EF	01/04/15

End of Introductory Note

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number
EPR/BR9715IB

The Natural Resources Body for Wales (“Natural Resources Wales”) authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016

Solutia UK Limited (“the operator”),

whose registered office is

Corporation Road
Newport
South Wales
NP19 4XF

company registration number **03295486**

to operate an installation at

Corporation Road
Newport
South Wales
NP19 4XF

to the extent authorised by and subject to the conditions of this permit.

Name	Date
 Holly Noble	05/12/18

Authorised on behalf of Natural Resources Wales

Conditions

1 Management

1.1 General management

- 1.1.1 The operator shall manage and operate the activities:
- (a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and
 - (b) using sufficient competent persons and resources.
- 1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.
- 1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.2 Energy efficiency

- 1.2.1 The operator shall:
- (a) take appropriate measures to ensure that energy is recovered with a high level of energy efficiency and energy is used efficiently in the activities.
 - (b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and
 - (c) take any further appropriate measures identified by a review.

1.3 Efficient use of raw materials

- 1.3.1 The operator shall:
- (a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;
 - (b) maintain records of raw materials and water used in the activities;
 - (c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and
 - (d) take any further appropriate measures identified by a review.

1.4 Avoidance, recovery and disposal of wastes produced by the activities

- 1.4.1 The operator shall take appropriate measures to ensure that:
- (a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and
 - (b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and
 - (c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.
- 1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

1.5 Multiple operator installations

- 1.5.1 For the following activities referenced in schedule 1, table S1.1. Where the operator notifies Natural Resources Wales under condition 4.3.1 (a) or 4.3.1 (c), the operator shall also notify without delay the other operator(s) of the installation of the same information

2 Operations

2.1 Permitted activities

- 2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").
- 2.1.2 Waste authorised by this permit shall be clearly distinguished from any other waste on the site.

2.2 The site

- 2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at Schedule 7 to this permit and excluding the land shown edged in red, filled in grey and labelled BOC.

2.3 Operating techniques

- 2.3.1 (a) The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Natural Resources Wales.
- (b) If notified by Natural Resources Wales that the activities are giving rise to pollution, the operator shall submit to Natural Resources Wales for approval within the period specified, a revision of any plan specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

- 2.3.2 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.
- 2.3.3 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:
- (a) the nature of the process producing the waste;
 - (b) the composition of the waste;
 - (c) the handling requirements of the waste;
 - (d) the hazardous property associated with the waste, if applicable; and
 - (e) the waste code of the waste.
- 2.3.4 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

2.4 Improvement programme

- 2.4.1 The operator shall complete the improvements specified in Schedule 1 Table S1.3 by the date specified in that table unless otherwise agreed in writing by Natural Resources Wales.
- 2.4.2 Except in the case of an improvement which consists only of a submission to Natural Resources Wales, the operator shall notify Natural Resources Wales within 14 days of completion of each improvement.

3 Emissions and monitoring

3.1 Emissions to water, air or land

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, S3.2 and S3.3.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 Total annual emissions from the emission points set out in tables schedule 3 S3.1 and S3.2 of a substance listed in schedule 3 table S3.3 shall not exceed the relevant limit in table S3.3.
- 3.1.4 The Operator shall carry out monitoring of groundwater at least once every 5 years; and soil at least once every 10 years; to the monitoring plan agreed in writing by Natural Resources Wales under PO1.

3.2 Emissions of substances not controlled by emission limits

- 3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.2.2 The operator shall:
- (a) if notified by Natural Resources Wales that the activities are giving rise to pollution, submit to Natural Resources Wales for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;

- (b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of Natural Resources Wales, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.

3.3.2 The operator shall:

- (a) if notified by Natural Resources Wales that the activities are giving rise to pollution outside the site due to odour, submit to Natural Resources Wales for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;
- (b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

3.4 Noise and vibration

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of Natural Resources Wales, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.4.2 The operator shall:

- (a) if notified Natural Resources Wales that the activities are giving rise to pollution outside the site due to noise and vibration, submit to Natural Resources Wales for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;
- (b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by Natural Resources Wales.

3.5 Monitoring

3.5.1 The operator shall, unless otherwise agreed in writing by Natural Resources Wales, undertake the monitoring specified in the following tables in schedule 3 to this permit:

- (a) point source emissions specified in tables S3.1, S3.2 and S3.3;
- (b) Great Crested Newts specified in table S3.4

3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

- 3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by Natural Resources Wales.
- 3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in Schedule 3 Tables S3.1, S3.2, S3.3 unless otherwise agreed in writing by Natural Resources Wales.

4 Information

4.1 Records

- 4.1.1 All records required to be made by this permit shall:
- (a) be legible;
 - (b) be made as soon as reasonably practicable;
 - (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
 - (d) be retained, unless otherwise agreed in writing by Natural Resources Wales, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
 - (i) off-site environmental effects; and
 - (ii) matters which affect the condition of the land and groundwater.
- 4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by Natural Resources Wales.

4.2 Reporting

- 4.2.1 The operator shall send all reports and notifications required by the permit to Natural Resources Wales using the contact details supplied in writing by Natural Resources Wales.
- 4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to Natural Resources Wales by 31 January (or other date agreed in writing by Natural Resources Wales) each year. The report(s) shall include as a minimum:
- (a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;
 - (b) the annual production /treatment data set out in schedule 4 table S4.2;
 - (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule; and
- 4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by Natural Resources Wales, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
- (a) in respect of the parameters and emission points specified in schedule 4 table S4.1;

- (b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4; and
 - (c) giving the information from such results and assessments as may be required by the forms specified in those tables.
- 4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to Natural Resources Wales, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.
- 4.2.5 The operator shall submit an annual solvent management plan in order to demonstrate compliance with the requirements of the Industrial Emissions Directive, by 31 January each year in respect of the previous year.

4.3 Notifications

- 4.3.1 The Operator shall
- (a) in the event that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—
 - (i) inform Natural Resources Wales,
 - (ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and
 - (iii) take the measures necessary to prevent further possible incidents or accidents;
 - (b) in the event of a breach of any permit condition, the operator must immediately—
 - (i) inform Natural Resources Wales, and
 - (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;
 - (c) in the event of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.
- 4.3.2 Any information provided under condition 4.3.1(a)(i), or 4.3.1 (b)(i) where the information relates to the breach of a limit specified in the permit, shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.
- 4.3.3 Where Natural Resources Wales has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform Natural Resources Wales when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to Natural Resources Wales at least 14 days before the date the monitoring is to be undertaken.
- 4.3.4 Natural Resources Wales shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:
- Where the operator is a registered company:
- (a) any change in the operator's trading name, registered name or registered office address; and
 - (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.
- Where the operator is a corporate body other than a registered company:
- (a) any change in the operator's name or address; and
 - (b) any steps taken with a view to the dissolution of the operator.

In any other case:

- (a) the death of any of the named operators (where the operator consists of more than one named individual);
- (b) any change in the operator's name(s) or address(es); and
- (c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

- (a) Natural Resources Wales shall be notified at least 14 days before making the change; and
- (b) the notification shall contain a description of the proposed change in operation.

4.3.6 Natural Resources Wales shall be given at least 14 days' notice before implementation of any part of the site closure plan.

4.3.7 Where the operator has entered into a climate change agreement with the Government, Natural Resources Wales shall be notified within one month of:

- (a) a decision by the Secretary of State not to re-certify the agreement;
- (b) a decision by either the operator or the Secretary of State to terminate the agreement; and
- (c) any subsequent decision by the Secretary of State to re-certify such an agreement.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "immediately", in which case it may be provided by telephone.

Schedule 1 - Operations

Table S1.1 activities

Activity listed in Schedule 1 of the EP Regulations	Description of specified activity	Limits of specified activity
S1.1 A (1) (a)(i) - Burning any fuel in an appliance with a rated thermal input of 50 or more megawatts	Site production of steam and electricity	From receipt of natural gas to emission of combustion products
S4.1 A (1) (a)(i) – Producing organic chemicals such as – hydrocarbons	Therminols - Therminol Plant 2 Therminol Plant 3	Receipt of raw materials to dispatch of final product
S4.1 A (1) (a)(ii) - Producing organic chemicals such as – organic compounds containing oxygen	S2075	Receipt of raw materials to dispatch of final product
S4.1 A (1) (a)(v) - Producing organic chemicals such as – organic compounds containing phosphorus	Dequest 2010 Dequest Amino	Receipt of raw materials to dispatch of final product
S5.4 A (1) (a)(i) - S5.4 A(1)(a)(i) – Disposal of non-hazardous waste in a facility exceeding 50 tonnes per day by biological treatment	Bio-treatment plant	Operation of biological effluent treatment plant
S5.4 A (1) (a)(ii) - Disposal of non-hazardous waste in a facility exceeding 50 tonnes per day by physico-chemical treatment	Effluent treatment plant	Operation of site effluent neutralisation plant

Directly Associated Activities

Condensing economiser	Operation of condensing economiser whereby emissions from boiler 16 will be split between emission point A4 as normal and additional point A31.
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Table S1.2 Operating techniques

Description	Parts	Date Received
Application	The response to questions 2.1 and 2.2 given in section 6, pages 1-32; section 7 white pages 1-76; section 7 green pages 1-69; section	31/03/03
Schedule 4 notice	Response to questions 1,8 and 10	12/10/03
Application for variation YP3435XB	To include the operational details of the proposed Biological Treatment Plant as detailed in the variation application	18/01/08
Application EPR/BR97151B/V004	Include the operational details of the proposed CHP and ancillary equipment, as detailed in the application for variation	10/01/11
Carbon Water Exchange Project Coral (polyp) Technical Brief of Stage Progression	All	06/02/14

Table S1.2 Operating techniques

Description	Parts	Date Received
Carbon Water Exchange Project Coral (polyp) Technical Brief of Stage Progression October 2013	All	01/03/14
2013 10 Solutia TH3 Report 'Solutia Therminol 3 (TH3) report in support of application to vary an environmental permit	All	28/10/13
Application EPR/BR9715IB/V008	Permit Variation Application – Non-Technical Summary – All	24/05/18
Application EPR/BR9715IB/V008	Solutia – Therminol 3 Plant Air Quality Assessment – All	24/05/18
Application EPR/BR9715IB/V008	Email detailing the specifics of the TH2 start-up and condensing economiser	11/07/18

Table S1.3 Improvement programme requirements

Ref.	Requirement	Date
IC33	The Operator shall submit to Natural Resources Wales in writing a report upon completion of a review of the costs and benefits of further measures to reduce emissions to water of Pentachlorophenol, including details of any beneficial improvements identified and the date by which these improvements will be implemented.	30 th June 2015
IC34	The operator shall carry out a comprehensive review of the current aerial emission points on-site to ensure the emission points, emission limit values and monitoring requirements listed in the Permit are reflective of the actual operations on-site. The Operator shall compile a report and emission point plan and submit to NRW for approval.	1 st June 2019
IC35	The Operator shall investigate NO _x emissions from emission points A26 and A27 (TH3 Pyrolysis furnace) and a report shall be compiled assessing the ways in which current emissions can be reduced to comply with the ELV in the Permit. The report shall be submitted to NRW for approval	1 st December 2019
IC36	The operator shall carry out additional monitoring on emission points A4 and A31 associated with Boiler 16 and the new condensing economiser to ensure that the 2 separate emissions when combined do not exceed the NO _x ELV of 135mg/Nm ³ and the CO ELV of 75mg/Nm ³ . The report shall be submitted to NRW for approval	1 st September 2019
IC37	The Operator shall compile a report containing full details of the new condensing economiser associated with Boiler 16. The report shall include operating parameters, likely emission profiles and commissioning schedules. The report shall be submitted to NRW for approval	1 st June 2019

Schedule 2 - Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels

Raw materials and fuel description	Specification
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Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference Period	Monitoring frequency	Monitoring standard or method
A2 ^{Note 1, 2}	Boiler 14 Stack (A2)	Oxides of Nitrogen (expressed as NO ₂)	150 mg/m ³	Spot sample	Annual	BS EN 14792 ^{Note 5}
A4 ^{Note 2, 7}	Boiler 16 Stack (A4)	Oxides of Nitrogen (expressed as NO ₂)	75 mg/m ³	6-monthly extractive spot sample ^{Note 6}	6 monthly	BS EN 14792 ^{Note 5}
		Carbon Monoxide	100 mg/m ³	6-monthly extractive spot sample ^{Note 6}	6 monthly	BS EN 15058 ^{Note 5}
A5	DQ1T1701 Scrub water tank (A1)	-	-	-	-	-
A6	DQXT223 Scrub water tank (A1)	Hydrogen chloride	10 mg/m ³	Spot sample	Annual	BS EN 1911
		Chloromethane ^{note 3}	-	Spot sample	Quarterly	BS CEN/TS 13649
A7	DQ1A150 PCI ₃ storage (A3)	-	-	-	-	-
A8	DQXZ258 day tank T257 (A4)	-	-	-	-	-
A9	DQXA500 recycle tank (A8)	-	-	-	-	-
A10	DQXA268 Day tank T267 (A16)	-	-	-	-	-
A14	3GXJ16 Reactor (A6)	-	-	-	-	-
A15	PPXT01 Benzene storage tank (A1)	Benzene	20g/hr	Spot sample	Annual	BS CEN/TS 13649 or US EPA Method 18
A16	PPXT101 Benzene day tank (A2)	Benzene	100g/hr	Spot sample	Annual	
A17	PPXT206 Benzene Column Reflux Drum (A3)	-	-	-	-	-
A18	PPXT112 Biphenyl bulk storage (A4)	-	-	-	-	-
A19	PPXB121 Biphenyl flaker (A4)	-	-	-	-	-
A20	PPXT205 Biphenyl buffer tank (A5)	-	-	-	-	-
A21	PPXT208 Biphenyl melt tank (A5)	-	-	-	-	-

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

Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference Period	Monitoring frequency	Monitoring standard or method
A22	PPXV121 Autoclave (A5)	-	-	-	-	-
A23	PPPYRO Pyrolysis furnace (A6)	Oxides of Nitrogen (expressed as NO ₂)	200 mg/m ³	Spot Sample	6 Monthly Note 6	BS EN 14792
		Benzene	5 mg/m ³	Spot Sample	6 Monthly Note 6	BS CEN/TS 13649 or US EPA Method 18
A24	PPXZ104 Biphenyl column reboiler furnace (A6)	-	-	-	-	-
A25	PPXZ149 Santowax reboiler furnace (A6)	-	-	-	-	-
A26	18ZZ0111 Furnace	Oxides of Nitrogen (expressed as NO ₂)	200 mg/m ³	Spot Sample	6 Monthly Note 6	BS EN 14792
		Benzene	5 mg/m ³	Spot Sample	6 Monthly Note 6	BS CEN/TS 13649 or US EPA Method 18
A27	18ZZ1111 Furnace	Oxides of Nitrogen (expressed as NO ₂)	200 mg/m ³	Spot Sample	6 Monthly Note 6	BS EN 14792
		Benzene	5 mg/m ³	Spot Sample	6 Monthly Note 6	BS CEN/TS 13649 or US EPA Method 18
A28	18ZZ0104 Furnace	Oxides of Nitrogen (expressed as NO ₂)	135 mg/m ³	Spot Sample	6 Monthly Note 6	BS EN 14792
A29	18ZZ0149 Furnace	Oxides of Nitrogen (expressed as NO ₂)	135 mg/m ³	Spot Sample	6 Monthly Note 6	
A30	18TA0011 Benzene Tank	Benzene	20 g/hr	Spot Sample	Annual	BS CEN/TS 13649 or US EPA Method 18
A31 ^{Note 2, 7}	Boiler 16 Stack (A4) – condensing economiser	Oxides of Nitrogen (expressed as NO ₂)	75 mg/m ³	6-monthly extractive spot sample ^{Note 6}	6 monthly	BS EN 14792 ^{Note 5}
		Carbon Monoxide	100 mg/m ³	6-monthly extractive spot sample ^{Note 6}	6 monthly	BS EN 15058 ^{Note 5}

Note 1: A limit of 300mg/m³ shall apply when Boiler 14 is operating on back-up fuel Kerosene

Note 2: Monitoring of this emission point is only required should the linked boiler operate for a continuous period of 14 days or more in any calendar year

Note 3: Chloromethane measurements shall be taken annually from the four main Dequest Amino Grades, i.e. Dequest 2000; 2016; 2046 and 2060

Note 4: Or other EN, ISO or BS method as agreed in writing with Natural Resources Wales

Note 5: All sampling shall be undertaken when both gas turbine and any supplementary firing are operating at a single load point, with the turbine at load point in excess of 70% of its maximum continuous rating, and with a waste heat boiler operating at typical levels

Note 6: the frequency and scope of the sampling and testing shall be reviewed by Natural Resources Wales following a minimum of 1 year

Note 7: Emissions from Emission point A4 is now split between A4 and A31. The volumetric flow rate will be the same as previously. Combined emissions from points A4 and A31 shall not exceed the original concentration based ELVs of; NO_x – 75mg/m³ and CO – 100mg/m³.

Table S3.2 – Annual Limits

Substance	Limit – Kg
Oxides of Nitrogen (from A2, A4)	20000
Oxides of Sulphur (from A2, A4)	6000
Chloromethane (from A6)	42000
Benzene (from A15, A16, A17 and A30)	800

Table S3.3 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Weekly Mass Limit (incl. unit)	Conc. Limit (incl. unit)	Reference Period	Monitoring frequency	Monitoring standard or method
W1 situated at grid reference ST333855	Process effluent streams, contaminated surface waters drainage, site sewerage, cooling water blowdown and Surface water drainage from site Note a	Benzene	20kg (as an average weekly discharge over each quarter)	-	Weekly Composite	Weekly Composite	-
		Biphenyl	20kg (as an average weekly discharge over each quarter)	-			-
		Triphenyl	-	-	-	-	
		Formaldehyde (COD)	-	10mg/l	-	-	
		Max vol. effluent discharged	25000m ³ /week	-	Weekly	Continuous	MCERTS accredited method
		pH	5-10	-	Continuous	Continuous	BS ISO 10523
		Cadmium	50g	-	Weekly Composite	Monthly	-
				3.5µg/l	Weekly Composite	Weekly Composite	BS EN ISO 5961
		Mercury	27g	-	-	-	-
				1.5 µg/l	-	-	BS EN 12846
		PCB's Note b	100g	-	-	-	-
		PCP	250g	-	-	-	-
		15 µg/l	-	-	BS EN 12673		
		50g	-	-	-		
		20 µg/l	-	-	BS EN 12673		
W2 situated at grid reference ST333854	Surface water drainage from site Note a	Cadmium	3.5 µg/l	-	Only applicable in cases of extreme flooding where direct discharge of surface water to the Severn Estuary is possible.		BS EN ISO 5961
		Mercury	1.5 µg/l	-			BS EN 12846
		PCP	15 µg/l	-			BS EN 12673
		TCB	20µg/l	-			BS EN 12673
		COD	500mg/l	-			BS ISO 6068-2.34
		pH	6-9	-			BS ISO 10523

Note a: Release of process effluent is currently excluded +/- 3 hours of low tide.

Note b: See Schedule 6 for PCB definition

Table S3.4 Great crested newt monitoring requirements

Location or description of point of measurement	Parameter	Monitoring Frequency	Monitoring standard or method	Other specifications
Ponds 1 - 7 within the Installation boundary as shown in Schedule 7	Monitoring shall comprise the following: (i) Date and time of survey, and time taken to complete survey; (ii) Presence and number of individual Great Crested Newts; (iii) Assessment of condition of each monitoring point against Habitat Suitability Index criteria; (iv) Record of environmental conditions (air and water temperature, rain, wind, clarity and turbidity of water, vegetation and topography); and (v) Presence of any adverse factors (fish, ducks and other fowl, invasive non-native species).	Once every five years.	Great Crested Newt Mitigation Guidelines (English Nature, 2001) and Oldham, R.S., Keeble, J, Swan, M.J.S. and M. Jeffcote (2000), Evaluating the suitability of habitat for the Great Crested Newt (<i>Triturus cristatus</i>), Herpetological Journal, 10 94, pp. 134-155 or other method agreed in writing with NRW	None set

Schedule 4 - Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.5.1	A2, A4, A6, A15, A16, A26-A30, A31	Annually	01/01/04
Emissions to water Parameters as required by condition 3.5.1	W1	Every 3 months	01/01/04
Great crested newts as required by condition 3.5.1	As detailed in Table S3.4	Every 5 years	01/01/19

Table S4.2: Annual production/treatment

Parameter	Units
Production of Chemicals	Tonnes

Table S4.3 Performance parameters

Parameter	Frequency of assessment	Units
Effluent COD	Monthly	COD kg/tonne of product
Effluent Toxicity	Monthly	Value of NOEC
VOC	Annual	Kg/tonne of product
PCOP	Annual	Value of PCOP

Table S4.4 Reporting forms

Media/parameter	Reporting format	Date of form
Air	Form Air 1 or other form as agreed in writing by Natural Resources Wales	01/01/04
Air (Annual Releases)	Air 2 or other form as agreed in writing by Natural Resources Wales	01/01/04
Water (Combined W1 + W2)	Form W1 or other form as agreed in writing by Natural Resources Wales	01/01/04
Waste Return	Form R1 or other form as agreed in writing by Natural Resources Wales	01/01/04
Water Usage	Form WU1 or other form as agreed in writing by Natural Resources Wales	01/01/04
Energy	Form E1 or other form as agreed in writing by Natural Resources Wales	01/01/04
Performance Indicators	Form P1 or other form as agreed in writing by Natural Resources Wales	01/01/04

Schedule 5 - Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	Notification period

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B - to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 - Interpretation

“accident” means an accident that may result in pollution.

“application” means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

“authorised officer” means any person authorised by Natural Resources Wales under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

“*background concentration*” means such concentration of that substance as is present in:

- for emissions to surface water, the surface water quality up-gradient of the site; or
- for emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge.

“*calendar monthly mean*” means the value across a calendar month of all validated hourly means.

“CEN” means Comité Européen de Normalisation.

“Commissioning” means testing of the installation that involves any operation of a Large Combustion Plant referenced in schedule 1, table S1.1.

“*emissions to land*” includes emissions to groundwater.

“*emissions of substances not controlled by emission limits*” means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission or background concentration limit.

“*energy efficiency*” the ISO base load net plant efficiency means the performance value established by acceptance testing following improvements made to the plant that could affect the efficiency.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations SI 2016 No.1154 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“*groundwater*” means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

“*Industrial Emissions Directive*” means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions

“*hazardous substance*” means a substance classified as hazardous as a consequence of fulfilling the criteria laid down in parts 2 to 5 of Annex I to Regulation (EC) No 1272/2008

“*large combustion plant*” or “*LCP*” is a combustion plant or group of combustion plants discharging waste gases through a common windshield or stack, where the total thermal input is 50 MW or more, based on net calorific value. The calculation of thermal input, excludes individual combustion plants with a rated thermal input below 15MW.

“*MCERTS*” means the Environment Agency’s Monitoring Certification Scheme.

“*Natural gas*” means naturally occurring methane with no more than 20% by volume of inert or other constituents.

“NRW” means Natural Resources Wales.

“operational hours” are whole hours commencing from the first unit ending start up and ending when the last unit commences shut down.

“*quarter*” means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

“RFI” means Request for Further Information

“SI” means site inspector.

“*Waste Framework Directive*” or “*WFD*” means Waste Framework Directive 2008/98/EC of the European Parliament and of the Council on waste

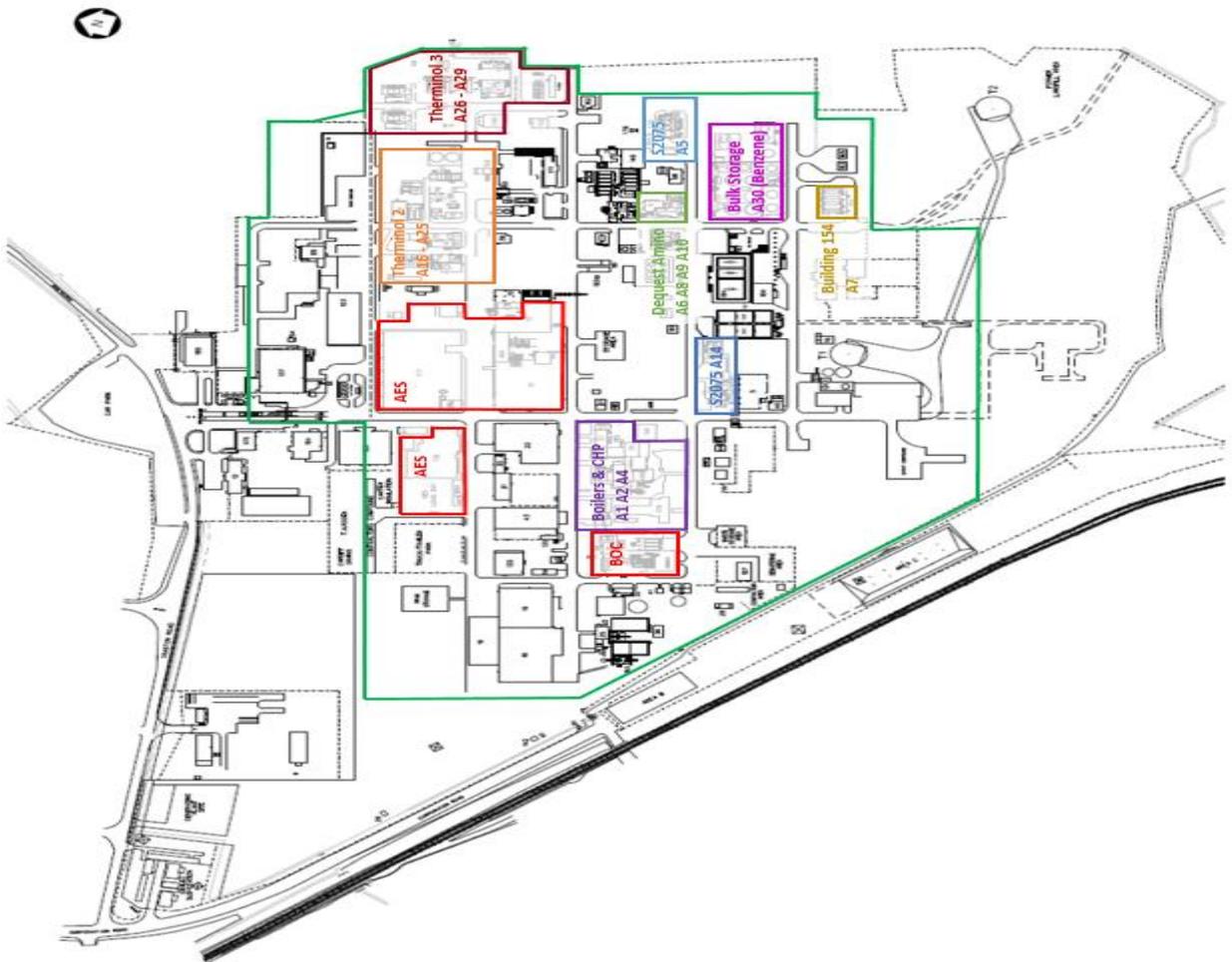
Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or
- in relation to emissions from gas turbine or compression ignition engine combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3kPa and with an oxygen content of 15% dry for liquid and gaseous fuels; and/or
- in relation to emissions from combustion processes comprising a gas turbine with a waste heat boiler, the concentration in dry air at a temperature of 273K, at a pressure of 101.3kPa and with an oxygen content of 15% dry, unless the waste heat boiler is operating alone, in which case, with an oxygen content of 3% dry for liquid and gaseous fuels; and/or
- in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content.

“year” means calendar year ending 31 December.

Schedule 7 - Site plan



END OF PERMIT