



# Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

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EOC UK Limited

Tenax Road PVA Plant

Tenax Road

Trafford Park

Manchester

M17 1JT

**Permit number**

EPR/NP3437YR

# Tenax Road PVA Plant

## Permit number EPR/NP3437YR

### Introductory note

#### **This introductory note does not form a part of the permit**

The main features of the permit are as follows.

EOC UK Limited operates a chemical plant for the production of polyvinyl acetate (PVA) from vinyl acetate monomer (VAM) with a maximum projected annual throughput of 5,000 tonnes of PVA at a regulated installation located on Tenax Road, Trafford Park, Manchester.

This activity is regulated under Section 4.1 A(1)(a)(viii) of Part 2 to Schedule 1 of the Environmental Permitting (England and Wales) Regulations 2016.

The PVA produced by the regulated chemical plant is stored within the permitted installation prior to being exported offsite as a finished product or to being used in part within a pre-existing downstream chemical blending activity for adhesives production that is not regulated by this permit.

The permitted PVA production plant consists of the following main process stages:

- Receipt and offloading of bulk VAM and its storage in a 80 m<sup>3</sup> tank;
- Receipt, handling and storage of other chemical raw materials in lower quantities as intermediate bulk containers and drums;
- PVA manufacturing through the free radical polymerisation of VAM in aqueous solution;
- Finished PVA product storage in two storage tanks with a volume of 30 m<sup>3</sup> each and loading to tankers for offsite export or transfer to the downstream non-regulated adhesive production process.

The PVA production plant also includes the following directly associated activities:

- Process cooling via a primary closed circuit cooling system and a secondary evaporative cooling system, including an emergency cooling system;
- Steam generation (existing medium combustion plant with thermal rated input of 1.19 MWth);
- Emergency diesel generator and diesel fire water pump;
- Process waste handling and dispatch to authorised disposal.

The emissions to air from the regulated installation consist of localised and fugitive emissions of VAM that is a Volatile Organic Compound (VOC) and emissions from combustion of natural gas to raise steam in a steam generator.

Emissions of VAM are minimised through implementation of best available techniques including the following:

- A vapour balancing system returns vapours arising during VAM offloading to the tanker;
- VAM vapours that evolve in the polymerisation reaction step are condensed and returned to the reactor. Emissions of vapours not recovered by the condenser are treated by an emission abatement system consisting of activated carbon filtration unit prior to emission to air (emission point V1);
- High integrity gaskets are used to prevent and minimise fugitive emissions from equipment handling VOCs.

The existing steam generator consists of a low NO<sub>x</sub> burner to reduce emissions of nitrogen oxides from the combustion process.

Waste water generated in the polymerisation process is minimised through internal recycling within the system by reusing rinse water effluents. Excess process wastewater that cannot be recycled is dispatched to an authorised disposal offsite.

Process waste water emission sources to sewer from the regulated installation consist of the cooling water blowdown effluent from the cooling system and the blowdown effluent from the steam generation system. These effluent streams are routed to sewer under a trade effluent discharge consent via the final pit of an existing on-site effluent treatment plant providing treatment to waste waters discharged by the non-regulated chemical blending activity. The principal user of the effluent treatment plant is the non-regulated pre-existing

chemical blending activity and therefore it does not constitute an activity directly associated with the permitted activities.

The installation lies within the Trafford Park Industrial Estate, surrounded by heavy and light industrial units, distribution premises and retailers. There are no residential receptors within close proximity. The nearest ecological receptor is the Trafford Ecology Park Local Nature Reserve, located at approximately 600 meters to the North-East of the site, whilst the nearest European conservation area within relevant screening distance is the Manchester Mosses Special Area of Conservation, at approximately 8.4 km to the west.

The site operates according to an environmental management system certified to standard ISO 14001:2015 that covers the operations of the non-regulated chemical blending activities and will be extended to the permitted installation prior to start of operations.

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

<b>Status log of the permit</b>		
<b>Description</b>	<b>Date</b>	<b>Comments</b>
Application EPR/NP3437YR/A001	Duly made 04/06/18	Application for an organic chemical plant for the production of polyvinyl acetate (PVA).
Additional information received	26/09/18	Response to Schedule 5 Notice issued 02/08/18 including additional information on activities carried out on-site, proposed operating techniques and risk assessment.
Additional information received	22/10/18	Response to Schedule 5 Notice issued 08/10/18 including additional information on the operating techniques for the non-regulated effluent treatment plant, drainage and containment systems and risk assessment for emissions to air.
Permit determined EPR/NP3437YR (PAS Billing ref. NP3437YR)	29/11/18	Permit issued to EOC UK Limited.

End of introductory note

# Permit

## The Environmental Permitting (England and Wales) Regulations 2016

### Permit number

**EPR/NP3437YR**

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016

**EOC UK Limited** (“the operator”),

whose registered office is

**Tenax Road  
Trafford Park  
Manchester  
M17 1JT**

company registration number 02622569

to operate an installation at

**Tenax Road PVA Plant  
Tenax Road  
Trafford Park  
Manchester  
M17 1JT**

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

Name	Date
Simon Hunt	29/11/2018

Authorised on behalf of the Environment Agency

# 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 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.

## **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”).

### **2.2 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.

### **2.3 Operating techniques**

2.3.1 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 Environment Agency.

2.3.2 If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan or other documentation (“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 the Environment Agency.

2.3.3 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.

2.3.4 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.

2.3.5 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 the Environment Agency.

2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

### **2.5 Pre-operational conditions**

2.5.1 The activities shall not be brought into operation until the measures specified in schedule 1 table S1.4 have been completed.

## **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 and S3.2.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

### **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 the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency 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 the Environment Agency.
- 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 the Environment Agency, 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 the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency 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 the Environment Agency.

### **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 the Environment Agency, 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 by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency 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 the Environment Agency.

## **3.5 Monitoring**

- 3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:
  - (a) point source emissions specified in tables S3.1 and S3.2;
  - (b) process monitoring specified in table S3.3.
- 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), where available, unless otherwise agreed in writing by the Environment Agency.
- 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 and S3.2 unless otherwise agreed in writing by the Environment Agency.

## **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 the Environment Agency, 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 the Environment Agency.

### **4.2 Reporting**

- 4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.



- 4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) 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; and
  - (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.
- 4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, 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 the Environment Agency, 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.

### **4.3 Notifications**

- 4.3.1 In the event:
- (a) 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 the Environment Agency,
    - (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) of a breach of any permit condition the operator must immediately—
    - (i) inform the Environment Agency, and
    - (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;
  - (c) 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 the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The Environment Agency 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) the Environment Agency 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 The Environment Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.

## **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 reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity	Limits of specified activity
AR1	S4.1 A(1) (a) (viii)	Producing organic chemicals such as plastic materials: emulsion of polyvinyl acetate (PVA).	From receipt and storage of raw materials to the reaction system including storage and dispatch of finished product. It does not include downstream chemical blending activity for production of adhesives and compounds.
<b>Directly Associated Activity</b>			
AR2	Vapour recovery and emission abatement system	Consists of condensation and recovery of vinyl acetate monomer (VAM) vapours evolved from the reaction system and abatement of non-recovered VAM emissions in an activated carbon filtration system.	From reaction system to emission point V1, from where non-recovered / abated VAM is emitted to atmosphere.
AR3	Steam Generation	Natural gas fuelled boiler (Medium Combustion Plant) with net rated input of 1.19 MWth.	From receipt of gas to combustion of gas and emission of combustion gases through emission point A1.
AR4	Process cooling	Consists of a primary closed circuit and a secondary evaporative cooling system. Includes an emergency cooling system.	Includes cooling water make-up, dosing of chemicals for cooling water conditioning, automated blowdown discharge to foul sewer (emission point S1) routed via on-site effluent treatment plant, based on conductivity set point. Includes an emergency cooling system that supplies 'once through' potable water cooling to the primary circuit for reactor cooling and vapour condensation, in the event of failure of the secondary evaporative cooling system.
AR5	Emergency power supply	Consists of an emergency diesel generator and battery uninterruptible power supply to control systems.	Includes emergency power generation system to prevent loss of reactor control and run-away of radical polymerisation reaction in case of power failure detected by voltage measurement. Includes

<b>Activity reference</b>	<b>Activity listed in Schedule 1 of the EP Regulations</b>	<b>Description of specified activity</b>	<b>Limits of specified activity</b>
			receipt and storage of diesel oil for the emergency diesel generator with secondary containment; includes back-up batteries for emergency power supply to the programmable logic controllers (PLC) used in the process.
AR6	Diesel fire water pump	Diesel driven fire water pump within the fire pump house.	Includes receipt and storage of diesel oil for the diesel driven fire water pump with secondary containment.
AR7	Storage and handling of process by-products and wastes	Storage and handling of process by-products and waste (including packaging) from onsite activities.	From receipt to dispatch off site to authorised disposal.

<b>Description</b>	<b>Parts</b>	<b>Date Received</b>
Response to Schedule 5 Notice dated 02/08/18	Sections 3, 4, 5, 6, 7, 9, 10 and 11 of the application document titled 'Supporting documentation for application NP3437YR', dated September 2018, as supplemented and amended by subsequent reply to Schedule 5 Notice.	26/09/18
Response to Schedule 5 Notice dated 08/10/18	Responses to questions Schedule 5 Notice providing additional information on the operating techniques for the non-regulated effluent treatment plant and its technical connection with the installation; the operation of the penstock valves; the operation of the emergency diesel generator and diesel firewater pump; secondary containment capacities; emissions to air from the steam generator and process vent at the outlet of the activate carbon filtration unit.	22/10/18

<b>Reference</b>	<b>Requirement</b>	<b>Date</b>
IC.1	The Operator shall submit for approval a written report to the Environment Agency on the commissioning of the installation. The report shall summarise the environmental performance of the plant as installed against the design parameters set out in the application. The reports shall also include a review of the performance of the facility against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with this permit.	Within 3 months of the completion of commissioning
IC.2	The Operator shall conduct a monitoring campaign followed by the review of emissions of VOCs (vinyl acetate monomer - VAM) to air and abatement efficiency of the activated carbon abatement system (emission point source V1 of Table S3.1 of the permit).	Within 18 months from commencement of the operation

**Table S1.3 Improvement programme requirements**

Reference	Requirement	Date
	<p>This review shall be based on emissions monitoring data obtained during the first year of operation (or as otherwise agreed in writing by the Environment Agency).</p> <p>The VAM emissions monitoring campaign shall consist of the following methodology, or other suitable methodology proposed by the operator and agreed in writing by the Environment Agency:</p> <ul style="list-style-type: none"> <li>- Testing of VAM concentrations at 2 sample points:               <ol style="list-style-type: none"> <li>1. One sample point upstream of the activated carbon filter;</li> <li>2. One sample point downstream of the activated carbon filter, corresponding to emission point V1.</li> </ol> </li> <li>- Sufficient number of samplings to inform a robust assessment (minimum 6 validated samples per each sample point, or as otherwise agreed in writing by the Environment Agency, with adequate frequency to define a representative emission profile during the first year of operation);</li> <li>- Sampling and testing during operating conditions that are likely to be representative of:               <ol style="list-style-type: none"> <li>1. The stage of the batch polymerisation process when peak emissions of VAM are expected;</li> <li>2. The phases approaching the end of life of the activated carbon bed, as predicted according to engineering calculations carried out to work out its change over frequency;</li> </ol> </li> <li>- Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring campaign shall have either MCERTS certification or MCERTS accreditation (as appropriate) and employ VOC sampling and testing standards identified in Table S3.1 of this permit, in line with the Environment Agency's Technical Guidance Note M16, 'Monitoring volatile organic compounds in stack gas emissions', Version 5, November 2016.</li> </ul> <p>The review shall include, but not be limited to:</p> <ul style="list-style-type: none"> <li>- The validation of the activated carbon change over frequency stated in the application documents for this permit (application EPR/NP3437YR/A001).</li> <li>- A comparison of actual emissions against the emissions predicted during the design stage and included in the risk assessment provided by the operator with the application documents for this permit (application EPR/NP3437YR/A001). The results of the monitoring campaign shall be used to reassess the risk associated with the emissions of VAM according to the Environment Agency's H1 Methodology and confirm this can be screened out as insignificant, as shown in the application (EPR/NP3437YR/A001).</li> </ul> <p>A written report shall be submitted to the Environment Agency for approval, which shall include details of the monitoring results and findings of the environmental impact assessment. The report shall also outline any improvements proposed to reduce the impact if identified as necessary.</p>	

**Table S1.4 Pre-operational measures**

<b>Reference</b>	<b>Pre-operational measures</b>
PO.1	No later than 3 months prior to the commencement of commissioning, the Operator shall submit for approval to the Environment Agency a written report confirming that the preliminary HAZOP studies undertaken for the installation and referred in the application documents have been formally validated within a 'detailed engineering HAZOP study' for the specific design, sizing, piping, equipment layout and technical details of the proposed permitted installation and design of pressure relief devices. The report shall confirm that the detailed engineering HAZOP study has been carried out by a multidisciplinary team of professionals competent in the design of a chemical process facility and provide a summary of the key areas of risk identified during the detailed engineering HAZOP study explaining how these risks have been minimised and mitigated through the detailed design of the installation.
PO.2	No later than 3 months prior to the commencement of commissioning, the Operator shall submit for approval a summary of the updated site Environment Management System (EMS) to the Environment Agency and make available for inspection all documents, procedures and operating instructions which form part of the EMS. The documents and procedures set out in the EMS shall form the written management system referenced in condition 1.1.1 (a) of the permit.

## Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials	
Raw materials	Specification
Vinyl Acetate Monomer	To include adequate concentration of polymerisation inhibitor.

## 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
V1 as shown on emission point plan in Schedule 7	Reactor system activated carbon bed abatement system	Volatile Organic Compounds (VOC), consisting of Vinyl Acetate Monomer (VAM)	No limit set	Hourly average (or average over the sampling period)	Annual [Note 1]	BS EN 12619 Or BS PD CEN/TS 13649 [Note 2]
A1 as shown on emission point plan in Schedule 7	Natural gas steam boiler	Nitrogen Oxides (NO and NO2 expressed as NO2)	No limit set	--	--	
		Carbon Monoxide	No limit set	--	--	
A2 as shown on emission point plan in Schedule 7	Emergency diesel generator	Nitrogen Oxides (NO and NO2 expressed as NO2)	No limit set	--	--	
		Carbon Monoxide	No limit set	--	--	
		Particulates	No limit set	--	--	
		Sulphur Dioxide	No limit set	--	--	
A3 as shown on emission point plan in Schedule 7	Diesel firewater pump	Nitrogen Oxides (NO and NO2 expressed as NO2)	No limit set	--	--	
		Carbon Monoxide	No limit set	--	--	
		Particulates	No limit set	--	--	
		Sulphur Dioxide	No limit set	--	--	
Pressure relief devices	Process Reactor PRV(s)	No parameters set	No limit set	--	--	
	VAM Tank PRV(s) and burst disc(s)	Vinyl Acetate Monomer (VAM)	No limit set	--	--	
Vents from tanks	PVA storage tanks	No parameters set	No limit set	--	--	



<b>Table S3.1 Point source emissions to air – emission limits and monitoring requirements</b>						
<b>Emission point ref. &amp; location</b>	<b>Source</b>	<b>Parameter</b>	<b>Limit (including unit)</b>	<b>Reference period</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>
<p>Note 1: During the first 12 months of operation the monitoring regime set under Improvement Condition 2 (IC 2) as referenced in Table S1.3 of this permit applies, unless otherwise agreed in writing by the Environment Agency. Sampling and testing to be carried out during operating conditions that are representative of VAM emissions for the installation.</p> <p>Note 2: or as otherwise agreed in writing by the Environment Agency.</p>						

<b>Table S3.2 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements</b>						
<b>Emission point ref. &amp; location</b>	<b>Source</b>	<b>Parameter</b>	<b>Limit (incl. Unit)</b>	<b>Reference period</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>
S1 on emission point plan in Schedule 7, emission to United Utilities Davyhulme Sewage Treatment Works	Cooling system blowdown, via on-site effluent treatment plant	No parameter set	No limit set	--	--	--
S2 on emission point plan in Schedule 7, emission to United Utilities Davyhulme Sewage Treatment Works	Boiler blowdown, via on-site effluent treatment plant	No parameter set	No limit set	--	--	--
S3, S4 on emission point plan in Schedule 7, emission to United Utilities Davyhulme Sewage Treatment Works	Penstock isolation valves at discharge point of uncontaminated surface runoff	No parameter set	No limit set	--	--	--

<b>Table S3.3 Process monitoring requirements</b>				
<b>Emission point reference or source or description of point of measurement</b>	<b>Parameter</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>	<b>Other specifications</b>
VAM storage tank	Temperature, pressure, level (level transmitter and independent high-level alarm with pump shutoff function)	Continuous	Not applicable	

<b>Table S3.3 Process monitoring requirements</b>				
<b>Emission point reference or source or description of point of measurement</b>	<b>Parameter</b>	<b>Monitoring frequency</b>	<b>Monitoring standard or method</b>	<b>Other specifications</b>
Reactor reflux condenser	Cooling water temperature at the outlet of condenser	Continuous	Not applicable	
Gas detection system	Fugitive emissions of Vinyl Acetate Monomer	Continuous	Not applicable	

## Schedule 4 – Reporting

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

<b>Table S4.1 Reporting of monitoring data</b>			
<b>Parameter</b>	<b>Emission or monitoring point/reference</b>	<b>Reporting period</b>	<b>Period begins</b>
Emissions to air Parameters as required by condition 3.5.1.	V1	Every 12 months	1 January
Emissions to sewer Discharged effluent volume	S1, S2	Every 12 months	1 January

<b>Table S4.2: Annual production</b>	
<b>Parameter</b>	<b>Units</b>
Polyvinyl Acetate Monomer (emulsion) – Used on-site in non-regulated activity	tonnes
Polyvinyl Acetate Monomer (emulsion) – Exported	tonnes

<b>Table S4.3 Performance parameters</b>		
<b>Parameter</b>	<b>Frequency of assessment</b>	<b>Units</b>
Water usage	Annually	m <sup>3</sup>
Energy usage	Annually	MWh (electric power, natural gas); tonnes (Gas Oil)
Total raw material used	Annually	tonnes

<b>Table S4.4 Reporting forms</b>		
<b>Media/parameter</b>	<b>Reporting format</b>	<b>Date of form</b>
Air	Form air 1 or other form as agreed in writing by the Environment Agency	29/11/18
Sewer	Form sewer 1 or other form as agreed in writing by the Environment Agency	29/11/18
Water usage	Form water usage 1 or other form as agreed in writing by the Environment Agency	29/11/18
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	29/11/18
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	29/11/18

# 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	

<b>(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</b>	
<b>To be notified within 24 hours of detection</b>	
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>(b) Notification requirements for the breach of a limit</b>	
<b>To be notified within 24 hours of detection unless otherwise specified below</b>	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	

<b>(b) Notification requirements for the breach of a limit</b>	
<b>To be notified within 24 hours of detection unless otherwise specified below</b>	
Measures taken, or intended to be taken, to stop the emission	

<b>Time periods for notification following detection of a breach of a limit</b>	
<b>Parameter</b>	<b>Notification period</b>

<b>(c) Notification requirements for the detection of any significant adverse environmental effect</b>	
<b>To be notified within 24 hours of detection</b>	
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 the Environment Agency 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.

“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.

“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 limit.

“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

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

“Medium Combustion Plant” or “MCP” means a combustion plant with a rated thermal input equal to or greater than 1 MW but less than 50 MW.

“Medium Combustion Plant Directive” or “MCPD” means Directive 2015/2193/EU of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from medium combustion plants.

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.

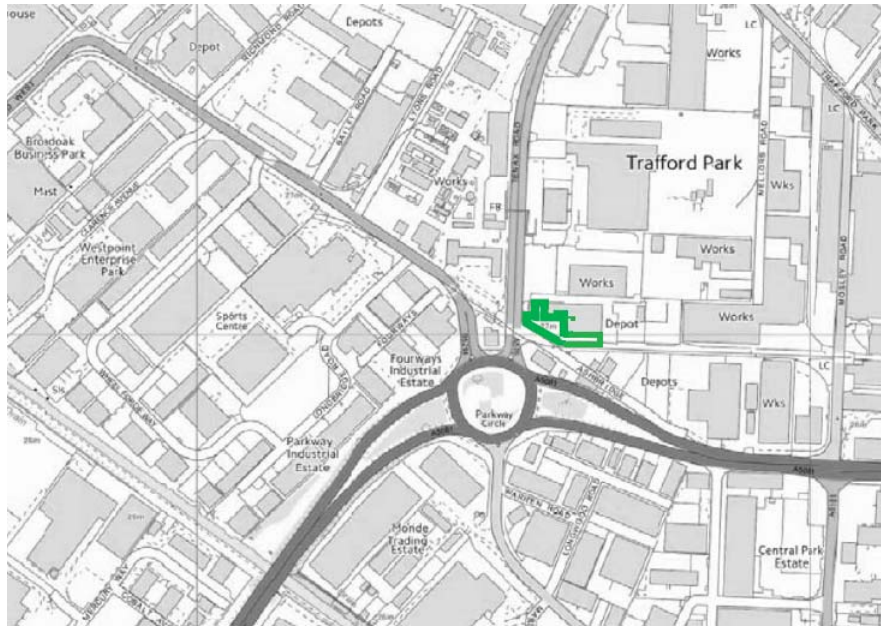
Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- 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 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.

“VOC” means Volatile organic compounds as defined in Article 3(45) of Directive 2010/75/EU - ‘volatile organic compound’ means any organic compounds well as the fraction of creosote, having at 293,15 K a vapour pressure of 0,01 kPa or more, or having a corresponding volatility under the particular conditions of use.

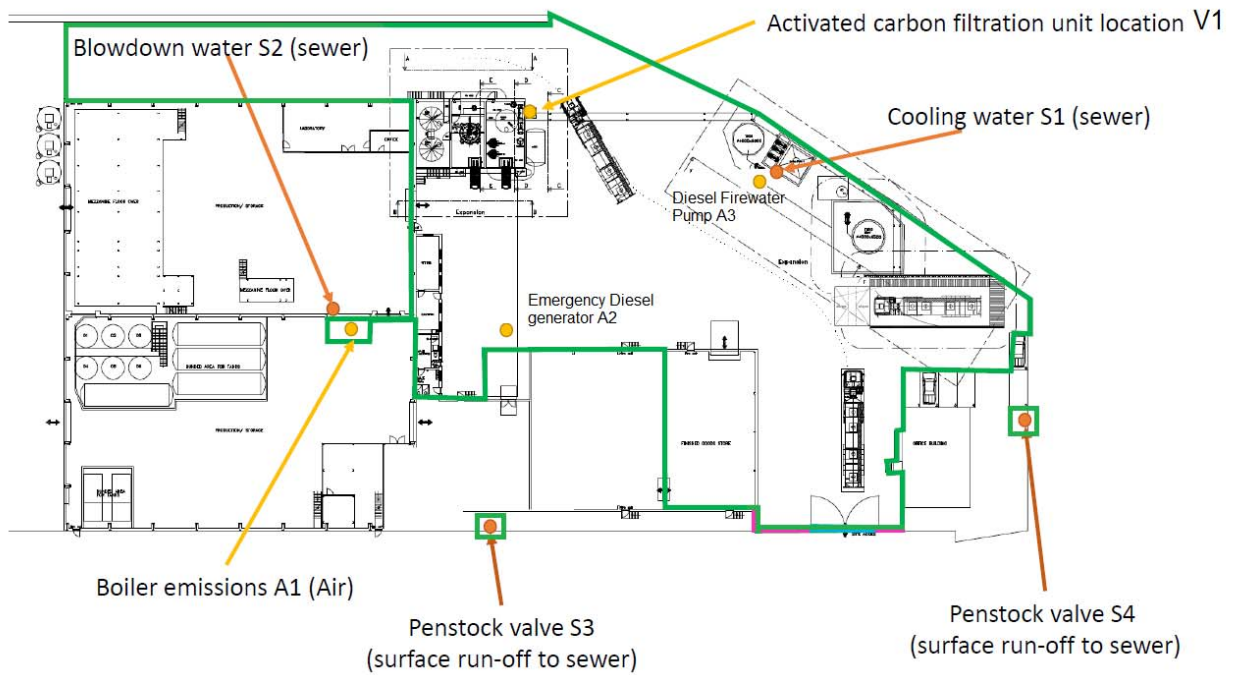
“year” means calendar year ending 31 December.

# Schedule 7 – Site plan



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## Emission point plan:



END OF PERMIT