Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Vivergo Fuels Limited

Saltend Bioethanol Plant
S039 Saltend Chemicals Park
Saltend Lane
Hedon Road
Hull
HU12 8DS

Variation application number

EPR/WP3633KH/V005

Permit number

EPR/WP3633KH

Saltend Bioethanol Plant
Permit number EPR/WP3633KH

Introductory note

This introductory note does not form a part of the notice

Under the Environmental Permitting (England & Wales) Regulations (EPR) 2016 (schedule 5, part 1, paragraph 19) a variation may comprise a consolidated permit reflecting the variations and a notice specifying the variations included in that consolidated permit.

Changes introduced by this variation notice/statutory review

This variation has been issued to update some of the conditions following a statutory review of the permits in the industry sector for the production of large volume organic chemicals (LVOC). The opportunity has also been taken to consolidate the original permit and subsequent variations.

The Industrial Emissions Directive (IED) came into force on 07 January 2014 with the requirement to implement all relevant Best Available Techniques (BAT) Conclusions as described in the Commission Implementing Decision. The BAT Conclusions for production of LVOC were published on 07 December 2017 in the Official Journal of the European Union (L323) following a European Union wide review of BAT, implementing decision 2017/2117/EU of 21 November 2017.

Where appropriate, we also considered other relevant BAT Conclusions published prior to this date but not previously included in a permit review for the Installation:-

Common waste water and waste gas treatment/management systems in the chemical sector, published 09 June 2016.

The BAT Conclusions for this installation which apply from 07 December 2021 are:

Production of Large Volume Organic Chemicals:
General BAT Conclusions 2, 8, 10, 11, 13, 14, 17 to 19.

Common waste water and waste gas treatment/management systems in the chemical sector:
BAT Conclusions 1 to 23.

The schedules specify the changes made to the permit.

Schedule 1 of the notice specifies the conditions that have been varied and schedule 2 comprises a consolidated permit which reflects the variations being made. All the conditions of the permit have been varied and are subject to the right of appeal.

Brief Description of the process

Saltend Bioethanol Plant is operated by Vivergo Fuels Limited and is located entirely within the existing industrial chemicals site at Saltend. The Saltend site is situated on the north bank of the Humber Estuary, approximately 7km to the east of the centre of Kingston upon Hull at National Grid reference TA16622785.

The installation operates 24 hours a day, all year round, to produce bioethanol from wheat grain (primary activity) and animal feed from the by-product (Dry Distillers' Grains with Solubles (DDGS)). These activities fall under the following EPR listed activities:

Section 4.1 Part A(1)(a)(ii) - Producing organic chemicals such as organic compounds containing oxygen, such as alcohols, aldehydes, ketones, carboxylic acids, esters, ethers, peroxides, phenols, epoxy resins.

Section 6.8 Part A(1)(d)(ii) - Treating and processing materials intended for the production of food products from vegetable raw materials at a plant with a finished product capacity of more than 300 tonnes per day.

The key steps in the process are as follows:

Wheat is transported onto site via wagons, is sampled and, if meets acceptance requirements, is tipped into the wheat tipping area. This is then conveyed to the mill building where it is screened for metals, stones and chaff. The chaff goes into the chaff blowing line and is used later in the process to produce animal feed pellets.

The wheat is then stored in one of six 1,500 tonne silos. From the silos, the wheat goes back into the mill building and is then milled into a coarse flour in roller mills. The flour is mixed into a slurry using fresh and recycled process water. The slurry is treated in a liquefaction stage, where steam is injected and enzymes are added to start breaking down the wheat starch into fermentable sugars.

The material then enters one of eight fermenters where yeast, water and additional enzymes are added. The fermentation cycle lasts around 60 hours with filling, fermenting, emptying and cleaning cycles. The fermentation produces alcohol with a typical concentration of 10-13% m/m alcohol.

The fermenters then discharge to the beerwell (a large buffer tank) from where the material is fed continuously to distillation. The first distillation column removes carbon dioxide (CO_2), then undertakes a crude alcohol/water separation with non-fermented solids remaining with the water stream as stillage. The stillage goes for storage in the animal feed plant.

The alcohol and water are distilled and separated by a separate column. The alcohol content is increased to around 95% at this stage and goes for further processing by molecular sieve drying (MSDH) where the alcohol is dried to 98% and stored in a product tank.

The stillage is fed into one of nine decanters where solids are separated from water. The solids enter one of three driers which discharge via emission points A11 to A13, with the dried solids being conveyed into the pelleting building. The liquid is passed to the evaporation plant where waste heat from distillation is used to concentrate the liquid to a syrup which can be sold as a product with a variable proportion added to the solids during the drying process.

In the pelleting building, meal from the driers and chaff from the wheat intake are mixed together and passed through a die press to form high protein animal feed pellets. This is then stored for despatch.

The main emissions to air are particulate matter from milling, drying and cooling, abated by bag filter or cyclones as appropriate; products of combustion from fermentation and drying; together with volatile organic compounds (VOCs) arising from the distillation and drying process, abated by Regenerative Thermal Oxidisers (RTOs) as appropriate.

Process effluent and surface water run-off are transferred to the Saltend site effluent collection system known as the Aquarius system. This is operated by Saltend Chemicals Park Limited which in turn discharges uncontaminated water directly to the River Humber and trade effluent to the nearby Yorkshire Water waste water treatment works (YW WWTW).

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

Status log of the permit		
Description	**Date**	**Comments**
Application EPR/WP3633KH/A001	13/07/2009	Duly made Application for a permit for the manufacturing of Bioethanol and animal feed
Schedule 5 notice requesting additional information issued	05/11/2009	Response received 25/11/2009
Schedule 5 notice requesting additional information issued	23/11/2009	Response received 07/12/2009
Additional information received	16/03/2010	
Additional information received	31/03/2010	
Permit determined	30/06/2010	Permit issued to Vivergo Fuels Limited
Variation application EPR/WP3633KH/V002	04/02/2016	Duly made Application to increase the plant capacity and add two new emission points
Application withdrawn EPR/WP3633KH/V002	30/03/2016	Application returned
Variation application EPR/WP3633KH/V003	Duly made 16/05/2016	Change to the road tanker loading system
Variation determined EPR/WP3633KH/V003	25/07/2016	Varied and consolidated permit issued
Variation application EPR/WP3633KH/V004	Duly made 27/09/2016	Application to add two new emission points and update abatement operating techniques
Variation determined EPR/WP3633KH/V004	26/10/2016	Varied permit issued
Regulation 61 Notice dated 04/05/2018 (Notice requiring information for statutory review of permit) EPR/WP3633KH/V005	12/09/2018 24/10/2018	Response received Technical standards detailed in response to the information notice Statutory review of permit occasioned by LVOC BAT Conclusions published 07/12/2017 Environment Agency initiated variation
Request for further information sent 08/04/2021	28/04/2021	Additional information received LVOC BAT Conclusions 2, 8, 9, 13, 15 to 18 CWW WGT BAT Conclusions 1 to 5, 10, 12, 15 to 17
Request for information sent 05/05/2021 01/06/2021	28/05/2021 18/06/2021	Additional information received LVOC BAT Conclusion 13 CWW WGT BAT Conclusions 1 and 12 Speciated Class A VOCs at emission points A8 to A10
Further information received	10/08/2021	Clarification for emission points A14, A20 and A21.
Variation determined EPR/WP3633KH/V005 (Billing Ref: GP3134QV)	11/08/2021	Varied and consolidated permit issued

Other Part A installation permits relating to this installation		
Operator	**Permit number**	**Date of issue**
Saltend Chemicals Park Ltd.	EPR/VP3834YU	15/03/2018

End of introductory note

Notice of variation and consolidation

The Environmental Permitting (England and Wales) Regulations 2016

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2016 varies

Permit number

EPR/WP3633KH

Issued to

Vivergo Fuels Limited ("the operator")

whose registered office is

Weston Centre
10 Grosvenor Street
London
W1K 4QY

company registration number **05998024**

to operate a regulated facility at

Saltend Bioethanol Plant
S039 Saltend Chemicals Park
Saltend Lane
Hedon Road
Hull
HU12 8DS

to the extent set out in the schedules.

The notice shall take effect from 11/08/2021

Name	Date
Anne Lloyd	**11/08/2021**

Authorised on behalf of the Environment Agency

Schedule 1

All conditions have been varied by the consolidated permit as a result of an Environment Agency initiated variation.

Schedule 2 – consolidated permit

Consolidated permit issued as a separate document.

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/WP3633KH

This is the consolidated permit referred to in the variation and consolidation notice for application EPR/WP3633KH/V005 authorising,

Vivergo Fuels Limited ("the operator"),

whose registered office is

Weston Centre
10 Grosvenor Street
London
W1K 4QY

company registration number **05998024**

to operate an installation at

Saltend Bioethanol Plant
S039 Saltend Chemicals Park
Saltend Lane
Hedon Road
Hull
HU12 8DS

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

Name	Date
Anne Lloyd	**11/08/2021**

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.

1.5 Multiple operator installations

1.5.1 Where the operator notifies the Environment Agency 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").

2.2 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, S3.1a, S3.2, S3.2a and S3.3.

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.

3.4 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.

3.5 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, S3.1a, S3.2, S3.2a and S3.3; and

(b) process monitoring 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), 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, S3.1a, S3.2, S3.2a and S3.3 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 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.

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.

4.3.7 Where the operator has entered into a climate change agreement with the Government, the Environment Agency 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 "without delay", 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**
A1 Bioethanol production	Section 4.1 Part A(1)(a)(ii) Producing organic chemicals such as organic compounds containing oxygen, such as alcohols, aldehydes, ketones, carboxylic acids, esters, ethers, peroxides, phenols, epoxy resins.	Production of bioethanol	From wheat delivery, storage and milling with a capacity of 3,500 tonnes per day, including mash slurry formation, heating/hydrolysis, saccharification, fermentation with a capacity of 10,000 tonnes of fermented mash per day; to distillation, de-hydration and stillage evaporation, with an average capacity of 420 million litres per year, and technically connected ethanol storage facilities, denaturing, road loading and managing the transfer of ethanol to Saltend Chemicals Park Limited for export by ship.
A2 DDGS production	Section 6.8 Part A(1)(d)(ii) Treating and processing materials intended for the production of food products from vegetable raw materials at a plant with a finished product capacity of more than 300 tonnes per day.	Production of animal feed from dry distillers grain with solubles (DDGS)	From receipt of stillage residues and processing to produce wet distillers grain (WDG), solubles and DDGS animal food product in a plant with a capacity of 1,300 tonnes per day, to despatch of product.

Table S1.1 activities			
Activity reference	**Activity listed in Schedule 1 of the EP Regulations**	**Description of specified activity**	**Limits of specified activity**
	Directly Associated Activity		
A3	Raw materials	Receipt, storage and deployment of raw materials for use in process and for cleaning in place (CIP).	Chemicals and CIP materials storage area.
A4	Process condensate treatment (PCT)	Treatment of collected water recycles prior to reuse in the process; Buffer storage biogas prior to use as fuel in RTOs; Buffer storage of waste biomass prior to off-site recovery or disposal.	Process condensate treatment area.
A5	Effluent control	Collection and treatment of trade effluents prior to discharge to Saltend Aquarius as the primary sewage undertaker, at emission points W1 (formerly S1) and S2.	Effluent management area.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application EPR/WP3633KH/A001	Section 20, parts 1 – 8 of the application document, in response to section 5a technical standards, Part B of the application form, the accompanying drawings and plans provided in Section 4 of the application document.	13/07/2009
Application EPR/WP3633KH/A001	The following management plans described in the application document in response to section 5b, Table 3 General Requirements and sections 7a and 7b, Part B of the application form: • Summary accident management plan provided in Section 9; • Odour management plan provided in Section 11; • Noise management plan provided in Section 12; • Monitoring plan provided in Section 15.	13/07/2009
Response to Schedule 5 Notice dated 05/11/2009, addendum to permit application	Response to the following questions: • Questions 1 – 14 detailing process controls; • Questions 15 – 16 detailing management systems; • Question 17 detailing installation boundary and changes in operational control; • Question 18 on accident management; • Question 19 on odour; • Question 20 on monitoring; • Question 21 on basis of impact assessment.	25/11/2009
Response to Schedule 5 Notice dated 23/11/2009, addendum 2 to permit application	Clarification and expansion of response to question 21 on impact from the Schedule 5 notice issued on 05/11/2009. Response to the following questions: • Questions 22 – 26 detailing process controls; • Questions 27 – 30 on site condition report; • Questions 31 – 37, providing further detail on the basis of the impact assessment modelled by air dispersion study.	07/12/2009
Further information received	Confirmation of emissions to air	16/03/2010
Further information received	Confirmation that emissions from release points A1 and A3 – A6 can be monitored in accordance with Technical Guidance Note (Monitoring) M1: Sampling requirements for stack emission monitoring.	31/03/2010
Variation application EPR/WP3633KH/V003	The following titled parts of the Non-technical Summary: • Gasoline Tank • Vapour Combustion unit The following parts of John Zink Luxembourg Firm Proposal document reference 201502-51536-A2 Rev A2 Rev.1 dated 26/02/2016: • Operation description • Equipment description and Receiving • Installation & Start-up.	16/05/2016
Variation application EPR/WP3633KH/V004	Response to part C3 of the application form and supporting documents.	27/09/2016

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Variation EPR/WP3633KH/V005 Regulation 61 Notice – request for further information dated 04/05/2018	Technical standards in relation to Best available techniques as described in BAT conclusions under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions for Production of Large Volume Organic Chemicals BAT Conclusions 2, 8, 10, 11, 13, 14, 17 to 19. Common waste water and waste gas treatment/management systems in the chemical sector BAT Conclusions 1 to 23.	12/09/2018 24/10/2018
Variation EPR/WP3633KH/V005 Response to request for further information sent 08/04/2021	Technical standards in relation to Best available techniques as described in BAT conclusions under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions for Production of Large Volume Organic Chemicals BAT Conclusions 2, 8, 9, 13 and 15 to 18. Common waste water and waste gas treatment/management systems in the chemical sector BAT Conclusions 1 to 5, 10, 12 and 15 to 17.	28/04/2021
Variation EPR/WP3633KHV005 Response to request for further information sent 05/05/2021 and 01/06/2021	Technical standards in relation to Best available techniques as described in BAT conclusions under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions for Production of Large Volume Organic Chemicals BAT Conclusion 13. Common waste water and waste gas treatment/management systems in the chemical sector BAT Conclusions 1 and 12.	28/05/2021 18/06/2021

Table S1.3 Improvement programme requirements		
Reference Note 1	**Requirement**	**Date**
IC7	The operator shall update the site condition report for the installation. The update must reflect all the changes to operations and emissions in permit variation EPR/VP3633KH/V003, as appropriate, in particular having regard to the impacts of the change in denaturing product, new tank, changes to bunding and the removal of the methanol bitrex tank. The update should ensure all the potential pollution impacts are addressed, mitigated against and remediated, if required.	25/01/2017
IC8	CWW BAT Conclusions 4 and 5 The operator shall submit, for approval by Environment Agency, a report setting out progress to achieving the 'Narrative' BAT where BAT is currently not achieved. The report shall include, but not be limited to, the following: • Methodology for achieving BAT. • Associated targets / timelines for reaching compliance. • Any alterations to the initial plan (in progress reports). The report shall address the following BAT Conclusions: • Common waste water and waste gas treatment/management systems in the chemical sector: **BAT Conclusion 4** (monitor emissions to water) and **BAT Conclusion 5** (monitor diffuse VOC emissions). Refer to BAT Conclusions for a full description of the BAT requirement.	Progress report by: 07/12/2021 (then six monthly intervals until start-up of the facility)
IC9	CWW BAT Conclusion 12 The operator shall submit, for approval by the Environment Agency, a report to demonstrate how the final release from emission point S2 will comply with the relevant BAT AELs in Tables 1 to 3 of this BAT Conclusion. For this 'indirect' release to the Humber Estuary via Yorkshire Water waste water treatment works (YW WWTW) reduction factors should be used to demonstrate compliance and the efficiency of the waste water treatment plant.	31/12/2021
IC10	Surface water pollution risk assessment The operator shall submit a surface water pollution risk assessment to the Environment Agency for approval, which shall assess the impact of discharges of hazardous pollutants to surface water and sewer from the installation. The risk assessment shall include, but not be limited to the following: a) representative emissions data for the following hazardous pollutants:cadmium, mercury, nickel; and any other relevant substances discharged from the installation. Any emissions monitoring required should be carried out using the methods and standards described in Environment Agency M18 guidance; and b) a risk assessment in accordance with the screening procedures in Environment Agency guidance "Surface water pollution risk assessment for your environmental permit", using the representative emissions data obtained in (a) above.	31/03/2022

Table S1.3 Improvement programme requirements		
Reference Note 1	**Requirement**	**Date**
IC11	Road tanker loading area Vapour Combustion Unit stack (A19) The operator shall submit a written report to the Environment Agency on the commissioning of the vapour combustion unit (VCU) at emission point A19. The report shall summarise the environmental performance and optimisation of the unit against the design parameters.	Within 4 months of the completion of commissioning
Note 1: IC1 to IC6 are complete and have been removed from this table.		

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO1	Prior to the commencement of commissioning of the equipment associated with variation EPR/WP3633KH/V004, the operator shall confirm the final design. This shall include any changes to the original proposal and where necessary provision of updated documents for approval by the Environment Agency.

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Gas used in the regenerative thermal oxidiser associated with emissions from the fermenter scrubber – release point A8	Natural gas only
Gas used in the regenerative thermal oxidisers and burners used on the three DDGS dryers associated with release points A11, A12 and A13.	Natural gas or biogas generated only from the Vivergo anaerobic treatment process.

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements shall apply until 06 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A1 Note 4	Wheat mill intake hopper vent abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	1 hour	Every 6 months	BS EN 13284-1
A2 Note 4	Mill conveying and pre-clean vent via abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	1 hour	Every 6 months	BS EN 13284-1
A3 Note 4	De-stoners and conveyor A vent via abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	1 hour	Every 6 months	BS EN 13284-1
A4 Note 4	Cleaning A vent via abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	1 hour	Every 6 months	BS EN 13284-1
A5 Note 4	Discharge A and B vent via abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	1 hour	Every 6 months	BS EN 13284-1
A6 Note 4	Cleaning B vent via abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	1 hour	Every 6 months	BS EN 13284-1
A7 Note 4	De-stoners on conveyor B vent via abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	1 hour	Every 6 months	BS EN 13284-1
A8 Note 4	Fermenter scrubber via regenerative thermal oxidiser (RTO) stack	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	50 mg/m^3	1 hour	Every 6 months	BS EN 14792
		Carbon monoxide	100 mg/m^3	1 hour	Annually	BS EN 15058

Table S3.1 Point source emissions to air – emission limits and monitoring requirements shall apply until 06 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A8 Note 4	Fermenter scrubber via regenerative thermal oxidiser (RTO) stack	Class A VOC (as acetaldehyde)	100 g/hour when RTO operational Note 2	1 hour	Every 6 months	Mass balance based on monitoring undertaken to BS EN 13649
		Class A VOC (as acetaldehyde)	20 mg/m^3 when RTO operational Note 2	1 hour	Every 6 months	BS EN 13649
		Class B VOC (as carbon)	2 kg/hour when RTO operational Note 3	1 hour	Every 6 months	Mass balance based on monitoring undertaken to BS EN 13649
		Class B VOC (as carbon)	75 mg/m^3 when RTO operational Note 3	1 hour	Every 6 months	BS EN 13649
A9 Note 4	Distillation plant scrubber vent 1	Class A VOC (as acetaldehyde)	100 g/hour	1 hour	Every 6 months	Mass balance based on monitoring undertaken to BS EN 13649
		Class B VOC (as carbon)	2 kg/hour	1 hour	Every 6 months	Mass balance based on monitoring undertaken to BS EN 12619
A10 Note 4	Distillation plant scrubber vent 2	Class A VOC (as acetaldehyde)	100 g/hour	1 hour	Every 6 months	Mass balance based on monitoring undertaken to BS EN 13649
		Class B VOC (as carbon)	2 kg/hour	1 hour	Every 6 months	Mass balance based on monitoring undertaken to BS EN 12619

Table S3.1 Point source emissions to air – emission limits and monitoring requirements shall apply until 06 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A11 Note 4	DDGS dryer 1 via cyclone and RTO stack Note 1	Particulate matter	40 mg/m^3	1 hour	Every 6 months	BS EN 13284-1
		Oxides of nitrogen (NO and NO_2 expressed as NO_2)	200 mg/m^3	1 hour	Every 6 months	BS EN 14792
		Carbon monoxide	100 mg/m^3	1 hour	Annually	BS EN 15058
		Class B VOC (as carbon)	2 kg/hour when RTO operational Note 3	1 hour	Every 6 months	Mass balance based on monitoring undertaken to BS EN 12619
		Class B VOC (as carbon)	75 mg/m^3 when RTO operational Note 3	1 hour	Every 6 months	BS EN 12619
A12 Note 4	DDGS dryer 2 via cyclone and RTO stack Note 1	Particulate matter	40 mg/m^3	1 hour	Every 6 months	BS EN 13284-1
		Oxides of nitrogen (NO and NO_2 expressed as NO_2)	200 mg/m^3	1 hour	Every 6 months	BS EN 14792
		Carbon monoxide	100 mg/m^3	1 hour	Annually	BS EN 15058

Table S3.1 Point source emissions to air – emission limits and monitoring requirements shall apply until 06 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A12 Note 4	DDGS dryer 2 via cyclone and RTO stack Note 1	Class B VOC (as carbon)	2 kg/hour when RTO operational Note 3	1 hour	Every 6 months	Mass balance based on monitoring undertaken to BS EN 12619
		Class B VOC (as carbon)	75 mg/m^3 when RTO operational Note 3	1 hour	Every 6 months	BS EN 12619
A13 Note 4	DDGS dryer 3 via cyclone and RTO stack Note 1	Particulate matter	40 mg/m^3	1 hour	Every 6 months	BS EN 13284-1
		Oxides of nitrogen (NO and NO_2 expressed as NO_2)	200 mg/m^3	1 hour	Every 6 months	BS EN 14792
		Carbon monoxide	100 mg/m^3	1 hour	Annually	BS EN 15058
		Class B VOC (as carbon)	2 kg/hour when RTO operational Note 3	1 hour	Every 6 months	Mass balance based on monitoring undertaken to BS EN 12619
		Class B VOC (as carbon)	75 mg/m^3 when RTO operational Note 3	1 hour	Every 6 months	BS EN 12619
A14 Note 4	Pellet cooler 1 and chaff line via cyclone stack	Particulate matter	50 mg/m^3	1 hour	Quarterly for first 12 months. Every 6 months thereafter	BS EN 13284-1
A15 Note 4	Pellet cooler 2 via cyclone stack	Particulate matter	50 mg/m^3	1 hour	Every 6 months	BS EN 13284-1
A16 Note 4	Pellet cooler 3 via cyclone stack	Particulate matter	50 mg/m^3	1 hour	Every 6 months	BS EN 13284-1

Table S3.1 Point source emissions to air – emission limits and monitoring requirements shall apply until 06 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A17 Note 4	Pellet cooler 4 via cyclone stack	Particulate matter	50 mg/m^3	1 hour	Every 6 months	BS EN 13284-1
A18 [OS grid ref 516490, 427750]	Biogas flare from purification of process condensate	No parameters set	No limit set	-	-	Permanent sampling access not required.
A19 [Point A19 on the Continuous Emissions Locations plan Rev 3]	Road tanker loading area Vapour Combustion Unit stack	Class B VOC (as carbon)	2 kg/hour Note 3	1 hour	Quarterly for the first 12 months. Every 6 months thereafter	Mass Balance based on monitoring undertaken to BS EN 12319
		Class B VOC (as carbon)	75 mg/m^3 Note 3	1 hour	Quarterly for the first 12 months. Every 6 months thereafter	BS EN 12319
		Carbon monoxide	100 mg/m^3	1 hour	Quarterly for the first 12 months. Every 6 months thereafter	BS EN 15058
		Oxides of nitrogen (NO and NO_2 expressed as NO_2)	50 mg/m^3	1 hour	Quarterly for the first 12 months. Every 6 months thereafter	BS EN 14792

Note 1: Maximum length of time that the DDGS dryers can operate unabated before shut-down of emissions source shall be 24 hours.

Note 2: Concentration of 20 mg/m^3 for Class A VOCs shall apply when mass release exceeds 100 g/hour.

Note 3: Concentration limit of 75 mg/m^3 as Carbon for Class B VOCs shall apply when mass release exceeds 2 kg/hr.

Note 4: Emission point on the ‘continuous emission locations’ plan in Section 4 of application EPR/WP3633KH/A001.

Table S3.1a Point source emissions to air – emission limits and monitoring requirements shall apply from 07 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A1 Note 4	Wheat mill intake hopper vent abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	Average over sample period	Once every year	EN 13284-1
A2 Note 4	Mill conveying and pre-clean vent via abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	Average over sample period	Once every year	EN 13284-1
A3 Note 4	De-stoners and conveyor A vent via abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	Average over sample period	Once every year	EN 13284-1
A4 Note 4	Cleaning A vent via abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	Average over sample period	Once every year	EN 13284-1
A5 Note 4	Discharge A and B vent via abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	Average over sample period	Once every year	EN 13284-1
A6 Note 4	Cleaning B vent via abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	Average over sample period	Once every year	EN 13284-1
A7 Note 4	De-stoners on conveyor B vent via abatement plant bag filter stack on wheat milling building	Particulate matter	20 mg/m^3	Average over sample period	Once every year	EN 13284-1
A8 Note 4	Fermenter scrubber via regenerative thermal oxidiser (RTO) stack	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	50 mg/m^3	Average over sample period	Once every year	EN 14792
		Carbon monoxide	100 mg/m^3	Average over sample period	Once every year	EN 15058
		VOC (as acetaldehyde)	100 g/hour when RTO operational Note 2	Average over sample period	Every 6 months Note 6	Mass balance based on monitoring undertaken to EN 13649

Table S3.1a Point source emissions to air – emission limits and monitoring requirements shall apply from 07 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
		VOC (as acetaldehyde)	20 mg/m^3 when RTO operational Note 2	Average over sample period	Every 6 months Note 6	EN 13649
		TVOC (as carbon)	2 kg/hour when RTO operational Note 3	Average over sample period	Every 6 months Note 6	Mass balance based on monitoring undertaken to EN 12619
		TVOC (as carbon)	75 mg/m^3 when RTO operational Note 3	Average over sample period	Every 6 months Note 6	EN 12619
A9 Note 4	Distillation plant scrubber vent 1	VOC (as acetaldehyde)	100 g/hour	Average over sample period	Every 6 months	Mass balance based on monitoring undertaken to EN 13649
		TVOC (as carbon)	2 kg/hour	Average over sample period	Once every year	Mass balance based on monitoring undertaken to EN 12619
A10 Note 4	Distillation plant scrubber vent 2	VOC (as acetaldehyde)	100 g/hour	Average over sample period	Every 6 months	Mass balance based on monitoring undertaken to BS EN 13649
		TVOC (as carbon)	2 kg/hour	Average over sample period	Once every year	Mass balance based on monitoring undertaken to BS EN 12619
A11 Note 4	DDGS dryer 1 via cyclone and RTO stack Note 1	Particulate matter	40 mg/m^3	Average over sample period	Every 6 months	EN 13284-1

Table S3.1a Point source emissions to air – emission limits and monitoring requirements shall apply from 07 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A11 Note 4	DDGS dryer 1 via cyclone and RTO stack Note 1	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	200 mg/m^3	Average over sample period	Every 6 months	EN 14792
		Carbon monoxide	100 mg/m^3	Average over sample period	Annually	EN 15058
		TVOC (as carbon)	2 kg/hour when RTO operational Note 3	Average over sample period	Every 6 months	Mass balance based on monitoring undertaken to EN 12619
		TVOC (as carbon)	75 mg/m^3 when RTO operational Note 3	Average over sample period	Every 6 months	BS EN 12619
A12 Note 4	DDGS dryer 2 via cyclone and RTO stack Note 1	Particulate matter	40 mg/m^3	Average over sample period	Every 6 months	EN 13284-1
		Oxides of nitrogen (NO and NO_2 expressed as NO_2)	200 mg/m^3	Average over sample period	Every 6 months	EN 14792
		Carbon monoxide	100 mg/m^3	Average over sample period	Annually	EN 15058
		TVOC (as carbon)	2 kg/hour when RTO operational Note 3	Average over sample period	Every 6 months	Mass balance based on monitoring undertaken to EN 12619

Table S3.1a Point source emissions to air – emission limits and monitoring requirements shall apply from 07 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
		TVOC (as carbon)	75 mg/m^3 when RTO operational Note 3	Average over sample period	Every 6 months	EN 12619
A13 Note 4	DDGS dryer 3 via cyclone and RTO stack Note 1	Particulate matter	40 mg/m^3	Average over sample period	Every 6 months	EN 13284-1
		Oxides of nitrogen (NO and NO_2 expressed as NO_2)	200 mg/m^3	Average over sample period	Every 6 months	EN 14792
		Carbon monoxide	100 mg/m^3	Average over sample period	Annually	EN 15058
		TVOC (as carbon)	2 kg/hour when RTO operational Note 3	Average over sample period	Every 6 months	Mass balance based on monitoring undertaken to EN 12619
		TVOC (as carbon)	75 mg/m^3 when RTO operational Note 3	Average over sample period	Every 6 months	EN 12619
A14 Notes 4 & 5	Pellet cooler 1 and chaff line via cyclone stack	Particulate matter	50 mg/m^3	Average over sample period	Quarterly for first 12 months. Every 6 months thereafter Note 6	EN 13284-1
A15 Note 4	Pellet cooler 2 via cyclone stack	Particulate matter	50 mg/m^3	Average over sample period	Once every year	EN 13284-1
A16 Note 4	Pellet cooler 3 via cyclone stack	Particulate matter	50 mg/m^3	Average over sample period	Once every year	EN 13284-1

Table S3.1a Point source emissions to air – emission limits and monitoring requirements shall apply from 07 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A17 Note 4	Pellet cooler 4 via cyclone stack	Particulate matter	50 mg/m^3	Average over sample period	Once every year	EN 13284-1
A18 [OS grid ref 516490, 427750]	Biogas flare from purification of process condensate	No parameters set	No limit set	-	-	Permanent sampling access not required
A19 [Point A19 on the Continuous Emissions Locations plan Rev 3]	Road tanker loading area Vapour Combustion Unit stack	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	50 mg/m^3	Average over sample period	Once every year	EN 14792
		Carbon monoxide	100 mg/m^3	Average over sample period	Once every year	EN 15058
		TVOC (as carbon)	2 kg/hour Note 3	Average over sample period	Once every year	Mass Balance based on monitoring undertaken to EN 12319
		TVOC (as carbon)	75 mg/m^3 Note 3	Average over sample period	Once every year	EN 12319

Note 1: Maximum length of time that the DDGS dryers can operate unabated before shut-down of emissions source shall be 24 hours.

Note 2: Concentration of 20 mg/m^3 for VOCs (as acetaldehyde) shall apply when mass release exceeds 100 g/hour.

Note 3: Concentration limit of 75 mg/m^3 as Carbon for TVOCs shall apply when mass release exceeds 2 kg/hr.

Note 4: Emission point on the 'continuous emission locations' plan in Section 4 of application.

Note 5: Refer to PO1 in table S1.4 of this permit.

Note 6: Monitoring frequency may be reduced to once every year by written agreement with the Environment Agency if the data clearly demonstrates sufficient stability.

Table S3.2 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements shall apply until 06 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
S1 located at grid reference 516632, 428080 emission of clean effluent to the Aquarius system and thereafter the Humber Estuary.	Blind sumps; cooling water blowdown; rainwater.	pH	6.0 – 9.0	Instantaneous	Continuous	No standard method is available
		Total organic carbon (TOC)	70 mg/l	24 hour average	24 hour proportional flow composite sample	BS EN 1484:1997 SCA Blue Book 157 ISBN 0117529769
		Total organic carbon (TOC)	100 mg/l	Instantaneous	Continuous	MCERTS method Note 1
		Chemical oxygen demand (COD)	200 kg/day	24 hour average	24 hour proportional flow composite sample	BS 6068-2.34:1988 BS ISO 15705:2002 SCA Blue Book 215
		Flow	2,400 m^3/day	Daily	Continuous	MCERTS Note 2
		Flow	400 m^3/hour	Hourly	Continuous	MCERTS Note 2
		Oils and greases	3 mg/l	24 hour flow proportional composite sample	Weekly	BS EN ISO 9377-2:200 or other EN ISO, BS or SCA Blue Book method as agreed with the Environment Agency
		Nickel	0.5 mg/l	24 hour flow proportional composite sample	Weekly	BS ENO ISO 11885:1998 SCA Blue Book 163 ISBN 0117532444

Table S3.2 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements shall apply until 06 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
S1 located at grid reference 516632, 428080 emission of clean effluent to the Aquarius system and thereafter the Humber Estuary.	Blind sumps; cooling water blowdown; rainwater.	Total suspended solids (TSS)	30 mg/l	24 hour flow proportional composite sample	Weekly	BS EN 872:1996
		Cadmium and its compounds	2 µg/l	Annual average	Annual	Mass balance calculation with method agreed in writing with the Environment Agency
		Mercury	2 µg/l	Annual average	Annual	Mass balance calculation with method agreed in writing with the Environment Agency
S2 located at national grid reference 516632,428080 emission of dirty trade effluent to Aquarius system for treatment at YW WWTW before discharge to the Humber Estuary	Blind sumps; cooling water blowdown; rainwater.	pH	No limit set	Instantaneous	Continuous	No standard method is available
		Total organic carbon (TOC)	No limit set	24 hour average	24 hour proportional flow composite sample	MCERTS method Note 1
		Chemical oxygen demand (COD)	No limit set	24 hour average	24 hour flow proportional composite sample	BS 6068-2.34:1988 BS ISO 15705:2002 SCA Blue Book 215
		Flow	No limit set	Daily	Continuous	MCERTS Note 2
		Flow	No limit set	Hourly	Continuous	MCERTS Note 2

Table S3.2 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements shall apply until 06 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
S2 located at national grid reference 516632,428080 emission of dirty trade effluent to Aquarius system for treatment at YW WWTW before discharge to the Humber Estuary	Blind sumps; cooling water blowdown; rainwater.	Oils and greases	No limit set	24 hour proportional composite sample	Weekly	BS EN ISO 9377-2:200 or other EN ISO, BS or SCA Blue Book method as agreed with the Environment Agency
		Nickel	No limit set	24 hour proportional composite sample	Weekly	BS ENO ISO 11885:1998 SCA Blue Book 163 ISBN 0117532444
		Total suspended solids (TSS)	No limit set	24 hour proportional composite sample	Weekly	BS EN 872:1996 Determination of suspended solids
		Cadmium and its compounds	2 µg/l	Annual average	Annual	Mass balance calculation with method agreed in writing with the Environment Agency
		Mercury	2 µg/l	Annual average	Annual	Mass balance calculation with method agreed in writing with the Environment Agency
Note 1: To be compliant with Performance Standards and Tests Procedures for Continuous Water Monitoring Equipment Part 2 – Performance standards and test procedures for on-line monitors Version 3.1 August 2010. Note 2: To be compliant with Minimum Requirement for the Self-Monitoring of Effluent Flow Version 4.0 August 2014.						

Table S3.2a Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements shall apply from 07 December 2021						
Emission point ref. & location Note 2	**Source**	**Parameter**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
S2 Note 1	Blind sumps; cooling water blowdown; rainwater.	Total suspended solids (TSS)	No limit set	24 hour proportional composite sample	Weekly	EN 872
		Total organic carbon (TOC)	No limit set	24 hour proportional flow composite sample (24 hour average)	Daily	EN1484
		Chemical oxygen demand (COD)	No limit set	24 hour proportional flow composite sample (24 hour average)	Daily	ISO 15705
		Nickel	No limit set	24 hour proportional composite sample	Weekly	EN ISO 11885
		Oils and greases	Non visible	Instantaneous	Weekly	Visual inspection
		pH	No limit set	Instantaneous	Continuous	ISO 10523
		Flow	No limit set	Daily	Continuous	MCERTS self-monitoring flow scheme
		Flow	No limit set	Hourly	Continuous	MCERTS self-monitoring flow scheme

Note 1: Located at national grid reference 516632,428080 emission of dirty trade effluent to Aquarius system for treatment at YW WWTW before discharge to the Humber Estuary.

Note 2: Former S1 now correctly identified as W1, refer to table S3.3 of this permit.

Table S3.3 Point source emissions to water (other than sewer) – emission limits and monitoring requirements shall apply from 07 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
W1 Note 1	Blind sumps; cooling water blowdown; rainwater.	Total suspended solids (TSS)	30 mg/l Note 3	24 hour flow proportional composite sample	Daily Note 2	BS EN 872
		Total organic carbon (TOC)	33 mg/l Note 3	24 hour flow proportional composite sample	Daily Note 2 24 hour proportional flow composite sample	EN 1484
		Total organic carbon (TOC)	100 mg/l	Instantaneous	Continuous	EN 1484
		Chemical oxygen demand (COD)	200 kg/day	24 hour proportional flow composite sample (24 hour average)	Daily	BS ISO 15705
		Nickel	-	24 hour flow proportional composite sample	Weekly Note 2	EN ISO 11885
		Total phosphorus (TP)	0.5 mg/l Note 3	24 hour flow proportional composite sample	Daily Notes 2 & 4	EN ISO 15681-1
		Oils and greases	Non visible	Instantaneous	Weekly	Visual inspection
		pH	6.0 – 9.0	Instantaneous	Continuous	ISO 10523
		Flow	2,400 m^3/day	Daily	Continuous	MCERTS self- monitoring flow scheme
		Flow	400 m^3/hour	Hourly	Continuous	MCERTS self- monitoring flow scheme
		Temperature	-	Instantaneous	Continuous	Resistance temperature detector

Table S3.3 Point source emissions to water (other than sewer) – emission limits and monitoring requirements shall apply from 07 December 2021						
Emission point ref. & location	**Source**	**Parameter**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
Note 1: Formerly S1, located at grid reference 516632, 428080, emission of clean effluent to the Aquarius system and thereafter the Humber Estuary.						
Note 2: Monitoring frequency may be reduced by written agreement with the Environment Agency if the data clearly demonstrates sufficient stability.						
Note 3: Limits are flow-weighted yearly averages of 24-hour flow-proportional composite samples.						
Note 4: Emission limits and monitoring requirements shall not apply where it is demonstrated that the emission is < 300 kg/year.						

Table S3.4 Process monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
Combustion chamber on fermenter scrubber RTO associated with release point A8	Temperature	Continuous	Verified temperature probe	Minimum temperature of 820°C, or as otherwise agreed with the Environment Agency in response to improvement condition IC1 in Table S1.3
Combustion chamber on the DDGS dryer 1 RTO associated with release point A11	Temperature	Continuous	Verified temperature probe	Minimum temperature of 820°C, or as otherwise agreed with the Environment Agency in response to improvement condition IC1 in Table S1.3
Combustion chamber on the DDGS dryer 2 RTO associated with release point A12	Temperature	Continuous	Verified temperature probe	Minimum temperature of 820°C, or as otherwise agreed with the Environment Agency in response to improvement condition IC1 in Table S1.3
Combustion chamber on the DDGS dryer 3 RTO associated with release point A13	Temperature	Continuous	Verified temperature probe	Minimum temperature of 820°C, or as otherwise agreed with the Environment Agency in response to improvement condition IC1 in Table S1.3

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.	A8, A9, A10, A11, A12, A13, A14 Note 1	Every 6 months	1 January, 1 July
	A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A15, A16, A17, A19	Annually	1 January
Emissions to water Parameters as required by condition 3.5.1	S1 Note 2, W1 Note 2, S2	Every 6 months	1 January, 1 July
Note 1: Refer to PO1 in table S1.4 of this permit. Quarterly for the first 12 months. Note 2: Reporting at S1 shall apply until 06 December 2021. From 07 December 2021 S1 is correctly identified as W1, refer to table S3.3 of this permit.			

Table S4.2: Annual production/treatment	
Parameter	**Units**
Ethanol	tonnes
DDGS granules	tonnes
WDGS	tonnes
Total production	tonnes

Table S4.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Total raw material wheat used	Annually	tonnes
Water usage	Annually	m^3/year
Water usage per tonne of ethanol product	Annually	m^3/tonne
Electricity consumption	Annually	MWh/year
Electricity consumption per tonne of total product	Annually	MWh/tonne
Steam consumption	Annually	tonnes/year MWh/year
Steam consumption per tonne of ethanol product	Annually	MWh/tonne
Natural gas consumption	Annually	MWh/year
Natural gas consumption per tonne of total product	Annually	MWh/tonne
Biogas consumption	Annually	MWh/year

Table S4.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Biogas consumption per tonne DDGS product	Annually	MWh/tonne
Primary CO_2 emissions from fermentation	Annually	tonnes
Primary CO_2 emissions from energy consumption per tonne of total product	Annually	tonnes/tonne
CO_2 emissions from fermentation	Annually	tonnes
CO_2 emissions per tonne of ethanol product	Annually	tonnes
Total CO_2 emissions	Annually	tonnes
Total CO_2 emissions per tonne of total product	Annually	tonnes
Process condensate plant surplus biomass for off-site disposal	Annually	tonnes
Process condensate plant surplus biomass for off-site disposal per tonne of ethanol product	Annually	tonnes/tonne
Process condensate plant surplus biomass for off-site recovery	Annually	tonnes/tonne
Process condensate plant surplus biomass for off-site recovery per tonne of ethanol product	Annually	tonnes/tonne
DDGS sent for recovery or disposal	Annually	tonnes
WDGS sent for recovery or disposal	Annually	tonnes
Date, duration and reason for regenerative thermal oxidisers on release points A8 and A11-A13 being unavailable	Annually	--
Date, duration and reason for biogas flaring associated with release point A18	Annually	--
Annual energy loss through biogas flaring	Annually	MWh
Number of flaring events Materials flared Reasons for flaring (routine and non-routine) Actions taken to reduce flaring	Annually	Durations (minutes)
Effluent treatment at YW WWTW	Annually	No change/change Note 1
Note 1: Confirm whether there have been any significant changes at the installation or at YW WWTW that may affect whether treatment off-site at YW WWTW is BAT and provides an equivalent level of protection of the environment as if the effluent were treated on-site.		

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Air	Form Air 1 or other form as agreed in writing by the Environment Agency	August 2021
Water	Form Water 1 or other form as agreed in writing by the Environment Agency	August 2021
Sewer	Form Sewer 1 or other form as agreed in writing by the Environment Agency	August 2021
Water usage	Form Water usage 1 or other form as agreed in writing by the Environment Agency	August 2021
Energy usage	Form Energy 1 or other form as agreed in writing by the Environment Agency	August 2021
Other performance indicators	Form Performance 1 or other form as agreed in writing by the Environment Agency	August 2021

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	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
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 breach of permit conditions not related to limits	
To be notified within 24 hours of detection	
Condition breached	
Date, time and duration of breach	
Details of the permit breach i.e. what happened including impacts observed.	
Measures taken, or intended to be taken, to restore permit compliance.	

(d) 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.

“annually” means once every year.

“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.

“BAT-AELs” means BAT-associated emission levels, i.e. the emission levels associated with the best available techniques for emissions to air and/or water, as set out in

“Common waste water and waste gas treatment/management systems in the chemical sector BAT Conclusions or CWW” means Commission Implementing Decision (EU) 2016/902 of 30 May 2016 establishing Best Available Techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for Common Waste Water And Waste Gas Treatment/ Management Systems in the Chemical Sector as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016

“diffuse emissions” means non-channelled emissions which can result from ‘area’ sources (e.g. tanks) or ‘point’ sources (e.g. pipe flanges).

“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.

“emissions to land” includes emissions to groundwater.

“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 or background concentration limit.

“flaring” means high-temperature oxidation to burn combustible compounds of waste gases from industrial operations with an open flame.

“fugitive emissions” means diffuse VOC emissions from ‘point’ sources.

“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 as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016

“Large Volume Organic Chemicals BAT Conclusions or LVOC” means The Commission Implementing Decision (EU) 2017/2117 of 21 November 2017 establishing Best Available Techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for the Production of Large Volume Organic Chemicals as read in accordance with Schedule 1A to the Environmental Permitting (England and Wales) Regulations 2016.

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

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

“Total Organic Carbon” means Total Organic Carbon. In respect of releases to air this means the gaseous and vaporous organic substances, expressed as TOC.

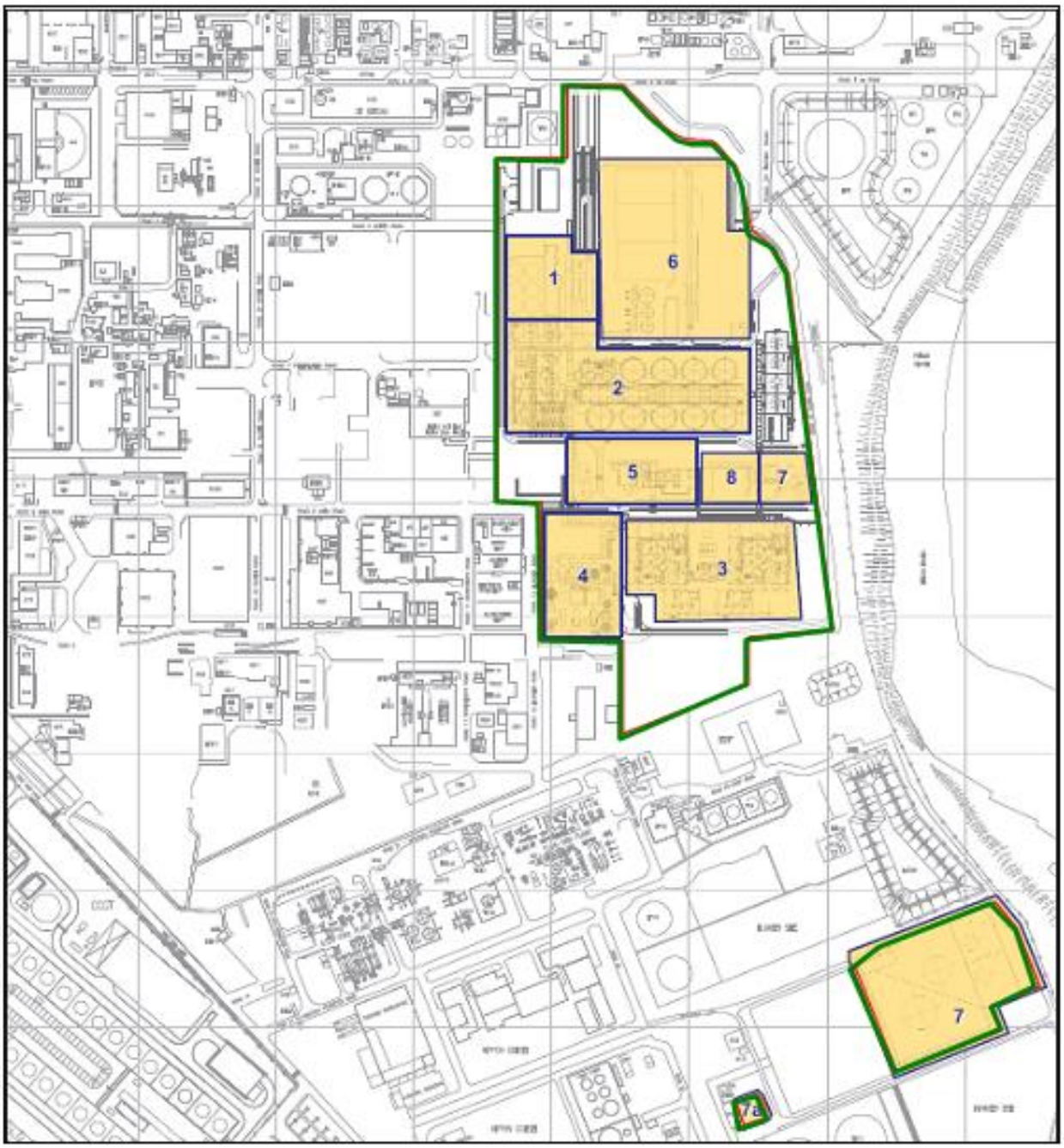
“year” means calendar year ending 31 December.

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.

Schedule 7 – Site plan



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END OF PERMIT

Permit Number: AB1234XY **Operator:** Operator Name

Facility: Site Name **Form Number:** Air1 DD/MM/YY

Reporting of emissions to air for the period from DD/MM/YYYY **to** DD/MM/YYYY

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result [1]	Test Method [2]	Sample Date and Times [3]	Uncertainty [4]
Quarterly reporting	Include all substances monitored including those with mass limits						
Annual reporting							

1. The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.
2. Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.
3. For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.
4. The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed ……. Date……..

(Authorised to sign as representative of Operator)

Permit Number: AB1234XY **Operator:** Operator Name

Facility: Site Name **Form Number:** Water1 DD/MM/YY

Reporting of emissions to water (other than to sewer) and land for the period from DD/MM/YYYY **to** DD/MM/YYYY

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result [1]	Test Method [2]	Sample Date and Times [3]	Uncertainty [4]
Quarterly reporting	Include all substances monitored including those with mass limits						
Annual reporting							

1. The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.
2. Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.
3. For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.
4. The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed ……. Date……..

(Authorised to sign as representative of Operator)

Permit Number: AB1234XY **Operator:** Operator Name

Facility: Site Name **Form Number:** Sewer1 DD/MM/YY

Reporting of emissions to sewer for the period from DD/MM/YYYY **to** DD/MM/YYYY

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result [1]	Test Method [2]	Sample Date and Times [3]	Uncertainty [4]
Quarterly reporting	Include all substances monitored including those with mass limits						
Annual reporting							

1. The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.
2. Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.
3. For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.
4. The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed …… Date……..

(Authorised to sign as representative of Operator)

Permit Number: AB1234XY **Operator:** Operator Name

Facility: Site Name **Form Number: WaterUsage1** DD/MM/YY

Reporting of Water Usage for the year YYYY

Water Source	Usage (m^3/year)	Specific Usage (m^3/unit output)
Mains water		
Site borehole		
River abstraction		
Other (specify)		
TOTAL WATER USAGE		

Trends in Mains Water Usage		
Year	**Total Water Usage**	**Specific Usage (m^3/unit output)**

Operator's comments:

Signed ……. Date……..

(authorised to sign as representative of Operator)

Permit Number: AB1234XY **Operator:** Operator Name

Facility: Site Name **Form Number: Energy1** DD/MM/YY

Reporting of Energy Usage and Energy Efficiency for the year YYYY

Energy Source	Quantity Used	Primary Energy Usage (MWh)	CO2 produced (tonnes)
Electricity*	MWh		
Natural gas	t		
Diesel	t		
Other (Specify)	**t**		
Total	**--**		

* Conversion factor for delivered electricity to primary energy = 2.4

Operator's comments:

Signed …… Date……..

(authorised to sign as representative of Operator)

Permit Number: AB1234XY **Operator:** Operator Name

Facility: Site Name **Form Number:** Performance1 DD/MM/YY

Reporting of Environmental Performance for the year YYYY

Parameter	Units

Operator's comments:

Signed …… Date…….. (authorised to sign as representative of Operator)