Environment Agency

Review of an Environmental Permit for an Installation subject to Chapter II of the Industrial Emissions Directive under the Environmental Permitting (England & Wales) Regulations 2016 (as amended)

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

The Permit number is: EPR/BP3036ZJ
The Operator is: Greenergy Biofuels Limited
The Installation is: Biodiesel West Riverside Immingham Dock
This Variation Notice number is: EPR/BP3036ZJ/V006

What this document is about

Article 21(3) of the Industrial Emissions Directive (IED) requires the Environment Agency to review conditions in permits that it has issued and to ensure that the permit delivers compliance with relevant standards, within four years of the publication by the European Commission of updated decisions on BAT conclusions.

We have reviewed the permit for this installation against the revised BAT Conclusions for the Large Volume Organic Chemicals industry sector published on 07 December 2017 in the Official Journal of the European Union.
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

In this decision document, we set out the reasoning for the consolidated variation notice that we have issued.

It explains how we have reviewed and considered the techniques used by the operator in the operation and control of the plant and activities of the installation. This review has been undertaken with reference to the decision made by the European Commission establishing best available techniques (BAT) conclusions (BATc) for Production of Large Volume Organic Chemicals, and Common Waste Water And Waste Gas Treatment/Management Systems in the Chemical Sector as detailed in documents reference C(2017) 7469, and C(2016) 3127 respectively. It is our

record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position.

As well as considering the review of the operating techniques used by the operator for the operation of the plant and activities of the installation, the consolidated variation notice takes into account and brings together in a single document all previous variations that relate to the original permit issue. Where this has not already been done, it also modernises the entire permit to reflect the conditions contained in our current generic permit template.

The introduction of new template conditions makes the permit consistent with our current general approach and with other permits issued to installations in this sector. Although the wording of some conditions has changed, while others have been deleted because of the new regulatory approach, it does not reduce the level of environmental protection achieved by the permit in any way. In this document we therefore address only our determination of substantive issues relating to the new BAT Conclusions.

We try to explain our decision as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy, and we would welcome any feedback as to how we might improve our decision documents in future.

How this document is structured

1. Our decision
2. How we reached our decision
3. The legal framework
4. Annex 1–decision checklist regarding relevant BAT Conclusions.
5. Annex 2 – Assessment, determination and decision where an application(s) for Derogation from BAT Conclusions with associated emission levels (AEL) has been requested.
6. Annex 3 – Improvement Conditions

1 Our decision

We have decided to issue the variation notice to the operator. This will allow it to continue to operate the Installation, subject to the conditions in the consolidated variation notice that updates the whole permit.

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

The consolidated variation notice contains many conditions taken from our standard environmental permit template including the relevant annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the notice, we have considered the techniques identified by the operator for the operation of their installation, and have accepted that the details are sufficient and satisfactory to make those standard conditions appropriate. This document does, however, provide an explanation of our use of "tailor-made" or installation-specific conditions, or where our permit template provides two or more options.

2 How we reached our decision

2.1 Requesting information to demonstrate compliance with BAT Conclusion techniques

We issued a notice under regulation 61(1) of the Environmental Permitting (England and Wales) Regulations 2016 (a Regulation 61 Notice) on 04/05/18 requiring the operator to provide information to demonstrate where the operation of their installation currently meets, or how it will subsequently meet, the revised standards described in the relevant BAT Conclusions document. The notice required that where the revised standards are not currently met, the operator should provide information that

- Describes the techniques that will be implemented before 07/12/21 which will then ensure that operations meet the revised standard, or
- justifies why standards will not be met by 07/12/21, and confirmation of the date when the operation of those processes will cease within the installation or an explanation of why the revised BAT standard is not applicable to those processes, or
- justifies why an alternative technique will achieve the same level of environmental protection equivalent to the revised standard described in the BAT Conclusions.

Where the operator proposed that they were not intending to meet a BAT standard that also included a BAT Associated Emission Level (BAT AEL) described in the BAT Conclusions Document, the Regulation 61 notice required that the operator make a formal request for derogation from compliance with that AEL (as provisioned by Article 15(4) of IED). In this circumstance, the notice identified that any such request for derogation must be supported and justified by sufficient technical and commercial information that would enable us to determine acceptability of the derogation request.

The Regulation 61 notice response from the Operator was received on 10/08/18.

We considered that the response did not contain sufficient information for us to commence determination of the permit review. We therefore issued a further information request to the operator. Suitable further information was provided by the operator on 6th May 2020, 9th June 2020 & 23rd December 2021.

We considered it was in the correct form and contained sufficient information for us to begin our determination of the permit review.

The Operator made no claim for commercial confidentiality. We have not received any information in relation to the Regulation 61 Notice response that appears to be confidential in relation to any party.

2.2 Review of our own information in respect to the capability of the installation to meet revised standards included in the BAT Conclusions document

Based on our records and previous experience in the regulation of the installation we have no reason to consider that the operator will not be able to comply with the techniques and standards described in the BAT Conclusions.

2.3 Condition of Soil and Groundwater

Articles 16 and 22 of the Industrial Emissions Directive (IED) require that a quantified baseline is established for the level of contamination of soil and groundwater with hazardous substances, in order that a comparison can be made on final cessation of activities.

We have used the Large Volume Organic Chemicals permit review to regulate against the above IED requirements. Our Regulation 61 notice required operators, where the activity of the installation involved the use, production or release of a relevant hazardous substance (as defined in Article 3(18) of the Industrial Emissions Directive), to carry out a risk assessment considering the possibility of soil and groundwater contamination at the installation with such substances. Where any risk of such contamination was established we requested that the operator either:

- prepare and submit a baseline report containing information necessary to determine the current state of soil and groundwater contamination; or

- provide a summary report referring to information previously submitted where they were satisfied that such information represented the current state of soil and groundwater contamination so as to enable a quantified comparison to be made with the state of soil and groundwater contamination upon definitive cessation the activity.

Where operators concluded that there were no risks of soil or groundwater contamination (due to there not being any release of hazardous substances), they were required to provide a copy of the risk assessment.

The Reg 61 response included the original application Site Condition Report which contained Baseline soil and groundwater reference data (GOT appraisal March 2013) and a revised risk assessment which concludes

'There has been no pollution incidents that had the potential to affect land under the existing site. The existing Greenergy Biofuels site is of a mixed tarmac and concrete hardstanding construction All roads and hardstanding are sloped to the site drains and sumps which are pumped to the site effluent plant which contains an oil/water separator for removing oil and suspended solids. The emissions to water are continuously monitored as per the permit requirements. There is no evidence of damage to these pollution prevention measures.'

2.5 Surface Water Pollution Risk Assessment

As part of our delivery of the Water Framework Directive (WFD) requirements, we need to identify and assess the impact of all sources of hazardous pollutants to surface waters from regulated industry. We use the term 'hazardous pollutants' to collectively describe substances covered by the EQSD[1] (priority hazardous substances, priority substances and "other pollutants"). It also applies to the specific pollutants listed in the 2015 Directions[2], and substances which have operational (non-statutory) Environmental Quality Standards (EQS).

For all installations with discharges to surface water we required the operator, via our Regulation 61 notice, to provide a summary report of the current hazardous pollutant releases referring to the series of screening tests, which are described in our H1 risk assessment guidance, which would allow us to assess whether the emissions of hazardous pollutants from the installation are significant.

[1] Environmental Quality Standards Directive (EQSD) (2008/105/EC, as amended by 2013/39/EU)
[2] The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015

The installation discharges effluent from an Effluent Treatment Plant into TrAC waters (River Humber), however the discharge pipe discharges into the River Humber water body at low tide so the screening tests for freshwater (2 – 4) were used with the EQS for estuaries and coastal waters as per the 'surface water pollution risk assessment' guidance.
The mass emissions do not exceed any of the BAT-AEL thresholds in the Common Waste Water BAT Conclusions.
All emissions screen out at Test 2 of the H1 screening tests (for freshwater as described above) and so the emissions are insignificant (<4% of the relevant EQS).

The River Flow Rate used was obtained from the document 'The Humber Catchment and its coastal area – UEA – Feb 2002.
Internal consultation with our Area Hydrology Colleagues obtained the following response:
'Looking at the customer's proposed discharge quantities they are negligible compared to the tidal inflows and outflows of the Humber. Therefore we have no concerns regarding this.

As a result we agree that the emissions to surface water from the site can be classed as insignificant and no BAT-AELs apply.

3 The legal framework

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

- an *installation* as described by the IED;
- subject to aspects of other relevant legislation which also have to be addressed.

We consider that, in issuing the consolidated variation notice, it will ensure that the operation of the installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

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

We have set emission limit values (ELV's) in line with the BAT Conclusions, unless a tighter, i.e. more stringent, limit was previously imposed and these limits have been carried forward. For emissions to each relevant environmental receptor (i.e. air, or surface water), the emission limits and monitoring requirements have been incorporated into the consolidated variation notice via two sets of two tables in Schedule 3 – Emissions and Monitoring for

a) the existing ELVs and monitoring requirements which are effective from the date of issue of the notice; and
b) Amended ELVs that are specified in the Medium Combustion Plant Directive (MCPD)

Annex 1: decision checklist regarding relevant BAT Conclusions

BAT Conclusions for the Large Volume Organic Chemicals industry sector were published by the European Commission on 07 December 2017. There are 19 General BAT Conclusions and a further 71 BAT Conclusions in 10 subsector-specific sections. 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; 23 BAT Conclusions for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector. This annex provides a record of decisions made in relation to each relevant BAT Conclusion applicable to the installation. This annex should be read in conjunction with the consolidated variation notice.

The overall status of compliance with the BAT conclusion is indicated in the table as

NA Not Applicable
CC Currently Compliant
FC Compliant in the future (within 4 years of publication of LVOC BAT conclusions)
NC Not Compliant

BAT Conclusion No	Summary of BAT Conclusion requirement for Production of Large Volume Organic Chemicals	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	BAT Conclusions that are not applicable to this installation	**NA**	LVOC BAT Conclusions 20 to 23 inclusive are not applicable as there is no production of lower olefins at this installation. LVOC BAT Conclusions 24 to 30 inclusive are not applicable as there is no production of aromatics at this installation. LVOC BAT Conclusions 31 to 44 inclusive are not applicable as there is no production of ethylbenzene and styrene monomer at this installation. LVOC BAT Conclusions 45 to 47 inclusive are not applicable as there is no production of formaldehyde at this installation. LVOC BAT Conclusions 48 to 55 inclusive are not applicable as there is no production of ethylene oxide and ethylene glycols at this installation. LVOC BAT Conclusions 56 to 60 inclusive are not applicable as there is no production of phenol at this installation. LVOC BAT Conclusions 61 to 63 inclusive are not applicable as there is no production of ethanolamine at this installation. LVOC BAT Conclusions 64 to 74 inclusive are not applicable as there is no production of toluene diisocyanate(TDI) and methylene diphenyl diisocyanate (MDI) at this installation. LVOC BAT Conclusions 76 to 85 inclusive are not applicable as there is no production of ethylene dichloride and vinyl chloride monomer at this installation. LVOC BAT Conclusions 86 to 90 inclusive are not applicable as there is no production of hydrogen peroxide at this installation. LVOC BAT Conclusions 1, 3, 4, 5 and 6 are not applicable as there are no process furnaces/heaters at this installation. LVOC BAT 7 is not applicable as there no emissions of ammonia from the site and no requirement for S(N)CR.

			LVOC BAT 9 is not applicable as the off gas from the site does not contain sufficient calorific value for a combustion unit. LVOC BAT Conclusions 11 is not applicable as there is no source of dust emissions at this installation. LVOC BAT Conclusions 13 is not applicable as there is no use of a thermal oxidiser for abatement at this installation. LVOC BAT 15 is not applicable as the catalyst used on-site are organic solvents.
2	Monitor channelled emissions to air other than from process furnaces/heaters in accordance with the described standards and minimum frequencies	**CC**	Reg 61 response shows emissions of methanol from emission points A1 and A3, however the flow from these emission points is below the limit of detection (0.5m/s), monitoring requirements have been included in line with the BATc and are applicable should the flows increase. Emission points A5 & A6 are classed as Medium Combustion Plants and so fall under the MCP Directive (MCPD) of which these two Kerosene (Gas oil) fired package boilers have the ELVs included in table S3.1 (NO_x and CO) and are applicable from 1st January 2025. It has been confirmed that there is a recordable flow within emission points A7 & A8 and so monitoring is required and has been included into table S3.1. Emission points: • A1 – cooler – methanol & TVOC • A3 – cooler – methanol & TVOC • A5 – package boiler 1 – MCPD limits included • A6 – package boiler 2 – MCPD limits included • A7 – refinery vacuum system – TVOC • A8 – refinery vacuum system - TVOC This BAT point applies to all emission points to Air A1 – A8 • Benzene: operator response With regard to monitoring of Benzene and gaseous chlorides there are no potential for the pollutant to be released in the reaction processes within the plant (from any emission point to air). • Dust The use of water scrubbers as part of the abatement systems for emission points A1, A3, A7 and A8 mean

			that the potential for dust emissions from these points are negligible. Emission points A5 & A6 (package boilers). The boiler units are existing under the Medium Combustion Plant Directive (MCPD) and such monitoring subsequent emission limits of the units is not applicable until after 1st Jan 2025. • Gaseous Chlorides, expressed as HCl With regard to monitoring of Benzene and gaseous chlorides there are no potential for the pollutant to be released in the reaction processes within the plant (from any emission point to air). • SO2 There is no source of sulphur from emission points A1, A3, A7 or A8. Emission points A2 & A4 are small (0.9MW) thermal oil heaters and so the ELVs don't apply. Emission points A5 & A6 are subject to the Medium Combustion Plant Directive which does not require monitoring of SO_2. • TVOC In reality there is no flow from both emission points A1 and A3. Daily flow checks are performed with an anemometer on each of these emission points with no flow being recorded. It has previously been agreed with the EA Regulatory Officer that no monitoring is required as there is no flow from these points. Any monitoring done by MCERTS contractors on these emission points would be outside the MCERTS scope as they fall below the flow requirements of 3m/s defined in section 6 of BS EN 15259. Any emission loads would be based on calculations using the limit of detection of 0.5m/s. There is a potential for VOC emissions from these stacks (A7 & A8) although as they are emitted from a vacuum system the emissions and flows are not expected to be high. GBL have undertaken a monitoring exercise to MCERTS standards for VOC's and flow but have yet to receive the results for this. GBL also propose to perform some additional monitoring to MCERTS standards to determine the potential concentrations, flow and mass emissions from these points. RFI response: it has been determined that there is a recordable flow within the emission points (A7 & A8). LVOC BAT 2 has been amended to include proposed monitoring of the emission points.
7	To reduce emission of ammonia optimise design/operation of SCR/SNCR	**NA**	Operator response: There are no emissions to air of ammonia at Greenergy Biofuels Limited therefore the use of selective catalytic reduction (SCR) or Selective non-catalytic reduction (SNCR) is not applicable and has not been considered. We have accepted that this BAT point is not applicable to the site.
8	Increase resource efficiency/reduce the pollutant load on final waste gas treatment by using one or a	**CC**	Operator response: Greenergy Biofuels Limited (GBL) comply with this BAT Conclusion by the application of techniques b *(recovery and use of organic solvents and unreacted organic raw materials)* and f *(techniques to reduce solids and/or liquids entrainment)* from the above (BAT 8) table both to reduce the load of

	combination of the described techniques on process off-gas streams (8a/b take precedence over 9)		pollutants in the waste gas and to increase overall resource efficiency. The site have measures in place (utilising techniques b and f) which recover methanol from the process reducing any emissions of this substance to be negligible. The remaining techniques are not applicable to the process. We have accepted that the site is compliant with this BAT point.
9	Increase energy efficiency/reduce the pollutant load on final waste gas treatment by sending process off-gas streams of sufficient calorific value to a combustion unit	**NA**	Operator response: The off gas from the biodiesel and refinery process plants on Greenergy Biofuels Limited are of insufficient flow and calorific value to send to a combustion unit. The emissions from these units are below the limit of detection of 0.5 m/s for flow measurement and it would be impracticable to send these to a combustion unit, therefore this BAT conclusion is deemed to be not applicable. We have accepted that this BAT point is not applicable to this site.
10	Reduce channelled emissions of organic compounds to air by using one or a combination of the described techniques.	**CC**	Operator response: Greenergy Biofuels Limited uses condensation (to recover methanol) and water scrubbing (to remove HCl vapour) to reduce emissions to air. We have accepted that the site is compliant with this BAT point.
12	Reduce emissions to air of sulphur dioxide and other acid gases (e.g. HCl), by using wet scrubbing.	**CC**	Operator response: Greenergy Biofuels Limited uses condensation (to recover methanol) and water scrubbing (to remove HCl vapour) to reduce emissions to air. We have accepted that the site is compliant with this BAT point.
14	Reduce the waste water volume, the pollutant loads discharged to a suitable final treatment (typically biological treatment), and emissions to water, by using appropriate techniques based on the information provided by the inventory of waste	**CC**	Operator response: Greenergy Biofuels Limited (GBL) employs an integrated treatment strategy which includes process integrated techniques *(recovery of water from the methanol rectification unit for reuse in Citric Acid wash solution, use of jet washes to minimise water usage and reuse of site condensate)*, recovering pollutants at source *(front end filtration of raw water and sampling and analysis of every UCO import)*, pretreatment techniques *(Fat Strippa to recover oil from the process waste effluent)* and waste water treatment *(DAF and activated sludge)* to reduce water volumes and pollutant load to the river. We have accepted that the site is compliant with this BAT point.

	water streams specified in the CWW BAT conclusions.		
15	Increase resource efficiency when using catalysts by using a combination of the described techniques.	**NA**	Operator response: Greenergy Biofuels Limited do not use solid catalysts as defined in the above table but use a Sodium Methylate catalyst as part of the reaction mechanism as shown in CWW BAT 2, The recovery and reuse of the organic catalyst is described in LVOC BAT 16. Therefore this BAT conclusion is not applicable. The site use an organic solvent as a catalyst, which is covered in BAT 16 below. We have accepted that this BAT point is not applicable to this site.
16	Increase resource efficiency by recovery and reuse of organic solvents.	**CC**	Operator response: Greenergy Biofuels Limited (GBL) operates a Methanol rectification unit which takes in Wet methanol streams from different areas of the biodiesel process via a storage tank, the wet methanol passes into a distillation column operating under atmospheric pressure and distils the methanol as a top product. This stream is then condensed and the rectified and condensed methanol is sent to the methanol storage tank for reuse back into the process. We have accepted that the site is compliant with this BAT point.
17	Prevent, or where not practicable reduce, waste for disposal by using a combination of the described techniques.	**CC**	Operator response: Prevent or reduce generation of waste Waste is also reduced by ensuring that the impurities in the feedstock are separated and converted into biodiesel using a different process. The choice of Sodium Methylate as the catalyst means that there is a reduced water concentration in the feed to the transesterification reactors where the hydrolysis side reactions of water reacting with methyl ester to produce free fatty acid (FFA) can occur. Therefore there is reduced (FFA) in the product from the transesterification process that has to be removed and reused. Recover materials for reuse or recycling As part of the process chemistry Glycerine is produced as a co product. This is then purified to a customer specification which includes water, non-glycerine organics such as esters and FFA and methanol. The methanol content is reduced to <0.5% wt ensuring that the material is non-hazardous and therefore not subject to ADR. Notwithstanding the above, end of waste status has not been formally agreed for the glycerine co product and as a result Improvement Condition 7 has been included into the permit, to address this. Recover energy High COD effluent streams are separated and are either treated within the site effluent treatment plant or can be sent off site for energy recovery or treatment at licensed facilities.

			We have accepted that the site is compliant with this BAT point.
18	Prevent or reduce emissions from equipment malfunctions, by using all the described techniques.	**CC**	Operator response: Greenergy Biofuels Limited (GBL) maintains an electronic Asset System, Q4 which is an off the shelf asset management system. Additional electronic systems such as a Management of Change, Shift log system and an incident reporting system integrate with asset system. Contained within the Asset System is a list of all equipment on site. This includes a list of critical HSEQ equipment which is defined by managerial activities such as Hazard Operability studies, SIL assessments and DSEAR assessments. Within the lists of equipment are monitoring or maintenance programmes which set at fixed periods and are determined by a combination of factors which include statutory requirements, operational experience, equipment manuals and monitoring. For many systems on site such as pumps and motors GBL operate a duty/standby system on a limited number of systems whereby on a failure of a motor the standby system can be put on line straight away with the offline equipment being repaired. Critical spares are kept locally for all equipment that is not on duty standby. We have accepted that the site is compliant with this BAT point.
19	Prevent or reduce emissions to air and water occurring during other than normal operating conditions, by implementing measures commensurate with the relevance of potential pollutant releases for: i) Start up and shutdown operations ii) Other circumstances	**CC**	Operator response: The production operations from Greenergy Biofuels Limited (GBL) are considered to be low impact and self-contained therefore there is little difference in emissions during start up and shut down. As previously described the vents are enclosed on the main process plant so that in an emergency they can pass through the abatement plant. The main abatement plants such as the condenser and scrubber on the main air emissions are started up first and last to come off on shut down. On small scale, short duration shutdowns for example for maintenance repairs or routine cleaning then the plant being worked on can be isolated and the other plant can be kept under circulation. This ensures a more efficient restart process with fewer emissions that having to start the plant from cold. The advantage with operations at GBL are that there are two separate refinery and biodiesel plants where one plant can be shut down for maintenance leaving the other plants still operational. We have accepted that the site is compliant with this BAT point.

BAT Conclusion No	Summary of BAT Conclusion requirement for Common Waste Water and Waste Gas Treatment/ Management Systems in the Chemical Sector	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	BAT Conclusions that are not applicable to this installation	**NA**	CWW BAT 6 is not applicable as there have been no recorded events where odour nuisance has either formed a complaint or been substantiated. CWW BAT 17 and 18 are not applicable as the site does not utilise flares on site. CWW BAT 22 is not applicable as noise nuisance is not expected nor has ever occurred from the site.
1	To improve overall environmental performance implement and adhere to an EMS incorporating all the described features.	**CC**	Operator response: All the operations on the Greenergy Biofuels Limited (GBL) site adhere to the Integrated Management System which covers Quality, Environment and Health and Safety. The management system has been certified on 19th October 2017 to the standards found in ISO14001:2015 for Environment, ISO9001:2015 for Quality and on 17th November 2016 for ISO 18001:2007 for Health and Safety. The Integrated Business Management Policy which was last signed on 29/11/17 and demonstrates the management commitment to Quality, Environmental and Health and Safety issues is also attached and forms the basis of compliance to the relevant ISO standards. The scope for all three standards covers the 'The production and processing of biodiesel including the associated operation, management and maintenance of the Greenergy biofuels plant.' Copies of the ISO Certificates and the most recent GBL Integrated Business Policy are attached. We have accepted that the site is compliant with this BAT point.
2	To facilitate reduction of emissions to water and air and water usage, establish and maintain an inventory of waste water and waste gas streams as part of BAT1 EMS	**CC**	In order to facilitate the reduction of emissions to water and air and the reduction of water usage, BAT is to establish and to maintain an inventory of waste water and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the following features:

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	incorporating the described features.		(i) information about the chemical production processes, including: (a) chemical reaction equations, also showing sid products; The submitted BAT response shows this. (b) simplified process flow sheets that show the origi of the emissions; The submitted BAT response shows this. © descriptions of process-integrated techniques treatment at source including their performances Shown in BAT responses LVOC 8, 10 & 14 and CWW 7, 10 & 16 LVOC 8 • application of techniques b (recovery and use of organic solvents, methanol, and raw materials, catalyst) and f (techniques to reduce solids and/or liquids entrainment) LVOC 10 • Greenergy uses condensation and water scrubbing to reduce emissions to air LVOC 14 • Greenergy Biofuels Limited (GBL) employs an integrated treatment strategy which includes process integrated techniques *(recovery of water from the methanol rectification unit for reuse in Citric Acid wash solution, use of jet washes to minimise water usage and reuse of site condensate)*, recovering pollutants at source *(front end filtration of raw water and sampling and analysis of every UCO import)*, pretreatment techniques *(Fat Strippa to recover oil from the process waste effluent)* and waste water treatment *(DAF and activated sludge)* to reduce water volumes and pollutant load.to the river.

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			CWW 7
			• Greenergy use many techniques to either reduce the usage of water or the production of waste water:
			  • Filtration of raw water
			  • Reuse of site condensate
			  • Recovery of process waters for reuse
			  • Use of jetwash for plant cleaning to minimise water usage
			  • Use of road sweeper to minimise solids deposition in surface water drains
			  • Using specifications for the water content of the UCO (used cooking oil) raw material validated with sampling and analysis of each incoming load
			
			(ii) information, as comprehensive as is reasonably possible, about the characteristics of the waste water streams, such as:
			
			(a) average values and variability of flow, pH, temperature, and conductivity;
			
			The operator has provided emissions to water monitoring table for pH and temp. The monitoring of flow and EC is not currently required, flow monitoring will be required as a result of the permit review and has been incorporated into the reviewed permit.
			
			(b) average concentration and load values of relevant pollutants/parameters and their variability (e.g. COD/TOC, nitrogen

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			species, phosphorus, metals, salts, specific organic compounds); The operator has provided max, min and average values and loads provided for all currently measured parameters and 'other' parameters. (c) data on bioeliminability (e.g. BOD, BOD/COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. nitrification)); The BOD/COD ratio of the final effluent is highly variable and ranges from a low of 0.9 to a high of 52 with an average ratio of 17 being found for the results of the final effluent from 2017. Due to the low concentration levels of emissions that are discharged into the River Humber and the initial biodegradability of the raw materials that are used initially then the potential for harm from the effluent discharge is considered to be low. (iii) information, as comprehensive as is reasonably possible, about the characteristics of the waste gas streams, such as: (a) average values and variability of flow and temperature; Flows from A1 and A3 (main plant vents) are below the LOD (0.5 m/s) so parameter concentrations have not been monitored. A2 & A4 (thermal oil boilers) have been included into the permit however no monitoring requirements or limits are

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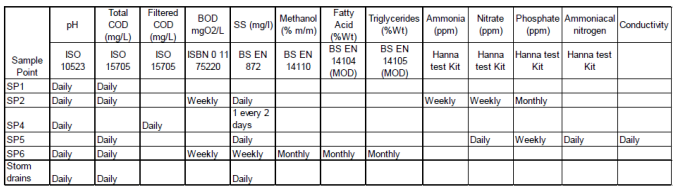
			required as the boilers are <1MWth (0.9MWth) each. Flows from A5 & A6 (package boilers) have been included into the permit under the MCPD. Flows from A7 & A8 are required. Monitoring was undertaken and it was determined that there is a recordable flow within these emission points. LVOC BAT 2 has been amended to include proposing monitoring of these emission points. But at the point of writing the results had not been received. IC8 has been included in order to validate the stability of the emissions and amend the monitoring frequency if applicable. (b) average concentration and load values of relevant pollutants/parameters and their variability (e.g. VOC, CO, NO_X, SO_X, chlorine, hydrogen chloride); See response to LVOC BAT 2. (c) flammability, lower and higher explosive limits, reactivity; The plant sources that discharge into emission points A1, A3, A7 & A8 are nitrogen purged at various points where required to reduce flammability within the vent system. The emission temperatures of these emissions are low at 30°C as

BAT Conclusion No	Summary of BAT Conclusion requirement for Common Waste Water and Waste Gas Treatment/ Management Systems in the Chemical Sector	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			the emissions pass through a chiller and scrubber. A2, A4, A5 & A6 are thermal/package boilers and so flammability does not need to be considered. (d) presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, nitrogen, water vapour, dust). See response to LVOC BAT 2.
3	For relevant emissions to water monitor key process parameters at key locations.	**CC**	Operator response: Greenergy Biofuels Limited (GBL) monitors various stages of the waste water treatment process as shown in the table below.  this covers all aspects of the effluent treatment system and demonstrates the effectiveness of the effluent treatment process. In addition flow, temperature and pH is monitored at various points in the effluent treatment process and prior to the discharge point in order to comply with the current environmental permit conditions. Flow monitoring from emission point W1 has now been included into the permit. We have accepted that the site is compliant with this BAT point.

Sample Point	pH ISO 10523	Total COD (mg/L) ISO 15705	Filtered COD (mg/L) ISO 15705	BOD mgO2/L ISBN 0 11 75220	SS (mg/l) BS EN 872	Methanol (% m/m) BS EN 14110	Fatty Acid (%Wt) BS EN 14104 (MOD)	Triglycerides (%Wt) BS EN 14105 (MOD)	Ammonia (ppm) Hanna test Kit	Nitrate (ppm) Hanna test Kit	Phosphate (ppm) Hanna test Kit	Ammoniacal nitrogen Hanna test Kit	Conductivity
SP1	Daily	Daily											
SP2	Daily	Daily		Weekly	Daily				Weekly	Weekly	Monthly		
SP4	Daily		Daily		1 every 2 days								
SP5		Daily			Daily					Daily	Weekly	Daily	Daily
SP6	Daily	Daily		Weekly	Weekly	Monthly	Monthly	Monthly					
Storm drains	Daily	Daily			Daily								

<table>
<tr><th>BAT Conclusion No</th><th>Summary of BAT Conclusion requirement for Common Waste Water and Waste Gas Treatment/ Management Systems in the Chemical Sector</th><th>Status NA/ CC / FC / NC</th><th>Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement</th></tr>
<tr><td>4</td><td>Monitor emissions to water in accordance with the described standards and minimum frequencies.</td><td></td><td>Operator response:
Greenergy Biofuels Limited (GBL) currently monitors the emissions to water as defined in the Table S3.3 of the Environmental Permit.
In addition GBL monitor various parts of the effluent plant as described in CWW BAT 3.
As a result of the BAT review GBTL has undertaken some baseline monitoring over the month of June 2018 that has included the following parameters, test methods and frequencies. This is to give baseline levels in order to assess compliance with CWW BAT 12.

<table>
<tr><th>Parameter</th><th>Unit</th><th>Average</th><th>Minimum</th><th>Maximum</th><th>Annual load</th><th>BAT 12 limits</th></tr>
<tr><td>Total Organic Carbon (TOC)</td><td>mg/l</td><td>35.7</td><td>14</td><td>74</td><td>1.48 t/yr</td><td>3.3 t/yr</td></tr>
<tr><td>Chemical Oxygen Demand (COD)</td><td>mg/l</td><td>89.4</td><td>36</td><td>169</td><td>3.71 t/yr</td><td>10 t/yr</td></tr>
<tr><td>Total suspended solids</td><td>mg/l</td><td>4.4</td><td><1</td><td>34</td><td>0.18 t/yr</td><td>3.5 t/yr</td></tr>
<tr><td>Total Nitrogen</td><td>mg/l</td><td>1.0</td><td>1.0</td><td>1.1</td><td>0.04 t/yr</td><td>2.5 t/yr</td></tr>
<tr><td>Total Inorganic Nitrogen</td><td>mg/l</td><td>22.5</td><td>0.4</td><td>64.8</td><td>1.07 t/yr</td><td>2.0 t/yr</td></tr>
<tr><td>Total Phosphorus</td><td>mg/l</td><td>0.39</td><td>0.12</td><td>2.44</td><td>15.9 kg/yr</td><td>300 kg/yr</td></tr>
<tr><td>Adsorbable organically bound halogens (AOX)</td><td>µg/l</td><td>8.7</td><td><0.1</td><td>16</td><td>0.36 kg/yr</td><td>100 kg/yr</td></tr>
<tr><td>Chromium (Cr)</td><td>µg/l</td><td>2.9</td><td><2</td><td>4</td><td>0.12 kg/yr</td><td>2.5 kg/yr</td></tr>
<tr><td>Copper (Cu)</td><td>µg/l</td><td>17.6</td><td><9</td><td>82</td><td>0.7 kg/yr</td><td>5.0 kg/yr</td></tr>
<tr><td>Nickel (Ni)</td><td>µg/l</td><td>16</td><td>11</td><td>24</td><td>0.7 kg/yr</td><td>5.0 kg/yr</td></tr>
<tr><td>Zinc (Zn)</td><td>µg/l</td><td>91.8</td><td>30</td><td>562</td><td>3.7 kg/yr</td><td>30 kg/yr</td></tr>
</table>
</td></tr>
</table>

BAT Conclusion No	Summary of BAT Conclusion requirement for Common Waste Water and Waste Gas Treatment/ Management Systems in the Chemical Sector	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			We have accepted that the site is compliant with this BAT point.
5	Periodically monitor diffuse VOC emissions to air from relevant sources using a combination (or for large amounts – all) of the described techniques.	**CC**	Operator response: No diffuse monitoring of VOC's is performed at Greenergy Biofuels Limited (GBL) as we do not believe that the site used large amounts of VOC's. This is backed up by the fact that GBL falls below the requirements for both upper and lower tier under the Control of Major Accident Hazard (COMAH) regulations for the storage and use of chemicals used on site. GBL have fixed Methanol alarms around site that are linked to alarms within the control room and SCADA system but these are used for process safety / health and safety purposes. There are also personnel monitors which again are used for personal safety for use on site when working under the site permit to work system. As described in CWW 2 there are no flows coming from the main process emissions points A1 and A3, also the process plant is enclosed and there is a thorough maintenance and inspection regime on site to ensure that the vessels and pipework are maintain to high standards then the risk of diffuse emissions of VOC's is low. This is backed up by the fact that there have been no odour complaints connected to the GBL site. We have accepted that the site is compliant with this BAT point.
6	Periodically monitor odour emissions from relevant sources using the described standards.	**NA**	Operator response: There have been no recorded events where odour nuisance has either formed a complaint or has been substantiated therefore BAT Conclusion 6 is not applicable. We have accepted that this BAT point is not applicable.
7	Reduce usage of water and the generation of waste water, by reducing the volume and/or pollutant load of waste water streams, enhancing the reuse of waste water within the production process and recovery	**CC**	Operator response: Greenergy Biofuels Immingham Limited use many different techniques to either reduce the usage of water or to reduce the generation of waste water. These include: Front end filtration of raw water resulting in better quality process waters, reduced blow down from cooling towers, and required routine flushes of water systems and filtration processes that required more agitation to reduce silt deposits from bore hole quality water. Reuse of site condensate into sites own boiler providing efficiencies and reducing fresh water for Boiler feed requirements demand. Process waters from wash stages, centrifugation, methanol recovery systems, and water

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	and reuse of raw materials.		scrubbers are recovered and cleaned as far as reasonably practicable for reuse within the process. Examples of these are as wash waters within the process, dilution waters for chemical mixing and hot water feeds across wash stages within the plant. Plant cleaning is done using jetwashing to minimise water usage, also a road sweeper is used to minimise solids deposition into the surface water drains. Using specifications for the water content of the UCO, (used cooking oil), raw material, sampling and analysis of each import of UCO raw material whether ship or road tanker with rejection of loads for nonconforming material if required. There are also discharge procedures for the discharge of road tankers which minimise the potential for water getting into the process. At the storage facility there are processes for managing and dewatering the storage tanks again to minimise the potential for water coming into the production process. We have accepted that the site is compliant with this BAT point.
8	Prevent the contamination of uncontaminated water reduce emissions to water, by segregating uncontaminated waste water streams from waste water streams that require treatment.	**CC**	Operator responses: Greenergy Biofuels Limited has separate surface water drainage system as shown in the attached Site Drainage Layout drawing. This passes into a holding tank and oil/water interceptor for separation of any potential oil contamination. The surface water is then sampled and analysed before being discharged to the W1 effluent outfall under positive operator control. There are also Penstock valves situated in the surface water drainage system that can be closed in the event of a spill to isolate the surface water drains before decisions are made as to where the material in the drains is moved to. We have accepted that the site is compliant with this BAT point.
9	Prevent uncontrolled emissions to water by providing an appropriate buffer storage capacity for waste water incurred during other than normal operating conditions based on a risk assessment, and	**CC**	Operator response: Greenergy Biofuels Limited (GBL) has capacity to recycle waste waters directly from consented outfall back through the Effluent treatment process. To help manage this there is an initial effluent tank, an additional waste water storage tank and a large biomass tank for allowing increase in effluent waters volume. In addition the site has facility to use additional, large mobile 70m_3 storage vessels, Iso tanks, and road barrels at its disposal, to help temporary storage and management of waste water levels. There is also a buffer tank that can be linked to the sites surface water interceptor if required.

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	taking appropriate further measures.		Smaller volumes of waste waters depending on their nature (pH etc), can be stored in IBC, Intermediate bulk containers for suitable treatment through plant processes, ETP systems or disposal, by licensed facilities through segregation. For emergency site waters, a contract has been agreed with third party to help manage fire and emergency waters. Any external / adjacent emergency systems, fire waters, storm waters from the estuary can be controlled by Associated British ports, (ABP), who provide external bunding and pumping systems, that can be measured and positively released to environment as and when required. We have accepted that the site is compliant with this BAT point.
10	Reduce emissions to water, by using an integrated waste water management and treatment strategy that includes an appropriate combination of the described techniques (in the priority order given).	**CC**	Operator response: Greenergy Biofuels Limited (GBL) employs all of the techniques listed above (in this BAT point) in order to reduce emissions to the river. Process integrated techniques include management techniques such as the setting of limits for water in the Used Cooking Oil (UCO) feedstock and the subsequent sampling and analysis of every import to site whether tanker or ship. Process techniques include the recovery of water from the Methanol rectification unit where a wet methanol stream from several sources around the plants are distilled with the Methanol recovered for reuse and the water reused for production of a Citric Acid wash solution. Front end filtration of raw water resulting in better quality process waters, reduced blow down from cooling towers, and required routine flushes of water systems and filtration processes that required more agitation to reduce silt deposits from bore hole quality water. Reuse of site condensate into sites own boiler providing efficiencies and reducing fresh water for Boiler feed requirements demand. Process waters from wash stages, centrifugation, methanol recovery systems, and water scrubbers are recovered and cleaned as far as reasonably practicable for reuse within the process. Examples of these are as wash waters within the process, dilution waters for chemical mixing and hot water feeds across wash stages within the plant. Plant cleaning is done using jetwashing to minimise water usage, also a road sweeper is used to minimise solids deposition into the surface water drains. GBL have a pre-treatment plant (Fat Strippa) which takes an oil/water stream from the UCO feed centrifuges and from other process sumps from around the plant and passes it through an interceptor which separates the UCO and water. The oil is reused within the process and the water is sent to a holding

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			tank where it is tested. Depending on the level of COD it can be blended into the feed to the effluent *(treatment)* plant or it can be sent off site for energy recovery / treatment in an anaerobic digestion plant. The only pre-treatment that is required is neutralisation of the effluent before it enters the Dissolved Air Flotation (DAF) unit for solids removal. The sludge from the DAF is sent to a sludge holding tank for further disposal. The clarified effluent leaves the DAF unit via an underflow baffle and is pumped into the T04 DAF effluent tank. The wastewater is then pumped into the *(activated sludge)* Bioreactor. Following bio treatment in the bioreactor, the treated waste water is separated from the biomass (activated sludge) in a cross flow membrane separation process which produces a suspended solid free permeate. The mixed liquor from the bioreactor is pumped at pressure through one of two banks of ultra-fine membrane modules. The activated sludge in the concentrate stream is returned to the bioreactor. The resulting permeate is collected and discharged into T06 Final effluent tank. From the final effluent tank the effluent is pumped to the River Humber via pipework owned by Inter Terminals. We have accepted that the site is compliant with this BAT point.
11	Reduce emissions to water, by pre-treating waste water that contains pollutants that cannot be dealt with adequately during final waste water treatment using appropriate techniques as part of an integrated waste water management and treatment strategy.	**CC**	Operator response: Greenergy Biofuels Limited (GBL) pre-treat the waste water prior to it entering the DAF and biological treatment plants by neutralising the effluent. The effluent is pumped to the T02 neutralisation tank which is monitored for pH and from these results either 28% hydrochloric acid or 25% sodium hydroxide are dosed to ensure an optimum pH 0f 6.5 to 7 pH for solids removal in the DAF plant. GBL have a pre-treatment plant (Fat Strippa) which takes an oil/water stream from the UCO feed centrifuges and from other process sumps from around the plant and passes it through an interceptor which separates the UCO and water. The oil is reused within the process and the water is sent to a holding tank where it is tested. Depending on the level of COD it can be blended into the feed to the effluent plant or it can be sent off site for energy recovery / treatment in an anaerobic digestion plant. We have accepted that the site is compliant with this BAT point.

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12	Reduce emissions to water, by using an appropriate combination of the described final waste water treatment techniques.		The site utilises the following water treatment techniques: • Equalisation • Neutralisation • Physical separation – DAF plant using polymer and coagulant • Activated sludge • Ultra-filtration We have accepted that the site is compliant with this BAT point.
	BAT-AELs Table 1 – TOC, COD, TSS Table 2 – nutrients Table 3 – AOX and metals	**NA**	See CWW BAT 4 – the monitoring exercise and subsequent calculations demonstrates that none of the BAT-AEL tonnage thresholds are exceeded, so they are not applicable.
13	Prevent or, where this is not practicable, reduce the quantity of waste being sent for disposal by setting up and implementing a waste management plan as part of the environmental management system (see BAT 1) that, in order of priority, ensures that waste is prevented, prepared for reuse, recycled or otherwise recovered.	**CC**	Operator response: Greenergy Biofuels Limited follow the Hierarchy of Waste at all stages. The decision to convert the plant from one that produced biodiesel from virgin vegetable oils to one that used Used Cooking Oils (UCO) as its main feedstock was done with the hierarchy of waste in mind. The main impurity in UCO is free fatty acid (FFA) which can cause side reactions as described in CWW 2. There are two aspects to controlling FFA, the first is that the UCO is purchased to a specification which includes FFA and that every import is sampled and analysed. This controls the levels of the FFA impurity that is used on site. Due to the number of raw material tanks GBL are able to blend different levels of FFA to get an optimum feed into the plant. The second aspect is the plant design, GBL have a deodoriser column which reduces the levels of FFA in the tri-glycerides feed which is then used in the transesterification process to produce the biodiesel. The resulting FFA stream from the deodoriser is then acid esterified to produce biodiesel. GBL test various parts of the process stream in order to assess the process efficiency and to minimise the generation of by-products and waste. Other design aspects that reduce waste is the construction of the FAT Strippa. This stream takes an oil/water stream from the initial UCO centrifuges and plant sumps and recovers oil

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			for reuse in the process. The water is sampled and can be either sent to the effluent treatment plant or sent offsite as a waste for energy recovery. GBL operates an effluent treatment plant (ETP) which treats the site effluent reducing the need to send water offsite for treatment / disposal. This is described further in CWW BAT 12. Water usage reduction and the reduction of the pollutant load to water as described in CWW BAT 7 also reduces the generation of waste both to the ETP and offsite via the W1 emissions to water or via waste disposal. The last stage of the process is the filtering of the Biodiesel, this is designed to remove contamination / impurities in the Biodiesel and ensure that the final product is within the Biodiesel specification. Filter aid (diatomaceous earth) is added to intermediate biodiesel tanks and left in a slurry form. After soaking for a length of time the slurry is passed through a filter press with the biodiesel returned to final product storage and the filter cake requiring disposal. Training is given to staff on the hierarchy of waste and there are separate site collection streams for packaging (plastic, paper and wood), metal, Waste electrical, contaminated filters. There are recycling points in the occupied buildings such as the offices, control room and labs which reduces the general waste production. The hierarchy of waste is followed in the reuse, recycling or recovery of the other wastes that are produced by the process or by directly associated processes. These include process wastes such as waste water, sludge, packaging, solvents from lab activities, WEEE, filter materials and general and recycled waste. A key business driver for Greenergy is sustainability of the process from raw materials through the finished products. This achieved through certification and auditing of raw material suppliers through the International Sustainability and Carbon Certification (ISCC) process therefore non-conforming material that has to be disposed of is kept to a minimum and the composition of the UCO is known therefore reducing waste at source. We have accepted that the site is compliant with this BAT point.
14	Reduce the volume of waste water sludge requiring further treatment or disposal, and reduce its potential	**CC**	Operator response: Although Greenergy Biofuels Limited produces sludge from the onsite effluent treatment process there is no treatment done to it prior to disposal from the site. Activities such as thickening or dewatering would ensure that the sludge is unpumpable or to vastly increase the loading times making it unsuitable to handle. Due to the short residence time in the storage tank and

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	environmental impact, by using one or a combination of the described techniques.		the short term handling before final treatment stabilisation of the sludge is not required. We have accepted that the site is compliant with this BAT point.
15	Facilitate the recovery of compounds and the reduction of emissions to air, by enclosing the emission sources and treating the emissions, where possible.	**CC**	Operator response: All the process vents from the biodiesel process streams and all vent lines that have a potential to contain methanol as well as emergency vents from bursting discs from vessels and vacuum pumps are vented into a common line. From there they pass into the vent condensation and recovery unit. The first stage of this unit is to cool the incoming stream using a water glycol cooling stream set at -15$_{o}$C. The condensate from this unit which consists mainly of water goes to the Methanol rectification unit for the recovery of the methanol. We have accepted that the site is compliant with this BAT point.
16	Reduce emissions to air, by using an integrated waste gas management and treatment strategy that includes process-integrated and waste gas treatment techniques.	**CC**	Operator response: The Biodiesel 2 unit has a counter current single pass water scrubber to scrub any emission from that process. On the refinery side of the process water scrubbers that are part of the internal design of the vacuum system of the deodoriser are used to scrub any potential emissions from the vacuum emissions from various process plants. The resulting water is treated in the onsite effluent treatment plant. GBL has a small water scrubber that is used to abate the emissions from discharges of Hydrochloric acid from road tankers into the storage tank. Any vapours vented from the storage tank during discharge are passed through a recirculating water scrubber. The scrubbed air is vented to atmosphere. When required the weakly acidified acid is put into the drainage system and treated in the effluent system. We have accepted that the site is compliant with this BAT point.
19	Prevent or, where that is not practicable, reduce diffuse VOC emissions to air, by using a combination of the described techniques.	**CC**	Operator response: Greenergy Biofuels Limited (GBL) uses a variety of techniques to reduce diffuse VOC e emissions to air. These include: The design of the GBL plant ensures that there are limited emission sources to air. Process vents and emergency vents linked to pressure relief devices and bursting discs from plant are enclosed in a vent header so that they can be subsequently treated.(See CWW BAT15). Vent pipeline systems are designed and constructed with the minimum of flange joints and use an all welded construction process were possible. Areas of detail that are included in the design of the

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			plant include spring loaded sample valves with caps that will reduce potential diffuse emissions in comparison with standards valves. High integrity equipment is used such as magnetically driven pumps, pumps fitted with mechanical seals, spiral wound high – integrity gaskets for critical applications, corrosion resistant equipment (For example hastelloy and stainless steel) for plant applications that are exposed to acidic/alkaline materials. Where PTFE gaskets are used the bolts are tightened using trained fitters who have been on the required training courses. The design of the Immingham site ensures that there is good access to the plant for maintenance and inspection activities to take place. GBL have maintenance procedures for all relevant equipment which will include torque strengths were applicable for the bolts used for the flanges. The site maintain an electronic site maintenance system, Q4 which contains preventative maintenance programs and is a database for records. The frequency of maintenance or inspection is determined by either statutory requirements, equipment manuals and operational experience based on good practice. GBL uses an electronic management of change program which provides the platform for plant commissioning and handover procedures to be documented and in line with recommendations by suppliers and installation contractors. In addition GBL has undergone a Dangerous Substances and Explosive Atmosphere Regulations (DSEAR) risk assessment by a third party which is updated when required. This has identified zoned areas which requires ATEX rated equipment to be used within this area and recommendations for improvement although the majority of these were safety related. Also the site undertake Process Hazard Reviews and SIL assessments when required. We have accepted that the site is compliant with this BAT point.
20	Prevent or, where that is not practicable, reduce odour emissions, by setting up, implementing and regularly reviewing an odour management plan, as part of the environmental management system	**CC**	Operator response: Odour nuisance is not expected nor has ever occurred from the Greenergy Biofuels Limited (GBL) site as per CWW BAT 6. There are documented procedures for Incident reporting within the sites Environmental Management System which is ISO Certified as demonstrated in CWW BAT 1. GBL uses an external off the shelf incident reporting system Airsweb that is used for reporting events such as Injury, Illness, Near Miss, Environmental, Hazard Observations, Security, Process or Business events. This system is used to log events and forms the basis of investigation of the event and subsequent setting of actions with suitable timelines to reduce the potential of events occurring again.

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	(see BAT 1), that includes all of the described elements:		As there is no expected odour nuisance and no substantiated complaints then this BAT Conclusion is considered to be Not Applicable but there are procedures in place to investigate odour complaints as described above contained within the site EMS. We have accepted that the site is compliant with this BAT point.
21	Prevent or, where that is not practicable, reduce odour emissions from waste water collection and treatment and from sludge treatment, by using one or a combination of the described techniques.	**NA**	Operator response: There have been no reported odour emissions from the Greenergy Biofuels Limited effluent treatment plant therefore this BAT Conclusion has been determined to be not applicable. We have accepted that the site is compliant with this BAT point.
22	Prevent or, where that is not practicable, reduce noise emissions, by setting up and implementing a noise management plan, as part of the environmental management system (see BAT 1), that includes all of the described elements:	**NA**	Operator response: Noise nuisance is not expected nor has ever occurred from the Greenergy Biofuels Limited (GBL) site. There are documented procedures for Incident reporting within the sites Environmental Management System which is ISO Certified as demonstrated in CWW BAT 1. GBL uses an external off the shelf incident reporting system Airsweb that is used for reporting events such as Injury, Illness, Near Miss, Environmental, Hazard Observations, Security, Process or Business events. This system is used to log events and forms the basis of investigation of the event and subsequent setting of actions with suitable timelines to reduce the potential of events occurring again. As there is no expected noise nuisance and no substantiated complaints then this BAT Conclusion is considered to be Not Applicable but there are procedures in place to investigate noise complaints as described above contained within the site EMS. We have accepted that this BAT point is not applicable.
23	Prevent or, where that is not practicable, reduce noise emissions, by using one or a combination	**CC**	Operator Response: The Greenergy Biofuels Limited (GBL) site is located within the operational area of the Port of Immingham so the dominant noise sources are from vehicle traffic within the port area and shipping

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	of the described techniques.		movements into Immingham dock therefore the nearest receptors are industrial users. Notwithstanding this GBL takes into account the noise emissions for both environmental protection and the protection of employees and visitors to the site. The reduction of noise on site is achieved by a number of factors which include: The plant is an existing plant so relocation of equipment is difficult, some of this has been resolved for example the installation of the new boiler was done in an area where warehouses screen the boilers in two directions. Being in the port area means that the main raw material, used cooking oil and the finished product, biodiesel can be moved via ship and pipeline to the site via holding tanks at the adjacent storage facility. This will reduce the noise associated with excessive road movements. The main process plant is constructed with a roof but open sides, on the eastern side of the biodiesel process the effluent treatment plant building was constructed that provides a barrier from noise emissions from this area. GBL operate a preventative maintenance plan of all equipment which covers maintenance and inspection of equipment which include potentially noisy equipment such as pumps, motors, fans, compressors and blowers. This equipment is all logged on a maintenance system – Q4. The frequency of maintenance or inspection is done using a combination of factors from statutory requirements such as those found for pressurised systems, through to manufacturers recommendations found in instruction and equipment manuals and the operational experience of the site based maintenance team. There are buildings in which noisy equipment or activities are, which include the effluent treatment plant, maintenance and fabrication workshops and the boiler, the doors on these buildings are kept shut. Noisy activities such as maintenance and logistics activities such as unloading and loading of raw materials in tankers are mainly done during day time hours. Any noise control required during maintenance activities will be assessed prior to the activity commencing using the safe system of working and the site permit to work systems. With respect to noise control equipment GBL have enclosed potentially noisy equipment such as the effluent treatment plant and the boiler within buildings which will mitigate the noise transmitted to external sources.

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			Noisy equipment such as the air compressors and the air blowers used in the effluent treatment plant are housed in their own acoustic enclosures. In general GBL complies with this condition in that it is located within the busy port environment and is shielded from sensitive receptors by the buildings and activities within the port area. The measures described above will ensure that the GBL contribution of noise to the immediate surroundings will be reduced as much as is operationally possible.

Annex 2: Assessment, determination and decision where an application(s) for Derogation from BAT Conclusions with associated emission levels (AEL) has been requested.

The Operator did not request derogation from compliance with any AEL included within the BAT Conclusions as part of their Regulation 61 notice response.

Annex 3: Improvement Conditions

Based on the information in the Operator's Regulation 61 Notice response and our own records of the capability and performance of the installation at this site, we consider that we need to set improvement conditions so that the outcome of the techniques detailed in the BAT Conclusions are achieved by the installation. These improvement conditions are set out below - justifications for them is provided at the relevant section of the decision document (Annex 1).

If the consolidated permit contains existing improvement conditions that are not yet complete or the opportunity has been taken to delete completed improvement conditions then the numbering in the table below will not be consecutive as these are only the improvement conditions arising from this permit variation.

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC6	The operator shall submit a report to the Environment Agency for approval which provides evidence of compliance with the MCERTS self-monitoring of effluent flow scheme for emission point W1 as required by table S3.2.	3 months from permit issue date.
IC7	The operator shall ensure that any residues from the treatment of waste to produce biodiesel have stopped being waste and have satisfied all the conditions within Article 6 of the Waste Framework Directive if these residues are sold or transferred as non-wastes. This includes, but is not limited to, glycerine/glycerol. The operator may self-assess using the available guidance and/or consult with the Environment Agency's Definition of Waste (DoW) Service. The operator shall submit a written report to the Environment Agency to confirm the waste status.	18 months from permit issue date or prior to any increase in waste acceptance, whichever is sooner
IC8	Submit a written report to the Environment Agency for technical assessment and approval. The report must contain a review (and the raw data the review is based on) of emissions from emission points A7 & A8 and must be representative of any seasonal effects, unless justification is provided as to why this is unnecessary. If the emission levels from A7 & A8 can be proven to be 'sufficiently stable', then the minimum monitoring frequency can be reduced to Annually as stated in BAT Conclusions LVOC BAT 2, footnote 2.	8 months from permit issue date.