

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/HP3230DJ
The Operator is: BioConstruct NewEnergy Ltd.
The Installation is: Imperial Park Anaerobic Digestion Plant
This Variation Notice number is: EPR/HP3230DJ/V003

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 Waste Treatment industry sector published on 10 August 2018 in the Official Journal of the European Union. 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 Waste Treatment as detailed in document reference C(2018) 5070. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position. It also provides a justification for the inclusion of any specific conditions in the permit that are in addition to those included in our generic permit template.

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 – Review of operating techniques within the Installation against BAT Conclusions.
5. Annex 2 – Review and assessment of changes that are not part of the BAT Conclusions derived permit review
6. Annex 3 – Improvement Conditions

1 Our decision

We have decided to issue the Variation Notice to the Operator. This will allow the Operator 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 19/07/19 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 17 August 2022, which will then ensure that operations meet the revised standards, or
- justifies why standards will not be met by 17 August 2022, 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 standards 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 BAT-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 20/02/20.

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 consider that the operator will be able to comply with the techniques and standards described in the BAT Conclusions other than for those techniques and requirements described in BAT Conclusions 3, 12, 14(h), 23(a) and 34. In relation to these BAT Conclusions, we do not fully agree with the operator in respect of their current stated capability as recorded in their regulation 61 Notice response. We have therefore included Improvement Conditions in the Consolidated Variation Notice to ensure that the requirements of the BAT Conclusion are delivered before 17/08/22.

IMPACT OF COVID-19 PANDEMIC

SPECIAL NOTE: Due to the impact of the Covid-19 pandemic, compliance officers were unable to visit site in order to conduct a site audit and review against the Waste Treatment BATc. Therefore, we have required compliance officers to undertake a desk-based assessment of compliance. Whilst we appreciate that this is not the normal approach, we do need to follow Government guidelines until the lockdown measures are eased.

3 The legal framework

The Consolidated Variation Notice will be issued, if appropriate, 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.

Annex 1: decision checklist regarding relevant BAT Conclusions

BAT Conclusions for the Waste Treatment sector, were published by the European Commission on 10 August 2018. There are 53 conclusions included in the BAT Conclusions document but not all of them will be applicable to the installation. 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 BAT conclusions)

NC – Not Compliant

| BAT Conclusion No | Summary of BAT Conclusion requirement for Waste Treatment | 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 |
|-------------------|--|----------------------------------|---|
| 1 | <p>In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features:</p> <ol style="list-style-type: none"> I. commitment of the management, including senior management; II. definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation; III. planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment; IV. implementation of procedures paying particular attention to: <ol style="list-style-type: none"> (a) structure and responsibility, (b) recruitment, training, awareness and competence, (c) communication, (d) employee involvement, (e) documentation, (f) effective process control, (g) maintenance programmes, (h) emergency preparedness and response, (i) safeguarding compliance with environmental legislation; | CC | <p>The operator has an environment management system (EMS) which covers the points in BAT 1. For instance:</p> <ul style="list-style-type: none"> • management review (ref PROG – 39) • environmental policy (ref Pol 002) • target and objective setting (ref PROC – 38) • communication (ref PROC 46) • EMS compliance audit (ref EMP-005) • Legal compliance audit (ref EF-006). <p>For waste stream management see BAT2 For waste water and waste gas inventory see BAT3 For odour management plan see BAT 12 For noise and vibration management plan see BAT 17.</p> <p>EA assessment The permit includes conditions on general management (condition 1.1). We are satisfied the operator is currently compliant with BAT 1.</p> |

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| | <p>V. checking performance and taking corrective action, paying particular attention to:</p> <ul style="list-style-type: none"> (a) monitoring and measurement (see also the JRC Reference Report on Monitoring of emissions to air and water from IED installations – ROM), (b) corrective and preventive action, recruitment, training, awareness and competence, (c) maintenance of records, (d) independent (where practicable) internal or external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained <p>VI. review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;</p> <p>VII. following the development of cleaner technologies;</p> <p>VIII. consideration for the environmental impacts from the eventual decommissioning of the plant at the stage of designing a new plant, and throughout its operating life;</p> <p>IX. application of sectoral benchmarking on a regular basis;</p> <p>X. waste stream management (see BAT 2);</p> <p>XI. an inventory of waste water and waste gas streams (see BAT 3);</p> <p>XII. residues management plan (see description in Section 6.5);</p> | | <p>[We note we have required the Operator to review, amend and update the EMS previously to ensure that all sources of potential odour on site are identified and appropriate measures taken to minimise environmental impacts – see CAR form dated 20/07/18]</p> |

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| | <p>XIII. accident management plan (see description in Section 6.5); XIV. odour management plan (see BAT 12) XV. noise and vibration management plan (see BAT 17).</p> | | |
| 2 | <p>In order to improve the overall environmental performance of the plant, BAT is to use all of the techniques listed below:</p> <p>(a) Set up and implement waste characterisation and pre-acceptance procedures; (b) Set up and implement waste acceptance procedures; (c) Set up and implement a waste tracking system and inventory; (d) Set up and implement an output quality management system; (e) Ensure waste segregation; (f) Ensure waste compatibility prior to mixing or blending of waste; (g) Sort incoming solid waste</p> | CC | <p>The operator employs techniques a) and b) and has appropriate procedures in place i.e. PROC 17 feedstock rejection, 18 - feedstock acceptance, 19 - sampling procedures, 20 - laboratory procedure and 27 - waste acceptance criteria.</p> <p>Agreements with the supplier will ensure that only treated/processed waste suitable for treatment in the AD process is received at site. The information regarding the source of generation of waste, quantity of waste, compositional analysis, EWC categorisation of waste and ABPR compliance (if applicable), will be provided by the supplier. For any animal by-products, arrangements will be made with the supplier to ensure that the waste has been effectively pasteurised before being sent to the AD Plant. The operator will ensure that representative samples have been obtained and analysis has been carried out by an accredited laboratory. Feedstock</p> |

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| | | | <p>characterisation will be carried out as part of establishing the supply contract and clear rejection criteria for wastes not suitable for treatment in the process will be available.</p> <p>For waste acceptance all deliveries will be weighed and visual inspections will be carried out. Sampling will be carried out in accordance with the sampling plan for verification and compliance testing. Tankered wastes will be sampled prior to acceptance. Appropriate waste rejection procedures are also in place detailing what wastes are to be rejected and how to manage these rejected wastes.</p> <p>c) Information from pre-acceptance and acceptance is kept i.e. composition/volume. Waste is then kept in balance tanks prior to mixing in fermenter tanks. Animal By Product waste is accepted in small quantities and treated appropriately i.e. via pasteurisation tanks: 70 degrees C for 1 hour.</p> <p>d) they have an output quality system – PAS 110, a BSI standard for anaerobic digestate.</p> <p>e) waste is segregated as appropriate and stored separately. Liquid feedstock goes to pre storage tank for</p> |

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| | | | <p>receipt, while solid material (mainly brewers spent grain) goes to the solid material handling and storage building prior to being processed into the main pre-storage tank facility.</p> <p>f) waste compatibility is ensured at the pre acceptance / acceptance stage.</p> <p>g) incoming waste is sorted as above.</p> <p>EA assessment</p> <p>Condition 2.3.7 of the permit requires the pre acceptance and acceptance procedures to be compliant with BAT. We are satisfied the operator is currently compliant with BAT 2.</p> |
| 3 | <p>In order to facilitate the reduction of emissions to water and air, 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:</p> | FC | <p>EA assessment</p> <p>Waste water</p> <p>BAT 3 is not applicable to waste water at the site. No process effluents are generated from the system. The foul water from cleaning operations inside/outside buildings is</p> |

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| | <p>(i) information about the characteristics of the waste to be treated and the waste treatment processes, including:</p> <p>(a) simplified process flow sheets that show the origin of the emissions;</p> <p>(b) descriptions of process-integrated techniques and waste water/waste gas treatment at source including their performances;</p> <p>(ii) information about the characteristics of the waste water streams, such as:</p> <p>(a) average values and variability of flow, pH, temperature, and conductivity;</p> <p>(b) average concentration and load values of relevant substances and their variability (e.g. COD/TOC, nitrogen species, phosphorus, metals, priority substances /micropollutants);</p> <p>(c) data on bioeliminability (e.g. BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. inhibition of activated sludge)) (see BAT 52);</p> <p>(iii) information about the characteristics of the waste gas streams, such as:</p> <p>(a) average values and variability of flow and temperature;</p> <p>(b) average concentration and load values of relevant substances and their variability (e.g. organic compounds, POPs such as PCBs);</p> <p>(c) flammability, lower and higher explosive limits, reactivity;</p> <p>(d) presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, nitrogen, water vapour, dust).</p> | | <p>trapped in pits and pumped back into the system and will not be discharged. The condensate from the gas cleaning system is pumped back into the post fermenter tank. The discharge from the site only comprises of foul water from welfare facilities which goes to foul sewer and uncontaminated rainwater from site drainage which goes to sewer.</p> <p>Waste gas emissions</p> <p>BAT 3 is applicable to waste gaseous emissions and the Operator is not currently compliant with this requirement. We have therefore included an improvement condition requiring them to comply with this BAT conclusion.</p> <p>We are satisfied the operations will be future compliant with this BAT conclusion.</p> |

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| 4 | <p>In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques given below:</p> <p>(a) Optimised storage location; (b) Adequate storage capacity; (c) Safe storage operation; (d) Separate area for storage and handling of packaged hazardous waste.</p> | CC | <p>BAT 4a is applicable to new sites.</p> <p>BAT 4b – the 2 primary fermentation tanks have a 5,953 m³ capacity; the 1 post fermentation tank has a 7,584 m³ capacity and the 4 digestate tanks have a 8,590 m³ capacity. Quantity of incoming waste is controlled.</p> <p>BAT 4c – the area where these tanks are sited is contained within a 2.45 m high concrete wall, designed to accommodate 110% capacity of the largest tank as a secondary containment measure. Equipment and infrastructure have a maintenance checklist. The site has emergency response procedures i.e. spillages, SCARDA alarm, emergency shutdown, accident management plan.</p> <p>4d) NA , no packaged hazardous waste stored</p> <p>EA assessment We are satisfied the operator is currently compliant with BAT 4.</p> |
| 5 | <p>In order to reduce the environmental risk associated with the handling and transfer of waste, BAT is to set up and implement handling and transfer procedures.</p> | CC | <p>Staff are trained appropriately – ref PROC 40 training procedure, staff competency matrix and training manual.</p> |

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| | <p>Handling and transfer procedures aim to ensure that wastes are safely handled and transferred to the respective storage or treatment. They include the following elements:</p> <ul style="list-style-type: none"> • handling and transfer of waste are carried out by competent staff; • handling and transfer of waste are duly documented, validated prior to execution and verified after execution; • measures are taken to prevent, detect and mitigate spills; • operation and design precautions are taken when mixing or blending wastes (e.g. vacuuming dusty/powdery wastes). <p>Handling and transfer procedures are risk-based considering the likelihood of accidents and incidents and their environmental impact.</p> | | <p>The reception area for the wastes comprises of an enclosed building with an odour abatement system. Roller shutter doors are provided for access and egress by delivery and other vehicles. All tanks are provided with secondary containment facilities. The reception area comprises an impermeable surface and a stone trap is provided for liquid feedstock deliveries. All foul water from the reception building is trapped in the pits and will be pumped back into the system.</p> <p>Waste will be transferred within the site via sealed pipelines. Pumps between pipe transit routes are linked to an alarm and cut out at high or low pressure.</p> <p>The bulk of the operations will be managed through SCADA (Supervisory Control and Data Acquisition) system.</p> <p>An operational manual is maintained at the site and routine inspection and maintenance is carried out by the site personnel.</p> |

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| | | | EA assessment We are satisfied the Operator is currently compliant with BAT 5. |
| 6 | For relevant emissions to water as identified by the inventory of waste water streams (see BAT 3), BAT is to monitor key process parameters (e.g. waste water flow, pH, temperature, conductivity, BOD) at key locations (e.g. at the inlet and/or outlet of the pre-treatment, at the inlet to the final treatment, at the point where the emission leaves the installation). | NA | There are no direct or indirect waste water discharges from the site to controlled waters. The Environment Agency is satisfied that BAT 6 does not apply to the installation. |
| 7 | BAT is to monitor emissions to water with at least the frequency given in BATc 7, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality. | NA | There are no direct or indirect waste water discharges to controlled waters from the installation. The Environment Agency is satisfied that BAT 7 does not apply to the installation. |
| 8 | BAT is to monitor channelled emissions to air with at least the frequency given in BATc 8, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality. | CC | The odour abatement unit (emission point A6, NZ 52858 21083) is identified on the permit, and the frequency and monitoring standards set in line with BAT 8 requirements. The Environment Agency is satisfied that the operations will be compliant with this BAT conclusion. |

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| 10 | <p>BAT is to periodically monitor odour emissions.</p> <p>Odour emissions can be monitored using:</p> <ul style="list-style-type: none"> • EN standards (e.g. dynamic olfactometry according to EN 13725 in order to determine the odour concentration or EN 16841-1 or -2 in order to determine the odour exposure); • when applying alternative methods for which no EN standards are available (e.g. estimation of odour impact), ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality. <p>The monitoring frequency is determined in the odour management plan (see BAT 12).</p> | CC | <p>The operator has an odour management plan. Sniff tests are performed daily. Staff have received sniff test training.</p> <p>EA assessment</p> <p>Odour has been an ongoing issue at the site. The Operator has worked with the Environment Agency to try and identify sources and mitigate them using appropriate measures. Part of this is to regularly monitor odour emissions.</p> <p>We are satisfied operations are currently compliant with BAT 10.</p> |
| 11 | <p>BAT is to monitor the annual consumption of water, energy and raw materials as well as the annual generation of residues and waste water, with a frequency of at least once per year.</p> <p>Monitoring includes direct measurements, calculation or recording, e.g. using suitable meters or invoices. The monitoring is broken down at the most</p> | CC | <p>The permit (Table S4.3) requires the annual reporting of these parameters to the Environment Agency.</p> <p>EA assessment</p> <p>We are satisfied that the Operator is currently compliant with BAT 11.</p> |

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| | appropriate level (e.g. at process or plant/installation level) and considers any significant changes in the plant/installation. | | |
| 12 | <p>In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:</p> <ul style="list-style-type: none"> • a protocol containing actions and timelines; • a protocol for conducting odour monitoring as set out in BAT 10; • a protocol for response to identified odour incidents, e.g. complaints; • an odour prevention and reduction programme designed to identify the source(s); to characterise the contributions of the sources; and to implement prevention and/or reduction measures. | FC | <p>The Operator has an Odour Management Plan (May 16 ref. NT12687/001 (plus items 1.1, 1.2, 1.3 and 1.4(b) of letter dated 28/1116, ref. DB/ST/NT12050/004) which are part of the operating techniques.</p> <p>The plan includes a protocol for odour monitoring (daily sniff tests); a section on accidental releases and abnormal operation; a complaints procedure and an undertaking for annual review with improvements if further control measures are deemed necessary.</p> <p>EA assessment</p> <p>There have been substantiated odour issues at the site. There are sensitive receptors within 100m of the site. The Operator has been working with the Environment Agency on improving performance in this area.</p> <p>We are adding an improvement condition that requires the Operator to review, update and implement their OMP. The OMP must also include the current operating</p> |

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| | | | parameters, limits and design criteria of the odour abatement plant. |
| 13 | <p>In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to use one or a combination of the techniques given below:</p> <p>(a) Minimising residence times; (b) Using chemical treatment; (c) Optimising aerobic treatment</p> | CC | <p>BAT 13a) is only applicable to open systems (this installation is not an open system). 13b) oxygen is used in the tanks to oxidise hydrogen sulphide 13c) Not applicable as this is an anaerobic system</p> <p>EA assessment We are satisfied the Operator is currently compliant with BAT 13.</p> |
| 14 | <p>In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques given below:</p> <p>(a) Minimising the number of potential diffuse emission sources; (b) Selection and use of high-integrity equipment; (c) Corrosion prevention; (d) Containment, collection and treatment of diffuse emissions;</p> | FC | <p>The Operator uses a combination of techniques to achieve compliance with BAT 14:</p> <p>a) The feedstock will be digested within the AD tank which is completely sealed. This includes all necessary non-return valves and pumps to ensure there are no losses from any part of the process. The facility is automated and managed</p> |

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| | <p>(e) Dampening; (f) Maintenance; (g) Cleaning of waste treatment and storage areas; (h) Leak detection and repair (LDAR) programme</p> | | <p>using a SCADA system to maintain maximum efficiency. c) Construction materials have been chosen as appropriate i.e. concrete, tanks, pipework d) Deliveries take place inside an enclosed building. The air within the building is collected and abated prior to discharge. Biogas that is produced in the tanks is drawn off to the 4 CHPs and combusted to produce electricity and heat. Any odorous volatile organics within the biogas will be broken down within the combustion process. f) Regular maintenance checks will be undertaken by the technician and supported by the technology provider where required. Relevant spare parts will be kept onsite for general maintenance and replacement and where additional parts are necessary these will be made available as soon as possible. g) At least two times each day, receptacles and storage bays shall be checked and any litter and debris collected and the area tidied. The floor of</p> |

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| | | | <p>the building shall be brushed at least once per day and more often, if necessary to ensure that the working area is kept tidy. There are various work instructions i.e. how to clean the stone catchers in the reception hall.</p> <p>EA assessment</p> <p>The Operator is using many of the appropriate techniques except for the use of a leak detection and repair programme (LDAR). As there have been odour issues at this site, we consider this is also an appropriate technique that should be used. We have therefore included an improvement condition to require the Operator to produce and implement a LDAR programme to be agreed with the EA.</p> <p>We are satisfied the operations will be future compliant with this BAT conclusion.</p> |
| 15 | BAT is to use flaring only for safety reasons or for non-routine operating conditions (e.g. start-ups, shutdowns) by using both of the techniques given below: | CC | The Operator employs both techniques to ensure compliance with BAT 15. |

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| | (a) Correct plant design; (b) Plant management | | <p>a) The gas recovery system has sufficient capacity. The post fermenter tanks and the digestate storage tanks are provided with gas accumulator roofs and have a total gas storage capacity of 20,000m³, which is equivalent to ten hours of gas storage.</p> <p>b) The CHP units are routinely monitored to ensure efficient operation. This includes routine maintenance in accordance with manufacturer's specifications which will result in minimising the risk of release of unburnt biogas.</p> <p>EA assessment We are satisfied the Operator is currently compliant with BAT 15.</p> |
| 16 | <p>In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given below:</p> <p>(a) Correct design of flaring devices; (b) Monitoring and recording as part of flare management</p> | CC | <p>The emergency flare is designed to be able to accept all biogas (2.5m³/hr capacity) from the site should the CHPs breakdown or require maintenance. Pressure relief valves are provided on top of each fermenter and storage tank. However, likelihood of biogas release from these valves is very unlikely as any surplus gas will be burned by the</p> |

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| | | | <p>flare in the first instance. Should the CHPs be unavailable due to a breakdown or similar the flare will automatically light, ensuring biogas is disposed of safely and odorous compounds are destroyed.</p> <p>The control systems is monitored via the SCADA system. System alarms will notify site personnel of an event or failure in the system.</p> <p>The Operator provided technical data on the flare design during the original application.</p> <p>EA assessment</p> <p>We are satisfied that the Operator is currently compliant with BAT 16.</p> |
| 17 | <p>In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to set up, implement and regularly review a noise and vibration management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:</p> <ul style="list-style-type: none"> I. a protocol containing appropriate actions and timelines; II. a protocol for conducting noise and vibration monitoring; | CC | <p>The Operator does not have a Noise and Vibration Management Plan. A noise assessment report was undertaken in 2014 to BS4142:1997 which classified the site as having marginal impact.</p> <p>The applicability of BAT 17 is restricted to cases where noise or vibration is expected at sensitive receptors or has been substantiated already.</p> |

| BAT Conclusion No | Summary of BAT Conclusion requirement for Waste Treatment | 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 |
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| | <p>III. a protocol for response to identified noise and vibration events, e.g. complaints;</p> <p>IV. a noise and vibration reduction programme designed to identify the source(s), to measure /estimate noise and vibration exposure, to characterise the contributions of the sources and to implement prevention and /or reduction measures.</p> | | <p>EA assessment</p> <p>Noise or vibration has not been an issue at the site, so we accept that a Noise and Vibration Management Plan is not currently required. However, Condition 3.4 of the permit means that we can require a plan should it been deemed necessary in the future.</p> <p>We are satisfied the Operator is currently compliant with BAT 17.</p> |
| 18 | <p>In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to use one or a combination of the techniques given below:</p> <p>(a) Appropriate location of equipment and buildings;</p> <p>(b) Operational measures;</p> <p>(c) Low noise-equipment;</p> <p>(d) Noise and vibration equipment;</p> <p>(e) Noise attenuation</p> | CC | <p>The Operator employs a combination of technical to achieve compliance with BAT 18;</p> <p>a) Wastes are accepted within a waste transfer building.</p> <p>b) All plant and equipment is maintained in accordance with the manufacturer's recommendations to avoid excessive noise. The reception building door is kept shut as much as possible. Equipment is operated by trained staff. The site does not operate at night.</p> |

| BAT Conclusion No | Summary of BAT Conclusion requirement for Waste Treatment | 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 |
|-------------------|--|----------------------------------|---|
| | | | <p>EA assessment We are satisfied the Operator is currently compliant with BAT 18.</p> <p>However, Condition 3.4 means that a noise management plan can be required should one be needed in the future.</p> |
| 19 | <p>In order to optimise water consumption, to reduce the volume of waste water generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques given below:</p> <ul style="list-style-type: none"> (a) Water management; (b) Water recirculation; (c) Impermeable surface; (d) Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels; (e) Roofing of waste storage and treatment areas; (f) Segregation of water streams (g) Adequate drainage infrastructure; (h) Design and maintenance provisions to allow detection and repair of leaks (i) Appropriate buffer storage capacity | CC | <p>The Operator states that:</p> <ul style="list-style-type: none"> a) The water consumption is managed on a regular basis b) opportunities for improving water efficiency by considering water recycling, minimising water requirements for cleaning through use of vacuuming or moping or reuse of wash water will be employed. c) The site is concreted d) Tanks are sized adequately. Pipes are fitted with pressure alarms. e) Waste comes into a transfer building. This waste is then pumped to series of enclosed i.e. roofed tanks. |

| BAT Conclusion No | Summary of BAT Conclusion requirement for Waste Treatment | 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 |
|-------------------|---|----------------------------------|---|
| | | | f) Roof water is kept separate from waste g) Drainage plans of the sight are available h) There is a regular inspection and maintenance programme i) The tanks are sized adequately, and the site bunding allows for secondary containment EA assessment We are satisfied that the Operator is currently compliant with BAT 19. |
| 20 | In order to reduce emissions to water, BAT is to treat waste water using an appropriate combination of the techniques given below: Preliminary and primary treatment, e.g. (a) Equalisation (b) Neutralisation (c) Physical separation, e.g. screens, sieves, grit separators, grease separators, oil-water separation or primary settlement tanks Physico-chemical treatment, e.g. (d) Adsorption (e) Distillation /rectification | NA | BAT 20 is NA as there is no waste water produced on site. |

| BAT Conclusion No | Summary of BAT Conclusion requirement for Waste Treatment | 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 |
|-------------------|--|----------------------------------|---|
| | <p>(f) Precipitation (g) Chemical oxidation (h) Chemical reduction (i) Evaporation (j) Ion exchange (k) Stripping</p> <p>Biological treatment, e.g. (l) Activated sludge process (m) Membrane bioreactor (n) Nitrification / denitrification when the treatment includes a biological treatment</p> <p>Solids removal, e.g. (o) Coagulation and flocculation (p) Sedimentation (q) Filtration (e.g. sand filtration, microfiltration, ultrafiltration) (r) Flotation</p> <p>See also: Table 6.1: BAT-associated emission levels (BAT-AELs) for direct discharges to a receiving water body</p> | | |

| BAT Conclusion No | Summary of BAT Conclusion requirement for Waste Treatment | 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 |
|-------------------|--|----------------------------------|--|
| | See also: Table 6.2: BAT-associated emission levels (BAT-AELs) for indirect discharges to a receiving water body | | |
| 21 | <p>In order to prevent or limit the environmental consequences of accidents and incidents, BAT is to use all of the techniques given below, as part of the accident management plan (see BAT 1):</p> <p>(a) Protection measures; (b) Management of incidental /accidental emissions; (c) Incident /accident registration and assessment system</p> | CC | <p>The Operator has an Environmental Risk Assessment and Accident Management Plan (SLR, NT12050.004, May2016). It also has a DSEAR (dangerous substances and explosive atmospheres) plan, (SLR, ref: 405:06133.00001, April 2016). The site has conducted an Hazard and Operability Plan (HAZOP). It also employs all the techniques listed. Incidents and accidents are noted and reviewed.</p> <p>EA assessment The Environment Agency is satisfied the Operator is currently compliant with BAT 21.</p> |
| 22 | In order to use materials efficiently, BAT is to substitute materials with waste. | NA | This is not applicable to the installation. Any dosing of tanks undertaken needs to be exact. |

| BAT Conclusion No | Summary of BAT Conclusion requirement for Waste Treatment | 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 |
|-------------------|---|----------------------------------|---|
| | Waste is used instead of other materials for the treatment of wastes (e.g. waste alkalis or waste acids are used for pH adjustment, fly ashes are used as binders). | | |
| 23 | <p>In order to use energy efficiently, BAT is to use both of the techniques given below:</p> <p>(a) Energy efficiency plan; (b) Energy balance record</p> | FC | <p>The installation generates approximately 5MW electricity which is exported to the National Grid. Energy required to run the site is around 700KW.</p> <p>The excess heat from the CHP units is used in the primary and post fermentation tanks, pasteurisation tanks (for the digestate) and for space heating in the buildings on site.</p> <p>Energy balance is required to be reported annually by the permit.</p> <p>EA assessment</p> <p>The Operator has got information on energy but not an energy efficiency plan. IC 05 has therefore been included to require the operator to produce an energy efficiency plan.</p> <p>We are satisfied the operations will be future compliant with this BAT conclusion.</p> |

| BAT Conclusion No | Summary of BAT Conclusion requirement for Waste Treatment | 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 |
|-------------------|--|----------------------------------|---|
| 24 | <p>In order to reduce the quantity of waste sent for disposal, BAT is to maximise the reuse of packaging, as part of the residues management plan (see BAT 1).</p> <p>Packaging (drums, containers, IBCs, pallets, etc.) is reused for containing waste, when it is in good condition and sufficiently clean, depending on a compatibility check between the substances contained (in consecutive uses). If necessary, packaging is sent for appropriate treatment prior to reuse (e.g. reconditioning, cleaning).</p> | CC | <p>Waste generated on site will be minimised in the first instance. Waste recycling bins will be in place within the office and welfare buildings and will be disposed through the regular commercial collections. Waste that cannot be processed on site (e.g. waste oils from the CHP facility) will be segregated and then disposed at a suitable location using appropriately licensed contractors. Opportunities for recycling the intermediate bulk containers (IBC) which will be used across the site for storing maintenance products is being explored.</p> <p>EA assessment</p> <p>Condition 1.4 of the permit requires the operations to comply with the waste hierarchy.</p> <p>We are satisfied the Operator is currently compliant with BAT 32.</p> |
| 33 | <p>In order to reduce odour emissions and to improve the overall environmental performance, BAT is to select the waste input.</p> | CC | <p>The Operator does select the waste input and has pre-acceptance and acceptance procedures (see BAT 2).</p> |

| BAT Conclusion No | Summary of BAT Conclusion requirement for Waste Treatment | 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 |
|-------------------|---|----------------------------------|--|
| | | 35, Table 6.7 | <p>complete the improvement condition and demonstrate compliance with NH₃ BAT-AEL by the compliance date, 17 August 2022.</p> <p>In addition to the BAT-AEL, we have inserted the requirement to monitor odour concentration, hydrogen sulphide and ammonia on a 6-monthly frequency in Table S3.3 (process monitoring).</p> <p>As part of the Environment Agency approach to reduce emissions in the biowaste treatment sector, we have included the following improvement conditions:</p> <p><u>Improvement condition for the review of effectiveness of abatement plant</u></p> <p>Improvement condition (IC10) requires the operator to review abatement plant on site, in order to determine whether existing measures have been effective and adequate to prevent and /or minimise emissions released</p> |

| BAT Conclusion No | Summary of BAT Conclusion requirement for Waste Treatment | 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 |
|-------------------|--|----------------------------------|--|
| | | | <p>to air. Where further improvements are identified, the operator is required to implement these measures.</p> <p><u>Improvement condition for the review of abatement plant design</u></p> <p>Improvement condition 11 requires the operator to review the design of the site ventilation system and abatement plant in order to determine whether it is fit for purpose and effective in controlling odorous compounds in the air streams from site processes. Where further improvements are identified, the operator is required to implement these measures.</p> |
| 35 | <p>In order to reduce the generation of waste water and to reduce water usage, BAT is to use all of the techniques given below:</p> <p>(a) Segregation of water streams; (b) Water recirculation; (c) Minimisation of the generation of leachate</p> | CC | <p>The Operator employs all the techniques to achieve compliance with BAT 35.</p> <p>(a) Clean rainwater is kept separate from process water and is discharged to surface water drain (b) Foul water from cleaning operations inside and outside buildings is trapped in pits and pumped back into the post fermenter tank. Condensate</p> |

| BAT Conclusion No | Summary of BAT Conclusion requirement for Waste Treatment | 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 |
|-------------------|---|----------------------------------|---|
| | | | <p>from the gas cleaning system will be pumped back into the post fermenter tank. (c) NA – this is a wet AD process</p> <p>EA assessment We are satisfied the Operator is currently compliant with BAT 35.</p> |
| 36 | <p>In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters.</p> <p>Monitoring and/or control of key waste and process parameters, including:</p> <ul style="list-style-type: none"> • waste input characteristics (e.g. C to N ratio, particle size); • temperature and moisture content at different points in the windrow; • aeration of the windrow (e.g. via the windrow turning frequency, O₂ and/or CO₂ concentration in the windrow, temperature of air streams in the case of forced aeration); • windrow porosity, height and width. | NA | BAT 36 is applicable to the aerobic treatment of waste. |
| 37 | <p>In order to reduce diffuse emissions to air of dust, odour and bioaerosols from open-air treatment steps, BAT is to use one or both of the techniques given below:</p> | NA | BAT 37 is applicable to open-air treatment steps. |

| BAT Conclusion No | Summary of BAT Conclusion requirement for Waste Treatment | 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 |
|-------------------|--|----------------------------------|--|
| | (a) Use of semi permeable membrane covers; (b) Adaptation of operations to the meteorological conditions | | |
| 38 | <p>In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters.</p> <p>This includes monitoring and/or control of key waste and process parameters:</p> <ul style="list-style-type: none"> • pH and alkalinity of the digester feed; • digester operating temperature; • hydraulic and organic loading rates of the digester feed; • concentration of volatile fatty acids (VFA) and ammonia within the digester and digestate; • biogas quantity, composition (e.g. H₂S) and pressure; • liquid and foam levels in the digester. | CC | <p>Condition 3.5.1 (b) of the permit requires that this process monitoring takes place and is regularly reported on.</p> <p>EA assessment</p> <p>We are satisfied the operation is currently compliant with BAT 38.</p> |
| 39 | <p>In order to reduce emissions to air, BAT is to use both of the techniques given below:</p> <p>(a) Segregation of the waste gas streams; (b) Recirculation of waste gas</p> | NA | <p>BAT 39 is applicable to mechanical biological treatment plants.</p> |

Annex 2: Review and assessment of changes that are not part of the BAT Conclusions derived permit review

Existing Medium Combustion Plant

The Operator provided further information on all combustion plant on site with respect to:

- Number of combustion plant (CHP engines, back-up generators, boilers);
- Size of combustion plant – rated thermal input (MWth)
- Date each combustion plant came into operation
- Confirmation as to whether or not the combustion plant is subject to a capacity market agreement (2014 or 2015 auction) or whether or not a Feed-in Tariff preliminary accreditation application was received prior to 1 December 2016 – Feed in Tariff was received prior to December 2016.

The information is provided in the table(s) below:

CHP engines

| | |
|---|---|
| 1. Rated thermal input (MW) of the medium combustion plant. | 4 CHP engines with an aggregated thermal input of 12.5 MW _{th} . (3 x CHP 1487 KW electrical output 1 x CHP 527 KW electrical output). |
| 2. Type of the medium combustion plant (diesel engine, gas turbine, dual fuel engine, other engine or other medium combustion plant). | Combined heat and power |
| 3. Type and share of fuels used according to the fuel categories laid down in Annex II. | Biogas |
| 4. Date of the start of the operation of the medium combustion plant or, where the exact date of the start of the operation is unknown, proof of the fact that the operation started before 20 December 2018. | April 2017 |
| 5. Confirmation of capacity market agreement arising from 2014 or 2015 capacity auctions. | See below |
| 6. Confirmation of Feed-in Tariff preliminary accreditation application received by the Gas and Electric Markets Authority prior to 1 December 2016. | Feed in Tariff was received prior to December 2016. |

EA assessment

We have reviewed the information provided and we consider that the declared combustion plant qualify as “existing” medium combustion plant.

For existing MCP with a rated thermal input of less than or equal to 5 MW, the emission limit values set out in tables 1 and 3 of Part 1 of Annex II MCPD shall apply from 1 January 2030.

We have not amended any emission limit values for existing medium combustion plant as part of this permit review.

Bioaerosols monitoring requirements

The Operator provided information regarding bioaerosols monitoring in their response to the Regulation 61 Notice. They confirm that there are no external site operational processes within 250m of a sensitive receptor or an open biofilter within 250m of a sensitive receptor.

We carried out an assessment of the site location and the distance of site processes from sensitive receptors as part of this determination and agree this is the case so bioaerosol monitoring requirements were not included.

Soil & groundwater risk assessment (baseline report)

The IED requires that the operator of any IED installation using, producing or releasing “relevant hazardous substances” (RHS) shall, having regarded the possibility that they might cause pollution of soil and groundwater, submit a “baseline report” with its permit application. The baseline report is an important reference document in the assessment of contamination that might arise during the operational lifetime of the regulated facility and at cessation of activities. It must enable a quantified comparison to be made between the baseline and the state of the site at surrender.

At the definitive cessation of activities, the Operator has to satisfy us that the necessary measures have been taken so that the site ceases to pose a risk to soil or groundwater, taking into account both the baseline conditions and the site’s current or approved future use. To do this, the Operator has to submit a surrender application to us, which we will not grant unless and until we are satisfied that these requirements have been met.

The Operator submitted a site condition report, including a Phase I desk study and a Phase II site investigation report [document reference: SCR NT12050.002, May 2016] during the original application received on 14/06/16. The site condition report included a report on the baseline conditions as required by Article 22. We reviewed that report and considered that it adequately described the condition of the soil and groundwater at that time.

The site does not treat or release any ‘Relevant Hazardous Substances’, (‘RHS’) as defined by the Industrial Emissions Directive (IED). However, some of the raw materials used to support the digestion process/CHP engines may be classed as hazardous substances, such as lubrication oil (and subsequent used oil), iron chloride and antifoaming agents. These oils are to be stored within the fully enclosed CHP building and the chemical reagents are to be stored in the fully enclosed Tech1 building.

Having due regard to this and the supporting risk assessment provided at the time, it is considered unlikely that pollution of soil or groundwater will occur from a relevant hazardous substance.

However, it was noted that the SCR does not contain groundwater monitoring data. Our ‘H5 Site condition report guidance’ states that:

“applicants whose activities involve using, producing or releasing RHS must recognise that if they choose not to carry out intrusive investigations, we will assume the baseline level of contamination to be zero, because the IED requires quantification. Where there

is any doubt, we advise that applicants obtain sufficient evidence of pre-existing contamination to facilitate a simple determination at the point of surrender. “

In this case we have advised the operator accordingly with respect to the absence of any groundwater monitoring. This means that when the Operator applies to surrender the Permit, any contamination by substances used at, produced or released from the facility would be considered to have resulted from the operation of the installation. This is in accordance with the Environment Agency Guidance H5 – Site Condition Report.

We have reviewed the information and our site inspection information on incidents/accidents and we consider that that it adequately describes the condition of the soil and groundwater. Consequently, we are satisfied that the baseline condition has not changed.

Waste types

We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility. The waste are specified in Table S2.3 of the permit.

We are satisfied that the operator can accept these wastes for the following reasons:

- they are suitable for the proposed activities
- the proposed infrastructure is appropriate
- the environmental risk assessment is acceptable.

Other wastes (non-standard waste codes)

The following waste in the current permit are not specified in our revised biowaste treatment permit templates. We have retained these wastes in the current permit provided the Operator undertakes a detailed characterisation of the waste prior to acceptance for treatment at the site in accordance with BATc 2a.

| Waste code | Description |
|-------------------|---|
| 03 01 05 | sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04 |
| 03 03 02 | green liquor sludge |
| 03 03 08 | paper and cardboard – not allowed if any non biodegradable coating or preserving substance is present |
| 03 03 10 | fibre rejects, fibre-, filler- and coating-sludges from mechanical separation |
| 03 03 11 | sludges from on-site effluent treatment other than those mentioned in 03 03 10 |
| 04 01 01 | Fleshings and lime split wastes |
| 04 01 05 | Tanning liquor free of chromium |
| 04 01 07 | Sludges not containing chromium |
| 19 05 01 | Non-composted fraction of municipal and similar wastes |
| 19 05 02 | Non-composted fraction of animal and vegetable waste |
| 19 05 03 | Off-specification compost |

We made these decisions with respect to waste types in accordance with Framework Guidance Note – *Framework for assessing suitability of wastes going to anaerobic digestion, composting and biological treatment* (July 2013).

Excluded wastes (99 waste codes)

We have excluded the following waste streams ending with “99” code(s) because more suitable waste codes are already in the European Waste Catalogue (EWC) that accommodate the waste described:

| Waste code | Description |
|-------------------|--|
| 02 02 99 | sludges from gelatine production, animal gut contents |
| 02 03 99 | sludge from production of edible fats and oils to include seasoning residues, molasses residues, residues from production of potato, corn or rice starch |
| 02 04 99 | other wastes |

Our technical guidance on waste classification WM3 specifically sets out clear instructions for the use of the European Waste Catalogue (EWC), particularly with regard to “99” codes.

The guidance specifies that the Operator must:

- Identify the source generating the waste in chapters 01 to 12 or 17 to 20 and identify the appropriate six-digit code of the waste (excluding codes ending with 99 of these chapters).
- If no appropriate waste code can be found in chapters 01 to 12 or 17 to 20, the chapters 13, 14 and 15 must be examined to identify the waste.
- If none of these waste codes apply, the waste must be identified according to chapter 16.
- If the waste is not in chapter 16, the 99 code (wastes not otherwise specified) must be used in the section of the list corresponding to the activity identified in step one as a last resort.

We made this decision with respect to “99” codes in accordance with the Technical Guidance WM3: Waste Classification – Guidance on the classification and assessment of waste [1st Edition v1.1, May 2018].

Secondary containment

We asked the Operator via the Regulation 61 Notice to:

- describe any secondary containment and whether it currently meets the relevant standard in the “Containment systems for the prevention of pollution (C736)” report, where there are above-ground storage or primary containment on site; or
- explain why the current site infrastructure design and construction is fit for purpose, where it is concluded that secondary containment is not required or does not need to meet the standards in the C736 report, to enable a baseline standard so as to establish a quantified comparison; and

- describe how the construction of the lagoons meets the relevant standard in CIRIA C736 report, where there are storage lagoons used for the storage of digestate on site.

The Operator did not provide a response to the Regulation 61 Notice with respect to the existing site secondary containment.

We have set improvement conditions (IC08) in the permit to address the deficiencies in the existing site secondary containment. See Improvement condition(s) in Annex 3 of this decision document.

Primary containment infrastructure design (tanks /vessels used for storage and/or treatment activities)

We assessed primary containment as part of the permit review. This information was not requested in the Regulation 61 Notice issued to the Operator, however, it was considered prudent to address this aspect as part of the permit review process. In this instance, the required information relating to the review of primary containment infrastructure against CIRIA C535 was not previously submitted to the Environment Agency, nor was it included in the supporting documentation submitted by the Operator in their Regulation 61 response.

We have therefore set an Improvement Condition (IC07) in the permit to address this aspect of the permit review (see Annex 3).

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 or Annex 2).

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 |
| Improvement condition for progress report to achieve BAT-AELs | | |
| IC 01 | <p>The operator shall carry out a monitoring study in order to verify the assumptions made in the application in relation to the emission concentration of sulphur dioxide to air.</p> <p>The study shall include quantification of the actual sulphur dioxide emission concentration from the gas engine multi-flue stack, (emission points A1 to A4) by either:</p> <ul style="list-style-type: none"> – representative monitoring of sulphur dioxide stack emissions; or – calculation from the continuous hydrogen sulphide monitoring of the feed gas. | Complete |
| IC 02 | <p>Using the emission concentration established in accordance with improvement condition IC01 above, the operator shall submit a risk assessment of sulphur dioxide emissions to air to the Environment Agency for review.</p> <p>This risk assessment shall be carried out in accordance with Environment Agency Guidance: '<i>Air emissions risk assessment for your environmental permit</i>' and shall also include:</p> <ul style="list-style-type: none"> – details of how the sulphur dioxide emission concentration has been derived; – a proposed emission limit value and monitoring for sulphur dioxide if the process contribution or predicted environmental concentration is considered significant in relation to an environmental standard; and – a timetable for the implementation of any measures for further action that have been identified in the risk assessment. <p>Once agreed in writing by the Environment Agency, any emission limit value and monitoring shall be implemented and form part of schedule 3, table S3.1 of this permit.</p> | 18/03/2021 |

| Table S1.3 Improvement programme requirements | | |
|--|--|--|
| Reference | Requirement | Date |
| | Any identified further actions shall be implemented as agreed in writing by the Environment Agency. | |
| IC 03 | The operator shall submit a report of the commissioning of the odour abatement system to the Environment Agency that shall include, but not be limited to: <ul style="list-style-type: none"> – odour control and abatement systems performance; and – details of any additional procedures developed during commissioning for achieving satisfactory process control and compliance with permit conditions relating to odour. | Complete |
| IC 04 | The operator shall submit a report of the commissioning of the bund vehicular access ‘flood gates’ to the Environment Agency that shall include, but not be limited to: <ul style="list-style-type: none"> – a review of the effectiveness of the functioning and containment provided by the flood gates; and – details of any additional procedures developed during commissioning for achieving satisfactory containment. | 18/03/2021 |
| IC 05 | The operator shall submit, for approval by the Environment Agency, a report setting out progress to achieving the Best Available Techniques Conclusion Associated Emission Levels (BAT-AELs) where BAT is currently not achieved, but will be achieved before 17 August 2022. The report shall include, but not be limited to, the following: <ol style="list-style-type: none"> 1) Current performance against the BAT-AELs 2) Methodology for reaching the BAT-AELs and associated monitoring requirements 3) Associated targets/timelines for reaching compliance by 17 August 2022 4) Any alterations to the initial plan (in progress reports). <p>The report shall address the BAT Conclusions for Waste Treatment with respect to the following:</p> <ul style="list-style-type: none"> • BAT 34 Table 6.7 (compliance with BAT-AEL for channelled NH₃ from the biological treatment of waste) <p>Refer to BAT Conclusions for a full description of the BAT requirement.</p> | Progress reports at six monthly intervals from date of permit issue: 18/03/2021 18/09/2021 18/03/2022 |
| IC 06 | 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, but will be achieved before 17 August 2022. The report shall include, but not be limited to, the following: <ol style="list-style-type: none"> 1) Methodology for achieving BAT | Progress reports at six monthly intervals from date of permit issue: 18/03/2021 |

| Table S1.3 Improvement programme requirements | | |
|---|--|-------------------------------------|
| Reference | Requirement | Date |
| | <p>2) Associated targets/timelines for reaching compliance by 17 August 2022</p> <p>3) Any alterations to the initial plan (in progress reports).</p> <p>The report shall address the BAT Conclusions for Waste Treatment with respect to:</p> <ul style="list-style-type: none"> • BAT 3 (in relation to <u>waste gas</u> emissions) In order to facilitate the reduction of emissions to air, BAT is to establish and to maintain an inventory of waste gas streams, as part of the environmental management system (see BAT 1). • BAT 12 Review, update and implement the Odour Management Plan for the site. In particular in relation to an odour prevention and reduction programme designed to identify the source, to characterise the contributions of the sources and to implement prevention/reduction measures. Include the operating parameters, current limits and design criteria of the odour abatement plant. • BAT 14 (h) Set up and implement a leak detection and repair (LDAR) programme for organic compounds emissions. This is a structured approach to reduce fugitive emissions of organic compounds by detection and subsequent repair or replacement of leaking components. • BAT 23 (a) Draw up and implement an energy efficiency plan. <p><i>Refer to BAT Conclusions for a full description of the BAT requirement.</i></p> | <p>18/09/2021</p> <p>18/03/2022</p> |
| IC 07 | <p>The operator shall submit a written 'primary containment plan' and shall obtain the Environment Agency's written approval to it. The plan shall contain the results of a review conducted, by a competent person, and shall compare the design specification of primary containment systems where all polluting liquids and solids are being stored, treated, and/or handled against the design standards within CIRIA C535 guidance or equivalent.</p> <p>The review shall include:</p> <ul style="list-style-type: none"> • physical condition of all primary containment systems (storage and treatment vessels); • the suitability for providing primary containment when subjected to the dynamic and static loads caused by the vessels' contents; • any work required to ensure compliance with the standards set out in CIRIA C535 or equivalent; and • a preventative maintenance and inspection regime | 18/09/2021 |

| Reference | Requirement | Date |
|------------------|---|-------------|
| | <p>The plan must contain dates for the implementation of individual improvement measures necessary for the primary containment to adhere to the standards detailed/referenced within CIRIA C535 guidance, or equivalent.</p> <p>The plan shall be implemented in accordance with the Environment Agency's written approval.</p> | |
| IC 08 | <p>The operator shall submit a written 'secondary and tertiary containment plan' and shall obtain the Environment Agency's written approval to it. The plan shall contain the results of a review conducted, by a competent person, in accordance with the methodology detailed within CIRIA C736 (2014), of the condition and extent of secondary and tertiary containment systems where all polluting liquids and solids are being stored, treated, and/or handled.</p> <p>The review should consider, but is not limited to, the storage vessels, bunds, loading and unloading areas, transfer pipework/pumps, temporary storage areas, and liners underlying the site.</p> <p>The plan must contain dates for the implementation of individual improvement measures necessary for the secondary and tertiary containment systems to adhere to the standards detailed/referenced within CIRIA C736 (2014), or equivalent.</p> <p>The plan shall be implemented in accordance with the Environment Agency's written approval.</p> | 18/09/2021 |
| IC09 | <p>The operator shall establish the methane emissions in the exhaust gas from engines burning biogas and compare these to the manufacturer's specification and benchmark levels agreed in writing with the Environment Agency. The operator shall, as part of the methane leak detection and repair (LDAR) programme, develop proposals to assess the potential for methane slip and take corrective actions where emissions above the manufacturer's specification or appropriate benchmark levels are identified.</p> | 18/09/2021 |
| IC10 | <p>The operator shall carry out a review of the abatement plant on site, in order to determine whether the measures have been effective and adequate to prevent and where not possible minimise emissions released to air including but not limited to odour and ammonia.</p> <p>The operator shall submit a written report to the Environment Agency following this review for assessment and approval.</p> <p>The report shall include but not limited to the following aspects:</p> | 18/09/2021 |

| Table S1.3 Improvement programme requirements | | |
|--|--|-------------|
| Reference | Requirement | Date |
| | <ul style="list-style-type: none"> • Full investigation and characterisation of the waste gas streams. • Abatement stack monitoring results (not limited to odour and ammonia) • Abatement process monitoring results (not limited to odour and ammonia) • Odour monitoring results at the site boundary • Records of odour complaints and odour related incidents • Recommendations for improvement including the replacement or upgrading the abatement plant • Timescales for implementation of improvements to the abatement plant <p>The operator shall implement the improvements in line with the timescales as approved by the Environment Agency.</p> | |
| IC11 | <p>The operator shall submit to the Environment Agency a written review report of the design details of the site ventilation system and abatement plant and obtain the Environment Agency's written approval to it.</p> <p>The report shall include but not limited to:</p> <ol style="list-style-type: none"> a) Ventilation design performance criteria for effective fugitive odorous emission control b) Design of the abatement systems that will ensure compliance with the odour condition 3.3. The report shall include a demonstration (whether by a detailed review of technical papers or by trial results) that all odorous chemical compounds and their loading rates expected in the relevant air streams have been considered in the design; and supporting evidence that the odorous compounds will be controlled and/or abated either by operating techniques or by the proposed abatement systems. c) Design alarms and triggers for each relevant scenario to alert the operator to the malfunction of both ventilation and abatement systems. The report should further list all relevant contingency mitigation actions to minimise risk of elevated odour pollution from the installation linked to each malfunction scenario and detail the actions to restore systems to normal operating conditions for effective odour control. <p>Ventilation and abatement systems should be designed by suitably qualified named engineers who can supervise and sign-off on construction quality assurance.</p> | 18/09/2021 |