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

Permit number: EPR/BP3133TC
Operator: Warrens Emerald Biogas Ltd
Installation: Emerald Biogas Energy Park
Variation Notice number: EPR/BP3133TC/V007

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 20 January 2020 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 standards are not applicable to those processes, or
- justifies why an alternative technique will achieve the same level of environmental protection equivalent to the revised BAT 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 15 May 2020.

We considered it was in the correct form and contained sufficient information for us to begin our determination of the permit review but not that it necessarily contained all the information to confirm that site activities meet the relevant BAT conclusions. We completed the determination based on the information and supporting information received.

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 1, 2, 3, 4, 5, 8, 10, 14, 18, 19, 21, 23, 33, 34, 35 and 38. 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 response to the Regulation 61 Notice. We have therefore included Improvement Conditions IC13 and IC14 in the Consolidated Variation Notice to ensure that the requirements of the BAT Conclusions are delivered before 17 August 2022.

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.

Annex 1: decision checklist regarding relevant BAT Conclusions

BAT Conclusions for Waste Treatment were published by the European Commission on 10 August 2018. There are 53 BAT Conclusions. 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	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: 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: (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,	**FC**	**<u>Environment Agency assessment</u>** The operator has provided information to support compliance with BATc 1. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 1. Each aspect of the BATc has been addressed by the operator. However, some key supporting information was not submitted but are referenced. Also, the operator states that the EMS is certified to ISO 14001 accreditation, however the evidence was not supplied. We consider that the operator will be future compliant with BATc 1. Improvement condition 14 (IC14) has been included in the permit to achieve compliance (see Annex 3).

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
	(i) safeguarding compliance with environmental legislation. V. checking performance and taking corrective action, paying particular attention to: (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 VI. review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness; VII. following the development of cleaner technologies; 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;		

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
	IX. application of sectoral benchmarking on a regular basis; X. waste stream management (see BAT 2); XI. an inventory of waste water and waste gas streams (see BAT 3); XII. residues management plan (see description in Section 6.5); 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).		
2	In order to improve the overall environmental performance of the plant, BAT is to use all of the techniques listed below: (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;	**FC**	**<u>Environment Agency assessment</u>** The operator has provided information to support compliance with BATc 2. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 2. The operator has provided a description of pre-acceptance and acceptance procedures. However, the level of information provided in the summaries does not describe key parameters for pre-acceptance procedures: • Waste variability. • Source of waste. • Processes waste was subject to.

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	(f) Ensure waste compatibility prior to mixing or blending of waste; (g) Sort incoming solid waste		• Age of waste. • Odour potential • Reactivity • Nutrient analysis • Total organic carbon • Particle size • Biochemical methane potential. Similarly, acceptance procedures do not describe key steps and verification against pre-acceptance parameters. The description does not outline rejection criteria and procedures. No specific discussion is provided on the reception of waste, i.e., holding waste subject to verification prior to treatment. Waste will be visually inspected at this reception stage and if considered appropriate will be sent for processing. No more detail is provided at this step. Key issues such as how reception waste is segregated from verified incoming waste is not commented on. There is also no procedure for conducting representative sampling on wastes which this is relevant. For other aspects of the BAT conclusion (c, d, e, f, and g), they are briefly described, and reference is made to plans and operating techniques. The documents and evidence were not submitted in response to the Regulation 61 Notice.

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
			We consider that the operator will be future compliant with BATc 2. Improvement condition 14 (IC14) has been included in the permit to achieve compliance (see Annex 3).
3	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: (i) information about the characteristics of the waste to be treated and the waste treatment processes, including: (a) simplified process flow sheets that show the origin of the emissions; (b) descriptions of process-integrated techniques and waste water/waste gas treatment at source including their performances; (ii) information about the characteristics of the waste water streams, such as: (a) average values and variability of flow, pH, temperature, and conductivity; (b) average concentration and load values of relevant substances and their variability (e.g. COD/TOC, nitrogen species, phosphorus, metals, priority substances /micropollutants);	**FC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 3. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 3. The operator did not provide sufficient information to support compliance with BATc 3 in response to the Regulation 61 Notice dated 20 January 2020. Characterisations, inventories and quantifications of waste water, waste materials and waste gases are not described, and no evidence was provided. Reference is made to previous applications without any specific detail. There is no evidence which demonstrates that there are waste inventories or waste gas inventories. The operator states that characterisations of the waste water are not necessary as there are no water emissions. While monitoring of these waste waters are not needed, BAT does not provide an exemption for operators to not undertake a characterisation and inventory of the waste water streams. We have included improvement conditions in the permit to achieve compliance. The operator is required to complete the improvement conditions

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	(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); (iii) information about the characteristics of the waste gas streams, such as: (a) average values and variability of flow and temperature; (b) average concentration and load values of relevant substances and their variability (e.g. organic compounds, POPs such as PCBs); (c) flammability, lower and higher explosive limits, reactivity; (d) presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, nitrogen, water vapour, dust).		and demonstrate compliance with the Waste Treatment BREF and BAT Conclusions by the compliance date, 17 August 2022.
4	In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques given below: (a) Optimised storage location; (b) Adequate storage capacity; (c) Safe storage operation; (d) Separate area for storage and handling of packaged hazardous waste.	**FC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 4. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 4. For (a), the operator states that storage and design principles of the BATc have been incorporated into the design originally. However, no detail is provided describing how this has been done in practice. However, it is recognised that this BATc is mainly applicable to new installations.

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			For (b), information is provided by the operator in a brief statement that 150,000 tonnes per annum can be processed as the average turnaround is less than 24 hours. Brief details are provided on abnormal operations; however, this is not necessarily a key part of this BAT. Other parts of the BATc are not addressed: quantity of waste stored monitored against max capacity and discussion of maximum residence times. We consider that the operator is compliant with parts (c) and (d) of the BATc. We consider that the operator will be future compliant with BATc 4. Improvement condition 14 (IC14) has been included in the permit to achieve compliance (see Annex 3).
5	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. 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: • handling and transfer of waste are carried out by competent staff;	**FC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 5. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 5. The operator has highlighted that procedures and measures for handling and transfer of wastes are described in the original application and subsequent variations. The operator also points to various operating technique documents. However, none of these procedures were submitted with the application. The

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
	• 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). Handling and transfer procedures are risk-based considering the likelihood of accidents and incidents and their environmental impact.		Regulation 61 Notice response does not demonstrate why these documents meet the BATc. We consider that the operator will be future compliant with BATc 5. Improvement condition 14 (IC14) has been included in the permit to achieve compliance (see Annex 3).
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**	**Environment Agency assessment** We are satisfied that BATc 6 is not applicable to this Installation. Process waters are collected and reused within the treatment process.
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**	**Environment Agency assessment** We are satisfied that BATc 7 is not applicable to this Installation. Process waters are collected and reused within the treatment process.

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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.	**FC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 8. We have assessed the information provided and reviewed the site compliance report. We are not satisfied that the operator has demonstrated compliance with BATc 8. We consider that the operator will be future compliant with BATc 8. Improvement condition 14 (IC14) has been included in the permit to achieve compliance (see Annex 3). There are three main emission points – bioscrubber (emission from biogas upgrading plant – carbon filter also used after this point to reduce H2S), carbon filter (serving the post digesters/gas holders) and JIMCO plant (UV-C (UV radiation) and ozone technology for emissions from reception hall). The operator does not currently undertake monitoring of the relevant parameters under this BATc from the emission points. An improvement condition (IC12) was in place in the previous permit to monitor odour concentration from the bioscrubbers (waste gas emissions from the biogas upgrading plant). However, the biogas upgrading plant has not yet been

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			commissioned. Therefore, odour monitoring has not yet commenced. The IC12 has been superseded by improvement conditions IC13 and IC14. We have set monitoring requirements within the permit which the operator will be required to implement for hydrogen sulphide, ammonia and odour concentrations. We have also included improvement conditions in the permit to achieve compliance. The operator is required to complete the improvement conditions and demonstrate compliance with the Waste Treatment BREF and BAT Conclusions by the compliance date, 17 August 2022.
10	BAT is to periodically monitor odour emissions. Odour emissions can be monitored using: • 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. The monitoring frequency is determined in the odour management plan (see BAT 12).	**FC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 10. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 10. As stated in the assessment of BATc 8, the operator previously had improvement conditions for the monitoring of odour concentration from the biogas upgrading plant. No monitoring has currently taken place for odour as the biogas upgrading plant has not yet been commissioned. There are no records of monitoring odour concentration from other odour sources (emission points). We have set monitoring requirements within the permit which the operator will be required to implement for odour concentrations.

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			We consider that the operator will be future compliant with BATc 10. Improvement condition 14 (IC14) has been included in the permit to achieve compliance (see Annex 3).
11	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. Monitoring includes direct measurements, calculation or recording, e.g. using suitable meters or invoices. The monitoring is broken down at the most appropriate level (e.g. at process or plant/installation level) and considers any significant changes in the plant/installation.	**CC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 11. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 11.
12	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: • a protocol containing actions and timelines; • a protocol for conducting odour monitoring as set out in BAT 10;	**CC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 12. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 12. The operator has an approved odour management plan from the latest permit variation in 2019. The OMP will need to be developed to include information detailing how it will achieve BATc 10. The improvement condition IC14 will ensure the operator complies with BATc 12.

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	• 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.		
13	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: (a) Minimising residence times; (b) Using chemical treatment; (c) Optimising aerobic treatment	**CC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 13. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with (insert BATc point 13. Section (a) and (c) of the BATc are not relevant to anaerobic digestion. Regarding point (b), the operator has confirmed that ferric chloride is used to dose the digester in order to precipitate sulphur and reduce hydrogen sulphide.
14	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: (a) Minimising the number of potential diffuse emission sources; (b) Selection and use of high-integrity equipment; (c) Corrosion prevention;	**FC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 14. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 14. The operator is compliant with BATc parts (b), (c) and (g). The overall BATc requires the operator to implement an 'appropriate combination' of the

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	(d) Containment, collection and treatment of diffuse emissions; (e) Dampening; (f) Maintenance; (g) Cleaning of waste treatment and storage areas; (h) Leak detection and repair (LDAR) programme		techniques specified within the overall BATc. The operator's submission states that most of the techniques are in place at the site, however, key evidence to support the claims of compliance was not submitted. For example, a planned preventative maintenance procedure is referenced from previous applications but no reference to the document or supporting evidence provided with the application. It's possible that these procedures are in place but no evidence was available to assess. The reception hall is enclosed and fitted with fast acting roller shutter doors. Contaminated air from the hall is extracted and discharged to an abatement system – a UV-C light and ozone to cold oxidise the waste gases. The operator has stated that they acknowledge this is not BAT and are committing to a new system. The operator will be required by the improvement conditions to ensure the abatement system is compliant with BAT. We consider that the operator will be future compliant with BATc 14. Improvement condition 14 (IC14) has been included in the permit to achieve compliance (see Annex 3).
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: (a) Correct plant design; (b) Plant management	**CC**	**<u>Environment Agency assessment</u>** The operator has provided information to support compliance with BATc 15. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 15.

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16	In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given below: (a) Correct design of flaring devices; (b) Monitoring and recording as part of flare management	**CC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 16. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 16.
17	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: I. a protocol containing appropriate actions and timelines; II. a protocol for conducting noise and vibration monitoring; III. a protocol for response to identified noise and vibration events, e.g. complaints; IV. a noise and vibration reduction programme designed to identify the source(s), to measure /estimate noise and vibration exposure, to	**CC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 17. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc point 17. Previous correspondence with the Environment Agency indicates that noise assessments are not needed. The site is located within an industrial area with properties located approximately 900m from the site. There is no record of any substantiated noise complaints within our records.

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	characterise the contributions of the sources and to implement prevention and /or reduction measures.		
18	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: (a) Appropriate location of equipment and buildings; (b) Operational measures; (c) Low noise-equipment; (d) Noise and vibration equipment; (e) Noise attenuation	**FC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 18. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 18. The operator stated that noise was assessed as part of the original application and subject to noise surveys from former improvement conditions. However, the BATc requires operators to implement noise management measures. No discussion was provided outlining how the site incorporates noise measures in their operations. We consider that the operator will be future compliant with BATc 18. Improvement condition 14 (IC14) has been included in the permit to achieve compliance (see Annex 3).
19	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:	**FC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 19. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 19.

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	(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		The operator is compliant with a number of the sections of the BAT conclusions. All water collected on site (process and clean surface waters) is reused in the process. Currently, the process and clean waters are not separated (a and b). The operator indicates that improvements to site are planned to separate these streams to save more water. All process areas of the site have impermeable surfaces in place (b). In addition, all waste storage and process areas are within enclosed/sealed buildings/tanks (e). Stormwater storage lagoon on site will be more resilient when waste water and surface waters are segregated. Overall buffer storage is available via the surface water lagoon (i). However, key aspects of the BATc covering containment (and secondary containment) and preventative maintenance have not been demonstrated. The operator states that primary and secondary containment measures are compliant with the BATc. However as outlined in Annex 2 of this document, the secondary containment and bunding of the site is subject to change and requires reassessment against relevant standards, such as CIRIA C736. Additional improvement condition (IC16) is in place to demonstrate compliance with this part of the BATc. In addition, a preventative maintenance schedule is referenced but not provided or described. The operator does however provide a brief description of the visual inspections undertaken for the underground storage tank. No other supporting information was provided.

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			We therefore consider that the operator will be future compliant with BATc 19. Improvement condition 14 (IC14) has been included in the permit to achieve compliance (see Annex 3).
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 (f) Precipitation (g) Chemical oxidation (h) Chemical reduction (i) Evaporation (j) Ion exchange (k) Stripping	**NA**	**Environment Agency assessment** We are satisfied that BATc 20 is not applicable to this Installation. No waste water is discharged from the site. Therefore, no specific wastewater treatment techniques are needed.

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
	Biological treatment, e.g. (l) Activated sludge process (m) Membrane bioreactor (n) Nitrification / denitrification when the treatment includes a biological treatment ***Solids removal, e.g.*** (o) Coagulation and flocculation (p) Sedimentation (q) Filtration (e.g. sand filtration, microfiltration, ultrafiltration) (r) Flotation See also: Table 6.1: BAT-associated emission levels (BAT-AELs) for direct discharges to a receiving water body See also: Table 6.2: BAT-associated emission levels (BAT-AELs) for indirect discharges to a receiving water body		
21	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):	**FC**	**<u>Environment Agency assessment</u>**

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) Protection measures; (b) Management of incidental /accidental emissions; (c) Incident /accident registration and assessment system		The operator has provided information to support compliance with BATc 21. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 21. Security measures are in place; CCTV, boundary is fenced off, fire risk assessments are undertaken annually. In addition, the operator states that they are compliant with the BATc as an accident management plan (AMP) in place and indicates that this considers the risks/contingency measures for various emissions and has an incident logging system in place. However, the operator has not provided evidence of an AMP or described any accident management procedures in any detail. We consider that the operator will be future compliant with BATc 21. Improvement condition 14 has been included in the permit to achieve compliance (see Annex 3).
22	In order to use materials efficiently, BAT is to substitute materials with waste. 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).	**NA**	**Environment Agency assessment** We are satisfied that BATc 22 is not applicable to this Installation. All materials treated are wastes. Only ferric chloride is used which can't be replaced by a waste material.
23	In order to use energy efficiently, BAT is to use both of the techniques given below:	**FC**	**Environment Agency assessment**

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) Energy efficiency plan; (b) Energy balance record		The operator has provided information to support compliance with BATc 23. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 23. The operator stated that they don't have an energy efficiency plan but indicate they are taking steps to create and implement one. We have included improvement conditions in the permit to achieve compliance. The operator is required to complete the improvement conditions and demonstrate compliance with the Waste Treatment BREF and BAT Conclusions by the compliance date, 17 August 2022.
24	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). 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).	**NA**	**Environment Agency assessment** We are satisfied that BATc 24 is not applicable to this Installation. The waste arising from the treatment of incoming waste is not suitable for reuse on site. Waste generated is typically food packaging waste and black bin low grade materials. There are few tangible examples for opportunities to reuse packaging (e.g., waste containers).

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
33	In order to reduce odour emissions and to improve the overall environmental performance, BAT is to select the waste input. The technique consists of carrying out the pre-acceptance, acceptance and sorting of the waste input (see BAT 2) so as to ensure the suitability of the waste input for the waste treatment, e.g. in terms of nutrient balance, moisture or toxic compounds which may reduce the biological activity.	**FC**	**<u>Environment Agency assessment</u>** The operator has provided information to support compliance with BATc 33. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 33. As outlined in the assessment of BATc 2, the operator undertakes pre-acceptance, acceptance and characterising waste inputs. However, we have not received evidence of these procedures or further evidence to demonstrate full compliance with BATc 2. Compliance with BATc 2 will enable the operator to demonstrate adherence to BATc 33. We consider that the operator will be future compliant with BATc 33. Improvement condition 14 (IC14) has been included in the permit to achieve compliance (see Annex 3).
34	In order to reduce channelled emissions to air of dust, organic compounds and odorous compounds, including H_2S and NH_3, BAT is to use one or a combination of the techniques given below: (a) Adsorption; (b) Biofilter; (c) Fabric filter; (d) Thermal oxidation;	**FC** **BATc 34, Table 6.7 FC**	**<u>Environment Agency assessment</u>** The operator has provided information to support compliance with BATc 34. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 34. There are three main emission points – bioscrubber (emission from biogas upgrading plant – carbon filter also used after this point to reduce H2S),

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
	(e) Wet scrubbing See also: Table 6.7: BAT-associated emission levels (BAT-AELs) for channelled NH_3, odour, dust and TVOC emissions to air from the biological treatment of waste.		carbon filter (serving the post digesters/gas holders) and JIMCO plant (UV-C (UV radiation) and ozone technology for emissions from reception hall). Appropriate techniques are in place for emissions from the biogas upgrading plant and post digester/gas holder. However, as outlined in the assessment in BATc 8, the abatement technique used for the reception hall channelled emission is not compliant with BAT. The Operator submitted an improvement plan to demonstrate compliance with the BAT AELs but also committed to undertake an options appraisal to develop an alternate and or additional abatement system for the reception hall. A BAT recognised abatement system will need to be implemented before the operator achieves compliance. There is no evidence provided that compliance against the BAT AELs is achievable as no monitoring of the parameters outlined in Table 6.7 (BAT associated emission levels) has been completed. We have set a BAT-AEL for ammonia as specified in the Waste Treatment BREF and BAT Conclusions. Improvement condition (IC14) has been included in the permit to achieve compliance. The operator is required to complete the improvement condition

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
			and demonstrate compliance with BAT-AEL by the compliance date, 17 August 2022. 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). As part of the Environment Agency approach to reduce emissions in the biowaste treatment sector, we have included the following improvement conditions: <u>Improvement condition for the review of effectiveness of abatement plant</u> Improvement condition 17 (IC17) requires the operator to review abatement plant on site, to determine whether existing measures have been effective and adequate to prevent and /or minimise emissions released to air. Where further improvements are identified, the operator is required to implement these measures.
35	In order to reduce the generation of waste water and to reduce water usage, BAT is to use all of the techniques given below:	**FC**	**<u>Environment Agency assessment</u>**

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) Segregation of water streams; (b) Water recirculation; (c) Minimisation of the generation of leachate		The operator has provided information to support compliance with BATc 35. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc. Segregation of the water streams is not yet in place, all waste water and clean run-off is collected together. The operator has stated that this is a step they will undertake in future. The combined effluent is reused in the process, however, this has resulted in excess process water being used within the AD process which has at times caused reduced process efficiency. We consider that the operator will be future compliant with BATc 35. Improvement condition 14 (IC14) has been included in the permit to achieve compliance (see Annex 3).
36	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. Monitoring and/or control of key waste and process parameters, including: • waste input characteristics (e.g. C to N ratio, particle size);	**NA**	**Environment Agency assessment** We are satisfied that BATc 36 is not applicable to this Installation.

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
	• temperature and moisture content at different points in the windrow; • aeration of the windrow (e.g. via the windrow turning frequency, O_2 and/or CO_2 concentration in the windrow, temperature of air streams in the case of forced aeration); • windrow porosity, height and width.		
37	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: (a) Use of semi permeable membrane covers; (b) Adaptation of operations to the meteorological conditions	**NA**	**Environment Agency assessment** We are satisfied that BATc 37 is not applicable to this Installation.
38	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. This includes monitoring and/or control of key waste and process parameters: • pH and alkalinity of the digester feed; • digester operating temperature; • hydraulic and organic loading rates of the digester feed;	**FC**	**Environment Agency assessment** The operator has provided information to support compliance with BATc 38. We have assessed the information provided. We are not satisfied that the operator has demonstrated compliance with BATc 38. Reference is made to the previous variations and original permit. However, no reference is made to a specific document. A description of how the operator

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
	• concentration of volatile fatty acids (VFA) and ammonia within the digester and digestate; • biogas quantity, composition (e.g. H_2S) and pressure; • liquid and foam levels in the digester.		undertakes process monitoring and control. Parts of the BATc can be demonstrated as compliant, in particular, temperature. However many of the other parameters required under this BATc are not adequately addressed. • pH and alkalinity – no discussion of how this is undertaken, whether it is manual/automatic or continuous/periodic. There is a SCADA system, but it is not discussed how this happens on site. • Hydraulic loading rate and organic loading rates – not described. • Volatile fatty acid (VFA) and ammonia concentration – VFA 'profile' is monitored. It is unclear how this is done as a process monitoring technique. The operator describes monitoring of VFA as not done 'online'. This suggests it is not monitored via a SCADA system. A substitute of methane content at the digester outlet is used to indicate an increase in VFA. • Biogas quantity, composition, and pressure – The operator's response states that data is recorded 'online'. As above, this indicates that it may not be measured a SCADA. No discussion was provided on biogas composition. • Liquid and foam levels – foam levels assessed via visual inspections using the inspection port. No frequency or indicators are described. We consider that the operator will be future compliant with BATc 38. Improvement condition 14 (IC14) has been included in the permit to achieve compliance (see Annex 3).

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
39	In order to reduce emissions to air, BAT is to use both of the techniques given below: (a) Segregation of the waste gas streams; (b) Recirculation of waste gas	**NA**	**Environment Agency assessment** We are satisfied that BATc 39 is not applicable to this Installation.

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

Existing Medium Combustion Plant

We asked the operator to provide information on all combustion plant on site in the Regulation 61 Notice as follows:

- 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

The Operator provided the information in the table below:

Combined heat and power (CHP) engines

1. Rated thermal input (MW) of the medium combustion plant.	CHP engine 1 – 3.9 MWth CHP engine 2 – 2.9 MWth
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 engine
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.	CHP engine 1 – March 2013 CHP engine 2 – December 2014
5. Confirmation of capacity market agreement arising from 2014 or 2015 capacity auctions.	NA
6. Confirmation of Feed-in Tariff preliminary accreditation application received by the Gas and Electric Markets Authority prior to 1 December 2016.	NA

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

For existing medium combustion plant with a rated thermal input greater than 5 MW, the emission limit values set out in tables 2 and 3 of Part 1 of Annex II MCPD shall apply from 1 January 2025.

We have included the appropriate emission limit values for existing medium combustion plant as part of this permit review. See Table S3.1 in the permit.

Bioaerosols monitoring requirements

We asked the operator to confirm the following aspects regarding the site operations in the Regulation 61 Notice:

- Whether or not the operational processes of biodegradable waste are in open processes within 250 metres of human receptors.
- Whether or not there is a channelled or point source release within 250 metres that are open sources e.g., biofilters within 250 metres of human receptors; and
- The existing permit contains bioaerosols monitoring requirements, the microbiological markers, associated bioaerosols limits and the monitoring standards

The operator provided information regarding bioaerosols monitoring in their response to the Regulation 61 Notice. We carried out an assessment of the site location and the distance of site processes from sensitive receptors as part of this determination.

There are no external site operational processes and/or channelled /point sources within 250 metres of a sensitive receptor. Monitoring of bioaerosols is not required at the Installation.

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 multiple site condition reports (SCR) in previous permit applications; *Environmental Permit J03 Site Condition Report* (reference NT10635 dated March 2010) and *Warrens Emerald Biogas Limited EPR/BP3133TC Amended Site Condition Report* (reference WIE15717-100-R-2.2.1-SCR dated May 2019). These SCRs were submitted with the original application (31 March 2010) and variation to extend the site boundary (09 September 2019). The initial 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 operator submitted a summary report which referenced the site condition report and baseline report. We have reviewed the information 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 wastes are specified in Table S2.2 in 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 wastes in the current permit are not specified in the our revised biowaste treatment permit templates. We have retained these wastes in the current permit provided the operator undertakes a detailed characterisation of the wastes prior to acceptance for treatment at the site in accordance with BATc 2a.

Waste code	Description
02 03 02	Wastes from preserving agents
03 03 02	green liquor sludge (from recovery of cooking oil)
03 03 08	wastes from sorting of paper and cardboard destined for recycling – not allowed if non-biodegradable coating or preserving substance present
03 03 10	fibre rejects and sludges i.e., paper pulp (de-inked only), paper fibre
04 01 01	fleshings and lime split wastes
04 01 05	tanning liquor free of chromium
04 01 07	sludges not containing chromium
15 01 04	Metallic packaging
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 from source-segregated biodegradable waste
20 01 38	wood other than that mentioned in 20 01 37 – excluding wood with non-biodegradable coating or preserving substance present. No chemical additives or preservatives, and no persistent organics present. Untreated wood only.

We consider that the operator will be future compliant with BATc 2a. Improvement condition 14 (IC14) has been included in the permit to achieve compliance (see Annex 3).

We made this decision with respect to waste types in accordance with the 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
02 07 99	spent grains, hops and whisky filter sheets/ cloths, yeast and yeast like residues, sludge from production process.
19 05 99	composting liquors

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 and lagoon storage infrastructure design

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.

Assessment of existing secondary containment design and construction

The operator submitted a summary of the design and construction of containment measures at the installation. The summary was supported with the original design report for the site’s earth bund (*Emerald Bio Gas Tertiary Containment*, 2013 Reference 10T725) and a follow up addendum report. The addendum report, in response to IC11, (*Emerald Bio Gas. Addendum report*, 2017 Reference 16T752), was completed to review of the design, method of construction and integrity of the site secondary containment and storage. It also reviewed the changes made during the permit variation in 2016. The reports were carried out by a structural or civil engineer. The addendum report review compared the existing site secondary containment against CIRIA C736 or other. The report included a review of the:

- physical condition of the secondary containment
- the suitability for providing containment when subjected to the dynamic and static loads caused by catastrophic tank failure;
- future work required to ensure compliance with the standards set out in CIRIA C736 or other relevant industry standard; and
- Recommendations for improvement works.

The 2017 report also stated that the requirement for a preventative maintenance and inspection regime was out of scope of the report. While this aspect of IC11 was not completed by the report, the Environment Agency discharged the improvement condition in 2017.

We assessed the operator's assessment having regard to following guidance documents:

- CIRIA C736 Containment systems for the prevention of pollution
- ADBA Industry Guide: Secondary Containment at AD Plants (Version 1, 2016);
- ADBA PROjEN AD Containment Classification Tool

We reviewed the operator's report and its findings. We are satisfied that the site containment arrangements described in the 2016 variation (EPR/BP3133TC/V005) and the 2017 addendum report meet the standards set out in CIRIA C736. We also note that the addendum report of 2017 required the operator to implement a program of works to resolve issued of damage to the concrete bund and maintenance to sections of the earth clay bund. Our records do not categorically indicate these improvements were completed, however, it's clear that IC11 was confirmed by the Environment Agency as being completed.

A further variation was made to the installation in 2019 (EPR/BP3133TC/V006) which expanded the site boundary for the relocation of digester tanks and an extension to the earth bund. A pre-operational measure is in the permit which requires the operator to confirm that the containment measures described within the application would be implemented.

We reviewed the Operator's report and its findings. While it describes the condition of the containment measures and that they are in line with CIRIA C736, the changes to the site layout and bund extensions from the 2019 application are not covered. Therefore, we are not yet satisfied that the existing site containment meet the standards set out in CIRIA C736.

We have maintained the pre-operational condition from the previous permit and included the requirement for the operator to perform an assessment of the secondary containment once the pre-operational measure is completed to ensure that the changes to the containment measures were undertaken in line with CIRIA C736 and our guidance. This will be achieved via improvement condition 16 (IC16). See Improvement conditions 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 C736 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 (IC15) in the permit to address this aspect of the permit review (see Annex 3).

Digestate storage capacity

We asked the Operator via the Regulation 61 Notice to confirm whether the operational digestate storage capacity provides a minimum of two months storage.

The Operator provided the capacity of the digestate storage tanks and satellite storage locations for digestate. The Operator confirmed that the tanks and additional off site storage locations provide more than two months storage capacity. We are satisfied with the installation and additional locations have appropriate storage capacity.

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 are provided at the relevant section of the decision document (Annex 1 or Annex 2).

It should be noted that several of the improvement conditions introduced within previous variations have been subsequently superseded by revised conditions, improvement conditions and monitoring requirement as part of this permit review. IC12 written into the previous variation notice (EPR/BP3133TC/V007) which requires the operator to undertake odour monitoring of the bioscrubber (emissions from the bigas upgrading plant) depending on various commissioned scenarios is superseded by IC14 and IC17. As part of the revised monitoring requirements, emissions from the reception hall and post digester and gas holder vent stack will need to meet emission limits for Ammonia. Additional monitoring will be required for hydrogen sulphide and odour concentration.

However, the biogas upgrade waste gases (via the bioscrubber) will not be required to meet these BAT AELs. Emissions from this source could be a 'channelled emission' as described by the BREF. However, the Environment Agency does not have enough data that emissions from this source could have a demonstrable negative environmental impact. Therefore, we have decided not to implement the BAT AELs on operators within the biowaste treatment sector. However, in order to gather data from operators on emissions from this source, this permit review implements a requirement for operators to perform VOC monitoring. This will also capture any potential methane slip from the biogas upgrading process.

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	The operator shall undertake a noise survey in accordance with the procedures given in BS4142:1997 (rating industrial noise affecting mixed residential and industrial areas) and BS7445:2003 (description and measurement of environmental noise) or other methodology as agreed with the Environment Agency in order to verify the assessment provided in their application. The assessment shall include, but not limited to: • A review of the noise sources from the facility. Where any noise source(s) are identified as exhibiting tonal contributions, they shall be quantified by means of frequency analysis. • A review of noise levels from static plant. The noise survey shall cover normal day operations, weekend operations and night-time operations.	Complete
IC2	The operator shall undertake air emission monitoring from emission points A2, A3, A4 and A5 for total volatile organic compounds and where possible the individual species including	Complete

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
	methane and non-methane volatile organic compounds for a suitable trial period as agreed with the Agency. The operator shall ensure that the organisation undertaking the monitoring is MCERTS accredited. The monitoring shall provide data on the following: 1. The level and variability of emissions. 2. Propose limits based on the data. 3. Propose monitoring arrangements. 4. Undertake an appropriate environmental impact assessment as a result of the measured emissions. The operator shall submit a written report to the Agency on its findings and the air emission monitoring report.	
IC3	Following commissioning of the plant, the operator shall supply a commissioning report detailing performance against the plan submitted in accordance with pre-operational condition P01. The report shall include, but not limited to: • Details of any modifications made to the process during commissioning that changes the details within the application EA/EPR/BP3133TC/A001 and Schedule 5 notices. • Any abnormal waste generated as a result of the commissioning. • Infrastructure and equipment leak / integrity testing. • Odour control and abatement systems performance.	Complete
IC4	The operator shall carry out a waste minimisation audit of the anaerobic digestion facility. A written report shall be submitted to the Environment Agency detailing the findings of the audit and any improvements identified with a plan including timescales for their implementation.	Complete
IC5	The operator shall carry out an audit of water use of the anaerobic digestion facility. A written report shall be submitted to the Environment Agency detailing the findings of the audit and any improvements identified with a plan including timescales for their implementation.	Complete
IC6	The operator shall carry out an energy efficiency audit of the anaerobic digestion facility. The audit shall also include an evaluation of potential off-site utilisation by third parties of any excess / waste heat from the process. A written report shall be submitted to the Environment Agency detailing the findings of the audit and any improvements identified with a plan including timescales for their implementation.	Complete

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC7	The operator shall carry out a monitoring study to verify the assumptions made in the application in relation to the releases of pollutants to air. The study shall include the monitoring of point source releases to air from the biogas upgrading plant emission point A4 during normal operation, having regard to the Environment Agency technical guidance M2 and to MCERTS standards. As a minimum, two separate monitoring campaigns in a year shall be completed (one monitoring survey six months following commencement of operations at the biogas upgrading plant). The pollutants to be monitored shall include: • Total volatile organic compounds. • Hydrogen sulphide.	Superseded by IC14 and IC17
IC8	Following the completion of IC7, the operator shall undertake an environmental impact assessment of all point source releases to air, using the information obtained through the emissions monitoring study. The environmental impact assessment report and all associated monitoring reports and assessments shall be submitted in writing to the Environment Agency for review. The environmental impact assessment shall, as a minimum, include: • Reports showing details of the monitoring undertaken and the results obtained. • Results of the assessment of long and short term impacts from the emissions in accordance with the Environment Agency Guidance on Air Quality Assessment. • A completed H1 assessment software tool. If the H1 assessment shows potential long or short term impacts from the emissions, the operator shall propose an action plan to reduce the impacts of the substances identified.	Superseded by IC14 and IC17
IC9	The operator shall submit a revised odour management plan which includes the site changes authorised by this variation to the Environment Agency for written approval. The plan shall take into account the appropriate measures for odour control specified in the Environment Agency Draft Technical Guidance for Anaerobic Digestion (Reference LIT 8737, November 2013). The plan shall also include all the required information as specified in the Environment Agency Horizontal Guidance H4 - Odour Management. The operator shall comply with the odour management plan as approved by the Environment Agency.	Complete

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC10	The operator shall submit a revised accident management plan to the Environment Agency for written approval. The accident management plan shall include the site changes authorised by this variation (biogas upgrading plant, storage of propane, new digester and odour abatement plant). The plan shall take into account the appropriate measures specified in the Environment Agency Draft Technical Guidance for Anaerobic Digestion (Reference LIT 8737, November 2013). The plan shall also include all the required information as specified in the Environment Agency Guidance on Risk Assessment. The operator shall comply with the accident management plan as approved by the Environment Agency.	Complete
IC11	The operator shall ensure that a review of the design, method of construction and integrity of the site secondary containment is carried out by a qualified civil or structural engineer. The review shall compare the constructed secondary containment against the standards set out in the Environment Agency Draft Technical Guidance for Anaerobic Digestion (Reference LIT 8737, November 2013) and CIRIA C736 - Containment Systems for the Prevention of Pollution - secondary, tertiary and other measures for industrial and commercial premises or other relevant industry standard. The review shall include: • Physical condition of the secondary containment. • The suitability for providing containment when subjected to the dynamic and static loads caused by catastrophic tank failure. • Any work required to ensure compliance with the standards set out in CIRIA C736 or other relevant industry standard. • A preventative maintenance and inspection regime. A written report of the review shall be submitted to the Environment Agency detailing the review's findings and recommendations. Remedial action shall be taken to ensure that the secondary containment meets the standards set out in the technical guidance documents and implement the maintenance and inspection regime.	Complete
IC12	The operator shall submit a report to the Environment Agency on the commissioning of the bioscrubber as described in variation application V006. The report shall confirm the efficiency of the bioscrubber and carbon filters in controlling odour levels. The report shall include a proposal, for approval by the Environment Agency, of whether scenario 1 or 2 (from section 3.3.1 of application V006) will be used. The report shall also include a proposal for approval by the Environment	Superseded by IC14 and IC17

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
	Agency of monitoring and emission limits that will be required from emission points A4, A7 and A8.	
Improvement condition for progress report to achieve BAT-AELs		
IC13	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: 1. Current performance against the BAT-AELs. 2. Methodology for reaching the BAT-AELs. 3. Associated targets /timelines for reaching compliance by 17 August 2022. 4. Any alterations to the initial plan (in progress reports). The report shall address the BAT Conclusions for Waste Treatment with respect to the following: • **BAT 34 Table 6.7** (compliance with BAT-AELs for channelled NH_3, odour, dust and TVOC emissions to air from the biological treatment of waste). Refer to BAT Conclusions for a full description of the BAT requirement.	17/07/2022
Improvement condition for progress report to achieve Narrative BAT		
IC14	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: 1. Methodology for achieving BAT. 2. Associated targets/timelines for reaching compliance by 17 August 2022. 3. Any alterations to the initial plan (in progress reports). The report shall address the BAT Conclusions for Waste Treatment with respect to BAT 1, 2, 3, 4, 5, 8, 10, 14, 18, 19, 21, 23, 33, 34, 35 and 38.	17/07/2022
Improvement condition for primary containment		
IC15	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 an inspection and	24/02/2023 or other date as agreed in

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
	program of works undertaken by a qualified engineer and shall assess the extent design specification and condition of primary containment systems where polluting liquids and solids are being stored, treated, and/or handled. The plan shall include: • An assessment of the physical condition of all primary containment systems (storage and treatment vessels) using a Written Scheme of Examination and their suitability for providing primary containment when subjected to the dynamic and static loads caused by catastrophic tank failure. • A program of works with timescales for the implementation of individual improvement measures necessary to demonstrate that the primary containment is fit for purpose or alternative appropriate measures to ensure all polluting materials will be contained on site. • A preventative maintenance and inspection regime. The plan shall be implemented in accordance with the Environment Agency's written approval.	writing with the Environment Agency
Improvement condition for secondary containment design		
IC16	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 an inspection and program of works undertaken by a competent structural engineer, in accordance with the risk assessment methodology detailed within CIRIA C736 (2014) guidance, of the condition and extent of secondary and tertiary containment systems where all polluting liquids and solids are being stored, treated, and/or handled. The inspection shall consider, but not be limited to, the storage vessels, bunds, loading and unloading areas, transfer pipework/pumps, temporary storage areas, and liners underlying the site. The plan shall include: • An assessment of the physical condition of all secondary and/or tertiary containment systems, using a Written Scheme of Examination and their suitability for providing containment when subjected to the dynamic and static loads caused by catastrophic tank failure.	24/02/2023 or other date as agreed in writing with the Environment Agency

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
	• A program of works with timescales for the implementation of individual improvement measures necessary for the secondary and/or tertiary containment systems to comply with CIRIA C736 (2014) guidance, or equivalent. • A preventative maintenance and inspection regime. The plan shall be implemented in accordance with the Environment Agency's written approval.	
Improvement condition for review of effectiveness of abatement plant		
IC17	The operator shall carry out a review of the abatement plant on site (and following the installation of odour abatement at the reception hall (IC14)), 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. The operator shall submit a written report to the Environment Agency following this review for assessment and approval. The report shall include but not limited to the following aspects: • 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). • Details of air quality quantitative impact assessment including modelling and a proposal for site-specific "action levels" (not limited to odour concentration, hydrogen sulphide 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. The operator shall implement the improvements in line with the timescales as approved by the Environment Agency.	24/02/2023 or other date as agreed in writing with the Environment Agency

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
Improvement condition for assessment of methane slip		
IC18	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.	24/02/2023 or other date as agreed in writing with the Environment Agency