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/SP3133HW
The Operator is: Renewi UK Services Limited
The Installation is: Hespin Wood Resource Park
This Variation Notice number is: EPR/SP3133HW/V006

What this document is about

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

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 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 July 2019 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 18 January 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 we would need to complete that determination.

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 Conclusion 1, 2, 3, 6, 7, 12, 14, 19, 20, 23, 34, 35 and 39. In relation to these BAT Conclusions, there are cases where the operator has acknowledged that they are not compliant yet and cases where 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 3, 4, 5, 6 and 7 in the Consolidated Variation Notice to ensure that the requirements of the BAT Conclusion 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 the Waste Treatment Industry Sector, 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,	**FC**	**<u>Environment Agency assessment</u>** The operator confirmed that the installation has an Integrated Management System that is fully accredited to ISO 14001 standards. The EMS which is externally audited has been evidenced by a Certificate of Registration supplied by the operator as part of the response to our Regulation 61 Notice of 19/07/2019. The operator further reports that they will incorporate changes as a result of the BAT review into the management system via a review of their EMS Aspects and Impacts Register. In line with the proposed review, we have included **Improvement Condition 4 (IC4)** in the permit to ensure that all of the necessary elements of BAT are included in the EMS within the BAT conclusions review timescales.

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) effective process control, (g) maintenance programmes, (h) emergency preparedness and response, (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;		**We are satisfied that the Installation will be future compliant with BATc 1.**

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
	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; 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 reports that waste acceptance procedures were referenced in the original application of November 2010 and have been further developed in light of operational experience. The operator further states that waste checking and tracking procedures are in place. No other information was provided. Additionally, a robust waste tracking system should begin at the pre-acceptance stage even if the waste is a regular arising. The

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	(f) Ensure waste compatibility prior to mixing or blending of waste; (g) Sort incoming solid waste		operator has not provided information on the waste pre-acceptance procedures. Without information on the pre-acceptance procedures, which could have provided further support and a better understanding of the operator's waste acceptance procedures, we consider that the operator has not demonstrated full compliance with this BAT point. We have included **IC4** to ensure the Installation demonstrates full compliance with each of the relevant elements/techniques of BAT point 2. **We are satisfied that the Installation will be future compliant with BATc 2.**
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:	**FC**	**<u>Environment Agency assessment</u>** The operator confirmed that releases/emissions to water and air are currently documented in the Aspects and Impacts Register and not as a standalone inventory. The operator acknowledged that partial improvement is needed for full compliance with BAT 3 detailing that a standalone inventory will be incorporated into the site's Aspects and Impacts

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	(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); (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;		Register by September 2020 as part of the established EMS review process. The inventory will need to include all of the applicable features detailed in BAT 3 items 3(i) to 3(iii). Consequently, we have included IC4 to ensure the Installation demonstrates full compliance with BAT point 3. **We are satisfied that the Installation will be future compliant with BATc 3.**

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	(d) presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, nitrogen, water vapour, dust).		
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.	**CC**	**Environment Agency assessment** The Operator reports that storage and handling of waste is described in sections 1.6 and 2.3 of the original permit application and supporting information. **We have assessed this information and we are satisfied that the operator is compliant with BATc 4.**
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:	**CC**	**Environment Agency assessment** The Operator reports that storage and handling of waste is described in sections 1.6 and 2.3 of the original permit application and supporting information. All waste handling procedures are risk assessed and conducted by competent staff. All transfers are documented. **We have assessed the provided information and the information in the original application document as**

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 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). Handling and transfer procedures are risk-based considering the likelihood of accidents and incidents and their environmental impact.		**referenced by the operator and we are satisfied that the operator is compliant with BATc 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).	**FC**	**<u>Environment Agency Assessment</u>** The operator reports that current permit requirements are consistent with BAT, further stating that all water discharges are transferred by tanker for offsite treatment. In our assessment, we consider that this BAT point applies to SW1 as reflected in table S3.2 of the Notice. SW1, which is a point source emission to a tributary of Peter Syke, was previously listed in the permit as an uncontaminated point source emission from roofs and non-operational areas. In our assessment, we

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			have considered that for this emission, no form of characterisation evidenced by a formal analysis has been carried out on this stream to demonstrate that the discharge from SW1 is uncontaminated. We considered that surface water that falls on the on-site concrete apron (an operational area) forms part of this discharge so there is a possibility of contamination. Consequently, we have adopted a precautionary approach and require the Operator to consider SW1 in the inventory of waste water streams (to be addressed in response to BAT 3). The Operator is also required to address the elements of BAT 6 for this point source and demonstrate it is compliant with the relevant BAT-AELs for direct discharges to water (Table 6.1 of the BAT Conclusions). **We are satisfied that the Installation will be future compliant with BATc 6. Improvement Condition 4 has been included in the permit to achieve compliance.**
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.	**FC**	**Environment Agency Assessment** The operator confirmed that there are no wastewater emissions to water from the facility, stating that all water discharges are transferred by tanker for offsite treatment.

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			We do not agree with this assessment. We consider that this BAT point applies to SW1 as detailed above (BAT 6). Consequently, the permit has been updated to include monitoring requirements for various parameters and the associated BAT-AELs for direct discharges (Table 6.1 of the BAT conclusions). The included parameters are: • Total nitrogen • Total phosphorous • Total organic carbon • Chemical oxygen demand • Total suspended solids • Arsenic; • Cadmium; • Chromium; • Copper; • Nickel; • Lead; • Zinc; • Mercury.

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			The monitoring will only apply when the substance concerned is identified as relevant in the waste water inventory in demonstration of compliance with BAT 3. **We are satisfied that the Installation will be future compliant with BATc 7. IC4 has been included in the permit to achieve compliance.**
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**	**Environment Agency Assessment** The Operator reports that current permit requirements are consistent with this BAT requirement. Quarterly and annual reports are provided to the Environment Agency as required by the permit. We agree with this assessment. The current permit conditions require the operator to monitor channelled emissions to air at specified frequencies which we consider appropriate for the facility.

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
			The parameters that are currently monitored include Hydrogen sulphide, ammonia, odour concentration and particulate matter. Additionally, In accordance with the Waste Treatment BREF and BAT Conclusions 2018, we have added monitoring for Total volatile organic compounds (TVOC) with an associated emission limit value as reflected in the permit under table S3.1. In line with BAT requirements, We have updated the following monitoring frequencies from quarterly to 6 – monthly as reflected in table S3.1 of the Notice: Hydrogen sulphide – Once every 6 months Ammonia – Once every 6 months Odour concentration – Once every 6 months. **We are satisfied that the Operator is currently compliant with BATc 8.**
10	BAT is to periodically monitor odour emissions. Odour emissions can be monitored using:	**CC**	**<u>Environment Agency assessment</u>**

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	• 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).		The operator provided information to support compliance with BATc 10. Odour emissions from the facility are currently monitored according to EN standard 13725. As part of this review and in line with BAT requirements, the monitoring frequency has been updated from quarterly to 6 – monthly. **We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 10.**
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**	**<u>Environment Agency Assessment</u>** The Operator is compliant with this BAT point. Monitoring of resources and energy is reported via pollution inventory (PI) returns and annual report. There is also an annual review of the site's EMS by 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
			We are satisfied the Operator is currently compliant 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; • 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**	**Environment Agency Assessment** An OMP is in place for the facility, however, this is currently under review by the Environment Agency. We consider that changes will be made to this OMP in light of the recent biofilter performances and suggested improvements. We consider that certain elements of the OMP will change as improvements are made to the odour abatement on site. Consequently, we have set improvement condition IC4 to ensure that the operator demonstrates full compliance with BAT conclusion 12, within 4 years of publication of BAT conclusions). **We are satisfied that the Installation will be future compliant with BATc 12.**
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;	**N/A**	**Environment Agency Assessment** BAT 13(a) is only applicable to open systems. We consider that this not applicable to this site.

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	(b) Using chemical treatment; (c) Optimising aerobic treatment		The techniques listed under 13(b) and 13(c), do not apply to the processes onsite. **We are satisfied that BATc 13 is not applicable to the installation.**
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; (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	**FC**	**Environment Agency Assessment** The Operator has confirmed that the following techniques 14 (d) and 14 (g) are applied for the reduction of diffuse emissions to air: 14 (d) – containment, collection and treatment of diffuse emissions through the use of an enclosed building with appropriate abatement comprising a biofilter and a bag filter. 14 (g) – cleaning of waste treatment and storage areas including equipment. In support of the above, the operator has referred to sections 1.6, 1.7 and 2.3 of the original supporting information. We have assessed the information contained in those sections and

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
			consider that there is insufficient information to support full compliance with BAT 14. Consequently, Improvement Condition 4 has been included in the permit to achieve compliance. **We are satisfied that the Installation will be future compliant with BATc 14.**
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	**N/A**	No flaring takes place at the Installation. **We are satisfied that BATc 15 is not applicable to the installation.**
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;	**N/A**	There are no flares on site.

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	(b) Monitoring and recording as part of flare management		**We are satisfied that BATc 16 is not applicable to the installation.**
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 characterise the contributions of the sources and to implement prevention and /or reduction measures.	**CC**	**<u>Environment Agency Assessment</u>** The operator confirmed that there has been no noise pollution identified outside the site since its construction, therefore, there is no formal Noise Management Plan in place. Based on our compliance records, we agree with the operator's assessment. Should the activities start to give rise to pollution outside the site due to noise and vibration, there is a condition (condition 3.4.2) in the permit which requires the operator to submit an NMP to the Environment Agency when notified; the operator has acknowledged this. **We are satisfied the Operator is currently compliant with BATc 17.**

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
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	**CC**	**Environment Agency Assessment** The operator reports that there are conditions in the current permit that require a noise management plan in the event of noise pollution outside the site (condition 3.4.2). There has been no noise pollution identified outside the site since it's construction, therefore, no formal or documented Noise Management Plan has been required. Based on our compliance records, we agree with the operator's assessment. We consider that all waste activities are carried out in a fully enclosed building and that there are maintenance measures in place for plants to minimise the noise produced by operations onsite. Should the activities on-site start to give rise to pollution beyond the site boundary due to noise and vibration, there is a condition (condition 3.4.2) in the permit which requires the operator to submit an NMP to the Environment Agency when notified.

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 are satisfied the Operator is currently compliant with BATc 18.
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: (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	**FC**	**<u>Environment Agency Assessment</u>** The Operator has confirmed that improvements will be needed in order to comply with this BAT conclusion. The operator has committed to carrying out a resource efficiency review by the end of February 2021 to ensure compliance with this BAT Conclusion. We therefore consider that the operator will be compliant in the future and have added an improvement condition (IC4) to ensure that the operator demonstrates full compliance with this BATc point (within 4 years of publication of BAT conclusions). **We are satisfied that the Installation will be future compliant with BATc 19.**

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
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 ***Biological treatment, e.g.***	**FC** **BATc 20 - BAT-associated**	**<u>Environment Agency Assessment</u>** The operator confirmed that reports of waste water quality are provided to the Environment Agency via quarterly and annual returns and that the details of the quantities sent for treatment externally are provided via the pollution inventory. In our assessment, we consider that the emission to water associated with the MBT activity is SW1, for surface water from hardstanding and roofed areas which does not undergo any treatment prior to discharge. This is reflected in table S3.2 of the Notice. SW1, which is a point source emission to a tributary of Peter Syke, was listed in the previous permit as an uncontaminated point source emission from roofs and non-operational areas. We have considered that for this emission, no form of characterisation evidenced by a formal analysis has been carried out on this stream to demonstrate that the discharge from SW1 is uncontaminated.

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
	(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	**emission levels (BAT-AELs) for direct discharges to a receiving water body.**	Surface water that falls on the on-site concrete apron (an operational area) forms part of this discharge so there is a possibility of contamination. Therefore, we have adopted a precautionary approach and require the Operator to consider SW1 in the inventory of waste water streams (to be addressed in response to BAT 3). Consequently, we consider that the operator will be future compliant with the requirements of BATc 20 and the associated BAT-AELs as outlined in Table 6.1 of the Waste Treatment BAT Conclusions, 2018. **Improvement condition 3 has been incorporated into the permit to ensure that the operator demonstrates full compliance with BATc 20 and the BAT-Associated Emission Levels (BAT-AELs) for direct 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): (a) Protection measures; (b) Management of incidental /accidental emissions;	**CC**	**<u>Environment Agency assessment</u>** The operator provided information to support compliance with BATc 21. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 21.

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
	(c) Incident /accident registration and assessment system		**We are satisfied the Operator is currently compliant with BATc 21.**
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).	**N/A**	**Environment Agency assessment** The operator confirmed that current Resource Efficiency Permit Conditions comply with BAT and that there are very limited opportunities within the process to replace materials with waste. We agree with this assessment. **We are satisfied that BATc 22 is not applicable to this Installation.**
23	In order to use energy efficiently, BAT is to use both of the techniques given below: (a) Energy efficiency plan; (b) Energy balance record	**FC**	**Environment Agency assessment** The operator confirmed that they are currently compliant with BATc 23(a) – Energy efficiency plan. The operator is part of and compliant with the requirements of the Energy Savings Opportunity Scheme (ESOS). The operator also confirmed that ESOS phase 1 & 2 reports have been completed.

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
			Although compliant with BATc 23 (a), the operator has confirmed that an energy balance record as required by BATc 23 (b) is not yet in place but will be. A documented plan will be prepared and targets and objectives set and reviewed under the EMS BATc 23(b). Consequently, we have included IC4 in the permit to ensure that the operator demonstrates full compliance with this BATc point (within 4 years of publication of BAT conclusions). **We are satisfied that the Installation will be future compliant with BATc 23.**
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,	**N/A**	**<u>Environment Agency assessment</u>** The Operator stated that they do not consider this BAT point to be applicable to the MBT activity. Considering the nature of the wastes received and treated at the Installation, we agree with this 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
	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).		**We are satisfied that BATc 24 is not applicable to this Installation.**
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.	**CC**	**Environment Agency assessment** The Operator confirmed that only municipal solid waste (MSW) is accepted and treated at the Installation. The operator has rejection procedures in place for non-compliant, high odorous waste received at the facility. Additionally, as part of this permit review, we have reviewed and updated the permitted waste types for the MBT activity to ensure the waste types permitted are in accordance with the current permit template and suitable for the on-site treatment processes. **We are satisfied that the Installation is currently compliant with BATc 33.**

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
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; (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.	**CC** **FC (BATc 34, Table 6.7)**	**Environment Agency assessment** The operator provided information to support compliance with BATc 34. Biofilters and fabric filters are installed at the facility. We have assessed the information provided and we are satisfied that the operator has the appropriate combination of techniques to reduce channelled emissions to air of dust, organic compounds and odorous compounds, including H_2S and NH_3. We are satisfied that the operator has demonstrated compliance with BATc 34. Improvement condition (IC3) has been included in the permit to achieve compliance with the associated BAT - AELs. The operator is required to complete the improvement condition and demonstrate compliance with these BAT-AELs by the compliance date, 17 August 2022.

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
			In addition to the BAT-AELs, we have inserted the requirement to monitor odour concentration, hydrogen sulphide and ammonia on a 6-monthly frequency in Table S3.4 (process monitoring). As part of the Environment Agency approach to reduce emissions in the biowaste treatment sector, we have also included the following improvement conditions: <u>Improvement condition for the review of effectiveness of abatement plant (IC7)</u> Improvement condition 7 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 to air. Where further improvements are identified, the operator is required to implement these measures. <u>Improvement condition for the review of abatement plant design (IC8)</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
			Improvement condition 8 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.
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: (a) Segregation of water streams; (b) Water recirculation; (c) Minimisation of the generation of leachate	**FC**	**Environment Agency assessment** The operator confirmed that some measures to reduce waste water and optimise water efficiency are in place, stating that further assessments and trials would also be required to assess the potential for further improvement. The operator reports that the potential improvements would need to be considered within the context of the upcoming resource efficiency review described in BAT 19. The following measures are currently under consideration: • Recirculation/ reuse of biofilter leachate to reduce potential loss in microbial activity • Improved control of biofilter irrigation frequency.

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 agree with this submission and consider that the operator will be compliant in the future and have added improvement condition 4, to ensure that the operator demonstrates full compliance with this BATc point (within 4 years of publication of BAT conclusions). **We are satisfied that the Installation will be future compliant with BATc 35.**
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); • 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.	**CC**	**<u>Environment Agency assessment</u>** The operator confirmed that the waste input characteristics are relatively static due to the single stream nature of the municipal solid waste. As part of the process, any non-conforming waste is usually rejected upon receipt at the installation. The key process parameters are monitored and recorded via a SCADA (system control and data acquisition) system. Details of the windrows within the biodrying hall are contained within the Operator's Fire Prevention Plan, Issue 1, dated December 2019. **We are satisfied that the Installation is currently compliant with BATc 36.**

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
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	**N/A**	**Environment Agency assessment** This is a fully enclosed process so we are satisfied that this BAT point is not applicable to this installation. **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;	**N/A**	**Environment Agency assessment** This is for anaerobic treatment of waste and therefore, not applicable to this facility. **We are satisfied that BATc 38 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
	• 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.		
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	**FC**	**<u>Environment Agency assessment</u>** The operator reports that this BATc is generally applicable to new plant. We do not agree with this assessment. This BATc is specifically for MBT Installations. The Operator stated that they did not consider BATc 39 to apply to the technology employed at the site, however, as the Installation undertakes MBT, we would expect this BATc to be addressed in greater detail. The Operator did not provide sufficient explanation to justify that this BATc does not apply to the Installation, therefore, we have included Improvement Condition 4 to ensure that BATc 39 is fully addressed by 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
			We are satisfied that the installation will be future compliant with BATc 39.

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 confirmed there are no combustion plant or generator associated with the permitted activity.

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 within 250 metres of a sensitive receptor, however, the site operates a biofilter which is located within 250 metres of a sensitive receptor.

We have updated the bioaerosols monitoring requirements in the permit in accordance with our guidance TGN M9 Environmental monitoring of bioaerosols at regulated facilities (version 2, July 2018). We have removed the requirement to monitor gram negative bacteria. The Operator is required to comply with the new monitoring requirements from the date of permit issue.

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 during the original application received on 05/11/2010. The site condition report also refers to a Phase 1 Interpretative Geo Environmental Assessment Desk Study Report dated January 2008 and received on 01/12/2008. 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 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.

Excluded wastes

We have excluded the following wastes as they are not suitable for treatment by Mechanical and Biological Treatment as specified in our revised biowaste treatment permit templates. This decision was communicated to the operator and the operator confirmed in writing (correspondence dated 09 October 2020) that these waste could be removed from the permit:

- 20 01 25 – Edible oil and fat
- 20 01 28 – Paint, adhesives and resins other than those mentioned in 20 01 27
- 20 01 30 – Detergents other than those mentioned in 20 01 29
- 20 01 32 – Medicines other than those mentioned in 20 01 31
- 20 01 34 – Batteries and accumulators other than those mentioned in 20 01 33

- 20 01 36 - Discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35.
- 20 03 07 – Bulky waste

Therefore, these waste codes have been removed from the permit. 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).

Secondary containment and storage infrastructure

We assessed secondary containment as part of the permit review. In the Regulation 61 Notice, we asked the Operator to:

a) describe any secondary containment and whether it currently meets the relevant standard in the "Containment systems for the prevention of pollution (C736)" report, where the activity has above-ground storage or primary containment.

b) describe how the construction of any storage lagoons meet CIRIA 736 report.

c) explain why the current design and construction of the secondary containment is fit for purpose, and enable a baseline standard so as to establish a quantified comparison where it is concluded that secondary containment is not required or does not need to meet the standards in the C736 report.

d) confirm if any storage lagoons on site are covered to prevent emission loss.

e) confirm that the operational storage capacity on site provides a minimum of two months storage.

The Operator confirmed that:

a) Details of the site containment arrangements were provided at the planning and permitting stages of the installation development, listed in appendix 2. The operator further advised that the containment and application of the Standards are consistent with the level of risk posed by the installation.

b) There is an on-site storage lagoon at the installation for storage of clean, uncontaminated surface water and not for the storage of contaminated waste waters, leachate/digestate.

c) The operator concluded by stating that there are no deviations from the applicable standards at the installation given the relatively low risk of the activities undertaken and the existing containment measures implemented.

We consider that the operator has not provided sufficient information in response to our Regulation 61 Notice section on secondary containment systems. The Operator did not provide a risk assessment for the existing secondary containment as part of the Regulation 61 response and we have not in our compliance records seen any evidence to support the statement that the existing secondary containment meets the CIRIA 736 standards. Consequently, we have included an improvement condition (IC6) in the permit, as we consider it necessary for the secondary and tertiary containment systems to adhere to the standards detailed/referenced within CIRIA

C736 (2014), or equivalent. See Improvement condition 6 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 (IC5) 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 are 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		
IC3	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 20 Table 6.1** (compliance with BAT-AELs for direct discharges to a receiving water body) • **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.	Progress reports at six monthly intervals from date of permit issue: 12/05/2021 12/11/2021 12/05/2022
Improvement condition for progress report to achieve Narrative BAT		
IC4	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	Progress reports at six monthly intervals from

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	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, 6, 7, 12, 14, 19, 23, 35 and 39.	date of permit issue: 12/05/2021 12/11/2021 12/05/2022
Improvement condition for primary containment		
IC5	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. The review shall include: • 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 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. The plan shall be implemented in accordance with the Environment Agency's written approval.	12/11/2021 or other date as agreed in writing with the Environment Agency
Improvement condition for secondary containment design		
IC6	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	12/11/2021 or other date as agreed in writing with the

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	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. 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. 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. The plan shall be implemented in accordance with the Environment Agency's written approval.	Environment Agency
Improvement condition for review of effectiveness of abatement plant		
IC7	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. 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	12/11/2021 or other date as agreed in writing with the Environment Agency

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	• 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.	
Improvement condition for review of abatement plant design		
IC8	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. The report shall include but not limited to: 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. Ventilation and abatement systems should be designed by suitably qualified named engineers	12/11/2021 or other date as agreed in writing with the Environment Agency

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	who can supervise and sign-off on construction quality assurance.	