

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/AP3138CM

The Operator is: Urbaser Environmental Limited

The Installation is: Courtauld Road Waste Treatment Facility

This Variation Notice number is: EPR/AP3138CM/V004

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
7. Annex 4 – Pre-operational Conditions

1 Our decision

We have decided to issue the Variation Notice to the Operator. This will allow the Operator to continue to operate the Installation, subject to the conditions in the Consolidated Variation Notice that updates the whole permit.

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

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

2 How we reached our decision

2.1 Requesting information to demonstrate compliance with BAT Conclusion techniques

We issued a Notice under Regulation 61(1) of the Environmental Permitting (England and Wales) Regulations 2016 (a Regulation 61 Notice) on 19/07/19 requiring the Operator to provide information to demonstrate where the operation of their installation currently meets, or how it will subsequently meet, the revised standards described in the relevant BAT Conclusions document.

The Notice required that where the revised standards are not currently met, the operator should provide information that:

- Describes the techniques that will be implemented before 17 August 2022, which will then ensure that operations meet the revised standards, or
- justifies why standards will not be met by 17 August 2022, and confirmation of the date when the operation of those processes will cease within the Installation or an explanation of why the revised BAT standard is not applicable to those processes, or
- justifies why an alternative technique will achieve the same level of environmental protection equivalent to the revised standards described in the BAT Conclusions.

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

The Regulation 61 Notice response from the Operator was received on 19th 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 8 and 19c.

In relation to these BAT Conclusions, we do not fully agree with the operator in respect of their current stated capability as recorded in their regulation 61 Notice response.

We have therefore included Improvement Conditions IC4, IC5, IC6, IC7 and IC8 in the Consolidated Variation Notice to ensure that the requirements of the BAT Conclusions are delivered before 17th August 2022.

We have additionally included Pre-Operational Condition 1 in the Consolidated Variation Notice to ensure that techniques and standards described in the BAT conclusions are delivered for the water treatment facility (Advanced Membrane Bio-reactor) prior to restarting.

2.3 Requests for further information during determination

Although we were able to consider the Regulation 61 Notice response generally satisfactory at receipt, we did in fact need more information in order to complete our permit review assessment, and issued an e-mail request for further information on 12 March 2020. A copy of the further information request was placed on our public register.

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 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	<p>In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features:</p> <ul style="list-style-type: none"> I. commitment of the management, including senior management; II. definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation; III. planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment; IV. implementation of procedures paying particular attention to: <ul style="list-style-type: none"> (a) structure and responsibility, (b) recruitment, training, awareness and competence, (c) communication, (d) employee involvement, (e) documentation, (f) effective process control, (g) maintenance programmes, (h) emergency preparedness and response, (i) safeguarding compliance with environmental legislation; 	CC	<p>An Environmental Policy is in place and incorporates all of the features as required by BATc 1. It is annually updated to include improvements. The facility is currently working towards ISO14001:2015 accreditation and the systems in place have been designed to the standards ISO9001:2015, ISO14001:2015, ISO45001:2018.</p> <p><u>Environment Agency assessment</u> We are satisfied that the Installation is currently compliant with BATc 1.</p>

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

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	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; (f) Ensure waste compatibility prior to mixing or blending of waste; (g) Sort incoming solid waste	FC	Section 2.1 of the Environmental Permit (EP) application gives full details of the waste pre-acceptance procedures for the facility. A schedule of waste acceptance procedures to cover the inspection of incoming loads and procedures for dealing with Ad Hoc Waste are detailed in the section 2.3 of the Environmental Permit application. The weighbridge procedure, is detailed in the Environmental Permit application at section 2.1 - Waste acceptance procedures. The waste treatment process performance is continuously monitored through the use of a

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			<p>SCADA system that signals the status of equipment generating alarms when there are deviations outside pre-determined parameters. This monitoring is supplemented by site inspections and sampling and testing.</p> <p>Waste segregation procedures are set out in the Environmental Permit application at section 2.5.</p> <p>Table 8 – BAT justification (page 57) in the Environmental Permit application states that - 'None of the waste codes proposed for acceptance are likely to cause incompatibility issues'.</p> <p>The Environmental Permit application at Section 2.1 – confirms that mechanical Treatment (page 48), prior to biological treatment incoming wastes are classified by:</p>

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			<p>size, shape and type via trommels, ballistic separators, pneumatic separators, optical separators, magnetic separators (ferrous) and eddy-current separators (non-ferrous). Plastics are sorted according to type (e.g., HDPE (coloured /natural), PET (coloured /natural), film, etc.) and paper and cardboard are separated. Automated separation is also supplement by manual separation in picking cabins.</p> <p><u>Environment Agency assessment</u></p> <p>We have assessed the information provided in the site EMS. Although there is information relevant to compliance with BATc 2 in the submission, we consider that aspects of BATc 2a have not been adequately addressed with respect to characterisation of the following non-standard waste streams: EWC 03 03 07, 03 03 08, 15,01,04, 15 01 06 and 20 03 07.</p>

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			We consider that the operator will be future compliant with BATc 2a. Improvement condition 5 has been included in the permit to achieve compliance (see Annex 3).
3	<p>In order to facilitate the reduction of emissions to water and air, BAT is to establish and to maintain an inventory of waste water and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the following features:</p> <p>(i) information about the characteristics of the waste to be treated and the waste treatment processes, including:</p> <p>(a) simplified process flow sheets that show the origin of the emissions;</p> <p>(b) descriptions of process-integrated techniques and waste water/waste gas treatment at source including their performances;</p> <p>(ii) information about the characteristics of the waste water streams, such as:</p> <p>(a) average values and variability of flow, pH, temperature, and conductivity;</p> <p>(b) average concentration and load values of relevant substances and their variability (e.g. COD/TOC, nitrogen species, phosphorus, metals, priority substances /micropollutants);</p>	CC	<p>The Operator's inventory of emissions to water and air is set out in the Environmental Permit application (Table 42) and incorporates all of BATc 3 requirements. This inventory remains correct, with the exception that all collected wastewater generated on site is currently re-used to meet the irrigation needs of the biostabilisation halls. The waste water treatment facility is therefore not (currently) operational, and there is no relevant emission of waste water via emission point S1 (to sewer).</p> <p>Air flow is routinely measured internally using a calibrated pitot and micro manometer and in addition by the operators external odour monitoring contractor on a quarterly basis.</p>

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	<p>(c) data on bioeliminability (e.g. BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. inhibition of activated sludge)) (see BAT 52);</p> <p>(iii) information about the characteristics of the waste gas streams, such as:</p> <ul style="list-style-type: none"> (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). 		<p>Air temperature is continually monitored using an online SCADA system and in addition spot measurements are taken whenever air flow is monitored.</p> <p>Relevant substances associated with the MBT process have been identified as ammonia, hydrogen sulphide, mercaptans (and VOC's). These are routinely measured at the stack at the inlet, and following acid scrubbing.</p> <p>Monitoring for TVOC's is routinely undertaken at the stack.</p> <p>Emissions of odour and bioaerosols are routinely monitored and data is submitted to the Environment Agency. Monitoring of inlet and stack emissions is undertaken annually to provide a full composition /speciation of the organic compounds in the waste gas stream.</p>

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			<p>Explosive limits for methane are specifically measured prior to any hot works in confined space areas. The refining area has been assessed as a DSEAR area. An Explosion Protection Document is in place</p> <p>Monitoring for dust is routinely undertaken at the stack and also at the inlet. Monitoring of the relative humidity of the waste air is routinely undertaken at the same time as odour monitoring at the inlet and stack.</p> <p>Monitoring of gases for safety is continuous and is undertaken using personal gas detectors that feed into an online system (Blackline) for full visibility. Gases monitored include oxygen, hydrogen sulphide, carbon monoxide and ammonia</p> <p><u>Environment Agency assessment</u></p>

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			<p>We are satisfied the installation is currently compliant with BATc 3. Pre-operational condition PO1 detailed in Annex 3 is incorporated into the permit to ensure the operator provides an assessment of the waste water treatment plant against the Waste Treatment BAT Conclusions prior to re-starting.</p>
4	<p>In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques given below:</p> <ul style="list-style-type: none"> (a) Optimised storage location; (b) Adequate storage capacity; (c) Safe storage operation; (d) Separate area for storage and handling of packaged hazardous waste. 	CC	<p>Table 8 of the Environmental Permit application outlines how the design of waste storage areas meet BAT, confirming that all such areas are within fully enclosed buildings with impermeable floors and a sealed drainage system.</p> <p>Section 2.7 of the EP application details how the design of waste storage areas minimises the unnecessary handling of waste through the</p>

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			<p>use of conveyor belts to transport material within the facility</p> <p>UBB has an updated approved Fire prevention plan covering in detail BATc 4 Items b-c.</p> <p>UBB is not permitted to receive hazardous waste materials for treatment. BAT 4(d) is not applicable for this installation.</p> <p><u>Environment Agency assessment</u> We are satisfied the installation is currently compliant with BATc 4.</p>
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.	CC	Waste acceptance, handing and storage of the incoming waste is carried out as per the procedures set out in the Environmental Permit application.

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	<p>Handling and transfer procedures aim to ensure that wastes are safely handled and transferred to the respective storage or treatment. They include the following elements:</p> <ul style="list-style-type: none"> • handling and transfer of waste are carried out by competent staff; • handling and transfer of waste are duly documented, validated prior to execution and verified after execution; • measures are taken to prevent, detect and mitigate spills; • operation and design precautions are taken when mixing or blending wastes (e.g. vacuuming dusty/powdery wastes). <p>Handling and transfer procedures are risk-based considering the likelihood of accidents and incidents and their environmental impact.</p>		<p>Spills are prevented, detected and mitigated in line with operational and maintenance procedures. Including regular inspections of static and mobile equipment and infrastructure, Daily checks, routine monitoring and accident/incident notification assist in identifying a spill.</p> <p>Operational procedures exist and the training of relevant staff is undertaken to help mitigate the impact of a minor spillage. Major spillages are managed through the operators Emergency Incident and Response plan.</p> <p>Records are made of all waste arrivals, pre-acceptance, waste quantities accepted, rejects and other data as required by the Environment Agency and retained on site for a minimum of 3 years after the waste has been treated or rejected</p> <p><u>Environment Agency assessment</u></p>

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			We are satisfied the installation is currently 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	<p>There is no permitted discharge of waste water from this installation to controlled waters.</p> <p>There are currently no emissions of indirect waste waters to sewer being made as permitted under Table S3.3 of the permit and sewage undertaker discharge consent, all waste waters are re-used to meet irrigation needs of the bio stabilisation halls. In compliance with BATc 3 Also See BATc 7 and BATc 20.</p> <p>Waste waters from bio-scrubbing process are transported off site. Leachate is manually sampled.</p> <p><u>Environment Agency assessment</u></p>

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			We are satisfied that the Installation will be future compliant with BATc 6. Pre-operational condition PO1 is incorporated into the permit to achieve compliance (see Annex 3).
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	<p>There are currently no emissions of indirect waste waters to sewer made as permitted Table S3.3 of the permit. All waste waters are currently re-used to meet irrigation needs of the bio-stabilisation halls. In compliance with BATc 3, if emissions to sewer do commence, the operator will be compliant with BATc 7 requirements.</p> <p><u>Environment Agency assessment</u> We are satisfied that the Installation will be future compliant with BATc 7. Pre-operational condition PO1 is incorporated into the permit to achieve compliance (see Annex 3).</p>

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			Also See BATc 6 and BATc 20.
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	<p>The operator currently monitors stack monitoring for the following parameters Dust, H₂S, NH₃, Odour concentration and total VOCs. However current monitoring is not to MCERTS and not to EN, ISO or international Standards for several parameters. The operator is confident that the required standards can be met by the BAT compliance date.</p> <p><u>Environment Agency assessment</u></p> <p>We are satisfied that the Installation will be future compliant with BATc 8. Improvement condition IC5 is incorporated into the permit to achieve compliance (see Annex 3).</p>
10	BAT is to periodically monitor odour emissions.	CC	The operator undertakes MCERTS accredited odour monitoring quarterly to BS EN 13725

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	<p>Odour emissions can be monitored using:</p> <ul style="list-style-type: none"> • EN standards (e.g. dynamic olfactometry according to EN 13725 in order to determine the odour concentration or EN 16841-1 or -2 in order to determine the odour exposure); • when applying alternative methods for which no EN standards are available (e.g. estimation of odour impact), ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality. <p>The monitoring frequency is determined in the odour management plan (see BAT 12).</p>		<p>standards using an external monitoring contractor.</p> <p>Odour monitoring data is submitted to the Environment Agency periodically as detailed in Schedule 4 at Table S4.1 of the permit.</p> <p><u>Environment Agency assessment</u> We are satisfied the installation is currently compliant with BATc 10.</p>
11	<p>BAT is to monitor the annual consumption of water, energy and raw materials as well as the annual generation of residues and waste water, with a frequency of at least once per year.</p> <p>Monitoring includes direct measurements, calculation or recording, e.g. using suitable meters or invoices. The monitoring is broken down at the most appropriate level (e.g. at process or plant/installation level) and considers any significant changes in the plant/installation.</p>	CC	<p>The generation of waste water is continually monitored using an online SCADA system and recorded as part of daily checks. Information is included in monthly production reports.</p> <p>Monitoring the consumption of water, energy and raw materials is required by our Environmental Permit as detailed in condition 4.2.2. Monitoring data is submitted to the</p>

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			<p>Environment Agency annually as detailed in Schedule 4 at Table S4.3.</p> <p>Monitoring data is submitted to the Environment Agency quarterly.</p> <p><u>Environment Agency assessment</u> We are satisfied the installation is currently compliant with BATc 11.</p>
12	<p>In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:</p> <ul style="list-style-type: none"> • a protocol containing actions and timelines; • a protocol for conducting odour monitoring as set out in BAT 10; • a protocol for response to identified odour incidents, e.g. complaints; • an odour prevention and reduction programme designed to identify the source(s); to characterise the contributions of the sources; and to implement prevention and/or reduction measures. 	CC	<p>The operator has in place an approved Odour Management Plan, which is regularly reviewed and includes all of the BATc 12 elements.</p> <p><u>Environment Agency assessment</u> We are satisfied the installation is currently compliant with BATc 12.</p>

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13	<p>In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to use one or a combination of the techniques given below:</p> <ul style="list-style-type: none"> (a) Minimising residence times; (b) Using chemical treatment; (c) Optimising aerobic treatment 	CC	<p>The operator does not operate any open systems on site, BATc 13a is not applicable.</p> <p>The air treatment system comprises a chemical cleaning system (acid scrubbers – sulphuric acid) for the removal of ammonia (NH₃). Air is then directed to the biofilter</p> <p>Antifoam is routinely applied at different points in the sumps of the bio-stabilisation halls and in acid scrubbers to prevent the formation of scum in the receiving balance tanks, which are aerated to prevent the development of anaerobic conditions.</p> <p>SCADA system control is continually monitored to ensure the correct operation of the aeration</p>

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			<p>equipment and is supplemented with routine monitoring e.g. gaseous emissions, waste water monitoring to ensure correct operation and maintenance.</p> <p><u>Environment Agency assessment</u> We are satisfied the installation is currently compliant with BATc 13.</p>
14	<p>In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques given below:</p> <p>(a) Minimising the number of potential diffuse emission sources; (b) Selection and use of high-integrity equipment; (c) Corrosion prevention; (d) Containment, collection and treatment of diffuse emissions; (e) Dampening; (f) Maintenance; (g) Cleaning of waste treatment and storage areas; (h) Leak detection and repair (LDAR) programme</p>	CC	<p>The operator uses all of the BATc 14 techniques (a) – (h).</p> <p>The installation's design is as set out in the Environmental Permit application.</p> <p><u>Environment Agency assessment</u> We are satisfied the installation is currently compliant with BATc 14.</p>

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15	<p>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:</p> <p>(a) Correct plant design; (b) Plant management</p>	N/A	<p>No flaring operations are carried out on site.</p> <p><u>Environment Agency assessment</u> We are satisfied that BATc 15 does not apply to the installation.</p>
16	<p>In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given below:</p> <p>(a) Correct design of flaring devices; (b) Monitoring and recording as part of flare management</p>	N/A	<p>No flaring operations are carried out on site.</p> <p><u>Environment Agency assessment</u> We are satisfied that BATc 16 does not apply to the installation.</p>
17	<p>In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to set up, implement and regularly review a noise and vibration management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:</p> <p>I. a protocol containing appropriate actions and timelines;</p>	CC	<p>Noise and vibration nuisance is not expected or have been substantiated at localised receptors and there has been no requirement for a dedicated noise management plan to date.</p>

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	<ul style="list-style-type: none"> 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. 		<p>The facility has been designed in such a way as to minimise emissions of noise and vibration. All waste storage, handling and processing operations take place within fully enclosed buildings.</p> <p>The Environmental Permit application contains a noise and risk assessment and appropriate operating techniques which forms part of Table S1.2 including design, working practices and noise control measures. As such, these need are adhered to as part of their operating techniques.</p> <p>An Improvement Condition (IC3) was included in variation EPR/AP3138CM/V003 issued on 16/11/17 to assess the noise (including vibration) impacts from the site during operational day and night time periods (in accordance with the requirements of BS4142). The results of this assessment were compared</p>

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			<p>against those predicted at the EP application stage and demonstrated minimal noise levels.</p> <p>The applicability of BATc 17 is restricted to cases where a noise or vibration nuisance at sensitive receptors is expected and/or has been substantiated. The permit condition 3.4 ensures that the Operator submits a noise management plan in the event emissions of noise and vibration are causing annoyance beyond the site boundary.</p> <p>See also BATc 18.</p> <p><u>Environment Agency assessment</u> We are satisfied the installation is currently compliant with BATc 17.</p>
18	<p>In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to use one or a combination of the techniques given below:</p> <p>(a) Appropriate location of equipment and buildings;</p>	CC	<p>All operations take place within fully enclosed buildings which are acoustically cladded to minimise emissions from process operations.</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	<ul style="list-style-type: none"> (b) Operational measures; (c) Low noise-equipment; (d) Noise and vibration equipment; (e) Noise attenuation 		<p>Where applicable use and location of low noise equipment has been considered and noise and vibration control equipment installed .</p> <p>Noise attenuation measures have been implemented including but not limited to:</p> <p>A 4-metre high earth bund topped by a 1-metre high acoustic fence to provide noise attenuation to the nearest noise sensitive receptors to the east of the site.</p> <p>Walls, roofs, roof lights and shutter doors of the process buildings are designed to achieve high sound insulation through the building fabric.</p> <p>The internal reverberant noise levels within the facility is controlled by a suitable absorptive cladding material. This comprises of Class A absorbers equivalent in area to at least 50% of</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>the total internal surface area of the product storage building and the reception hall.</p> <p>Smoke vents include acoustic glass.</p> <p>All roller shutter doors are kept closed at all times, when not in immediate use.</p> <p>All roller shutter doors in the buildings are acoustically sealed to minimise acoustic weaknesses in the construction.</p> <p>There has been no requirement for the operator to provide a dedicated noise management plan to date. See also BATc 17.</p> <p><u>Environment Agency assessment</u> We are satisfied the installation is currently compliant with BATc 18.</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
19	<p>In order to optimise water consumption, to reduce the volume of waste water generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques given below:</p> <ul style="list-style-type: none"> (a) Water management; (b) Water recirculation; (c) Impermeable surface; (d) Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels; (e) Roofing of waste storage and treatment areas; (f) Segregation of water streams (g) Adequate drainage infrastructure; (h) Design and maintenance provisions to allow detection and repair of leaks (i) Appropriate buffer storage capacity 	<p>CC BAT c 19 (a), (b), (d), (e), (f), (g), (h) and (i)</p>	<p>The facility is designed to maximise the harvesting of rainwater (from the roof run-off from the visitor centre and the waste treatment facility).</p> <p>Pumps for the water circulation system for the biostabilisation process monitor use of water.</p> <p>Dry cleaning with air, mechanical sweeping, or vacuuming is used in certain key areas including around control panels, and where is does not pose an increased health and safety risk</p> <p>All jet wash equipment is provided with trigger controls to minimise water usage.</p> <p>The facility is designed to:</p> <ul style="list-style-type: none"> - Maximise the harvesting of rainwater, from roof run off and includes an underground rainwater storage tank.

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>- Maximise the reuse of process effluent.</p> <p>All surfaces of the floors in the waste storage, transfer and handling areas of the plant are made of concrete hard-standing for impermeable surfacing, with sealed construction joints and incorporating sealed drainage systems. Sealed jointing between floor slabs and a geo-membrane prevent fugitive emissions of leachate from the process into surface water or ground water. The site uses concrete slabs supplemented with secondary containment in vulnerable areas such as car parks.</p> <p>All tanks are within secondary bunds to mitigate the risk associated with an accidental breach of the primary containment. The bunds are formed from a concrete up-stand wall cast integral to the supporting slab to create one structural element/box and all are designed to comply</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>with the larger of the design guidance criterion which was to achieve a holding capacity of 110% of the working capacity of the tank. Daily inspections are carried out all bunds.</p> <p>Tanks such as acid tanks, WWTP plants or scrubber are connected to the SCADA system giving alarms when high and overflow level are reached. Valves and overflow pipes complete the system.</p> <p>All wastes treatment and handling operations take place within fully enclosed buildings.</p> <p>Uncontaminated surface water is kept separate from the process effluent. Waste water is collected separately and sent to the waste water treatment plant and later recirculated to the plant's processes.</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
		FC BATc 19 (c)	<p>Clean surface water and roof water is collected via oil/water interceptors and SUDS and discharged to Neverton brook. The drainage scheme includes provision for rain water harvesting.</p> <p>The Facility drainage layout is set out in the facility's Environmental Permit application and is shown in detail in the site drainage layout drawing (Drainage runs & pollution control features C15) and also forms part of the approved FPP.</p> <p>Waste water usage and tanks levels are daily monitored. Under normal operation the buffer storage capacity is over four days</p> <p>BATc 19 (c): The operator did not provide records of concrete joint inspections. Following a site inspection on the 4 March 2020, the</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>operator confirmed that these inspections would be completed by the end of May 2020.</p> <p><u>Environment Agency assessment</u></p> <p>We are satisfied that the Installation will be future compliant with BATc 19(c). Improvement condition IC6 is incorporated into the permit to achieve compliance (see Annex 3).</p>
20	<p>In order to reduce emissions to water, BAT is to treat waste water using an appropriate combination of the techniques given below:</p> <p><i>Preliminary and primary treatment, e.g.</i></p> <p>(a) Equalisation (b) Neutralisation (c) Physical separation, e.g. screens, sieves, grit separators, grease separators, oil-water separation or primary settlement tanks</p> <p><i>Physico-chemical treatment, e.g.</i></p> <p>(d) Adsorption</p>	<p>CC BATc 20 appropriate techniques.</p> <p>FC BATc 20 - BAT-associated emission levels (BAT-AELs) for indirect</p>	<p>The operator's waste water treatment plant is an Advanced Membrane Bioreactor (AMBR) process – BAT 20 (m), which combines aerobic biological treatment in the bioreactor tank, with the separation of treated water from the biomass via an ultrafiltration (UF) membrane system – BAT 20 (q).</p> <p>Excess biomass is removed via a regular schedule of sludge wasting/dewatering.</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	<p>(e) Distillation /rectification (f) Precipitation (g) Chemical oxidation (h) Chemical reduction (i) Evaporation (j) Ion exchange (k) Stripping</p> <p>Biological treatment, e.g. (l) Activated sludge process (m) Membrane bioreactor (n) Nitrification / denitrification when the treatment includes a biological treatment</p> <p>Solids removal, e.g. (o) Coagulation and flocculation (p) Sedimentation (q) Filtration (e.g. sand filtration, microfiltration, ultrafiltration) (r) Flotation</p> <p>See also:</p>	<p>discharges to a receiving water body.</p>	<p>Outputs from the WWT plant are dewatered sludge and permeate / treated leachate (ready for further re-use in the process or disposal to sewer).</p> <p>The operator has confirmed that the AMBR has never been used and that no indirect emissions to water (sewer) from waste water treatment currently takes place. Other than through the removal of solids via a drum screen – BAT 20 (c), all process waters are currently being re-used back in treatment processes.</p> <p>The operator does not currently envisage requiring to discharge waste water to sewer in the foreseeable future, although wish to retain the flexibility to do so.</p> <p>The operator confirms should they need to begin discharging to sewer that they would be</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	Table 6.2: BAT-associated emission levels (BAT-AELs) for indirect discharges to a receiving water body		<p>able to comply with the emission limits detailed in Table S3.3 by the Compliance date. This will be achieved via the operation of the installed waste water treatment plant and, if necessary, by using a relevant additive to reduce any minimum exceedence of chromium to within the BAT-AEL shown in Table S3.3.</p> <p><u>Environment Agency assessment</u></p> <p>We are satisfied that the Installation is currently compliant with BAT 20 appropriate techniques for wastewater treatment.</p> <p>Pre-operational condition PO1 is incorporated into the permit which addresses BATc 20 Table 6.2 BAT-associated emission levels (BAT-AELs) for indirect discharges to a receiving water body (see Annex 3).</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
21	<p>In order to prevent or limit the environmental consequences of accidents and incidents, BAT is to use all of the techniques given below, as part of the accident management plan (see BAT 1):</p> <ul style="list-style-type: none"> (a) Protection measures; (b) Management of incidental /accidental emissions; (c) Incident /accident registration and assessment system 	CC	<p>Fire and explosion protection systems are described in detail in the approved Fire Prevention Plan.</p> <p>The Emergency and incident response plan (BATc 1 (c)) defines the procedure to be followed in case of major spillages and the responsibility matrix. In case of minor spillages there is an operational procedure (together with information on the type and location of the spill kits available in various areas of the facility.</p> <p>In order to minimise the likelihood of any significant spill, all above ground storage vessels have been provided with secondary containment inside specific bund walls. These bund walls capable of retaining 110% of the largest individual tank volume or 25% of the total capacity of all the tanks within the bund.</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>The operator's Emergency and Incident Response Plan (BAT 1c (c)) defines the procedures for assessing and registering an incident/accident. The facility is equipped with an Accident / Incident / Non conformities tracking system.</p> <p><u>Environment Agency assessment</u></p> <p>We are satisfied that the Installation is currently compliant with BATc 21.</p>
22	<p>In order to use materials efficiently, BAT is to substitute materials with waste.</p> <p>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).</p>	CC	<p>The operator directs and re-uses collected leachate within the bio-stabilisation process: This reduces the requirement for further treatment i.e. waste water treatment, which would require the addition of various chemicals and nutrients and energy, substantially offsets potable water consumption that would otherwise be required for irrigation in the biostabilisation halls, and provides the composting process with a highly valuable</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>source of nutrients (improving the efficiency of the biological process).</p> <p>As part of the water management and drainage system, the facility design incorporates a rainwater harvesting system where the rainwater from the roofs is collected and reused within the facility (internal washdown and within the welfare facilities). This also reduces the overall volume of water which would need to be discharged from the site.</p> <p><u>Environment Agency assessment</u> We are satisfied that the Installation is currently compliant with BATc 22.</p>
23	<p>In order to use energy efficiently, BAT is to use both of the techniques given below:</p> <p>(a) Energy efficiency plan;</p>	CC	<p>The operator has a Corporate Energy Management Policy Statement in place and has developed an energy efficiency procedure</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	(b) Energy balance record		<p>(ECC-ENV-PR-033 v1) for the facility where KPIs are revised and updated annually.</p> <p>A monthly energy balance record is maintained and includes energy consumed: electricity, gas, fuel and water and energy generated: electricity (from installed PV panels). No energy is exported from the installation.</p> <p>The monthly tonnage of waste in and out is recorded to allow for KPIs to be monitored as described above.</p> <p><u>Environment Agency assessment</u> We are satisfied that the Installation is currently compliant with BATc 23.</p>
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).	CC	Consumables are purchased in bulk, minimising the generation of packaging wastes. Wherever possible, the packaging of any

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	<p>Packaging (drums, containers, IBCs, pallets, etc.) is reused for containing waste, when it is in good condition and sufficiently clean, depending on a compatibility check between the substances contained (in consecutive uses). If necessary, packaging is sent for appropriate treatment prior to reuse (e.g. reconditioning, cleaning).</p>		<p>incoming non-waste materials is reused either on or off-site.</p> <p>IBC containers are re-used on site (once cleaned) to contain and safely move spares and smaller consumables e.g. rollers and conveyor belts between stores and work areas.</p> <p>Pallets are frequently reused to assist in safely moving spares around site using mobile equipment.</p> <p>Sturdy cardboard boxes or other robust and clean packaging are used to organise equipment within e.g. the sampling area.</p> <p><u>Environment Agency assessment</u> We are satisfied that the Installation is currently compliant with BATc 24.</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
33	<p>In order to reduce odour emissions and to improve the overall environmental performance, BAT is to select the waste input.</p> <p>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.</p>	CC	<p>As per BATc 2, acceptance procedures have been developed to cover the inspection of incoming loads and, in case any ad hoc waste enters the facility in error, procedures for dealing with it have also been developed.</p> <p>Frequent sampling from around the facility is undertaken in order to ensure that the received waste is as expected and suitable for treatment. In addition, an intensive period of compositional analysis of the input waste is carried out each quarter to determine the full composition of the waste received.</p> <p><u>Environment Agency assessment</u> We are satisfied that the Installation is currently compliant with BATc 33.</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
34	<p>In order to reduce channelled emissions to air of dust, organic compounds and odorous compounds, including H₂S and NH₃, BAT is to use one or a combination of the techniques given below:</p> <p>(a) Adsorption; (b) Biofilter; (c) Fabric filter; (d) Thermal oxidation; (e) Wet scrubbing</p> <p>See also:</p> <p>Table 6.7: BAT-associated emission levels (BAT-AELs) for channelled NH₃, odour, dust and TVOC emissions to air from the biological treatment of waste.</p>	<p>FC</p> <p>FC BATc 34 Table 6.7 BAT-AEL : BAT-associated emission levels (BAT-AELs) for channelled NH₃, Odour, Dust and TVOC emissions to air from the biological treatment of waste.</p> <p>[For Table 6.7: BAT-AEL please see BATc 8]</p>	<p>The site currently operates via way of 4 No. Acid Scrubbers and a modular biofilter system BATc 34 (b) and (e).</p> <p>The operator has indicated that they will be able to meet BAT-AELs for all channelled emissions (NH₃, TVOC, Dust) except Odour concentration ELV of 1000 OUE/m³.</p> <p>The operator routinely measures NH₃ levels across the air treatment facility as part of routine operations. Current monitoring is comparable to the BAT-AEL limits shown in this BATc 34, although the methodology does not currently follow that outlined in BATc 8. Routine monitoring data demonstrates that site is capable of meeting this BAT-AEL.</p> <p>H₂S monitoring is currently undertaken weekly using colorimetric tubes and not according to</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>an EN, ISO or international /national standards. The methodology does not currently follow that outlined in BATc 8. The operator will be required to demonstrate compliance with the BAT-AEL. Historical data demonstrates that the site is capable of meeting this BAT-AEL.</p> <p>Dust is currently measured on a six monthly basis following the relevant methodology by an external contractor. The results provided by the current monitoring are comparable to the BAT-AEL limits shown in this BAT 34. Historical data demonstrates that UBB is capable of meeting this BAT-AEL.</p> <p>TVOCs are currently measured quarterly by an external contractor. The results provided by the current monitoring are comparable to the BAT-AEL limits shown in this BAT 34, although the methodology does not currently follow that outlined in BAT 8. Historical data demonstrates</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>that the site is capable of meeting this BAT-AEL specified.</p> <p>The Area officer has confirmed that the site does generate odour complaints and odour levels at the stack are significantly higher than BAT.</p> <p>We have inserted the requirement to monitor odour concentration on a 6-monthly frequency into the channelled emissions table, and have included improvement conditions (IC7 and IC8) which requires the operator to characterise and minimise emissions, review effectiveness of the abatement plant and abatement plant design.</p> <p><u>Environment Agency assessment</u> We are satisfied that the Installation will be future compliant with BATc 34.</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
35	<p>In order to reduce the generation of waste water and to reduce water usage, BAT is to use all of the techniques given below:</p> <p>(a) Segregation of water streams; (b) Water recirculation; (c) Minimisation of the generation of leachate</p>	CC	<p>The design of the water collection systems is as described in the Environmental Permit application (at Figure 9). This schematic shows the separate drainage systems the facility incorporates for:</p> <ul style="list-style-type: none"> • Process water (including biostabilisation hall, wash-down & biofilter leachate); • Foul water; and • Surface water <p>Recirculation loops to maximise the reuse and recycling of water are in place.</p> <p>Pumps for the water circulation system for the biostabilisation process monitor use of potable and recycled treated effluent water. This can measure the water use for each zone in the process, ensuring the optimum moisture</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>content for the correct functioning of the biostabilisation process.</p> <p>Environment Agency assessment We are satisfied that the Installation is currently compliant with BATc 35.</p>
36	<p>In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters.</p> <p>Monitoring and/or control of key waste and process parameters, including:</p> <ul style="list-style-type: none"> • waste input characteristics (e.g. C to N ratio, particle size); • temperature and moisture content at different points in the windrow; • aeration of the windrow (e.g. via the windrow turning frequency, O₂ and/or CO₂ concentration in the windrow, temperature of air streams in the case of forced aeration); • windrow porosity, height and width. 	CC	<p>Samples of waste entering the biostabilisation halls are regularly taken and analysed by external laboratories (C:N ratio, moisture content, loss on ignition (LOI) and biological stability) and by our on-site laboratory (moisture content and LOI).</p> <p>Temperature (and pressure) of the air in each aeration zone in each bio-stabilisation hall is monitored continuously through our online SCADA system.</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>Windrow filling, turning and discharge is automatic. It is controlled by the control room operator using an online SCADA system which is monitored 24 hours per day. Fans providing forced ventilation to the bio-stabilisation process operate continuously. Fan operation is monitored 24 hours per day by control room operator using an online SCADA system.</p> <p>Aeration in each zone is controlled by valves operating in a cycle and capable of being independently adjusted.</p> <p>The operator uses a comprehensive software based management system to control planned and reactive maintenance to the aeration system to ensure continued operation.</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>Measurements are also made on an “as needed” basis i.e. following changes to aeration set points, with a Compost Manager tool to ensure the availability of correct oxygen levels within the waste piles.</p> <p>Windrow filling and turning is automatic. It is controlled by the control room operators using an online SCADA system to ensure even piles. The estimated density of the first windrow is monitored as part of routine monitoring.</p> <p><u>Environment Agency assessment</u> We are satisfied that the Installation is currently compliant with BATc 36.</p>
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:	N/A	The entirety of site operations occur within fully enclosed buildings.

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	(a) Use of semi permeable membrane covers; (b) Adaptation of operations to the meteorological conditions		<u>Environment Agency assessment</u> We are satisfied that BATc 37 does not apply to the installation.
38	<p>In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters.</p> <p>This includes monitoring and/or control of key waste and process parameters:</p> <ul style="list-style-type: none"> • pH and alkalinity of the digester feed; • digester operating temperature; • hydraulic and organic loading rates of the digester feed; • concentration of volatile fatty acids (VFA) and ammonia within the digester and digestate; • biogas quantity, composition (e.g. H₂S) and pressure; • liquid and foam levels in the digester. 	N/A	<p>UBB operates an aerobic MBT facility.</p> <p><u>Environment Agency assessment</u> We are satisfied that BATc 38 does not apply to the installation.</p>
39	In order to reduce emissions to air, BAT is to use both of the techniques given below:	CC	The design of the air collection system is as described in the Environmental Permit application at page 16 – Air treatment. It is

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 the waste gas streams; (b) Recirculation of waste gas		<p>additionally described in the Odour Management Plan.</p> <p>Air from the waste reception, mechanical treatment, refining and waste water treatment areas is conducted to the biostabilisation halls.</p> <p>All air requiring treatment is extracted from the biostabilisation halls via one single collection point.</p> <p>Air from the waste reception, pre-processing, waste water treatment, and refining and storage areas passes into the biostabilisation halls. In the biostabilisation halls this waste gas is re-circulated to provide forced aeration to the biostabilisation process.</p> <p>From the biostabilisation halls all air requiring treatment passes as one mixed stream (of biostabilisation process and biostabilisation building air) to the air treatment facility.</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>Considering the installed and operational exhaust grid network, scrubber / biofilter arrangement and footprint of the site, it is not possible to separate this mixed stream of air ahead of treatment.</p> <p><u>Environment Agency assessment</u> We are satisfied that the Installation is currently compliant with BATc 39.</p>

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

Bioaerosols monitoring requirements

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.

UBB have one point source emission point at the site which is located within 250 metres of human sensitive receptors. However this emission point channels clean air from enclosed, and not open biofilters.

In compliance with improvement condition IC2 (Variation EPR/AP3138CM/V003), the operator submitted results of monitoring of bioaerosols emissions emitted from the biofilter stack A1 over the last 5 years together with ambient monitoring results from locations stipulated in Tables S3.5 and S3.6. The operator provided dispersion modelling (ADMS 5.2) and proposed emission limit values for Total bacteria, *Aspergillus fumigatus* and Gram-negative bacteria.

For bacteria Quarter 2 showed the highest counts over the three years at between 5.7×10^3 cfu/m³ to 21.3×10^4 cfu/m³. All other quarters showed concentrations under 103 cfu/m³ (average). Biofilter performance averaged from 73-99% in concentrations of bacteria pre- and post-stack during the sampling periods. During these times, ambient sampling demonstrated these emission values did not lead to any increased bioaerosols concentrations around the site.

Aspergillus fumigatus were rarely found in the stack (only twice in 10 monitoring events) and both times in quarter 1, ranging from 52 to 538 cfu/m³ (average). Biofilter performance averaged removal of up to 100% of *A. fumigatus*. Fungi were largely absent in ambient monitoring around the site. Sampling error for fungi could not be calculated effectively due to the small concentrations found. However, a 25% variability could be assumed with confidence.

The Environment Agency's Air Quality Modelling and Assessment Unit (AQMAU) carried out check modelling and sensitivity analysis using the operator's modelling files and meteorological data observed at Southend-on-Sea between 2003 and 2007. As a result of our checks, although we do not fully agree with the operator's exact numerical values, we agree that bioaerosols emissions from the biofilter stack are unlikely to cause exceedances of the ambient emission action levels at any nearby sensitive location.

We have updated the bioaerosols monitoring requirements (Table S3.5 and S3.6) in the permit in accordance with our guidance TGN M9 Environmental monitoring of bioaerosols at regulated facilities (version 2, July 2018) and have set emission action levels in accordance with the findings of the modelling.

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 qualitative site condition report ‘Site Condition Report dated: September 2011’ together with the original application which was received by the Environment Agency on 11/04/2012, this predated the Industrial Emissions Directive (IED) and changes introduced by the EPR. This included a description of the condition of the site, a risk assessment and consideration of the possibility of soil and groundwater contamination. The summary concluded that potentially polluting substances were to be used hydraulic fluids, cleaning chemicals and sulphuric acid. However adopting Environmental Management and pollution prevention measures meant there would be little likelihood that soil and groundwater contamination would occur. The operator selected not to provide baseline data. We reviewed that report and considered that it adequately described the condition of the soil and groundwater at that time.

As part of the Regulation 61 response (Schedule 1, Item 4), the operator has stated that there are no Relevant Hazardous Substances (RHS) present on the site that could pose a contamination risk to groundwater or soil, according to the Article 3(18) of the IED.

The Operator has accepted ‘zero contamination’ beneath the site. This means that when the Operator applies to surrender the Permit, any contamination by substances used at, produced or released from the facility would be considered to have resulted from the operation of the installation. This is in accordance with the Environment Agency Guidance H5 – Site Condition Report.

Waste types

We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility.

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.

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:

Table S2.2 Permitted waste types and quantities for Activity AR1	
Maximum quantity	The total annual throughput in Tables S2.2 and S2.3 shall not exceed 420,000 tonnes per year.
Exclusions	Wastes having any of the following characteristics shall not be accepted: <ul style="list-style-type: none"> • previously separated waste
Waste code	Description
20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS
20 01	separately collected fractions (except 15 01)
20 01 99	other fractions not otherwise specified (separately collected dog faeces only)

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 storage infrastructure

Risk assessment for secondary containment and storage lagoons

We assessed secondary containment as part of the permit review. Our assessment is in two stages:

Stage 1 – A review of the site containment risk assessment; and

Stage 2 – A review of existing site containment – a demonstration that the existing site containment is fit for purpose i.e. meets the CIRIA C736 standards

As part of the Regulation 61 response the operator failed to submit a report assessing the suitability of the site's secondary containment in comparison to the CIRIA C736 standards. The operator also failed to submit a site specific risk assessment methodology for the existing secondary containment in accordance with Chapter 2 of CIRIA C736.

In accordance with the CIRIA C736, the general framework for the risk assessment of containment adopts a three-step approach as follows:

Step 1 applies the source–pathway–receptor model to the site to assess the hazard presented by the inventory to the surrounding environment. The assessment of the source–pathway–receptor is combined to provide a **site hazard rating**. However, in many cases the nature and quantity of the inventory and knowledge of nearby sensitive receptors such as water bodies or designated habitats may be sufficient to determine that there is negligible (low site hazard rating) or, conversely, a high (high site hazard rating) risk.

Step 2 considers the likelihood of a loss of containment. This will depend on several factors such as the reliability of the operations and inspections undertaken on site, the conditions of the primary storage vessels and the degree they are protected from impact damage etc. Security will also be a consideration. The likelihood of a loss of containment is combined with the site hazard rating to provide a **site risk rating**.

Step 3 the site risk rating leads to a recommendation for an appropriate class of containment.

Assessment of existing secondary containment & storage design and construction

EPR permit EPR/AP3138CM/A001 Issued on 01/03/2013, contained a pre-operational condition (P05) regarding secondary containment design and construction. This condition was discharged in 2014, the operator confirming that the design of the bunding infrastructure had taken account of the new CIRIA C736 guidance. We have reviewed the original submission and found that it did not include an appropriate risk assessment in accordance with Chapter 2 of CIRIA C736 in order to establish the class of containment required and in addition did not contain confirmation/evidence that the assessment had undertaken by a structural or civil engineer. We therefore consider that the existing site containment and storage may not meet the standards set out in CIRIA C736.

We have set improvement conditions in the permit to address the deficiencies in the existing site secondary containment and storage infrastructure:

Improvement condition IC6 requires the operator to submit a site secondary containment and storage plan within 6 months of the permit issue. The plan shall contain details of:

- the condition and extent of the site secondary containment and storage systems, where all polluting liquids and solids are being stored, treated, and/or handled;
- individual improvement measures necessary for the site secondary containment and storage systems to adhere to the standards detailed/referenced within CIRIA C736 (2014), or equivalent.
- timescales for implementation of the individual measures

Improvement condition IC6 requires the operator to implement the secondary containment and storage plan within the timescales approved by the Environment Agency.

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 and Pre-operational conditions so that the outcome of the techniques detailed in the BAT Conclusions are achieved by the installation. These improvement conditions are set out below - justifications for them is provided at the relevant section of the decision document (Annex 1 or Annex 2).

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

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
Improvement condition for progress report to achieve BAT-AELs		
IC4	<p>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:</p> <ol style="list-style-type: none"> 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). <p>The report shall address the BAT Conclusions for Waste Treatment with respect to the following:</p> <ul style="list-style-type: none"> • BAT 20 Table 6.2 (compliance with BAT-AELs for indirect discharges to a receiving water body) • BAT 34 Table 6.7 (compliance with BAT-AELs for channelled NH3, odour, dust and TVOC emissions to air from the biological treatment of waste) <p>Refer to BAT Conclusions for a full description of the BAT requirement.</p>	<p>BATc 20 Progress reports at six monthly intervals upon completion of PO1 (Table S1.4).</p> <p>BATc 34 Progress reports at six monthly intervals from date of permit issue: 29/03/2021 29/09/2021 29/03/2022</p>

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
Improvement condition for progress report to achieve Narrative BAT		
IC5	<p>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:</p> <ol style="list-style-type: none"> 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). <p>The report shall address the BAT Conclusions for Waste Treatment with respect to BAT 2a, 6, 7, 8, 19c.</p> <p>Refer to BAT Conclusions for a full description of the BAT requirement.</p>	<p>Progress reports at six monthly intervals from date of permit issue:</p> <p>29/03/2021</p> <p>29/09/2021</p> <p>29/03/2022</p>
Improvement condition for primary containment, secondary containment and storage lagoons		
IC6	<p>The operator shall submit a written 'secondary and tertiary containment plan' and shall obtain the Environment Agency's written approval to it. The plan shall contain the results of a review conducted, by a competent person, in accordance with the methodology detailed within CIRIA C736 (2014), of the condition and extent of secondary and tertiary containment systems where all polluting liquids and solids are being stored, treated, and/or handled.</p> <p>The review should consider, but is not limited to, the storage vessels, bunds, loading and unloading areas, transfer pipework/pumps, temporary storage areas, and liners underlying the site. The plan must contain dates for the implementation of individual improvement measures necessary for the secondary and tertiary containment systems to adhere to the standards detailed/referenced within CIRIA C736 (2014), or equivalent.</p> <p>The plan shall be implemented in accordance with the Environment Agency's written approval.</p>	<p>29/09/2021 or other date as agreed in writing with the Environment Agency</p>
Improvement condition for review of effectiveness of abatement plant		
IC7	<p>The operator shall carry out a review of the abatement plant on site, in order to determine whether the measures have been effective and adequate to prevent and where not possible</p>	<p>29/09/2021 or other date as agreed in writing with the</p>

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<p>minimise emissions released to air including but not limited to odour and ammonia.</p> <p>The operator shall submit a written report to the Environment Agency following this review for assessment and approval.</p> <p>The report shall include but not limited to the following aspects:</p> <ul style="list-style-type: none"> • Full investigation and characterisation of the waste gas streams. • Abatement stack monitoring results (not limited to odour and ammonia) • Abatement process monitoring results (not limited to odour and ammonia) • Odour monitoring results at the site boundary • Records of odour complaints and odour related incidents • Recommendations for improvement including the replacement or upgrading the abatement plant • Timescales for implementation of improvements to the abatement plant <p>The operator shall implement the improvements in line with the timescales as approved by the Environment Agency.</p>	Environment Agency
Improvement condition for review of abatement plant design		
IC8	<p>The operator shall submit to the Environment Agency a written review report of the design details of the site ventilation system and abatement plant and obtain the Environment Agency's written approval to it.</p> <p>The report shall include but not limited to:</p> <ol style="list-style-type: none"> a) Ventilation design performance criteria for effective fugitive odorous emission control b) Design of the abatement systems that will ensure compliance with the odour condition 3.3. The report shall include a demonstration (whether by a detailed review of technical papers or by trial results) that all odorous chemical compounds and their loading rates expected in the relevant air streams have 	29/09/2021 or other date as agreed in writing with the Environment Agency

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<p>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.</p> <p>c) Design alarms and triggers for each relevant scenario to alert the operator to the malfunction of both ventilation and abatement systems. The report should further list all relevant contingency mitigation actions to minimise risk of elevated odour pollution from the installation linked to each malfunction scenario and detail the actions to restore systems to normal operating conditions for effective odour control.</p> <p>Ventilation and abatement systems should be designed by suitably qualified named engineers who can supervise and sign-off on construction quality assurance.</p>	

Annex 4: Pre-operational Conditions

Table S1.4 Pre-operational measures for future development		
Reference	Operation	Pre-operational measures
1	Advanced membrane bio-reactor waste water treatment operation (AR2)	<p>At least 6 months prior to restarting, the advanced membrane bio-reactor waste water treatment operation, the operator shall submit a BAT report to the Environment Agency for review and approval.</p> <p>The report shall include but not limited to an assessment of compliance of the advanced membrane bio-reactor waste water treatment operation against the Waste Treatment BAT Conclusions and BAT-AELs (current at the time).</p> <p>The advanced membrane bio-reactor waste water treatment operation shall not be restarted until agreed and approved by the Environment Agency.</p>