

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/JB3737WE
The Operator is: Riverside Bio Limited
The Installation is: Mitcham Waste Treatment Centre
This Variation Notice number is: EPR/JB3737WE/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

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 21/10/2019 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 standards are not applicable to those processes, or
- justifies why an alternative technique will achieve the same level of environmental protection equivalent to the revised BAT standards described in the BAT Conclusions.

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

The Regulation 61 Notice response from the Operator was received on 22/04/2020.

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 Conclusions:

- BAT 1XII – residues management plan
- BAT 4b,c – safe storage
- BAT 14 a, b, d and f – reduce diffuse emissions to air
- BAT 14h – leak detection and repair programme
- BAT 19 c, d, g – impermeable surface, prevention of overflows/failures from tanks and vessels, adequate drainage infrastructure
- BAT 23a – energy efficiency plan
- BAT 34 (and associated monitoring standards and frequencies in BAT 8) - ELV

In relation to these BAT Conclusions, we do not fully agree with the Operator in respect of their current stated capability as recorded in their response to the Regulation 61 Notice. We have therefore included Improvement Conditions in the Consolidated Variation Notice to ensure that the requirements of the BAT Conclusions are delivered before 17 August 2022.

3 The legal framework

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

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

We consider that, in issuing the Consolidated Variation Notice, it will ensure that the operation of the Installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

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

Annex 1: decision checklist regarding relevant BAT Conclusions

BAT Conclusions for the Treatment of Waste, were published by the European Commission on 10 August 2018. There are 53 BAT Conclusions. Not all BAT conclusions apply to the installation. This annex provides a record of decisions made in relation to each relevant BAT Conclusion applicable to the installation. This annex should be read in conjunction with the Consolidated Variation Notice.

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

NA – Not Applicable

CC – Currently Compliant

FC – Compliant in the future (within 4 years of publication of BAT conclusions)

NC – Not Compliant

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
1	<p>In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features:</p> <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; 	FC	<p><u>Environment Agency assessment</u></p> <p>The operator has provided information to support compliance with BATc 1. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with the majority of the narrative BAT requirements.</p> <p>However we do not agree with their conclusion regarding a residues management plan (RMP)(BAT XII).</p> <p>A RMP is a BAT requirement and is considered appropriate in this case. As the site is intrinsically linked with the adjoining AD facility this is a requirement for both.</p> <p>The guidance in section 6.5 of the BAT conclusions states that:</p> <p>A residues management plan is part of the EMS and is a set of measures aiming to:</p> <p>(1) minimise the generation of residues arising from the treatment of waste;</p>

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	<p>V. checking performance and taking corrective action, paying particular attention to:</p> <ul style="list-style-type: none"> (a) monitoring and measurement (see also the JRC Reference Report on Monitoring of emissions to air and water from IED installations – ROM), (b) corrective and preventive action, recruitment, training, awareness and competence, (c) maintenance of records, (d) independent (where practicable) internal or external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained <p>VI. review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;</p> <p>VII. following the development of cleaner technologies;</p> <p>VIII. consideration for the environmental impacts from the eventual decommissioning of the plant at the stage of designing a new plant, and throughout its operating life;</p> <p>IX. application of sectoral benchmarking on a regular basis;</p> <p>X. waste stream management (see BAT 2);</p> <p>XI. an inventory of waste water and waste gas streams (see BAT 3);</p> <p>XII. residues management plan (see description in Section 6.5);</p>		<p>(2) optimise the reuse, regeneration, recycling and/or recovery of energy of the residues, and</p> <p>(3) ensure the proper disposal of residues.</p> <p>In addition BREF (2.3.12) suggests RMPs apply to ‘solid’ wastes generated by the process. The operator is only certified under PAS 110 for separated liquor (not whole digestate or solids). An RMP would also apply to grits and sediments produced by the process.</p> <p>It is necessary to understand the fate of solids leaving the system and undertake analysis to ensure the treatment process objectives are being met and the process is working effectively.</p> <p>We therefore consider that the operator will be future compliant with BATc 1XII. Improvement condition 9 has been included in the permit to achieve compliance (see Annex 3).</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	CC	<u>Environment Agency assessment</u> The operator has provided information to support compliance with BATc 2. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance 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:	CC	<u>Environment Agency assessment</u> The operator has provided information to support compliance with BATc 3. We have assessed the information provided and we are

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	<p>(i) information about the characteristics of the waste to be treated and the waste treatment processes, including:</p> <ul style="list-style-type: none"> (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; <p>(ii) information about the characteristics of the waste water streams, such as:</p> <ul style="list-style-type: none"> (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); <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>satisfied that the operator has demonstrated compliance with BATc 3.</p>

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4	<p>In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques given below:</p> <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. 	FC	<p><u>Environment Agency assessment</u></p> <p>We have assessed the Operators submission and do not consider that BAT 4(b) and (c) have been complied with.</p> <p>Pre and post processing of waste is undertaken at this facility for the adjoining AD site. However, the Operator has not demonstrated that the digestate being produced at the adjoining AD facility is concurrent with the storage capacity on site.</p> <p>This links to BAT 1 XII above. We have therefore included improvement condition IC13 to assess operational storage capacity and safe storage considerations.</p> <p>We consider the Operator will be future compliant with BATc 4.</p>
5	<p>In order to reduce the environmental risk associated with the handling and transfer of waste, BAT is to set up and implement handling and transfer procedures.</p>	CC	<p><u>Environment Agency assessment</u></p> <p>The operator has provided information to support compliance with BATc 5. We have</p>

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	<p>Handling and transfer procedures aim to ensure that wastes are safely handled and transferred to the respective storage or treatment. They include the following elements:</p> <ul style="list-style-type: none"> • handling and transfer of waste are carried out by competent staff; • handling and transfer of waste are duly documented, validated prior to execution and verified after execution; • measures are taken to prevent, detect and mitigate spills; • operation and design precautions are taken when mixing or blending wastes (e.g. vacuuming dusty/powdery wastes). <p>Handling and transfer procedures are risk-based considering the likelihood of accidents and incidents and their environmental impact.</p>		<p>assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 5.</p>
6	<p>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).</p>	NA	<p><u>Environment Agency assessment</u></p> <p>We are satisfied that BATc 6 is not applicable to this installation. Only clean uncontaminated surface water from roofs and non-operational areas is allowed to be discharged from the site.</p>

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7	BAT is to monitor emissions to water with at least the frequency given in BATc 7, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.	NA	<p><u>Environment Agency assessment</u></p> <p>We are satisfied that BATc 7 is not applicable to this installation. Only clean uncontaminated surface water from roofs and non-operational areas is allowed to be discharged from the site.</p>
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><u>Environment Agency assessment</u></p> <p>The permit stipulates monitoring standards and frequencies to meet BATc 8.</p>
10	<p>BAT is to periodically monitor odour emissions.</p> <p>Odour emissions can be monitored using:</p> <ul style="list-style-type: none"> • EN standards (e.g. dynamic olfactometry according to EN 13725 in order to determine the odour concentration or EN 16841-1 or -2 in order to determine the odour exposure); • when applying alternative methods for which no EN standards are available (e.g. estimation of odour impact), ISO, national or other 	FC	<p><u>Environment Agency assessment</u></p> <p>The permit stipulates monitoring of odour emissions to meet BATc 10.</p>

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	<p>international standards that ensure the provision of data of an equivalent scientific quality.</p> <p>The monitoring frequency is determined in the odour management plan (see BAT 12).</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><u>Environment Agency assessment</u></p> <p>The operator has provided information to support compliance with BATc 11. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 11.</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; 	CC	<p><u>Environment Agency assessment</u></p> <p>The operator has provided information to support compliance with BATc 12. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 12.</p>

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	<ul style="list-style-type: none"> an odour prevention and reduction programme designed to identify the source(s); to characterise the contributions of the sources; and to implement prevention and/or reduction measures. 		
13	<p>In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to use one or a combination of the techniques given below:</p> <p>(a) Minimising residence times; (b) Using chemical treatment; (c) Optimising aerobic treatment</p>	CC	<p><u>Environment Agency assessment</u></p> <p>The operator has provided information to support compliance with BATc 13. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with 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>	FC	<p><u>Environment Agency assessment</u></p> <p>We do not consider the Operator to be compliant with regards 14 a, b, d, f and h. Environment Agency site inspections have revealed poor maintenance of pipework. We have therefore included improvement condition IC9 which requires a detailed assessment of the integrity of all above ground pipework and that a leak detection and repair programme is set up and implemented and</p>

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			also IC10 that requires the assessment of primary containment. We consider the operator will be future compliant with this BAT.
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	NA	<u>Environment Agency assessment</u> The site does not have a flare. We are satisfied that BATc 15 is not applicable to this 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; (b) Monitoring and recording as part of flare management	NA	<u>Environment Agency assessment</u> The site does not have a flare. We are satisfied that BATc 16 is not applicable to this 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;	NA	<u>Environment Agency assessment</u> The applicability of BAT 17 is restricted to cases where noise or vibration nuisance at sensitive receptors is expected and/or has been substantiated. We are satisfied that BATc 17 is not applicable to this Installation.

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	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.		
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	<u>Environment Agency assessment</u> The operator has stated in their Regulation 61 response that this is not applicable. We consider that BATc 18 is applicable to the site but that the operator is currently compliant because the activity takes place in an enclosed building with fast closing doors; the operator has a maintenance programme for equipment; equipment is operated by trained staff and the facility does not operate at night.
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	FC	<u>Environment Agency assessment</u>

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	<p>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>The operator has provided information to support compliance with BATc 19. We have assessed the information provided and reviewed the site compliance reports. We are not satisfied that the operator has demonstrated compliance with BATc 19. Due to the close proximity of the site to commercial property, environmental receptors and the restricted space on site, we regard this installation as a higher risk site and do not consider the installation to be fully compliant with BATc 19 c, d and g.</p> <p>Site inspections have revealed poor maintenance of pipework. We have therefore included improvement condition IC10 which requires a detailed assessment of primary containment. The inspection shall include all associated pipework and primary containment systems (e.g. tanks, vessels) where polluting liquids and solids are being stored, treated, and/or handled.</p>

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			<p>Site inspections have also shown the concrete flooring of the yard which forms part of the site bund to be damaged in multiple areas. We have therefore included IC11 which requires review and repair of the secondary containment on site.</p> <p>We consider the Operator will be future compliant with BATc 19.</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> <ul style="list-style-type: none"> (a) Equalisation (b) Neutralisation (c) Physical separation, e.g. screens, sieves, grit separators, grease separators, oil-water separation or primary settlement tanks <p><i>Physico-chemical treatment, e.g.</i></p> <ul style="list-style-type: none"> (d) Adsorption (e) Distillation /rectification 	NA	<p><u>Environment Agency assessment</u></p> <p>We are satisfied that BATc 20 is not applicable to this Installation.</p>

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	<p>(f) Precipitation (g) Chemical oxidation (h) Chemical reduction (i) Evaporation (j) Ion exchange (k) Stripping</p> <p>Biological treatment, e.g. (l) Activated sludge process (m) Membrane bioreactor (n) Nitrification / denitrification when the treatment includes a biological treatment</p> <p>Solids removal, e.g. (o) Coagulation and flocculation (p) Sedimentation (q) Filtration (e.g. sand filtration, microfiltration, ultrafiltration) (r) Flotation</p> <p>See also: Table 6.1: BAT-associated emission levels (BAT-AELs) for direct discharges to a receiving water body</p>		

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	See also: Table 6.2: BAT-associated emission levels (BAT-AELs) for indirect discharges to a receiving water body		
21	<p>In order to prevent or limit the environmental consequences of accidents and incidents, BAT is to use all of the techniques given below, as part of the accident management plan (see BAT 1):</p> <p>(a) Protection measures; (b) Management of incidental /accidental emissions; (c) Incident /accident registration and assessment system</p>	CC	<p><u>Environment Agency assessment</u></p> <p>The operator has 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.</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>	NA	<p><u>Environment Agency assessment</u></p> <p>This is not a feasible option at present but is reviewed regularly by the operator. We are satisfied that BATc 22 is not applicable to this Installation at present.</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; (b) Energy balance record</p>	FC	<p><u>Environment Agency assessment</u></p> <p>We have reviewed the information provided by the Operator. We are satisfied that the</p>

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			operator has demonstrated compliance with BATc 23(b) but not BATc 23(a). We consider that the operator will be future compliant with BATc 23(a). Improvement condition IC 9 has been included in the permit to achieve compliance (see Annex 3).
24	<p>In order to reduce the quantity of waste sent for disposal, BAT is to maximise the reuse of packaging, as part of the residues management plan (see BAT 1).</p> <p>Packaging (drums, containers, IBCs, pallets, etc.) is reused for containing waste, when it is in good condition and sufficiently clean, depending on a compatibility check between the substances contained (in consecutive uses). If necessary, packaging is sent for appropriate treatment prior to reuse (e.g. reconditioning, cleaning).</p>	CC	<p><u>Environment Agency assessment</u></p> <p>The operator has provided information to support compliance with BATc 24 We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with BATc 24.</p>
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><u>Environment Agency assessment</u></p> <p>The operator has provided information to support compliance with BATc 33. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance 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> <ul style="list-style-type: none"> (a) Adsorption; (b) Biofilter; (c) Fabric filter; (d) Thermal oxidation; (e) Wet scrubbing <p>See also: 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>CC (narrative BAT)</p> <p>BATc 34, Table 6.7 FC (BAT ELV)</p>	<p><u>Environment Agency assessment</u></p> <p>The operator provided information to support compliance with BATc 34. A wet scrubber (which uses chlorine dioxide suspended in water) and carbon filter are installed at the facility.</p> <p>We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with the narrative element of BATc 34.</p> <p>We have set a BAT-AEL for ammonia as specified in the Waste Treatment BREF and BAT Conclusions which is applicable from 17th August 2022.</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>Improvement condition IC8 has been included in the permit to achieve compliance. The operator is required to complete the improvement condition and demonstrate compliance with BAT-AEL by the compliance date, 17 August 2022.</p> <p>In addition to the BAT-AEL, we have inserted the requirement to monitor odour concentration, hydrogen sulphide and ammonia on a 6-monthly frequency in Table S3.3 (process monitoring).</p> <p>As part of the Environment Agency approach to reduce emissions in the biowaste treatment sector, we have included the following improvement condition:</p> <p><u>Improvement condition for the review of abatement plant design</u></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
			Improvement condition 12 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	<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><u>Environment Agency assessment</u></p> <p>The operator has provided information to support compliance with BATc 35. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance 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); 	CC	<p><u>Environment Agency assessment</u></p> <p>The operator has provided information to support compliance with BATc 36. We have assessed the information provided and we are</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"> • 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. 		<p>satisfied that the operator has demonstrated compliance with BATc 36.</p> <p>In addition the permit stipulates process monitoring requirements.</p>
37	<p>In order to reduce diffuse emissions to air of dust, odour and bioaerosols from open-air treatment steps, BAT is to use one or both of the techniques given below:</p> <p>(a) Use of semi permeable membrane covers; (b) Adaptation of operations to the meteorological conditions</p>	NA	<p><u>Environment Agency assessment</u></p> <p>There are no open air treatment steps on site. We are satisfied that BATc 37 is not applicable to this Installation.</p>
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; 	NA	<p><u>Environment Agency assessment</u></p> <p>BATc 38 applies to the anaerobic treatment of waste. We are satisfied that BATc 38 is not applicable to this Installation.</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"> • biogas quantity, composition (e.g. H₂S) and pressure; • liquid and foam levels in the digester. 		
39	<p>In order to reduce emissions to air, BAT is to use both of the techniques given below:</p> <p>(a) Segregation of the waste gas streams;</p> <p>(b) Recirculation of waste gas</p>	NA	<p>Environment Agency assessment</p> <p>BATc 39 applies to the mechanical biological treatment of waste. We are satisfied that BATc 39 is not applicable to this installation.</p>

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 confirm whether they have a combustion plant or a specified generator on the site. The Operator confirmed there are no combustion plant on site.

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 confirmed that:

- There are no outdoor operational processes (all storage and treatment of waste takes place inside a dedicated building)
- the Operator does have a channelled point source (an odour control unit) within 250m of human sensitive receptors but this is not an open source
- the current permit does not include the monitoring of bioaerosols.

We carried out an assessment of the site location and the distance of site processes from sensitive receptors as part of this determination. Monitoring of bioaerosols is not required at the installation.

Soil & groundwater risk assessment (baseline report)

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

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

The Operator submitted a site condition report EP APPLIC/DOC REF /VERTAL/A/03, 2008 during the original application received on 24/08/2008. 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 risk assessment which includes a description of the condition of the site and a consideration of the possibility of soil and groundwater contamination at the installation.

We have assessed the risk assessment in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive – Operational instruction 233_06 [*Assessing application site condition reports and surrender site condition reports submitted under the Environmental Permitting regime*]. Activities take place within a building with impermeable flooring and sealed drainage. Chemicals are stored in 1000L IBCs within their own bunded area. There are routine inspection and maintenance checks and spills are dealt with immediately. SOP procedures are in place (ref: Appendix C for Environmental Risk Assessment - risks to soil and groundwater). We consider the risk assessment is satisfactory.

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 and S2.3 in the permit.

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

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

Other wastes (non-standard waste codes)

Not applicable.

Excluded wastes (99 waste codes)

The permit does not have any excluded codes.

Secondary containment and lagoon storage infrastructure design

We asked the Operator via the Regulation 61 Notice to:

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

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

Although the Operator has a perimeter bund, which it shares with the adjoining facility, recent site visits by Environment Agency staff evidenced that the floor of the bund requires maintenance and repair. Improvement condition IC11 has therefore been included to ensure compliance. There are no storage lagoons on site.

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

We assessed primary containment as part of the permit review. This information was not requested in the Regulation 61 Notice issued to the Operator, however, it was considered prudent to address this aspect as part of the permit review process. In this instance, the required information relating to the review of primary containment infrastructure against CIRIA C736 report 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 IC10 in the permit to address this aspect of the permit review (see Annex 3).

Digestate storage capacity

The site storage capacity is intrinsically linked with the adjacent anaerobic digestion facility, operated by Riverside AD Limited on the same site. We have therefore included improvement condition 13 to assess storage capacity and ensure process production and fate of digestate are considered for the two sites in tandem.

Annex 3: Improvement Conditions

Based on the information in the Operator's Regulation 61 Notice response and our own records of the capability and performance of the installation at this site, we consider that we need to set improvement conditions so that the outcome of the techniques detailed in the BAT Conclusions are achieved by the installation. These improvement conditions are set out below - justifications for them is provided at the relevant section of the decision document (Annex 1 or Annex 2).

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

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC1-7	Complete	07/10/2016
Improvement condition for progress report to achieve BAT-AELs		
IC8	<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-AEL. 2) Methodology for reaching the BAT-AEL. 3) Associated targets /timelines for reaching compliance by 17 August 2022. 4) Any alterations to the initial plan (in progress reports). <p>The report shall address the BAT Conclusions for Waste Treatment with respect to the following:</p> <ul style="list-style-type: none"> • BAT 34 Table 6.7 (compliance with BAT-AEL for channelled NH₃ to air from the biological treatment of waste) <p>Refer to BAT conclusions 2018/1147 issued 17.08.2018 for a full description of the BAT requirement.</p>	<p>Progress reports at three monthly intervals from date of permit issue:</p> <p>07/01/2022 07/04/2022 07/07/2022</p>
Improvement condition for progress report to achieve Narrative BAT		
IC9	<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:</p>	<p>Progress reports at three monthly intervals from date of permit issue:</p> <p>07/01/2022 07/04/2022 07/07/2022</p>

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<p>BAT 1 XII – residues management plan</p> <p>Draw up and implement a residue management plan, having regard to (1) minimising the generation of residues arising from the treatment of waste;</p> <p>(2) optimising the reuse, regeneration, recycling and/or recovery of energy of the residues, and</p> <p>(3) ensuring the proper disposal of residues.</p> <p>BAT 4 (b)(c) – adequate storage capacity/safe storage</p> <p>Refer to IC13</p> <p>BAT 14 (a), (b), (d) and (f) – Reduce diffuse emissions to air</p> <p>Carry out a detailed assessment of the integrity of all above ground pipework. Identify any improvements required to ensure their integrity and provide timescales for making improvements. (see also IC10).</p> <p>Submit assessment and improvement plan to the Environment Agency for approval.</p> <p>BAT 14(h) – Leak detection and repair (LDAR) programme</p> <p>Write and implement a leak detection and repair programme and prepare a LDAR plan (a structured approach to reduce fugitive emissions of organic compound by detection and subsequent repair or replacement of leaking components, reference 6.2 Diffuse emissions of organic compounds to air in BAT conclusions document).</p> <p>Submit a copy of the LDAR plan to the Environment Agency for approval.</p> <p>BAT 19 (c)(d)(g) – prevent emissions to water</p> <p>Refer to IC10 & IC11</p> <p>BAT 23(a) – Energy efficiency plan.</p> <p>Write and implement an Energy Efficiency Plan that demonstrates compliance with the techniques prescribed in BAT conclusion 23(a).</p> <p>Submit a copy of the plan to the Environment Agency.</p> <p><i>Refer to BAT conclusions 2018/1147 issued 17.08.2018 for a full description of the BAT requirement.</i></p>	
Improvement condition for primary containment		
IC10	<p>The operator shall submit a written report detailing the inspection and assessment of the primary containment and shall obtain the Environment Agency's written approval to it. The inspection of primary containment shall be undertaken by an appropriately qualified engineer and shall assess the condition of the containment against its design specification and relevant industry standards. The inspection shall include</p>	<p>07/07/2022 or other date as agreed in writing with the Environment Agency</p>

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<p>all associated pipework and primary containment systems (e.g. tanks, vessels) where polluting liquids and solids are being stored, treated, and/or handled.</p> <p>The report shall include:</p> <ul style="list-style-type: none"> • an assessment of the physical condition of all primary containment systems (storage and treatment vessels) using a Written Scheme of Examination and assessment of their suitability for providing primary containment in accordance with relevant industry standards • a program of works with timescales for the implementation of individual improvement measures necessary to demonstrate that the primary containment is fit for purpose or alternative appropriate measures to ensure all polluting materials will be contained on site; and • a summary of the preventative maintenance and inspection regime 	
Improvement condition for secondary containment		
IC11	<p>The operator shall submit a written report detailing the inspection and assessment of the secondary containment and shall obtain the Environment Agency's written approval to it. The report shall contain the results of a detailed visual integrity assessment of the condition of the secondary containment system, having particular regard to the yard surface which forms the base of the secondary containment (bund).</p> <p>The report shall:</p> <ul style="list-style-type: none"> • photographically identify all improvement works that need to be undertaken and provide dates for when the work will be carried out. • include a summary of the preventative maintenance and inspection regime <p>The operator shall implement the improvements identified in the report and demonstrate to the Environment Agency the secondary containment system complies with the standards detailed/referenced within the CIRIA C736 (2014) guidance, or equivalent.</p>	07/07/2022 or other date as agreed in writing with the Environment Agency
Improvement condition for review of effectiveness of abatement plant		
IC12	<p>The operator shall carry out a review of the abatement plant on site, in order to determine whether the measures have been effective and adequate to prevent and where not possible, minimise emissions released to air, including but not limited to odour and ammonia. (Relevant existing information can be used to help inform the review).</p>	07/07/2022 or other date as agreed in writing with the

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<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 consideration of the following aspects:</p> <ul style="list-style-type: none"> • 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; • Details of air quality quantitative impact assessment including modelling (i.e.H1) and a proposal for site-specific “action levels” (not limited to odour concentration, hydrogen sulphide and ammonia); • Recommendations for improvement including the replacement or upgrading the abatement plant; and • 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 operational storage capacity		
IC 13	<p>The operator shall provide a written “digestate storage contingency plan” and shall obtain the Environment Agency’s written approval to it. The plan shall contain the results of a review of the current storage of digestate produced from site operations. The review shall examine and include details of:</p> <ul style="list-style-type: none"> • the existing site storage arrangements associated with Riverside AD Limited, including: i) infrastructure layout, design and configuration, ii) capacities of tanks, iii) process flow (digestate and emissions) iv) calculations that demonstrate the storage capacity for digestate is adapted to, and consistent with the processing capability of the AD based on maximum daily feed rate, hydraulic retention time and permitted limits • safe storage considerations, including health, safety and environmental risks associated with digestate storage, separation and dispatch • site contingency arrangements in the event of closed landspreading periods, extreme weather conditions, site closure, disease outbreak etc. <p>The storage contingency plan shall include:</p>	07/07/2022 or other date as agreed in writing with the Environment Agency

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<ul style="list-style-type: none"> • Identification of alternative outlets for digestate – identifying companies/permitted waste facilities that would be able to manage the digestate, taking into account their permits and capacity constraints. 	