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/RP3890CB
The Operator is: Biffa Waste Services Limited
The Installation is: Etwall In Vessel Composting Facility
This Variation Notice number is: EPR/RP3890CB/V007

What this document is about

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

We have reviewed the permit for this installation against the revised BAT Conclusions for the Waste Treatment industry sector published on 10 August 2018 in the Official Journal of the European Union. In this decision document, we set out the reasoning for the consolidated variation notice that we have issued.

It explains how we have reviewed and considered the techniques used by the Operator in the operation and control of the plant and activities of the installation. This review has been undertaken with reference to the decision made by the European Commission establishing Best Available Techniques (BAT) Conclusions (BATc) for Waste Treatment as detailed in document reference C(2018) 5070. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position. It also provides a justification for the inclusion of any specific conditions in the permit that are in addition to those included in our generic permit template.

As well as considering the review of the operating techniques used by the Operator for the operation of the plant and activities of the installation, the consolidated variation notice takes into account and brings together in a single document all previous variations that relate to the original permit issue. Where this has not already been done, it also modernises the entire permit to reflect the conditions contained in our current generic permit template.

The introduction of new template conditions makes the Permit consistent with our current general approach and with other permits issued to Installations in this sector. Although the wording of some conditions has changed, while others have been deleted because of the new regulatory approach, it does not reduce the level of environmental

protection achieved by the Permit in any way. In this document, we therefore address only our determination of substantive issues relating to the new BAT Conclusions.

We try to explain our decision as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy, and we would welcome any feedback as to how we might improve our decision documents in future.

How this document is structured

1. Our decision
2. How we reached our decision
3. The legal framework
4. Annex 1 – Review of operating techniques within the Installation against BAT Conclusions.
5. Annex 2 – Review and assessment of changes that are not part of the BAT Conclusions derived permit review
6. Annex 3 – Improvement Conditions

1 Our decision

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

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

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

2 How we reached our decision

2.1 Requesting information to demonstrate compliance with BAT Conclusion techniques

We issued a Notice under Regulation 61(1) of the Environmental Permitting (England and Wales) Regulations 2016 (a Regulation 61 Notice) on 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 21/04/2020.

We considered it was in the correct form and contained sufficient information for us to begin our determination of the permit review.

The Operator made no claim for commercial confidentiality. We have not received any information in relation to the Regulation 61 Notice response that appears to be confidential in relation to any party.

2.2 Review of our own information in respect to the capability of the Installation to meet revised standards included in the BAT Conclusions document

Based on our records and previous experience in the regulation of the installation we consider that the Operator will be able to comply with the techniques and standards described in the BAT Conclusions other than for those techniques and requirements described in BAT Conclusion 2 (a), 3, 8, 10, 14(d), 23 (a) and 34. In relation to these BAT Conclusions, we do not fully agree with the Operator in respect of their current stated capability as recorded in their response to the Regulation 61 Notice. We have therefore included Improvement Conditions 4 and 5 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 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	In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features: I. commitment of the management, including senior management; II. definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation; III. planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment; IV. implementation of procedures paying particular attention to: (a) structure and responsibility, (b) recruitment, training, awareness and competence, (c) communication, (d) employee involvement, (e) documentation, (f) effective process control, (g) maintenance programmes, (h) emergency preparedness and response, (i) safeguarding compliance with environmental legislation; V. checking performance and taking corrective action, paying particular attention to: (a) monitoring and measurement (see also the JRC Reference Report on Monitoring of emissions to air and water from IED installations – ROM), (b) corrective and preventive action, recruitment, training, awareness and competence,	**CC**	**<u>Environment Agency assessment</u>** The Operator has provided information to support compliance with BATc 1. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 1.

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	(c) maintenance of records, (d) independent (where practicable) internal or external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained VI. review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness; VII. following the development of cleaner technologies; VIII. consideration for the environmental impacts from the eventual decommissioning of the plant at the stage of designing a new plant, and throughout its operating life; IX. application of sectoral benchmarking on a regular basis; X. waste stream management (see BAT 2); XI. an inventory of waste water and waste gas streams (see BAT 3); XII. residues management plan (see description in Section 6.5); XIII. accident management plan (see description in Section 6.5); XIV. odour management plan (see BAT 12) XV. noise and vibration management plan (see BAT 17).		
2	In order to improve the overall environmental performance of the plant, BAT is to use all of the techniques listed below: (a) Set up and implement waste characterisation and pre-acceptance procedures; (b) Set up and implement waste acceptance procedures; (c) Set up and implement a waste tracking system and inventory; (d) Set up and implement an output quality management system; (e) Ensure waste segregation;	**FC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 2. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with most of the techniques for BATc 2.

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	(f) Ensure waste compatibility prior to mixing or blending of waste; (g) Sort incoming solid waste		However, we consider that aspects of BATc 2a have not been adequately addressed with respect to characterisation of the following non-standard waste streams which are not included in the current permit templates for the sector: • 02 01 04 • 02 03 02 • 02 06 02 • 17 02 01 • 17 05 04 • 19 12 07 • 19 03 02 • 20 01 10 • 20 01 38 • 20 02 02 • 20 03 01 • 20 03 03 • 20 03 07 We consider that the Operator will be future compliant with BATc 2. Improvement condition 5 has been included in the permit to achieve compliance (see Annex 3).
3	In order to facilitate the reduction of emissions to water and air, BAT is to establish and to maintain an inventory of waste water and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the following features: (i) information about the characteristics of the waste to be treated and the waste treatment processes, including:	**FC**	**<u>Environment Agency assessment</u>** The operator has provided information to support compliance with BATc 3. We have assessed the information provided and have checked our compliance records. We are not satisfied that the operator has demonstrated compliance with BATc 3. The response submitted stated that the Working Plan and Odour Management Plan addressed the requirement of BATc 1

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	(a) simplified process flow sheets that show the origin of the emissions; (b) descriptions of process-integrated techniques and waste water/waste gas treatment at source including their performances; (ii) information about the characteristics of the waste water streams, such as: (a) average values and variability of flow, pH, temperature, and conductivity; (b) average concentration and load values of relevant substances and their variability (e.g. COD/TOC, nitrogen species, phosphorus, metals, priority substances /micropollutants); (c) data on bioeliminability (e.g. BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. inhibition of activated sludge)) (see BAT 52); (iii) information about the characteristics of the waste gas streams, such as: (a) average values and variability of flow and temperature; (b) average concentration and load values of relevant substances and their variability (e.g. organic compounds, POPs such as PCBs); (c) flammability, lower and higher explosive limits, reactivity; (d) presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, nitrogen, water vapour, dust).		for the site EMS to incorporate an inventory of waste water and waste gas streams. However, this inventory was not evidenced in the response. In addition to the comments above, the following aspects of BATc 3 need to be addressed by the Operator: <u>(i) information about the characteristics of the waste to be treated and the waste treatment process, including:</u> • *Simplified process flow diagram showing the origin of emissions* – the Operator stated this information was not available at the time of writing their application. • *Descriptions of process-integrated techniques and waste water/waste gas treatment at source including their performances* – this aspect of BATc 3 was not addressed in the response. <u>(ii) information about the characteristics of the waste water streams</u> • *Average values and variability of flow and temperature*; • *Average concentration and load values of relevant substances and their variability*; • *Data on bio-eliminability.* Although the Operator confirmed that the wastewater stream discharged to foul sewer under trade effluent discharge consent is tested monthly for pH, ammoniacal nitrogen, suspended solids, chemical oxygen demand, biological oxygen demand and tested quarterly for metals (the specific metals tested for were not detailed), no inventory was presented which demonstrated

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			that each of the aspects of BATc 3 (ii) outlined above were addressed. <u>(iii) information about the characteristics of the waste gas streams</u> • *average values and variability of flow and temperature;* • *average concentration and load values of relevant substances and their variability*; • *presence of other substances that may affect the waste gas treatment system or plant safety*. The Operator confirmed temperature and air flows within the composting tunnels are monitored and controlled via SCADA control system, and that windrows are subject to manual monitoring of temperature, moisture and oxygen, with results being recorded on the site's Compost Manager system. However, it was unclear whether the variability of flow and temperature of the gases being treated by the odour abatement system (scrubber and biofilter) are also monitored, and it was not demonstrated that average values and variability of flow and temperature were documented within an established inventory. The odour abatement plant also serves the reception building, not only the composting tunnels, and we would expect the response to address the overall air stream being treated and subsequently released via the biofilter. This aspect of BATc 3 therefore remains outstanding. The Operator provided details of monitoring that was undertaken at the site for monitoring of CH_4, CO_2, O_2, CO and H_2S. However it was unclear whether this data was only applicable to the reception hall building, or if it also accounted for the emissions collected and abated from the composting

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			vessels. Furthermore, it appears this data was collected specifically for the purposes of reviewing the generation of flammable gases from the process. This aspect requires clarification. Additionally, the site's inventory of waste gases should provide details on the average concentration and load values of relevant substances which the odour abatement system will be treating. This was not demonstrated in the information submitted. This aspect of BATc 3 therefore remains outstanding. With regards to consideration of the presence of other substances that may affect the waste gas treatment system or plant safety, this aspect of BATc 3 was not addressed in the response. All other aspects of BATc 3 were satisfactory for the two waste streams identified by the Operator; W2 (to sewer) and the channelled emission from the open biofilter. The Operator acknowledged in their response that the site does not currently comply with all of the relevant requirements of BATc 3, and that where the facility does not currently comply with BATc 3, these aspects will be addressed by 17th August 2022. We consider that the Operator will be future compliant with BATc 3. Improvement condition 5 has been included in the permit to achieve compliance (see Annex 3).
4	In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques given below: (a) Optimised storage location; (b) Adequate storage capacity;	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 4. We have assessed the information provided and

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	(c) Safe storage operation; (d) Separate area for storage and handling of packaged hazardous waste.		have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 4.
5	In order to reduce the environmental risk associated with the handling and transfer of waste, BAT is to set up and implement handling and transfer procedures. Handling and transfer procedures aim to ensure that wastes are safely handled and transferred to the respective storage or treatment. They include the following elements: • handling and transfer of waste are carried out by competent staff; • handling and transfer of waste are duly documented, validated prior to execution and verified after execution; • measures are taken to prevent, detect and mitigate spills; • operation and design precautions are taken when mixing or blending wastes (e.g. vacuuming dusty/powdery wastes). Handling and transfer procedures are risk-based considering the likelihood of accidents and incidents and their environmental impact.	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 5. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance 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).	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 6. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 6.

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
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.	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 7. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 7. BATc 7 applies to the single point source emission to foul sewer listed in the permit, W2. This point source emission was previously permitted with no ELVs. Having reviewed Table 6.2 (BAT-AELs for indirect discharges to water), and based on the activities permitted (open windrow and in-vessel composting), we consider that no additional emission limits are applicable. The site will be required to continue complying with the requirements of their trade effluent discharge consent, as specified in Table S3.3 of the permit.
8	BAT is to monitor channelled emissions to air with at least the frequency given in BATc 8, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.	**FC**	**Environment Agency assessment** The Operator confirmed in their submission that they are not currently compliant with the requirements of BATc 8. Based on the information provided in the submission and our compliance records, we agree with this assessment. BATc 8 is applicable to the biofilter serving the waste reception building and composting tunnels. We consider the open bed biofilter to be a relevant channelled emission, and have therefore incorporated this into Table S3.1 (emissions to air) of the permit. In the previous permit (EPR/RP3890CB/V006), this channelled emission was not listed and the only permitted monitoring

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			requirement related to odour management from this source was for daily olfactory monitoring (detection at site boundary) to be undertaken. Therefore, the permit (Table S3.1) has been updated as part of this review to add the relevant emission limits and associated monitoring requirements for the following parameters (for the biofilter channelled emission), to implement the requirements of BATc 8 (associated with BAT 34): • Hydrogen sulphide (H_2S) • Ammonia (NH_3) • Odour concentration. The Operator confirmed the requirements of BATc 8 will be implemented by 17th August 2022. We consider that the Operator will be future compliant with BATc 8. Improvement condition 5 has been included in the permit to achieve compliance (see Annex 3).
10	BAT is to periodically monitor odour emissions. Odour emissions can be monitored using: • EN standards (e.g. dynamic olfactometry according to EN 13725 in order to determine the odour concentration or EN 16841-1 or -2 in order to determine the odour exposure); • when applying alternative methods for which no EN standards are available (e.g. estimation of odour impact), ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality. The monitoring frequency is determined in the odour management plan (see BAT 12).	**FC**	**<u>Environment Agency assessment</u>** The Operator confirmed in their submission that they are not currently compliant with the requirements of BATc 10, and that odour sampling to determine odour concentration is not currently undertaken. Based on the information provided in the submission and our compliance records, we agree with this assessment. As detailed above for BATc 8, we have updated Table S3.1 of the permit to include an odour monitoring regime for channelled emissions to air, on a 6 monthly basis. The Operator confirmed the requirements of BATc 10 will be implemented by 17th August 2022.

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			We consider that the Operator will be future compliant with BATc 10. Improvement condition 5 has been included in the permit to achieve compliance (see Annex 3).
11	BAT is to monitor the annual consumption of water, energy and raw materials as well as the annual generation of residues and waste water, with a frequency of at least once per year. Monitoring includes direct measurements, calculation or recording, e.g. using suitable meters or invoices. The monitoring is broken down at the most appropriate level (e.g. at process or plant/installation level) and considers any significant changes in the plant/installation.	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 11. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 11.
12	In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements: • a protocol containing actions and timelines; • a protocol for conducting odour monitoring as set out in BAT 10; • a protocol for response to identified odour incidents, e.g. complaints; • an programme designed to identify the source(s); to characterise the contributions of the sources; and to implement prevention and/or reduction measures.	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 12. A detailed review of the odour management plan was not undertaken as part of this permit review. However, it was confirmed by the local regulatory compliance team that the site has an odour management plan (OMP) that has been in place for four years, which is deemed to have been approved. Furthermore, odour management at the facility, including the OMP, was recently reviewed as part of a remote audit of the installation (dated 09/06/2020). Based on the information provided and our compliance records, we are satisfied that the Operator has demonstrated compliance with BATc 12.
13	In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to use one or a combination of the techniques given below:	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 13. We have assessed the information provided and

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	(a) Minimising residence times; (b) Using chemical treatment; (c) Optimising aerobic treatment		have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 13.
14	In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques given below: (a) Minimising the number of potential diffuse emission sources; (b) Selection and use of high-integrity equipment; (c) Corrosion prevention; (d) Containment, collection and treatment of diffuse emissions; (e) Dampening; (f) Maintenance; (g) Cleaning of waste treatment and storage areas; (h) Leak detection and repair (LDAR) programme	**FC**	**<u>Environment Agency assessment</u>** The Operator has provided information to support compliance with BATc 14. We have assessed the information provided and have checked our compliance records. We are not satisfied that the Operator has demonstrated compliance with BATc 14. The Operator stated in their response - *Emissions to air are controlled by the provision of an active air extraction system, which maintains negative pressures and applies 3 air changes per hour in the waste reception building and in-vessel tunnels being used.* Although the Operator's response confirmed that a number of the relevant techniques are currently employed on site, the information submitted did not demonstrate that the waste reception building and the composting vessels are adequately sealed and subject to negative pressure to contain diffuse emissions, as stated in the information submitted. BATc 14(d) must therefore be addressed by the Operator. As part of this, the Operator is required to demonstrate that the waste reception building and composting vessels are adequately enclosed and are maintained under negative pressure to manage diffuse emissions from these processing areas.

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			We consider that the Operator will be future compliant with BATc 14. Improvement condition 5 has been included in the permit to achieve compliance (see Annex 3).
15	BAT is to use flaring only for safety reasons or for non-routine operating conditions (e.g. start-ups, shutdowns) by using both of the techniques given below: (a) Correct plant design; (b) Plant management	**NA**	**Environment Agency assessment** The site does not operate any flares. 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**	**Environment Agency assessment** The site does not operate any flares. 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; 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	**NA**	**Environment Agency assessment** The Operator provided a single page document titled *Generic Noise and Vibration Management Plan*, which included details on source characterisation, control measures used to control noise and vibration generation, and noise monitoring. 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. We are satisfied this is not applicable to the installation. We are satisfied that BATc 17 is not applicable to this Installation.

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	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**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 18. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 18.
19	In order to optimise water consumption, to reduce the volume of waste water generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques given below: (a) Water management; (b) Water recirculation; (c) Impermeable surface; (d) Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels; (e) Roofing of waste storage and treatment areas; (f) Segregation of water streams (g) Adequate drainage infrastructure; (h) Design and maintenance provisions to allow detection and repair of leaks (i) Appropriate buffer storage capacity	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 19. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 19.

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20	In order to reduce emissions to water, BAT is to treat waste water using an appropriate combination of the techniques given below: ***Preliminary and primary treatment, e.g.*** (a) Equalisation (b) Neutralisation (c) Physical separation, e.g. screens, sieves, grit separators, grease separators, oil-water separation or primary settlement tanks ***Physico-chemical treatment, e.g.*** (d) Adsorption (e) Distillation /rectification (f) Precipitation (g) Chemical oxidation (h) Chemical reduction (i) Evaporation (j) Ion exchange (k) Stripping ***Biological treatment, e.g.*** (l) Activated sludge process (m) Membrane bioreactor (n) Nitrification / denitrification when the treatment includes a biological treatment ***Solids removal, e.g.*** (o) Coagulation and flocculation (p) Sedimentation (q) Filtration (e.g. sand filtration, microfiltration, ultrafiltration) (r) Flotation	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 20. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 20. W1 – Uncontaminated site surface water This discharge to water consists solely of uncontaminated surface water from roofs and non-operational areas. Therefore, W1 is excluded from BATc 20 as it is not considered to be waste water. W2 – Site foul drainage via interceptor Wastewater generated on-site is discharged to foul sewer under an existing trade effluent discharge consent, where it is subsequently treated at a sewage treatment works off-site. This discharge is therefore considered to be an indirect discharge. The Operator confirmed that prior to discharge to foul sewer the only treatment this effluent is subjected to is solids interception (preliminary and primary treatment under BATc 20). We consider the treatment arrangement to be sufficient. Having reviewed Table 6.2 (BAT-AELs for indirect discharges to a receiving water body) of the BAT Conclusions, we agree with the applicant's statement that none of the BAT-AELs listed are applicable.

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	See also: Table 6.1: BAT-associated emission levels (BAT-AELs) for direct discharges to a receiving water body See also: Table 6.2: BAT-associated emission levels (BAT-AELs) for indirect discharges to a receiving water body		
21	In order to prevent or limit the environmental consequences of accidents and incidents, BAT is to use all of the techniques given below, as part of the accident management plan (see BAT 1): (a) Protection measures; (b) Management of incidental /accidental emissions; (c) Incident /accident registration and assessment system	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 21. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 21.
22	In order to use materials efficiently, BAT is to substitute materials with waste. Waste is used instead of other materials for the treatment of wastes (e.g. waste alkalis or waste acids are used for pH adjustment, fly ashes are used as binders).	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 22. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 22.
23	In order to use energy efficiently, BAT is to use both of the techniques given below: (a) Energy efficiency plan; (b) Energy balance record	**FC**	**Environment Agency Assessment** The Operator confirmed that they do not currently comply with the requirements of BATc 23 and that: • There is not currently an energy efficiency plan in place for the installation;

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			• An energy flow diagram does not currently exist for the installation. The Operator confirmed that the requirements of BATc 23 will be implemented by 17th August 2022. We consider that the Operator will be future compliant with BATc 23. Improvement condition 5 has been included in the permit to achieve compliance (see Annex 3).
24	In order to reduce the quantity of waste sent for disposal, BAT is to maximise the reuse of packaging, as part of the residues management plan (see BAT 1). Packaging (drums, containers, IBCs, pallets, etc.) is reused for containing waste, when it is in good condition and sufficiently clean, depending on a compatibility check between the substances contained (in consecutive uses). If necessary, packaging is sent for appropriate treatment prior to reuse (e.g. reconditioning, cleaning).	**NA**	**Environment Agency assessment** The Operator stated that they do not consider this BAT point to apply to the activities undertaken. Considering the nature of the wastes received and treated at the Installation, we agree with this assessment. We are satisfied that BATc 24 is not applicable to this Installation.
33	In order to reduce odour emissions and to improve the overall environmental performance, BAT is to select the waste input. The technique consists of carrying out the pre-acceptance, acceptance and sorting of the waste input (see BAT 2) so as to ensure the suitability of the waste input for the waste treatment, e.g. in terms of nutrient balance, moisture or toxic compounds which may reduce the biological activity.	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 33. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 33.

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
34	In order to reduce channelled emissions to air of dust, organic compounds and odorous compounds, including H_2S and NH_3, BAT is to use one or a combination of the techniques given below: (a) Adsorption; (b) Biofilter; (c) Fabric filter; (d) Thermal oxidation; (e) Wet scrubbing See also: Table 6.7: BAT-associated emission levels (BAT-AELs) for channelled NH_3, odour, dust and TVOC emissions to air from the biological treatment of waste.	**CC (narrative BAT)/** **FC BAT-AELs (BATc 34, Table 6.7)**	**<u>Environment Agency assessment</u>** The Operator provided information to support compliance with BATc 34. A wet scrubber and open biofilter are installed at the facility to abate odorous gaseous emissions generated within the waste reception building and the enclosed composting vessels. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 34. We have set a BAT-AEL for ammonia as specified in the Waste Treatment BREF and BAT Conclusions. Improvement condition 4 has been included in the permit to achieve compliance with the relevant BAT-AELs, as specified in Table 6.7 of the BAT Conclusions.. The Operator is required to complete the improvement condition and demonstrate compliance with BAT-AEL by the compliance date, 17 August 2022. In addition to the BAT-AEL, we have inserted the requirement to monitor odour concentration, hydrogen sulphide and ammonia on a 6-monthly frequency in Table S3.4 (process monitoring). As part of the Environment Agency approach to reduce emissions in the biowaste treatment sector, we have included the following improvement condition: <u>Improvement condition for the review of effectiveness of abatement plant</u> Improvement condition 10 requires the Operator to review abatement plant on site, in order to determine whether existing

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
			measures have been effective and adequate to prevent and /or minimise emissions released to air. Where further improvements are identified, the Operator is required to implement these measures.
35	In order to reduce the generation of waste water and to reduce water usage, BAT is to use all of the techniques given below: (a) Segregation of water streams; (b) Water recirculation; (c) Minimisation of the generation of leachate	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 35. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 35.
36	In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters. Monitoring and/or control of key waste and process parameters, including: • waste input characteristics (e.g. C to N ratio, particle size); • temperature and moisture content at different points in the windrow; • aeration of the windrow (e.g. via the windrow turning frequency, O_2 and/or CO_2 concentration in the windrow, temperature of air streams in the case of forced aeration); • windrow porosity, height and width.	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 36. We have assessed the information provided and have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 36.
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:	**CC**	**Environment Agency assessment** The Operator has provided information to support compliance with BATc 37. We have assessed the information provided and

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	(a) Use of semi permeable membrane covers; (b) Adaptation of operations to the meteorological conditions		have checked our compliance records and we are satisfied that the Operator has demonstrated compliance with BATc 37.
38	In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters. This includes monitoring and/or control of key waste and process parameters: • pH and alkalinity of the digester feed; • digester operating temperature; • hydraulic and organic loading rates of the digester feed; • concentration of volatile fatty acids (VFA) and ammonia within the digester and digestate; • biogas quantity, composition (e.g. H_2S) and pressure; • liquid and foam levels in the digester.	**NA**	**Environment Agency assessment** The Operator stated that they do not consider this BAT point to apply to the activities undertaken. Considering the permitted activities undertaken at the Installation, we agree with this assessment. We are satisfied that BATc 38 is not applicable to this Installation.
39	In order to reduce emissions to air, BAT is to use both of the techniques given below: (a) Segregation of the waste gas streams; (b) Recirculation of waste gas	**NA**	**Environment Agency assessment** The Operator stated that they do not consider this BAT point to apply to the activities undertaken. Considering the permitted activities undertaken at the Installation, we agree with this assessment. We are satisfied that BATc 39 is not applicable to this Installation.

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

Existing Medium Combustion Plant

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

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

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

Bioaerosols monitoring requirements

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

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

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

There are external site operational processes within 250 metres of a sensitive receptor.

We therefore consider it appropriate to insert the bioaerosols monitoring requirements in the permit in accordance with our guidance TGN M9 *Environmental monitoring of bioaerosols at regulated facilities* (version 2, July 2018). We have removed the requirement to monitor gram-negative bacteria that was included in the previous notice. 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 stated the following in their response:

- The Etwall IVC facility does not produce or release any hazardous substances.
- Notwithstanding this, the site has operated with provision of impermeable pavements and sealed drainage systems (which have been appropriately maintained) since issue of the permit, such that operations at the facility are unlikely to impact upon baseline soil and groundwater quality beneath the site.

We have included two improvement conditions in the permit which require the Operator to:

- Submit a site condition report which includes baseline soil and groundwater data (Improvement Condition 6);
- Where the risk assessment carried out under IC6 above establishes a risk to soil and groundwater:
    - Prepare and submit a baseline report compliant with Article 22 of the Industrial Emissions Directive (IED) containing information necessary to determine the current state of soil and groundwater contamination; or
    - Provide a summary report referring to information previously submitted where the Operator is satisfied that such information represents the current state of soil and groundwater contamination (Improvement Condition 7).

This approach will enable a quantified comparison to be made with the state of the soil and groundwater contamination upon definitive cessation of activity.

Waste types

We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility. The wastes are specified in Table S2.2 in the permit.

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

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

Other wastes (non-standard waste codes)

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

Waste code	Description
02 01 04	waste plastics (except packaging)

Waste code	Description
02 03 02	wastes from preserving agents
02 06 02	wastes from preserving agents
17 02 01	wood
17 05 04	soil and stones other than those mentioned in 17 05 03
19 12 07	wood other than that mentioned in 19 12 06
19 03 02	solid wastes from soil remediation other than those mentioned in 19 13 01
20 01 10	clothes
20 01 38	wood other than that mentioned in 20 01 37
20 02 02	soil and stones
20 03 01	mixed municipal waste (biodegradable only)
20 03 03	street-cleaning residues (biodegradable only)
20 03 07	bulky waste (biodegradable only)

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).

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

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

We assessed primary containment as part of the permit review. This information was not requested in the Regulation 61 Notice issued to the Operator, however, it was considered prudent to address this aspect as part of the permit review process. In this instance, the required information relating to the review of primary containment infrastructure against CIRIA C736 was not previously submitted to the Environment Agency, nor was it included in the supporting documentation submitted by the Operator in their Regulation 61 response.

We have therefore set an Improvement Condition (IC8) in the permit to address this aspect of the permit review (see Annex 3).

Secondary containment and 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.

The Operator confirmed that:
- the facility has a number of above ground tanks including:
  - 75,000 L clean water tank;
  - 75,000 L grey water tank (collected roof water);
  - 50,000 L leachate tank (collected from waste reception areas and compost windrow areas);
  - 50,000 L firewater tank; and
  - 5,000 L fuel tank.
- the installation does not have any storage lagoons.
- all water and leachate storage tanks are provided with secondary containment comprising:
  - Impermeable concrete base and concrete bund walls capable of containing up to 110% of the capacity of the largest tank within the bund;
  - All gauges are contained within the bunded area, as are filling and emptying points;
  - No drain valves pass through the bunds;
  - Any pipework is routed over the top of the bunds.
- the fuel tank is a bunibowser containing an integral bunded enclosure providing the equivalent level of protection as the bunding detailed above.
- all waste processing and storage areas are served by impermeable pavements to sealed drainage systems, and therefore, any breach of secondary containment could rely on the surrounding impermeable pavements for tertiary containment.
- the Operator stated that the above measures are understood to comply with the requirements of CIRIA C736 report.

Although the above information in relation to secondary containment and storage infrastructure was provided, the Operator did not provide any evidence to support the statement that the existing secondary containment meets the CIRIA 736 standard. We have therefore set an Improvement Condition 9 (IC9) in the permit to address this aspect of the permit review.

Improvement Condition 9 requires the Operator to submit a site secondary containment plan within 12 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 9 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 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**
IC 1	The operator shall submit revised written procedures for approval to meet all the relevant BAT requirements for the Composting Activity detailed in Guidance Note IPPC S5.06 – *Guidance for the Treatment of Hazardous and Non Hazardous Waste*. The procedures must contain dates for implementation of individual measures.	Superseded
IC 2	The operator shall submit an odour management plan to the Environment Agency for written approval. The plan shall take into account the appropriate measures for odour control specified in section 2.2.6 of Sector Guidance Note IPPC S5.06 – Guidance for the Treatment of Hazardous and Non Hazardous Waste. The plan shall also incorporate all the required detailed information as specified in the Environment Agency's Horizontal Guidance H4 – Odour Management. The plan must contain dates for implementation of individual measures.	Completed
IC 3	The operator shall review and develop the existing fire risk assessment and plan for the facility and submit a revised plan to the Environment Agency in writing. The revised fire prevention plan must detail how maturation windrows will be monitored to ensure that the core temperature is measured and what action will be taken to reduce temperatures. The notification requirements of condition 2.4.2 will be deemed to have been complied with on submission of the written proposals. The operator shall implement the procedures and measures in accordance with the Environment Agency's written approval.	Completed
Improvement condition for progress report to achieve BAT-AELs		

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC4	The operator shall submit, for approval by the Environment Agency, a report setting out progress to achieving the Best Available Techniques Conclusion Associated Emission Levels (BAT-AELs) where BAT is currently not achieved, but will be achieved before 17 August 2022. The report shall include, but not be limited to, the following: 1) Current performance against the BAT-AELs. 2) Methodology for reaching the BAT-AELs. 3) Associated targets /timelines for reaching compliance by 17 August 2022. 4) Any alterations to the initial plan (in progress reports). The report shall address the BAT Conclusions for Waste Treatment with respect to the following: • **BAT 34 Table 6.7** (compliance with BAT-AELs for channelled NH_3, odour, dust and TVOC emissions to air from the biological treatment of waste)	Progress reports at three monthly intervals from date of permit issue: 24/04/2022 24/07/2022
Improvement condition for progress report to achieve Narrative BAT		
IC5	The operator shall submit, for approval by Environment Agency, a report setting out progress to achieving the 'Narrative' BAT where BAT is currently not achieved, but will be achieved before 17 August 2022. The report shall include, but not be limited to, the following: 1) Methodology for achieving BAT 2) Associated targets /timelines for reaching compliance by 17 August 2022 3) Any alterations to the initial plan (in progress reports). The report shall address the BAT Conclusions for Waste Treatment with respect to BAT 2, 3, 8, 10, 14 and 23.	Progress reports at three monthly intervals from date of permit issue: 24/04/2022 24/07/2022
Improvement condition for site risk assessment to prevent soil & groundwater pollution		
IC6	The operator shall submit to the Environment Agency for approval a risk assessment considering the possibility of soil and groundwater contamination at the installation where the activity involves the use, production or release of a relevant hazardous substance (as defined in Article 3(18) of the Industrial Emissions Directive). The risk assessment shall clearly establish with appropriate evidence whether or not there is a risk of	17/08/2022

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
	contamination of soil and groundwater and should follow the Defra Guidance – Industrial Emissions Directive EPR Guidance on Part A Installations (Section 5.10-5.15, pages 28-29 - Baseline Reports and Permit Surrender).	
IC7	Where the risk assessment carried out under IC6 above establishes a risk to soil and groundwater, the operator shall: a) prepare and submit a baseline report compliant with Article 22 of the Industrial Emissions Directive (IED) containing information necessary to determine the current state of soil and groundwater contamination; or b) provide a summary report referring to information previously submitted where the operator is satisfied that such information represents the current state of soil and groundwater contamination, so as to enable a quantified comparison to be made with the state of soil and groundwater contamination upon definitive cessation of activity.	17/08/2022 or other date as agreed in writing with the Environment Agency
Improvement condition for primary containment		
IC8	The operator shall submit a written 'primary containment plan' and shall obtain the Environment Agency's written approval to it. The plan shall contain the results of an inspection and program of works undertaken by a qualified engineer, and shall assess the extent design specification and condition of primary containment systems where polluting liquids and solids are being stored, treated, and/or handled. The plan shall include: • an assessment of the physical condition of all primary containment systems (storage and treatment vessels) using a Written Scheme of Examination and their suitability for providing primary containment when subjected to the dynamic and static loads caused by catastrophic tank failure; • a program of works with timescales for the implementation of individual improvement measures necessary to demonstrate that the primary containment is fit for purpose	17/08/2022 or other date as agreed in writing with the Environment Agency

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
	or alternative appropriate measures to ensure all polluting materials will be contained on site; and • a preventative maintenance and inspection regime The plan shall be implemented in accordance with the Environment Agency's written approval.	
Improvement condition for secondary containment design		
IC9	The operator shall submit a written 'secondary and tertiary containment plan' and shall obtain the Environment Agency's written approval to it. The plan shall contain the results of an inspection and program of works undertaken by a competent structural engineer, in accordance with the risk assessment methodology detailed within CIRIA C736 (2014) guidance, of the condition and extent of secondary and tertiary containment systems where all polluting liquids and solids are being stored, treated, and/or handled. The inspection shall consider, but not be limited to, the storage vessels, bunds, loading and unloading areas, transfer pipework/pumps, temporary storage areas, and liners underlying the site. The plan shall include: • an assessment of the physical condition of all secondary and/or tertiary containment systems, using a Written Scheme of Examination and their suitability for providing containment when subjected to the dynamic and static loads caused by catastrophic tank failure; • a program of works with timescales for the implementation of individual improvement measures necessary for the secondary and/or tertiary containment systems to comply with CIRIA C736 (2014) guidance, or equivalent. • a preventative maintenance and inspection regime The plan shall be implemented in accordance with the Environment Agency's written approval.	17/08/2022 or other date as agreed in writing with the Environment Agency
Improvement condition for review of effectiveness of abatement plant		
IC10	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	17/08/2022 or other date as agreed in writing with the

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
	minimise emissions released to air including but not limited to odour and ammonia. The operator shall submit a written report to the Environment Agency following this review for assessment and approval. The report shall include but not limited to the following aspects: • Full investigation and characterisation of the waste gas streams. • Abatement stack monitoring results (not limited to odour and ammonia) • Abatement process monitoring results (not limited to odour and ammonia) • Details of air quality quantitative impact assessment including modelling and a proposal for site-specific “action levels” (not limited to odour concentration, hydrogen sulphide and ammonia). • Odour monitoring results at the site boundary • Records of odour complaints and odour related incidents • Recommendations for improvement including the replacement or upgrading the abatement plant • Timescales for implementation of improvements to the abatement plant The operator shall implement the improvements in line with the timescales as approved by the Environment Agency.	Environment Agency