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/CP3298LQ
The Operator is: New Earth Solutions (Kent) Limited
The Installation is: Blaise Farm Quarry Closed Vessel Composting Facility
This Variation Notice number is: EPR/CP3298LQ/V005

What this document is about

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

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

It explains how we have reviewed and considered the techniques used by the Operator in the operation and control of the plant and activities of the installation. This review has been undertaken with reference to the decision made by the European Commission establishing BAT Conclusions 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 the BAT Conclusions.
5. Annex 2 – Review and assessment of changes that are not part of the BAT Conclusions derived permit review
6. Annex 3 – Improvement Conditions

1 Our decision

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

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

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

2 How we reached our decision

2.1 Requesting information to demonstrate compliance with BAT Conclusion techniques

We issued a Notice under Regulation 61(1) of the Environmental Permitting (England and Wales) Regulations 2016 (a Regulation 61 Notice) on 19/07/2019 requiring the Operator to provide information to demonstrate where the operation of their installation currently meets, or how it will subsequently meet, the revised standards described in the relevant BAT Conclusions document.

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

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

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

The Regulation 61 Notice response from the Operator was received on 17/01/2020.

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

The Operator did not ask for a derogation from any BAT-AEL.

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

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

Based on our records and previous experience in the regulation of the installation we consider that the Operator will be able to comply with the techniques and standards described in the BAT Conclusions other than for those techniques and requirements described in BAT Conclusion 1, 3, 4, 5, 12, 14, 19, 23, 34 and 36. In relation to these BAT Conclusion(s), we do not fully agree with the Operator in respect of their current stated capability as recorded in their regulation 61 Notice response. We have therefore included Improvement Condition 1 and 2 in the Consolidated Variation Notice to ensure that the requirements of the BAT Conclusion are delivered before 17/08/2022.

We acknowledge that there is ongoing communication between the operator and the Environment Agency with regard to site improvements and progressing action plans which aim to address the gaps identified in this decision document.

2.3 Requests for further information during determination

There were no further requests for information during determination.

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 but not all of them will be relevant to the installation. This annex provides a record of decisions made in relation to each relevant BAT Conclusion which are applicable to biowaste treatment installations. 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,	**FC**	The Operator has an Environmental Management System accredited to ISO14001 which is an internationally recognised, externally audited, standard. **EA assessment** We recognise that the Operator does have an EMS. However, in light of the shortfalls identified in some narrative BATs (nos. 1, 3, 4, 5, 12, 14, 19, 23 and 36) below, we require that at the EMS annual review the plan is updated and implemented, paying particular attention to the following areas: II - Environmental policy that includes the continual improvement of the installations environmental performance; III – planning procedures, objectives and targets in conjunction with financial planning and investment; IV- implementation of procedures paying particular attention to: f) effective process control g) maintenance programmes i) safeguarding compliance with environmental legislation; V – checking performance and taking timely corrective and preventative action; and VI – review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness.

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the Operator to demonstrate compliance with the BAT Conclusion requirement
	(c) 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 (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		We have therefore included improvement condition IC 2 requiring that the EMS is reviewed, updated and implemented in these areas. For more details on waste stream management, please refer to BAT 2. For more details on waste water and gas inventory, refer to BAT 3. For more details on Odour Management Plan, refer to BAT 12. For more details on Noise Management Plan, refer to BAT 17. **We are satisfied that the operation will be future compliant with BAT 1.**

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the Operator to demonstrate compliance with the BAT Conclusion requirement
	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);		

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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;	**CC**	The Operator states all the techniques listed are employed to achieve BAT 2, as follows: (a) The Operator liaises extensively with the suppliers from an early stage of the procurement process to understand and assess the type, volume and composition of the waste requiring treatment in order to design the facility to accept and treat the contracted waste stream. The Operator is provided with compositional analysis of the waste to be treated at the facility. Representative samples are taken to categorise the co-mingled (food and green), segregated green waste and segregated food waste arisings, by material, quantity and biodegradable content. In the event the Operator secures other waste contracts, they ask for evidence of the waste composition from the waste producer and, if necessary, carry-out compositional analysis of that waste to ensure the waste is suitable for treatment within the facility and that the facility is permitted to accept the waste. (b) Only non-hazardous wastes are accepted at the site, the quantity of waste accepted will be less than 75,000 tonnes per year. This is permitted by the current permit. Wastes that

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	(g) Sort incoming solid waste		are high in particulates, dust or fibres or that could give rise to problems during processing due to a high dust or fibre content will not be accepted. Malodorous organic wastes may be accepted subject to strict controls on the delivery vehicles so that they can be unloaded immediately into the Waste Reception Building, processed and placed in the windrow. These controls would have to be drawn up, including a specific risk assessment, and agreed with the Environment Agency, prior to delivery. All unloading of vehicles carrying waste will take place in the Waste Reception Building with the external doors closed. Wastes accepted have to conform to the EWC codes allowed by the permit. (c) All waste enters and leaves the site via a weighbridge where relevant information is recorded. All captured weighbridge data is stored and processed by the computer system. The data can be interrogated and reports produced. The type of information that can be reported includes the following: • The total amount of waste received at the facility. • Details of each load of waste received including: • the registration number of the collection vehicle. • the date and time of the delivery. • the gross and tare weights in tonnes of the vehicle making the delivery. • waste transfer note reference numbers and List of Wastes Regulations code. • Details of waste which has undergone treatment.

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			• Details of Process Outputs diverted from landfill and any residues disposed of to landfill in a format that can be used for WasteDataFlow auditing purposes. Once the waste is formed into windrows in the composting halls, each batch is assigned a unique reference number in order to facilitate traceability of the waste throughout the process. All processing events relating to each batch of waste are recorded by the process computer and referenced against the applicable batch number. This data is collated and provides an audit trail for all batches of material leaving the facility. (d) The waste output is managed so that all compost leaving site will be in accordance with the procedures laid out in PAS:100 and the Quality Protocol for Compost. As part of the assessment of product quality, the material will be tested in accordance with PAS100 requirements. (e) Rejected wastes will be segregated and stored in a separate area of the waste reception hall pending removal to a suitably permitted alternative facility. (f) The Operator will use their experience to ensure a good mixing of waste streams to provide a good C:N ratio (25-40:1) throughout the windrows. (g) The waste is assessed and sorted as it comes into the site. **EA assessment** We are satisfied the operation currently complies with BAT 2.

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3	In order to facilitate the reduction of emissions to water and air, BAT is to establish and to maintain an inventory of waste water and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the following features: (i) information about the characteristics of the waste to be treated and the waste treatment processes, including: (a) simplified process flow sheets that show the origin of the emissions; (b) descriptions of process-integrated techniques and waste water/waste gas treatment at source including their performances; (ii) information about the characteristics of the waste water streams, such as: (a) average values and variability of flow, pH, temperature, and conductivity; (b) average concentration and load values of relevant substances and their variability (e.g.	**FC**	The Operator states that the Installation has no point source emissions to air, land or water, so BAT 3 does not apply. **EA assessment** We do not agree with the Operators assessment above. The open biofilter is considered a 'channelled' (point-source) emission in accordance with BAT/BREF definitions. References to waste water and waste gas emissions in BAT 3 applies to both direct and indirect emission sources (i.e. point and fugitive emission sources). An inventory and the source identification of these emissions has not been provided or how the characteristics outlined in the BATc will be assessed. <u>Waste Gas Streams</u> The main releases from aerobic treatment operations are particulates, bioaerosols, ammonia; volatile organic carbons (VOCs); and other gases e.g. carbon dioxide. Not all emissions and their source have been identified (BAT 3) and demonstrated to be prevented, reduced or treated appropriately (BAT 14 et al.). Once these emissions and sources, both direct and indirect, are identified then process-integrated techniques and treatment methods can be reviewed. Information about the characteristics of the waste gases in line with BAT3 need to be considered.

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	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).		<u>Waste water</u> The permit does not authorise any trade effluent discharge from the site, or trade effluent treatment on site. The original permit application stated water is produced from the following areas and disposed of as below: • Leachate from composting halls and biofilter sump; aqueous scrubber liquor; vehicle wash down area; hand washing from sanitation stations and surface water from pad in front of reception building is collected in the leachate tank, and taken off-site for disposal • Clean water from building roofs drains to the on-site surface water lagoon. • Water from external paved areas **<u>(clean surface water only)</u>** drains to the on-site surface water lagoon via an oil interceptor. • Staff offices and welfare facilities drain to a cesspit (sealed tank) and is taken off-site for disposal. However, we are aware that some external areas that were identified at the permit application stage to be non-operational and were therefore allowed to drain to the on-site surface water lagoon, have since become operational. This indirect discharge needs to be categorised, collected and treated/disposed of appropriately i.e. provided with an impermeable surface and contained drainage system or waste transfer/handling arrangements revised. (Operational in this instance refers to the areas that are routinely used to transport materials around site and between buildings, such as along roadways).

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			The existing surface water lagoon must only be used for clean, uncontaminated (non-operational areas/roof water) water only, and this a condition in the permit. We have therefore included improvement condition IC 2 requiring the Operator to undertake a review and provide an inventory of all waste water and waste gases handled and treated by the process or produced from the process or plant, in accordance with BAT3. **We are satisfied that the operation will be future compliant with BAT 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; (c) Safe storage operation; (d) Separate area for storage and handling of packaged hazardous waste.	**FC**	The Operator states they use a combination of techniques (a), (b) and (c). BAT4(d) is not applicable as no packaged hazardous waste is stored on site. All storage areas are in an enclosed building which is considered the optimal storage location. All are adequately sized. Storage areas for IBCs/drums for process chemicals are in a fully contained environment. There are two leachate tanks, but usually only one is in use, so one tank can provide extra storage capacity should it be required. Their tanks are bunded by an appropriately designed and sized structure. **EA assessment** We disagree with the Operator on compliance with BAT 4(a); the flow of waste throughout the facility is contrary to original building design intentions. This has resulted in waste being stored, transferred and managed in areas other than that originally intended. Although we

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			recognise there may be limitations to revert to the original design in order to manage current quantities, a review of the process flow to identify opportunities to improve and optimise storage locations (incl. handling and treatment – BAT 5) should be carried out. Current practice must demonstrate environmental risk is being appropriately managed. We disagree with the Operator on compliance with BAT 4(b). This aligns with BAT 4(a) and BAT 4(c). Non-compliance with the permit has in the past been identified on site in relation to quantities stored onsite. Although rectified by the Operator this raises questions with regard to adequate storage capacity being available at all times; during all foreseeable scenarios. The need to review the flow of waste (BAT 4a) through the facility must naturally consider storage capacity at each location and safe storage. Demonstration of the site capacity to store maximum daily quantities should be provided. We disagree with the operator on compliance with BAT 4(c) safe storage operation - Reception Hall 2 is not connected to an extraction and ventilation system to manage foul air from within the building. This is contrary to permit requirements and the original permit application. Questions have also been raised regarding the build-up of carbon dioxide within composting halls that require special access requirements and the impact that this and possible air circulation limitations may have on process control. Effectiveness of the air-flow within the composting halls, including the floor-aeration system used to provide optimal composting conditions, needs to be demonstrated. Safe storage across the facility aligns with BAT 4 (a) and 4(b).

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			We have therefore included an Improvement Condition 2 to address this. **We are satisfied that the Operation will be future compliant with BAT 4. (please also refer to BAT 14).**
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;	**FC**	The Operator states they have handling and transfer procedures in place. The facility is supervised by staff members who are suitably trained and fully conversant with the requirements of the Permit. Training throughout the company follows a training policy. The training and competence required of each position on-site are identified and summarised in a training matrix. Training requirements for each position are tabulated in the matrix, which provides details on the mandatory training requirements and those which may be relevant during career progression. The site has a TCM. Transfer of material between certain stages of the process is reported to take place by loading shovel within partially or fully enclosed links or by tractor and covered trailer. Any spillages of material as a result of day to day operations e.g. material being transferred from composting halls to maturation will be cleaned up to prevent any build up . A road sweeper will be utilised as necessary to ensure the hard standing areas are kept clean.

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	• 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.		**EA assessment** We do not agree with the Operators assessment that they are currently compliant with all elements of BAT 5. The Operator has referred to the original application which states that all waste processing, storage and transfer activities will take place within fully enclosed buildings, affording a high degree of control over fugitive emissions. Negative pressure is maintained within the buildings to reduce the risk of localised escape of odour when the doors are opened for access. However, the operations have changed from the original application and materials are moved around the site outside of buildings, not just through the buildings as originally designed (as explained in BAT 4). As a result, spillage of materials on the roadways are an inevitable result of their regular movement. We therefore consider these roads to be operational areas. The roads and drainage ditch to which the roadways drain discharge to the on-site unlined surface water storage lagoon. The lagoon water either evaporates or filters into the ground below. The permit only allows **uncontaminated** clean roof water and site surface water to be stored in the lagoon. Handling and transfer procedures should therefore be reviewed alongside or following completion of the work required to demonstrate compliance with the other relevant BAT conclusions, for example BAT 4 and 14. We also note that reception hall 2 is not provided with an air extraction and ventilation system and can therefore only afford limited control of emissions. The ability to maintain

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			adequate pressure in all buildings is to be demonstrated or otherwise justified (see BAT 14). We have therefore included improvement condition 2. **We are satisfied the operator will be future compliant with BAT 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).	**NA**	The Operator states there are no direct and/or indirect discharges of waste water from the Installation to controlled waters. **EA assessment** No trade effluent treatment takes place on site. No direct or indirect discharges of waste water to controlled waters are allowed by the permit. We are satisfied that BAT 6 is not applicable to the installation **[However it should be noted that we are requiring the Operator to review the site drainage in respect of operational and non-operational areas, reference IC 2, see comments in BAT 5].**
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	**NA**	The Operator states there are no direct and/or indirect discharges of waste water from the Installation to controlled waters. There are no permitted point source emissions to water or sewer from the Installation. Effluents arising from the facility, and their disposal, are as follows:

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	provision of data of an equivalent scientific quality.		• Leachate from composting halls and biofilter sump; aqueous scrubber liquor; vehicle wash down area; hand washing from sanitation stations and surface water from pad in front of reception building is collected in the leachate tank, and taken off-site for disposal • Clean water from building roofs drains to the on-site lagoon. • Water from external paved areas (**clean surface water**) drains to the on-site lagoon via an oil interceptor. • Staff offices and welfare facilities which drain to a cesspit (sealed tank) and is taken off-site for disposal. **EA assessment** We note that monitoring only applies in the case of a direct discharge to receiving water. We are satisfied that BAT 7 is not currently applicable to the Installation. **[However it should be noted that we are requiring the Operator to review the site drainage in respect of operational areas being directed to the clean surface water on site lagoon, reference IC2, see comments in BAT 5].**
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	**CC**	The Operator states that BAT 8 is applicable to the sites open biofilter. As 'channelled emissions' include those from open-top biofilters, it is these emissions that have been considered. There are no other point source or channelled emissions to air. The relevant parameters that require monitoring for an open-top biofilter are NH_3, H_2S and odour

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	ensure the provision of data of an equivalent scientific quality.		concentration. The monitoring is associated with BAT 34 (see below). The footnotes to the monitoring table state that odour concentration may be monitored instead of NH_3 and H_2S (and vice versa). At the facility it is odour concentration monitoring that is carried out to the relevant standard. This is done every 6 months and the results presented in the biofilter efficiency report required to be submitted annually to the Environment Agency (by the end of January each year). **EA assessment** The permit stipulates the monitoring requirements and frequencies in accordance with BAT 8. W**e are satisfied the operation is compliant with BAT 8.**
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,	**CC**	The Operator confirms in their Regulation 61 Notice response that they monitor odour emissions regularly in accordance with their Odour Management Plan and six-monthly in accordance with EN 13725 and BAT 8 requirements. **EA assessment** We are satisfied that the installation is currently compliant with BAT 10.

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	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).		
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**	These are reported annually by the Operator in accordance with the relevant Permit Conditions. **EA assessment** Permit condition 4.2.2 requires monitoring and reporting of these performance parameters. We are satisfied that the installation is currently compliant with BAT 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	**FC**	The Operator states they have developed a site specific Odour Management Plan (OMP) detailing how the facility will be operated in order to minimise odour generation and comply with the Permit conditions. It includes the elements listed. The OMP is contained within the

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the Operator to demonstrate compliance with the BAT Conclusion requirement
	management system (see BAT 1), that includes all of the following elements: • a protocol containing actions and timelines; • a protocol for conducting odour monitoring as set out in BAT 10; • a protocol for response to identified odour incidents, e.g. complaints; • an odour prevention and reduction programme designed to identify the source(s); to characterise the contributions of the sources; and to implement prevention and/or reduction measures.		Integrated Management System as document 4.3 (7 BLA) Blaise Farm Odour Management Plan. The OMP states all waste processing, storage and transfer activities takes place within fully enclosed buildings affording a high degree of control over fugitive emissions. A dedicated air handling system provides positive ventilation within the buildings and air extracted and released to atmosphere via a biofilter. Under floor aeration ducts within the composting halls also draw air through the composting windrows to maintain aerobic conditions. This has the added benefit of creating negative pressure within the composting halls, preventing localised escapes of odours when the doors are opened for access. Air drawn through the under floor ducts is released to atmosphere via an aqueous scrubber and biofilter. Housekeeping measures (maintaining the cleanliness of the facility, ensuring that waste is treated promptly and ensuring the regular turning of windrows) are critical to minimising the odours associated with many waste management activities. A key objective is the maintenance of aerobic conditions. The integral emissions treatment plant (the aqueous scrubber and biofilter) ensure that trace odour within the ventilation air is cleaned before being exhausted to atmosphere. The aqueous scrubber targets ammonia and the biofilter residual trace odours through microbial activity. The monitoring frequency is stipulated in the Odour Management Plan.

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
			EA assessment Although the Operator does have an OMP it will need to be reviewed, updated and actions implemented to reflect any changes made to on-site activities following completion of the other BAT related improvement conditions. Currently the OMP does not accurately reflect all activities on site, for example, not all activities take place inside an enclosed building with an air collection system leading to extraction and abatement. A review of process flow and measures to minimise handling and transfer are further required and additional improvements indicated regards containment, storage and process control. We have therefore included improvement condition IC2 requiring that the OMP is reviewed, updated and implemented, as agreed with the EA. We are satisfied the operation will be future compliant with BAT 12.
13	In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to use one or a combination of the techniques given below: (a) Minimising residence times; (b) Using chemical treatment; (c) Optimising aerobic treatment	**NA**	BAT 13 states "*in the case of aerobic treatment of waste other than water-based liquid waste, see BAT 36*". We are satisfied that BAT is not applicable to this installation.

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the Operator to demonstrate compliance with the BAT Conclusion requirement
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**	The Operator states they use an appropriate combination of techniques listed: (d), (e), (f), and (g). This includes techniques such as: (d) storing, treating and handling waste and material that may generate diffuse emissions in enclosed buildings; — maintaining the enclosed buildings under an adequate pressure; — collecting and directing the emissions to an appropriate abatement system via an air extraction system. (e) Dampening potential sources of diffuse dust emissions (e.g. waste storage, traffic areas, and open handling processes) with water. (f) regular scheduled maintenance of equipment (g) regular cleaning of the whole waste treatment area (halls, traffic areas, storage areas, etc.), equipment and containers **EA assessment** We are not satisfied that the operators' stated techniques in BAT 14 are compliant as follows: 14 (d) containment, collection and treatment of emissions 14 (f) maintenance Not all handling of waste takes place inside enclosed buildings (as per BAT 5). Outside site containment requires improvement (for example, surfacing areas in disrepair – see BAT

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the Operator to demonstrate compliance with the BAT Conclusion requirement
			19), and evidence has not been provided to demonstrate all the buildings are under adequate pressure and emissions are collected and directed to the air abatement system where waste is processed as originally designed We have required a review of waste handling and storage of waste on site to satisfy BAT 4 & 5. We have therefore included improvement condition 2. **We are satisfied the operation will be future compliant with BAT 14.**
15	BAT is to use flaring only for safety reasons or for non-routine operating conditions (e.g. start-ups, shutdowns) by using both of the techniques given below: (a) Correct plant design; (b) Plant management	**NA**	No flaring takes place at the Installation. **We are satisfied that BAT 15 is not applicable to the installation.**
16	In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given below: (a) Correct design of flaring devices;	**NA**	No flaring takes place at the Installation. **We are satisfied that BAT 16 is not applicable to 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
	(b) Monitoring and recording as part of flare management		
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	**CC**	Noise/vibration was identified as Low Risk in the Operators risk assessment at the time of applying for a permit. Since then site operation has not identified noise as an issue which requires further assessment or the provision of a Noise and Vibration Management Plan. **EA Assessment** As the applicability is restricted to cases where a noise or vibration nuisance at sensitive receptors is expected and/or has been substantiated then this is not applicable to the site. We note however that the applicant did supply substantial noise information/mitigation methods in their 2016 variation application, and as such these need to be adhered to as part of their operating techniques. The applicability of BAT 17 is restricted to cases where a noise or vibration nuisance at sensitive receptors is expected and/or has been substantiated. The permit condition 3.4 ensures that the Operator submits a noise management plan in the event emissions of noise and vibration are causing annoyance beyond the site boundary. **We are satisfied the installation is currently compliant with BAT 17**.

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the Operator to demonstrate compliance with the BAT Conclusion requirement
	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**	One of the listed techniques is employed at the installation: (b) operational measures i.e. inspection and maintenance of equipment; closing of doors and windows of enclosed areas, equipment operation by experienced staff; and avoidance of noisy activities at night, if possible. **EA assessment** **We are satisfied the installation is currently compliant with BAT 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:	**FC**	The Operator uses a mixture of techniques listed i.e. (a) the moisture content of the waste is optimised in order to minimise the generation of leachate (c) the activity takes place on impermeable surface (e) the activity takes place in an enclosed building

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) 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		(d) tanks are bunded appropriately and provided with appropriate buffer capacity (f) leachate seeping from compost piles and windrows is segregated from surface run-off water (g) the site drains to a sealed drainage infrastructure **EA assessment** We do not agree with the operators assessment of compliance for BAT 19(c), (f), (g) and (h). Movement of waste throughout the facility does not follow original design intentions. Comments made in relation to other BAT conclusions above are applicable to BAT 19. In particular the use of external roadways for the routine transfer of waste. Recent inspections have also identified areas of external concrete surfacing in poor repair. Water that was identified originally as clean surface water run-off is at risk of being contaminated from routine vehicular movements and spillage of waste during movement but is draining to the surface water lagoon. The permit only allows uncontaminated clean roof water and site surface water to be stored in the lagoon. Either handling and movement of waste requires change to avoid its routine movement on external areas or the roadway is contained and run-off is appropriately contained and collected.

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 have therefore included improvement condition IC 2. Please also refer to BAT 5, BAT 4 & BAT 14. **We are satisfied the operation will be future compliant with BAT 19.**
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	**NA**	The installation does not have a direct discharge to a waterbody. Trade effluent goes to the leachate tank for disposal off-site. **We are satisfied that BAT 20 is not applicable to this installation.** **[However it should be noted that we are requiring the Operator to review the site drainage in respect of operational and non-operational areas, reference IC 2, see comments in BAT 5].**

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the Operator to demonstrate compliance with the BAT Conclusion requirement
	(i) 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 See also: Table 6.1: BAT-associated emission levels (BAT-AELs) for direct discharges to a receiving water body		

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
	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**	The Operator has a structured, formal Accident Management Plan (AMP0 (reference section 2.8 of their EPR application). This includes the three techniques given (a) to (c). **EA assessment** We are satisfied that the Operator is currently compliant with BAT 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	**NA**	The Operator states that this is not feasible in this process. Few materials are used on site, and where they are there is not a suitable waste alternative. **EA assessment** **We are satisfied that BAT 22 is not applicable to this installation.**

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the Operator to demonstrate compliance with the BAT Conclusion requirement
	acids are used for pH adjustment, fly ashes are used as binders).		
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**	The operator addresses energy in the energy efficiency in Section 2.7 of their EPR application. Energy usage is a performance parameter that has to be reported on annually to the Environment Agency as a condition in the Permit. **EA assessment** Section 2.7 of the EPR application does address energy efficiency but the Operator does not have a formal Energy Efficiency Plan (EEP). Therefore improvement condition 01 has been included to require the production of an EEP. We are satisfied the operation will be future compliant with BAT 23.
24	In order to reduce the quantity of waste sent for disposal, BAT is to maximise the reuse of packaging, as part of the residues management plan (see BAT 1). Packaging (drums, containers, IBCs, pallets, etc.) is reused for containing waste, when it is in good condition and sufficiently clean, depending on a compatibility check between the substances	**CC**	In the Regulation 61 Notice response the Operator states: The packaging used on site is reused/recycled as follows: • IBCs of sulphuric acid for the scrubber. These are returned to the supplier for re-filling. • Drums and 20l containers of oil – these are returned for reconditioning/cleaning prior to re-use. • Pallets – these are re-used.

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
	contained (in consecutive uses). If necessary, packaging is sent for appropriate treatment prior to reuse (e.g. reconditioning, cleaning).		**EA assessment** **We are satisfied the installation is currently compliant with BAT 24.**
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**	The Operator has pre-acceptance criteria to ensure the waste is suitable for use in the process. Details are provided in 2.1.1 and 2.1.2 of the EPR application. Please see BAT 2 above. **EA assessment** The permit contains acceptable waste types for in vessel composting (see Table S2.2). We are satisfied the operation is currently compliant with BAT 33**.**
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:	**CC with narrati**	The Operator states they use technique (b) biofilter at the site to comply with this BAT. As 'channelled emissions' include those from open-top biofilters, it is these emissions that have been considered. There are no other point source or channelled emissions to air.

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) 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.	**ve BAT**	The relevant parameters that require monitoring for an open-top biofilter are NH_3, H_2S and/or odour concentration. Odour concentration monitoring is carried out at the facility every 6 months and the results presented in the biofilter efficiency report required to be submitted annually (by the end of January each year). **Environment Agency assessment** The operator provided information to support compliance with BATc 34. Biofilters and scrubbers are installed at the facility. We have assessed the information provided and we are satisfied that the operator has demonstrated compliance with narrative BATc 34. We have set a BAT-AEL for ammonia as specified in the Waste Treatment BREF and BAT Conclusions. Improvement condition 1 has been included in the permit to achieve compliance. The operator is required to complete the improvement condition and demonstrate compliance with the BAT-AEL by the compliance date, 17 August 2022. In addition to the BAT-AEL, we have inserted the requirement to monitor odour concentration, hydrogen sulphide and ammonia on a 6-monthly frequency in Table S3.3 (process monitoring).

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the Operator to demonstrate compliance with the BAT Conclusion requirement
		FC BATc 34, Table 6.7	As part of the Environment Agency approach to reduce emissions in the biowaste treatment sector, we have included the following improvement conditions: <u>Improvement condition for the review of abatement plant effectiveness</u> Improvement condition 5 requires the operator to review abatement plant on site, in order to determine whether existing measures have been effective and adequate to prevent and /or minimise emissions released to air. Where further improvements are identified, the operator is required to implement these measures. <u>Improvement condition for the review of abatement plant design</u> Improvement condition 6 requires the operator to review the design of the site ventilation system and abatement plant in order to determine whether it is fit for purpose and effective in controlling odorous compounds in the air streams from site processes. Where further improvements are identified, the operator is required to implement these measures.
35	In order to reduce the generation of waste water and to reduce water usage, BAT is to use all of the techniques given below: (a) Segregation of water streams;	**CC**	The Operator uses all the applicable techniques: (a) Leachate seeping from compost piles and windrows is segregated from surface run-off water (b) Leachate can be used to irrigate the incoming waste prior to placement in the composting halls, if required

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the Operator to demonstrate compliance with the BAT Conclusion requirement
	(b) Water recirculation; (c) Minimisation of the generation of leachate		(c) the moisture content of the waste is optimised in order to minimise the generation of leachate **EA assessment** **We are satisfied that the installation is currently compliant with BAT 35. Please refer to BAT 19 for reducing emissions to soil and water.**
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);	**FC**	The Operator states: As detailed in the Blaise Environmental Permit Variation Application dated June 2016, section 2.1.1 and 2.1.2, waste is principally accepted under contract. Waste input characteristic requirements for C to N ratio and particle size are stipulated in the contracts. Any non-contractual waste streams are required to comply with the same specification as the contracted waste. Temperature and moisture content are measured in the windrows. Aeration is undertaken based on temperature. Windrow porosity is controlled by maintaining a consistent shred size; windrow height and width are also consistent. **EA assessment** We do not agree that aeration in the windrows is optimised and has been demonstrated. Oxygen content is not measured and high CO_2 levels have been found in the treatment halls. The effectiveness of the forced aeration system also requires review. Waste in 'maturation' is not actively monitored. We have therefore included improvement condition 2.

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
	• windrow porosity, height and width.		**We are satisfied that the operation will be future compliant with BAT 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: (a) Use of semi permeable membrane covers; (b) Adaptation of operations to the meteorological conditions	**NA**	The installation does not have any open-air treatment steps. **We are satisfied that BAT 37 is not applicable to this installation**.
38	**For anaerobic processes** - 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;	**NA**	The process is an aerobic biological treatment process. **We are satisfied that BAT 38 is not applicable to this installation.**

BAT Conclusion No	Summary of BAT Conclusion requirement for Waste Treatment	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the Operator to demonstrate compliance with the BAT Conclusion requirement
	• 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.		
39	**For mechanical biological treatment plants** - 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**	The process does not include mechanical biological treatment. **We are satisfied that BAT 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

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

Bioaerosols monitoring requirements

We assessed bioaerosols monitoring at the facility as part of the permit review. In the Regulation 61 Notice, we asked the Operator to:

a) state if operational processes of biodegradable waste are in open processes within 250 metres of human receptors.

b) confirm whether or not there are channelled or point source releases within 250 metres that are open sources e.g. biofilters within 250 metres of human sensitive receptors.

c) confirm whether or not the existing permit already requires bioaerosols monitoring and state:

i. the microbiological markers the permit currently refers to and the relevant limits.

ii. the monitoring standard the permit refers to.

The Operator stated in their Regulation 61 response that:

- The operational processes of biodegradable waste are not in open processes.
- There is an open biofilter on site, but it is not within 250 metres of human receptors.
- The environmental permit was varied and consolidated in 2017. It does require bioaerosols monitoring. The microbiological markers referred to are Total bacteria and Aspergillus fumigatus, and the monitoring standard referred to is - 'Technical Guidance Note M9 – Environmental monitoring of bioaerosols at regulated facilities'.

EA assessment

Bioaerosols were considered during the 2016 variation application, where it was noted that there were sensitive receptors within 250 metres. Bioaerosols monitoring was therefore included at the time, and we consider it necessary to retain the monitoring requirements. The permit has been updated to include monitoring standards to follow the M9 guidance.

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.

In the Regulation 61 Notice, we asked the Operator to carry out a risk assessment considering the possibility of soil and groundwater contamination at the installation with such substances 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).

Where any risk of such contamination is established, we asked the Operator to either:

a) Prepare and submit a baseline report containing information necessary to determine the current state of soil and groundwater contamination;
b) Provide a summary report referring to information previously submitted where they are satisfied that such information represents the site conditions

The Operator's response to the Regulation 61 notice stated that they do not use, produce or release any relevant hazardous substances, therefore a risk assessment is not considered necessary at this point in time.

EA assessment
We agree that this question is not applicable at this site, as the activity does not involve the use, production or release of a relevant hazardous substance.

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 S2.3 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)

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
03 03 11	sludges from on-site effluent treatment other than those mentioned in 03 03 10
04 01 01	fleshings and lime split wastes

Waste code	Description
17 02 01	wood
19 12 07	untreated wood where no non-biodegradable coating or preserving substance is present
20 01 38	untreated wood where no non-biodegradable coating or preserving substance is present

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

Excluded wastes (99 waste codes)

We have excluded the following waste streams ending with "99" code(s) because more suitable waste codes are already in the European Waste Catalogue (EWC) that accommodate the waste described:

Waste code	Description
02 01 99	wastes not otherwise specified
02 07 99	wastes not otherwise specified (malt husks, malt sprouts, yeast and yeast-like residues only)
19 05 99	composting liquors

Our technical guidance on waste classification WM3 specifically sets out clear instructions for the use of the European Waste Catalogue (EWC), particularly with regard to "99" codes.
The guidance specifies that the Operator must:

- Identify the source generating the waste in chapters 01 to 12 or 17 to 20 and identify the appropriate six-digit code of the waste (excluding codes ending with 99 of these chapters).
- If no appropriate waste code can be found in chapters 01 to 12 or 17 to 20, the chapters 13, 14 and 15 must be examined to identify the waste.
- If none of these waste codes apply, the waste must be identified according to chapter 16.
- If the waste is not in chapter 16, the 99 code (wastes not otherwise specified) must be used in the section of the list corresponding to the activity identified in step one as a last resort.

We made this decision with respect to "99" codes in accordance with the Technical Guidance WM3: Waste Classification – Guidance on the classification and assessment of waste [1st Edition v1.1, May 2018].

Secondary containment and storage infrastructure

Risk assessment for secondary containment and storage lagoons

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

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

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

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

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

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

The Operator confirmed that, in their view, the secondary containment does meet the relevant standard in the CIRIA Report (C736). They state:

- there is above ground storage in the form of two leachate storage tanks; these tanks are within a bund with another clean water and rainwater tank. The tanks are each approximately 400 m^3 capacity, and the bund is sized to be in excess of 25% of the total capacity of the tanks.

- Oil is stored in accordance with the Control of Pollution (Oil Storage) Regulations 2001. Oils are delivered on site in drums of 209 litres stored in an oil container with a bund. There is also a double skinned oil tank for the used oil that holds 2,500 litres.

- Acid for the scrubber is stored in a 1,000-litre IBC in a bund.

- CIRIA 736 deals with the storage of waste sludges and liquids. There is no such storage provided on site. The only lagoon on site is for clean surface water and it is not a storage lagoon as such. It does not appear that CIRIA 736 is relevant in this case. There is an approved Groundwater Management Plan that details how the site operates in order to minimise any risk of groundwater pollution.

- There is two months operational storage capacity for the compost.

- We consider that there is no requirement for the rainwater storage lagoon to be covered.

EA assessment
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 improvement condition IC 3 in the permit to address the deficiencies in the existing site secondary containment and storage infrastructure.

Improvement condition 3 requires the Operator to submit a site secondary containment plan within 6 months of the permit issue. The plan shall contain details of:

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

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

We assessed primary containment as part of the permit review. This information was not requested in the Regulation 61 Notice issued to the Operator, however, it was considered prudent to address this aspect as part of the permit review process. In this instance, the required information relating to the review of primary containment infrastructure against CIRIA C535 was not previously submitted to the Environment Agency, nor was it included in the supporting documentation submitted by the Operator in their Regulation 61 response.

We have therefore set an Improvement Condition 4 in the permit to address this aspect of the permit review (see Annex 3).

Annex 3: Improvement Conditions

Based on the information in the Operator's Regulation 61 Notice response and our own records of the capability and performance of the installation at this site, we consider that we need to set improvement conditions so that the outcome of the techniques detailed in the BAT Conclusions are achieved by the installation. These improvement conditions are set out below - justifications for them 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		
Ref No	**Requirement**	**Date**
Improvement condition for progress report to achieve Narrative BAT		
IC1	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-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). The report shall address the BAT Conclusions for Waste Treatment with respect to the following: • **BAT 34 Table 6.7** (compliance with BAT-AEL for channelled NH_3 emissions to air from the biological treatment of waste). ***Refer to BAT conclusions 2018/1147 issued 17.08.2018 for a full description of the BAT requirement.***	Progress reports at six monthly intervals from date of permit issue: 24/03/2021 24/09/2021 24/03/2022
Improvement condition for progress report to achieve Narrative BATs		
IC2	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).	Progress reports at six monthly intervals from date of permit issue: 24/03/2021 24/09/2021 24/03/2022

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Ref No	**Requirement**	**Date**
	The report shall address the BAT conclusions for waste treatment with respect to the following : **BAT 1** – review the effectiveness of the environmental management system (EMS) to make sure procedures are in place that provide adequate safeguarding of the environment from on-site activities. In particular with regards to the following elements and implementation of other prescribed improvements under this improvement condition: II - environmental policy that includes the continual improvement of the installations environmental performance; III – planning procedures, objectives and targets in conjunction with financial planning and investment; IV- implementation of procedures paying particular attention to f) effective process control; g) maintenance programmes; and i) safeguarding compliance with environmental legislation; V – checking performance and taking timely corrective and preventative action; and VI – review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness. Implement the EMS on completion of its review. **BAT 3** – Provide an inventory of waste water and waste gas streams. By inventory we mean a complete list of all waste water and waste gases produced, handled and treated by your process or plant. Substances may be associated with potential fugitive (diffuse) releases or point (channelled) sources. Information provided must incorporate the requirements prescribed in BAT 3 conclusion. **BAT 4** (a) **Optimised storage options** – a review of the process and waste flow throughout the facility must be carried out to identify opportunities to improve and optimise storage locations and minimise handling of waste (see BAT 5). (b) **Adequate storage capacity** – provide calculations that demonstrate the storage capacity is adapted to, and consistent with, processing capacity based on maximum daily throughput and permitted quantities. (c) **Safe storage** – Evaluate the effectiveness of the air ventilation and extraction system within composting halls. Review how the results of the evaluation may impact on process control and the ability to maintain optimum aerobic conditions and implement recommendations. **BAT 5** – **handling and transfer of waste** Review your site waste movements and associated procedures for the handling and transfer of materials around site. In particular the measures taken to prevent, detect and	

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Ref No	**Requirement**	**Date**
	mitigate spillages of waste on external areas and following any changes implemented under the BAT 4 and BAT 14 review. **BAT 12 – prevent or reduce odour emissions** Review and update your odour prevention and reduction measures in your Odour Management Plan (OMP). Your OMP must consider emissions identified in your inventory (BAT 3) and those associated with (but not limited to): • waste handling and transfer • odour emissions containment systems such as waste in reception, treatment and storage buildings. **BAT 14 – prevent or reduce emissions to air** 1. Review compliance with BAT 14(d) containment, collection and treatment of fugitive (diffuse) emissions in relation to the waste reception, storage and treatment buildings (see BAT12 above). Identify opportunities using visual and quantitative assessment to reduce fugitive emissions to air. Demonstrate the effectiveness of buildings to contain emissions. 2. Review and demonstrate the effectiveness of the building and floor air ventilation and extraction system installed within the treatment composting halls in providing optimal composting conditions while minimising fugitive emissions to air (see BAT 4 and IC5) **BAT 19 – prevent or reduce emissions to water** Review measures on site against BAT 19, in particular concentrating on: • use of external roadways for operational activities. Where external roads are used for routine operations which may result in roadways becoming contaminated, install measures to eliminate contaminated emissions to the on-site clean water lagoon. This may include providing adequate containment and drainage infrastructure or ceasing the use of roadways for operational activities. • impermeable surfacing. Inspect all site surfacing and identify areas of disrepair. Schedule repairs in accordance with your maintenance procedures and undertake repairs. • review the segregation of waste water streams and existing drainage infrastructure. Identify opportunities to minimise waste water generation and demonstrate drainage infrastructure is fully contained and fit for purpose. **BAT 23 – energy efficiency**	

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Ref No	**Requirement**	**Date**
	Submit an Energy Efficiency Plan that demonstrates compliance with the techniques prescribed in BAT conclusion 23(a). **BAT 36 – reduce emissions to air and improve environmental performance** Review your process control measures for optimising the aerobic composting process, in particular the aeration of windrows. This includes the maturation of compost (see BAT 4 and BAT 14). ***Refer to BAT conclusions 2018/1147 issued 17.08.2018 for a full description of the BAT requirement.***	
Improvement condition for secondary containment		
IC3	The Operator shall submit a written 'secondary containment plan' and shall obtain the Environment Agency's written approval to it. The plan shall contain the results of a review conducted, by a competent person (i.e. chartered civil or structural engineer), in accordance with the methodology detailed within CIRIA C736 (2014), of the condition and extent of secondary containment systems where all polluting liquids and solids are being stored, treated, and/or handled. The review should consider, but is not limited to, the storage vessels, bunds, loading and unloading areas, transfer pipework/pumps, temporary storage areas, and liners underlying the site. The plan must contain dates for the implementation of individual improvement measures necessary for the secondary and tertiary containment systems to adhere to the standards detailed/referenced within CIRIA C736 (2014), or equivalent. The plan shall be implemented in accordance with the Environment Agency's written approval.	24/09/2021 or other date as agreed in writing with the Environment Agency
Improvement condition for primary containment		
IC4	The operator shall submit a written 'primary containment plan' and shall obtain the Environment Agency's written approval to it. The plan shall contain the results of a review conducted, by a competent person, and shall compare the design specification of primary containment systems where all polluting liquids and solids are being stored, treated, and/or handled against the design standards within CIRIA C535 guidance or equivalent. The review shall include: • physical condition of all primary containment systems (storage and treatment vessels); • the suitability for providing primary containment when subjected to the dynamic and static loads caused by the vessels' contents;	24/09/2021 or other date as agreed in writing with the Environment Agency

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Ref No	**Requirement**	**Date**
	• any work required to ensure compliance with the standards set out in CIRIA C535 or equivalent; and • a preventative maintenance and inspection regime The plan must contain dates for the implementation of individual improvement measures necessary for the primary containment to adhere to the standards detailed/referenced within CIRIA C535 guidance, or equivalent.	
Improvement condition for review of abatement plant effectiveness		
IC5	The operator shall carry out a review of the abatement plant (scrubber and open biofilter) on site, in order to determine whether the abatement measures have been effective and adequate to prevent, and where not possible, minimise emissions released to air including, but not limited to, odour concentration, hydrogen sulphide 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: a) Full investigation and characterisation of the waste gas streams (see BAT3). b) Biofilter (channelled emission point) emissions monitoring results (not limited to odour concentration, hydrogen sulphide and ammonia) c) Abatement plant (scrubber and biofilter) process monitoring results (not limited to odour concentration, hydrogen sulphide and ammonia) d) 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). e) Odour monitoring results at the site boundary f) Records of odour complaints and odour related incidents g) Recommendations for improvement including the replacement or upgrading the abatement plant h) Timescales for implementation of improvements to the abatement plant Abatement system improvements should be designed by suitably qualified named engineers who can supervise and sign-off on construction quality assurance. The operator shall implement the improvements in line with the timescales as approved by the Environment Agency.	24/09/2021 or other date as agreed in writing with the Environment Agency
Improvement condition for review of abatement plant design		

Table S1.3 Improvement programme requirements		
Ref No	**Requirement**	**Date**
IC6	The operator shall submit to the Environment Agency a written review report of the design specification of the site ventilation system and abatement plant to demonstrate compliance with permit condition 3.3. The operator shall obtain the Environment Agency's written approval to it. The report shall include but not limited to: a) Ventilation and extraction design specifications and performance criteria for effective fugitive odorous emission control (see IC2) b) Design specifications and performance criteria of the abatement plant installed (scrubber and open biofilter). c) Demonstration that all odorous chemical compounds and maximum loading rates in the relevant air streams have been calculated in the system design. d) Evidence to show the odorous compounds will be controlled and abated by both good operational management and by the abatement system installed. Identification of potential malfunction scenarios and the alarms and trigger levels in place for each one. This applies to the abatement plant and ventilation and extraction systems. The report shall identify the action to be taken to minimise risk of elevated odour pollution from the installation for each malfunction scenario including how to restore systems to normal operational control.	24/09/2021 or other date as agreed in writing with the Environment Agency
Improvement condition for waste handling and storage		
IC7	Should the review of material flows around the site and the optimisation of storage in accordance with the improvement condition IC2 (concerning BAT 4(a), 5 and 19) conclude that one of the storage halls currently used to store the finished product be instead required for storage/treatment of incompletely processed waste material, then an air extraction and abatement system shall be installed to a design and timescale agreed in writing with the Environment Agency.	24/09/2021 or other date as agreed in writing with the Environment Agency