

Natural Resources Wales permitting decisions

Variation and Consolidation of a bespoke Permit – Biogen Waen Limited

We have decided to issue the variation for Waen Anaerobic Digestion Site in St Asaph, Denbighshire operated by Biogen Waen Limited.

The permit number is EPR/DP3735NP.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

The permit has been varied following the publication of the revised Best Available Techniques (BAT) Reference Documents (BREF) for Waste Treatment. The associated BAT conclusions to this document were published on 17 August 2018 in the Official Journal of the European Union.

This variation incorporates the changes required by the Industrial Emissions Directive following a statutory review of permits in the Waste Treatment sector. These include the amendment of the wording of several permit conditions relating to notifications, changes to emissions limits and monitoring requirements.

We are satisfied that the operator will be compliant with the published BAT conclusions which will apply from 17 August 2022.

Purpose of this document

This decision document:

- explains how we have carried out our statutory review of the Operator's Permit;
- why we have decided to vary the Permit as a result of that review; and
- why we have included the specific conditions in the revised Permit through the variation notice we are issuing.

It is our record of our decision-making process, to show how we have taken into account all relevant factors in reaching our position.

Structure of this document

- Assessment of Waen Anaerobic Digestion Site against the published BAT conclusions for Waste Treatment.
- Annex 1 – Decision Checklist regarding relevant BAT Conclusions.

Assessment of Waen Anaerobic Digestion Site against the published BAT conclusions for Waste Treatment

1. Our decision

We have issued a variation, which will allow Biogen Waen Limited to operate the installation, subject to the conditions in the varied permit.

The variation does three things:

- it consolidates the original permit to reflect changes made through earlier variations;
- it brings the permit into line with our modern regulatory template; and
- it varies the permit where appropriate to reflect the outcome of our statutory review and incorporate Best Available Techniques (BAT) and Associated Emission Limit Values (BAT-AELs).

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

The original permit, issued on the 16 January 2014, ensured that the installation, employed Best Available Techniques (BAT) and ensured a high level of protection for human health and the environment. We have altered the permit as a result of the statutory review, and we are confident that the new requirements will deliver a superior level of protection to that which was previously achieved. Where a site is not currently compliant with BAT, Improvement Conditions have been included to bring the site up standard by 17 August 2022.

2. The legal framework

The consolidated variation notice will be issued under Regulation 20 of the Environmental Permitting (England and Wales) Regulations 2016 (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.

3. How we reached our decision

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 on 5 April 2019 requiring the operator to provide information to demonstrate how the operation of their installation currently meets, or

will subsequently meet, the revised standards described in the relevant BAT Conclusions document. The Operator was asked to:

- Describe the techniques that will be implemented before 17 August 2022, which will then ensure that operations meet the revised standard, or
- Justify why standards will not be met by 17 August 2022, and confirm 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
- Justify why an alternative technique will achieve the same level of environmental protection equivalent to the revised standard described in the BAT Conclusions.
- Where their permitted activity involves the use, production or release of a hazardous substance, as defined in Article 3(18) of the Industrial Emissions Directive, Biogen Waen Limited were required to carry out a risk assessment considering the possibility of soil and groundwater contamination at the permitted installation with such substances. Where risk of such contamination was established, Biogen Waen Limited was required to prepare a baseline report containing information necessary to determine the state of soil and groundwater contamination so as to make a quantified comparison with the state upon definite cessation of the activity.
- Where their permitted activity involves the use, production, storage or release of priority hazardous substances and any other relevant substances, as defined by the Water Framework Directive, Biogen Waen Limited were required to carry out a risk screening assessment considering the presence of priority hazardous substances at the permitted installation. Where a risk of these substances was established, the operator was asked to sample the effluent and screen for the priority hazardous substances. If these substances are found to be present in the effluent stream, then assessment using the H1 tool and potential detailed modelling will be required to demonstrate that the effluent discharge will not have a significant impact to the receiving water.

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 Waste Treatment BAT Conclusions Document, the Regulation 61(1) Notice requested that the operator make a formal request for derogation from compliance with that 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(1) Notice response from the operator was received on the 30 September 2019 and additional information received on the 23 March 2020 and 11 June 2020.

We considered that the response contained sufficient information for us to commence 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(1) Notice response that appears to be confidential in relation to any part.

4. Key issues/Regulation 61(1) Notice response

BAT Conclusions for the Waste Treatment were published as Commission Implementing Decision EU 2018/1447 in the Official Journal of the EU on 17 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 should be read in conjunction with the permit/variation notice issued.

In response to Sections 1 to 4 of the Regulation 61(1) Notice, a detailed response was received from Biogen Waen Limited. Where the operator has concluded that they have achieved BAT, and we are in agreement, no further information/justification has been sought by Natural Resources Wales. Where the operator has not provided sufficient information or where the existing documentation does not achieve BAT, improvement conditions have been set to ensure compliance by 2022.

In response to Section 5 of the Regulation 61(1) Notice an update Opra profile was provided.

In response to Section 6 of the Regulation 61(1) Notice, Biogen Waen Ltd have confirmed that they do use hazardous substances on site. As a result, a risk assessment was completed and submitted to NRW in January 2019 which considered the possibility of soil and groundwater contamination. A baseline site report was also submitted to NRW at the time of original permit application (August 2013) which contains information necessary to determine the state of soil and groundwater contamination, so as to make a quantified comparison with the state upon definite cessation of the activity.

In response to Section 7 of the Regulation 61(1) Notice, the Operator confirmed that the site only discharges clean uncontaminated surface water run-off and that there are no process effluent discharges to either surface water or sewer. As BAT does not apply to discharges associated with clean uncontaminated surface runoff only, no further information/justification has been sought by Natural Resources Wales.

5. Changes we have made

Improvement Conditions

Based on the information provided in the Regulation 61(1) Notice responses, we consider that we need to set improvement conditions. These conditions are set out below. We are using these conditions to require the operator to provide Natural Resources Wales with details that need to be established or confirmed during operations. The improvement conditions ensure compliance by 2022.

Reference	Requirement	Date
IC1	The operator shall submit to Natural Resources Wales a written procedure(s) describing how they intend to meet the following BAT requirements in accordance with requirements specified within BAT Conclusions of the Waste Treatment BREF Document (EU 2018): - BAT 1 vii. Following the development of cleaner technologies - BAT 1 ix. Regular sectoral bench marking - BAT 1 x. Waste stream management (and BAT 2) - BAT 1 xi. The inventory of waste gas stream (and BAT 3) - BAT 1 xii. Residues Management Plan - BAT 1 xiii. Accident Management Plan	17 February 2022 or otherwise agreed in writing with Natural Resources Wales
IC2	The operator shall submit to Natural Resources Wales a written procedure(s) describing how they intend to meet the following BAT requirements in accordance with requirements specified within BAT Conclusions of the Waste Treatment BREF Document (EU 2018) in relating to: - BAT 2 a) Waste characterisation and pre-acceptance procedures - BAT 2 e) Waste segregation	17 February 2022 or otherwise agreed in writing with Natural Resources Wales
IC3	BAT 3 – Inventory of waste gas streams The operator shall submit to Natural Resources Wales a written procedure(s) in accordance with requirements specified within BAT Conclusions of the Waste Treatment BREF Document (EU 2018) in relation to: - BAT 3 (i)(a) The existing process flow diagram requires updating to include the emissions sources and in particular the activated carbon filtration system outlet. - BAT 3 (i)(b) the waste gas treatment description (carbon filtration system) including performance information. - BAT 3 (iii) establish an inventory of waste gas (for the waste gas from the reception hall to be treated by the activated carbon filtration system) to collate the information in accordance with BAT Conclusion 3 of the Waste Treatment BREF Document (EU 2018).	17 February 2022 or otherwise agreed in writing with Natural Resources Wales

IC4	The operator shall submit to Natural Resources Wales a written procedure(s) in accordance with requirements specified within BAT Conclusions of the Waste Treatment BREF Document (EU 2018) in relation to: BAT 4 b) adequate storage capacity	17 February 2022 or otherwise agreed in writing with Natural Resources Wales
IC5	The operator shall submit to Natural Resources Wales a written procedure(s) describing how they intend to meet the following BAT requirements in accordance with requirements specified within BAT Conclusions of the Waste Treatment BREF Document (EU 2018): - BAT 23 Energy efficiency Plan; and - Energy Balance Record.	17 February 2022 or otherwise agreed in writing with Natural Resources Wales
IC6	The operator shall submit to Natural Resources Wales a written procedure(s) describing how they intend to meet the following BAT requirements in accordance with requirements specified within BAT Conclusions of the Waste Treatment BREF Document (EU 2018): BAT 24 Maximise the reuse of packaging as part of a Residues Management Plan.	17 February 2022 or otherwise agreed in writing with Natural Resources Wales
IC7	The Operator shall submit for written approval a methodology for meeting the process parameters listed in Schedule 3b Table S3.3, as per BAT 38 for the anaerobic treatment of waste. The methodology shall identify each of the process parameters and detail the frequency and techniques in place to record the data. Where a process parameter cannot be monitored justification should be provided and/or a suitable alternative proposed. The methodology should include trigger levels for each of the parameters with associated procedures in place if trigger levels are exceeded.	17 February 2022 or otherwise agreed in writing with Natural Resources Wales

Operational Changes

Reference within Table S1.1 Activities to the combustion of resultant biogas in the combined heat and power (CHP) engine on site (which has an aggregated thermal input of 3.456MWth) (A4), has been re-listed within the table as a Directly Associated Activity (DAA) rather than previously as a standalone waste activity. The CHP engine meets the definition of a DAA as described within RGN02 and the Limb (ii) test. The re-listing from a waste activity to a DAA also ensures consistency with other permits issued for the AD sector, and provides clarity for charging purposes, as DAAs do not incur additional waste Opra charges.

Where typographical errors were found within the originally issued permit, these have been corrected.

Limits set within Table S3.1 for emissions from the flare stack have been removed (Emission Point Reference A2). This is to ensure consistency with other permits which also operate an emergency flare on site.

The permit site boundary plan has been updated to now include all point source emissions from the site.

Emissions to Water

There are no emissions to surface water or sewer associated with the permitted activity other than clean uncontaminated site surface water run-off.

Emissions to Water – Article 15(4) Derogations

No derogations

Emissions to Air

An additional emission release point to air has been included within Table 3.1. Emission point A5 references the outlet from the Activated Carbon Filter. This is not a new emission point as the Activated Carbon Filter and Odour Abatement System servicing the reception building has formed part of the permit since original permit issue. It's inclusion within Table S3.1 now correct this historical oversight.

There were also changes to the ELV's for emissions to air taking into account BAT conclusions from the Waste Treatment BREF.

The tables below outline the parameters and limits set to implement the BAT-AELs set out in BAT 34 of the Waste Treatment BREF:

Effective until 16 August 2022

Release point	Parameter	Limit/ BAT AEL	Effective to
A1 CHP Exhaust	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	500mg/m ³	16/08/2022
	Sulphur dioxide (SO ₂)	350mg/m ³	16/08/2022
	Volatile Organic Compounds (VOCs)	1000mg/m ³	16/08/2022
	Carbon Monoxide (CO)	1400mg/m ³	16/08/2022
A2 Flare Stack	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	No limits set	16/08/2022
	Volatile Organic Compounds (VOCs)	No limits set	16/08/2022
	Carbon Monoxide (CO)	No limits set	16/08/2022
A3 Pressure Relief Valves (PRVs)	No parameters set	No limits set	16/08/2022

A4 Boiler Exhaust	No parameters set	No limits set	16/08/2022
A5 Activated carbon filter outlet	No parameters set	No limits set	16/08/2022

Effective from 17 August 2022

Release point	Parameter	Limit/ BAT AEL	Effective from
A1 CHP Exhaust	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	500mg/m ³	17/08/2022
	Sulphur dioxide (SO ₂)	350mg/m ³	17/08/2022
	Volatile Organic Compounds (VOCs)	1000mg/m ³	17/08/2022
	Carbon Monoxide (CO)	1400mg/m ³	17/08/2022
A2 Flare Stack	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	No limits set	17/08/2022
	Volatile Organic Compounds (VOCs)	No limits set	17/08/2022
	Carbon Monoxide (CO)	No limits set	17/08/2022
A3 Pressure Relief Valves (PRVs)	No parameters set	No limits set	17/08/2022
A4 Boiler Exhaust	No parameters set	No limits set	17/08/2022
A5 Activated carbon filter outlet	NH ₃	20 ^{Note1} mg/Nm ³	17/08/2022
	Hydrogen sulphide (H ₂ S)	No limits set	17/08/2022

1 - Where BAT associated emission levels are identified (BAT-AELs), limits may be prescribed at the top end of the range unless the proximity of sensitive receptors requires a tighter limit or if tighter limits are previously on the permit, this ensures no backsliding of emission limits.

Emissions to Air – Article 15(4) Derogations

No derogations

Process Monitoring Requirements

There were changes to the process monitoring requirements taking into account BAT conclusions from the Waste Treatment BREF.

The tables below outline the parameters and monitoring frequencies required in order satisfy BAT38 of the Waste Treatment BREF.

Effective until 16 August 2022

Release point	Parameter	Monitoring Frequency	Effective to
Biogas from digesting tank and biogas holder	Flow	Continuous	16/08/2022
Biogas from digesting tank, biogas holder and waste reception building	Methane	Spot Sample	16/08/2022
	Hydrogen Sulphide		
	Carbon Dioxide		
Biogas from digesting tank, biogas holder, waste reception building and external storage areas	Odour	Daily	16/08/2022
Bund sump and storm water inspection chambers	Oil/grease and ammonia <03.ppm	Periodically	16/08/2022

Effective from 17 August 2022

Release point	Parameter	Monitoring Frequency	Effective from
Digester feed	pH	To be agreed with NRW	17/08/2022
	Alkalinity		
	Hydraulic and organic loading rates		
Digester	Operating temperature		17/08/2022
	Liquid and foam levels		
	Concentration of ammonia		
	Concentration of VFAs		17/08/2022
	Alkalinity		17/08/2022
	FOS/TAC ratio (VFA/TA)		17/08/2022
	pH		17/08/2022
Digestate	Concentration of VFAs		17/08/2022
	Ammonia		
Biogas from digesters	Flow		17/08/2022
	Quantity		17/08/2022
	Pressure		17/08/2022
	Composition		17/08/2022
	Methane		17/08/2022
	Hydrogen Sulphide		17/08/2022
	Carbon Dioxide		17/08/2022
Biogas from digesting tank, biogas holder, waste reception building and external storage areas	Odour	Daily	17/08/2022
Bund sump and storm water	Oil/grease and ammonia <03.ppm	Periodically	17/08/2022

inspection chambers			
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6. Conclusion

We consider that the installation already employed what used to be BAT, and that the operator has achieved significant improvements in performance since the permit was originally granted. The revised BREF and its BAT-AELs provide the opportunity to consider further environmental improvements.

Coupled with the consolidation and modernisation of the permit, we believe this variation provides a sound basis for ongoing regulation of the installation. The Sector Review provides the opportunity to consolidate and modernise the permit and we are satisfied that the operator is currently achieving or will be achieving all relevant BAT by 17 August 2022.

We believe that we have ensured compliance with all relevant legal requirements in carrying out this review and making our determination on the variation.

Annex 1: Decision checklist regarding relevant BAT Conclusions

BAT Conclusions for the Waste Treatment Bref were published as Commission Implementing Decision EU 2018/1147 in the Official Journal of the EU on 17 August 2018. There are 53 BAT Conclusions. This checklist 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.

All BAT Conclusions arising are listed by number in order below;

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
OVERALL ENVIRONMENTAL PERFORMANCE		
1	Environment Management System (EMS) – <u>ALL</u> of the following:	
	I. Management commitment	Currently Compliant: Site operates under an Environmental Management Systems (EMS) which has been agreed with NRW. The EMS is also certified to ISO 9001, ISO 14001 and OHSAS 18001/ISO 45001 standards as well as Competency Management System approved. ISO 14001 Approval number: 11283-EMS-006
	II. Environmental policy development including CI of performance	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-006

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	III.	Planning and implementing procedures & targets in conjunction with financial planning & investment	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-007
	IV.	<i>Implementation of procedures</i>	
		(a) Structure & responsibility	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-009
		(b) Recruitment, training, awareness & competence	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-010
		(c) Communication	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-011
		(d) Employee involvement	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-012
		(e) Documentation	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-013
		(f) Effective process control	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-014

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
		(g) Maintenance programmes	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-015
		(h) Emergency preparedness & response	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-016
		(i) Safeguarding compliance with environmental legislation	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-017
	V.	<i>Checking performance and taking corrective action</i>	
		(a) Monitoring & measurement	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-006
		(b) Corrective and preventive action	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-007
		(c) Maintenance of records	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-008
		(d) Independent (where practicable) internal or external EMS auditing	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-009

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	VI.	Senior management review of EMS	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-010
	VII.	Following development of cleaner technologies	Compliant in Future Operator has stated that this requirement is implemented through site approved management system & ISO 14001. However, this is not a requirement of ISO14001. As no additional evidence has been provided an improvement condition has been added to the permit to ensure the Operator is compliant with this requirement before the compliance deadline (IC1)
	VIII.	Whole life cycle considerations when designing a new plant i.e. impacts from eventual decommissioning and throughout its operating life	Currently Compliant: Implemented through site approved management system. ISO 14001 Approval number: 11283-EMS-006 The site is certified to Competence Management System (CMS), ISO9001:2015, ISO 14001:2015, ISO 45001/OHSAS 18001 and PAS 110 and this is externally audited annually.
	IX.	Regular sectoral bench marking	Compliant in Future Operator has stated that this requirement is implemented through site approved management system & ISO 14001. However, this is not a requirement of ISO14001. As no additional evidence has been provided an improvement condition has been added to the permit to ensure the Operator is compliant with this requirement before the compliance deadline (IC1)
	X.	Waste stream management (BAT 2)	Compliant in Future Operator has stated that this requirement is implemented through the site approved management system with pre- acceptance procedures and checks in place to manage all approved and permitted waste types, etc. However, evidence has

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			not been provided to demonstrate compliance with all items listed for each technique in BAT 2 (a to e) in line with descriptions in the BREF. An improvement condition has been added to the permit to ensure the Operator is compliant with this requirement before the compliance deadline (IC1)
	XI.	Inventory of wastewater & waste gas streams (BAT 3)	Compliant in Future Operator has stated that this requirement is implemented through the site approved management system with records kept for all incoming wastes over weighbridge and that this is also audited by third party certification bodies annually, as well as internally in addition to regulatory inspections. These are also reported to the regulators quarterly through waste return. However, evidence has not been provided to demonstrate compliance with all items listed for each technique in BAT 3 (i.e. all waste gas streams - carbon filter etc). An improvement condition has been added to the permit to ensure the Operator is compliant with this requirement before the compliance deadline (IC1)
	XII.	Residues Management Plan – S6.5	Compliant in Future Operator has stated N/a however this is a general BAT requirement and therefore applicable to site operations. An improvement condition has been added to the permit to ensure the Operator is compliant with this requirement before the compliance deadline (IC1)
	XIII.	Accident Management Plan – S6.5	Compliant in Future Operator has stated that the site has an approved Accident Management Plan which is reviewed annually or sooner where significant occurrences or changes occur,

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			however there is no record of the AMP having been submitted to NRW previously. As no additional evidence has been provided, an improvement condition has been added to the permit to ensure the Operator is compliant with this requirement before the compliance deadline (IC1)
	XIV.	Odour Management Plan (BAT 12)	Currently Compliant Site has an approved odour management Plan which is reviewed annually or sooner where significant occurrences or changes occur
	XV.	Noise & Vibration Management Plan (BAT 17)	Currently Compliant Site has an approved Noise Management Plan which is reviewed annually or sooner where significant occurrences or changes occur
2	Improving overall environmental performance – <u>ALL</u> of the following:		
	a.	Set up and implement waste characterisation & pre-acceptance procedures	Compliant in Future Operator has stated that this requirement is implemented through the site approved management system with pre- acceptance procedures and checks in place to manage all approved and permitted waste types, etc. However, further information on the pre-acceptance procedure is required in line with the requirements of BAT 2 (e.g. technical description, waste sampling and characterisation, technical assessment for suitability based on the characterisation of the waste, material flow analysis, records kept in computerised system, odour criteria for biodegradable wastes). An improvement condition has been added to the permit to ensure the Operator is compliant with this requirement before the compliance deadline (IC2)

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	b.	Set up and implement waste acceptance procedures	Currently Compliant The Operator implements a number of measures to improving overall environmental performance on site. These include Pre- acceptance procedure and checks are in place to manage all approved and permitted waste type.
	c.	Set up and implement a waste tracking system & inventory	Currently Compliant Site records are maintained for all incoming waste through a weighbridge database and this is audited by third party certification bodies annually, and regulators. These are also reported to the regulators quarterly through waste return. •Biogen adhere to strict waste acceptance criteria and undertake quality assurance checks on the incoming waste to ensure it conforms to the acceptable wastes; these procedures are documented in the IMS. •Included in these procedures are waste acceptance, handling, rejecting, risk-based sampling, inspection and analysis. •The IMS and site records will record the quantity, nature and origin of any waste that is disposed or recovered – and, where relevant, the destination, frequency of collection, mode of transport and treatment method for these wastes.
	d.	Set up and implement an output quality management system	Currently Compliant Site makes use of an on-site weighbridge which records and tracks the location and quantity of waste incoming and outgoing. This holds all relevant information about the waste as required. The Quality system is certified to ISO 9001 and is audited by an external UKAS accredited certification body. The digestate quality is certified to PAS 110 which is audited by an

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			external REAL accredited certification body. See Document Reference - PAS 110 Certificate and Document Reference - ISO Certificates
	e.	Ensure waste segregation	Compliant in Future Operator has stated that waste is segregated wherever practicable and the disposal routes identified with this being documented in the IMS and Duty of Care paperwork. Incoming waste is source segregated where applicable prior to arriving on site. No further information or a procedure has been provided. BAT 2e relies on the physical separation of waste and on procedures that identify when and where wastes are stored, and when the mixing of waste is allowed and how it is carried out. Further information is required, particularly with reference to Animal-by-Product (ABP) wastes which are accepted on site. An improvement condition has been added to the permit to ensure the Operator is compliant with this requirement before the compliance deadline (IC2)
	f.	Ensure waste compatibility prior to mixing or blending	Currently Compliant Site permitted to accept only non-hazardous, biodegradable and ABP wastes so there would not be any compatibility issues other than keeping the ABP wastes separate (and ensuring only permitted wastes accepted). Waste Accepted on-site for recovery: The waste types accepted onsite are included in as per Schedule 2 Table S2.1 of the site permit EPR/DP3735NP

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant	
	g.	Sort solid incoming waste – S6.4	Currently Compliant Waste is segregated wherever practicable, and the disposal routes identified. This is documented within the accredited IMS and duty of care paperwork. Regular inspections are completed to ensure standards are maintained. Incoming waste is source segregated where applicable prior to arriving to site.	
3	Establish and maintain a wastewater and waste gas inventory as part of the EMS - <u>ALL</u> of the following:			
	Information on characteristics of waste and waste treatment processes			
	(i)(a)	simplified process flow sheets showing emission sources	Compliant in Future Operator has stated that this requirement is implemented through documentation contained within the sites approved management system however evidence has not been provided to demonstrate compliance with all items listed for BAT 3 (i)(a) and (i)(b) (i.e. flow diagrams which show all waste gas streams - carbon filter etc). An improvement condition has been added to the permit to ensure the Operator is compliant with this requirement before the compliance deadline (IC3)	
	(i)(b)	Process-integrated and wastewater/waste gas treatment descriptions including performance		
	Information on characteristics of wastewater streams			
	(ii)(a)	Mean and variability of:		Not Applicable Although the Operator has provided evidence in response to this BAT conclusion, the AD plant has no wastewater emissions from the process, so this part of BAT Conclusion 3 is N/a
		Flow		
		pH		
		Temperature		
		Conductivity		
(ii)(b)	Mean concentration, load and variability of:			
	Total suspended solids			

BATc number		Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant		
		COD/TOC		Not Applicable Although the Operator has provided evidence in response to this BAT conclusion, the AD plant has no wastewater emissions from the process, so this part of BAT Conclusion 3 is N/a		
		Nitrogen species				
		Phosphorous				
		Metals				
		Priority substances/micropollutants				
		Any other relevant compounds				
	(ii)(c)	Bioeliminability data (see BAT 52):		Not Applicable Although the Operator has provided evidence in response to this BAT conclusion, the AD plant has no wastewater emissions from the process, so this part of BAT Conclusion 3 is N/a		
		BOD				
		BOD to COD ratio				
		Zahn-Wellens test				
		Biological inhibition potential				
	Information on characteristics of waste gas streams					
	(iii)(a)	Mean and variability of:		Compliant in Future Operator has stated that the operator has not provided sufficient information on waste gas streams. The Technical Standards and Techniques for Pollution Control document 2014 notes an air management system for the reception hall that discharges via a carbon filter abatement system. The Air Quality and Odour Assessment 2012 indicates the system discharges through two carbon filters and out through a stack on top of the building. This is considered a point source emission to air under the Waste Treatment BREF and further information is required on this waste gas stream in line with BAT 3.		
		Flow				

BATc number		Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
		temperature	An improvement condition has been added to the permit to ensure the Operator is compliant with this requirement before the compliance deadline (IC3)	
	(iii)(b)	<i>Mean concentration, load and variability of relevant substances:</i>		
		Organic compounds	Compliant in Future Operator has stated that the operator has not provided sufficient information on waste gas streams. The Technical Standards and Techniques for Pollution Control document 2014 notes an air management system for the reception hall that discharges via a carbon filter abatement system. The Air Quality and Odour Assessment 2012 indicates the system discharges through two carbon filters and out through a stack on top of the building. This is considered a point source emission to air under the Waste Treatment BREF and further information is required on this waste gas stream in line with BAT 3. An improvement condition has been added to the permit to ensure the Operator is compliant with this requirement before the compliance deadline (IC3)	
		POPs e.g. PCBs		
		Any other relevant compounds		
	(iii)(c)	Flammability		
		Lower and Higher Explosive Limits		
		Reactivity		
	(iii)(d)	<i>Presence of other substances that may affect the gas treatment system or plant safety:</i>		
		O2	Compliant in Future Operator has stated that the operator has not provided sufficient information on waste gas streams. The Technical Standards and Techniques for Pollution Control document 2014 notes an air management system for the reception hall that discharges via a carbon filter abatement	
		N2		
		Water vapour		
		Dust		

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			system. The Air Quality and Odour Assessment 2012 indicates the system discharges through two carbon filters and out through a stack on top of the building. This is considered a point source emission to air under the Waste Treatment BREF and further information is required on this waste gas stream in line with BAT 3. An improvement condition has been added to the permit to ensure the Operator is compliant with this requirement before the compliance deadline (IC3).
4	Reducing environmental risk associated with waste storage – <u>ALL</u> of the following:		
	a.	Optimised storage location	Currently Compliant The Operator implements a number of measures on site to reduce environmental risk associated with storage of waste on site. These include: optimised storage location i.e. all wastes stored away from watercourses and sensitive receptors and within enclosed building and/or enclosed tanks
	b.	Adequate storage capacity	Compliant in Future Operator has stated that this requirement is implemented through a number of measures on site, however evidence has not been provided to demonstrate compliance with this criterion. An improvement condition has been added to the permit to ensure the Operator is compliant with this requirement before the compliance deadline (IC4)
	c.	Safe storage operation	Currently Compliant The Operator implements a number of measures on site to reduce environmental risk associated with storage of waste on site. These include: safe storage option. Each

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			digester, pasteuriser and liquid tank is allocated a name/number and labelled with capacity on SCADA through which they are monitored. Written records of all tanks are kept including results of inspections and the waste types that may be stored or treated in them. The reception building ensures that any susceptible wastes stored within it are protected from heat, sunlight and ingress of water / moisture (Environmental Permit Supporting Statement 2015). The digestate tanks are located within the engineered earth bund, the waste oil tank has an integrated secondary containment system and the oily rags drum has a lid and is stored on a bund tray
	d.	Separate area for storage & handling of packaged hazardous waste	Currently Compliant The Operator implements a number of measures on site to reduce environmental risk associated with storage of waste on site. There is no packaged hazardous waste stored on site. The only hazardous waste generated is waste lubrication oil which is stored in a designated double skinned tank on hardstanding located adjacent to the CHP's and oily rags stored in metal drums next to the CHP's, both of which are segregated from all other wastes on site and emptied periodically by a specialist waste contractor.
5	Set up and implement procedures to reduce the environmental risk associated with handling and transfer of waste - include following elements:		
	Carried out by competent staff		Currently Compliant. The Operator implements a training programme and employs appropriate Technically Competent

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
		Managers for the site. The site is certified to a competency management system (CMS) standard V4.
	Duly documented, validated and verified	Currently Compliant The Operator implements an integrated Management system (IMS) for the ISO 9001, ISO 14001 and OHSAS 18001/ISO 45001 which is reviewed annually and documents any significant changes in the process or system that can affect the procedure
	Spill prevention, detection and mitigation measures	Currently Compliant Site has a spill control procedure to which all staff are trained. Site also has spill kits which are inspected daily and replenished if they run out of supplies. Procedures are in place for the handling and transfer of waste and staff are sufficiently trained in these and other associated procedures. The site is designed in a way that prevents spills from occurring i.e. enclosed tanks and pipework whose integrity is checked daily to allow or prompt detection and mitigation of any spillages. Emergency preparedness and spill procedures are in place and site team is trained in emergency response. Processes that require agitation are controlled via the site SCADA system which is available and accessible 24 hours a day. Drills are completed to familiarise/remind staff with what to do in the event of an incident as well as to get the opportunity to test the systems on site.
	Take precautions when mixing or blending wastes	Currently Compliant Only permitted waste type according to the site's permit are accepted on site and site has a quarantine area

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			for removing contaminates. Waste stream are segregated and labelled to prevent mixing, and no bending of waste on site.
		Procedures are risk-based and consider likelihood of accidents, incidents and their environmental impact	Currently Compliant The site has an approved Environmental Accident plan and Emergency Preparedness and Response procedure completed and issued by the Director of compliance. A source pathway receptor model and high, medium, low qualitative assessment type has been used for the assessment.
MONITORING			
6	Relevant emissions to water: monitor key process parameters at key locations		
	Key process parameters		
	Wastewater flow		Not applicable Permitted activities on site do not include any direct emissions to water thus there is no requirement to monitor key process parameters.
	pH		
	Temperature		
	Conductivity		
	BOD		
	Other process parameters		
	Key monitoring locations		
	Pre-treatment inlet and/or outlet		Not applicable Permitted activities on site do not include any direct emissions to water thus there is no requirement to monitor key process parameters.
	Final treatment inlet		
	Discharge point (to the environment)		
	Other location		

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
7	Monitoring emissions to water (refer to table) Monitoring parameters depend on waste treatment process(es) involved		Not applicable Permitted activities on site do not include any direct emissions to water thus there is no requirement to monitor key process parameters
8	Monitoring emissions to air (refer to table) Monitoring parameters depend on waste treatment process(es) involved		Compliant in Future Point source emissions to air from carbon filter abatement system in the reception hall will need to be monitored once every six months in line with BAT 8 for: H ₂ S and NH ₃ . No requirement set for odour concentration monitoring as no odour nuisances are expected / have been substantiated. Monitoring requirements in the permit have been updated to ensure compliance in the future (Schedule 3b of permit)
9	Monitoring diffuse emissions of organic compounds to air from processes involving solvents. Use one or a combination of the following:		
	a	Measurement – S6.2 descriptions	Not applicable The Operator has confirmed within response there are no activities involving solvents at the AD plant however, MCERT emissions monitoring is completed for the CHP engines and also reported as required engine is serviced as per schedule and the process is monitored for parameters that can impact emissions
	b	Emissions factor calculation	
	c	Mass balance calculation	
10	Periodically monitor odour emissions where nuisance is expected and/or has been substantiated (monitoring frequency is outlined in BAT 12)		
	Use EN standards e.g. 13725 or 16841		Currently Compliant Although the applicability of this BATc is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated (which is not the case for this site) the Operator still implements an Odour Management
	Use equivalent methods e.g. ISO / national / international monitoring standards		

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
		Plan which NRW consider compliant. Protocols for conducting odour monitoring in accordance with BAT10 may be reviewed in the event odour nuisances are substantiated
11	Annual monitoring for:	
	- Water, energy and raw materials	Currently Compliant The permit sets out reporting parameters that would form part of the annual report submitted to the Regulator at the end of January each year. Water, energy and raw material is monitored throughout the year with annual reports submitted to NRW at the end of January. Site do not dispose of any wastewater. All wastewater from the process is recirculated to the sealed drainage system and treated through the AD process, ultimately forming digestate which is accredited to PAS 110 quantities of which are reported to NRW annually. Freshwater usage will be monitored regularly. Any significant changes in consumption will be investigated and accounted for; if necessary, the frequency of readings will be increased.
	- Generation of residues and wastewater	Compliant in Future The operator has stated that the permit sets out reporting parameters that would form part of the annual report submitted to the Regulator at the end of January each year. Additional process data has been included as part of the updated reporting requirements issued as part of permit variation
EMISSIONS TO AIR		

BATc number		Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant	
12	Set up, implement and review an Odour Management Plan (as part of the site EMS) where nuisance is expected and/or has been substantiated. Include <u>ALL</u> of the following:				
	Protocol containing actions and timelines		Currently Compliant Although the applicability of this BATc is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated (which is not the case for this site) the Operator still implements an Odour Management Plan. Protocols for conducting odour monitoring in accordance with BAT10 may be reviewed in the event odour nuisances are substantiated		
	Protocol for conducting odour monitoring (BAT 10)				
	Protocol for response to odour incidents/complaints				
	Odour prevention and reduction programme				
13	Techniques to prevent, or where not practicable reduce odour emissions. Use one or a combination of the following:				
	a.	Minimising residence times (open systems only)		Currently Compliant Biogen Waen implements technique A & B of BAT 13 for the reduction of odour emissions. Site reduces residence time in odorous processes such as storage and handling. The site's minimum retention period is 35 days. In addition, site also have carbon filters to treat odour from the separation room and reception hall. In addition, ferric is dosed into the system to reduce Hydrogen Sulphide from the biogas. This is monitoring daily. waste is treated on first in first out basis and site will aim to ensure that waste is treated to empty the floor and wash down daily.	
	b.	Use chemical treatment (N/A if desired output is hampered)			
	c.	Optimising aerobic treatment – see examples. Refer to BAT 36 for wastes other than water-based liquid waste.			
14	Techniques to prevent, or where not practicable reduce diffuse emissions to air, in particular of dust, organic compounds and odour. Use one or a combination of the following:				

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	a.	Minimising potential diffuse emission sources – see examples	Currently Compliant The minimisation of the potential diffuse emissions source is included from the design stage and HAZOP studies are completed as and when major changes to site operating equipment and design is undertaken
	b.	Select and use high-integrity equipment – see examples	Currently Compliant • Site has high integrity gaskets and pumps with mechanical seals instead of packing
	c.	Corrosion prevention – see examples	Currently Compliant The site uses stainless steel pipework and appropriately selected construction materials incorporated into the design of the plant. The minimisation of the potential diffuse emissions source is included from the design stage and HAZOP studies are completed as and when major changes to site operating equipment and design is undertaken • Stainless steel and specially coated pipework is used for in specific equipment A HAZOP was carried out to consider appropriate selection of materials used.
	d.	Containment, collection and treatment of diffuse emissions – see examples	Currently Compliant • Site use includes the containment, collection and treatment of diffuse emission by ensuring processes such as the waste delivery and treatment is undertaken in enclosed building which are maintained under negative pressure and a minimum of 3 a/c per hour maintained during the processing day. Air from the reception and Separation buildings are treated through the site carbon filters

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			to remove any odours. All other processes are in enclosed pipework or main gas line.
	e.	Dampening (with water or fog)	Not applicable. Site does not use dampening techniques
	f.	Maintenance – see examples	Currently Compliant • All critical equipment is on a maintenance regime which the site follows. Weekly and Daily checks are also available allowing a proactive approach to leaks and failures.
	g.	Cleaning of waste treatment and storage areas – see examples	Currently Compliant • Good housekeeping and cleaning procedures are in place within the IMS. These include the use of ABP registered disinfectant. Road sweeping is carried out as and when required. Jet washing and hot wash in key areas such tank farm and reception hall are undertaken regularly.
	h.	Leak Detection and Repair (LDAR) programme for organics – S6.2	Currently Compliant • Leak detection for the gas through system pressure readings of the system and the carbon filter systems are continuously on. Qualified/certified contractors would be sort for the appropriate task if a leak detection and repair program is required.
15	Use flaring only for safety reasons or non-routine operating conditions (OTNOC). Use <u>both</u> of the following:		
	a.	Correct plant design – see examples	Currently Compliant Biogas is stored within the inner gas membrane of a purpose-built gas bag. The bag has an outer membrane that allows the inner bag to inflate and deflate safely as well as acting as secondary containment. The integrity of the gas
	b.	Plant management including gas system balancing and advanced process control	

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			holder is regularly checked. Gas monitoring equipment is used to monitor gas levels within both the tanks and the gas bag. The process tanks are gas tight vessels. All the transfer pipework is sealed and therefore under normal operation, there is no potential for odour release. The integrity of the process tanks will be inspected daily as part of the daily check's procedure. The biogas is used to produce electricity and heat through a CHP unit. The heat produced will be utilised within the process itself. Gas balance is managed via SCADA process control Site have high integrity relief valves which are on the site critical maintenance schedule.
16	Reduce emissions to air when flaring is unavoidable. Use <u>both</u> of the following:		
	a.	Correct design of flaring devices – see examples	Currently Compliant Any biogas sent to the flare is continuously monitored on the SCADA system. This includes, gas flow, heat concentration, velocity, purge gas flow rate and hours run. Flare usage is minimal and well within the permit limit of 10%. Flare usage is reported to the EA on an annual basis as part of the Air1 form. The purpose is to ensure controlled combustion of surplus biogas, primarily as a result of planned and unplanned outages due to maintenance or CHP breakdown. If the flare is used for more than 10% of the operational hours in the year, emissions testing by an MCERTS firm will take place to assess conformance to the upper

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			limits stipulated in the permit. Parameters for testing are stated in (BAT 3 (iii) Ref Document) Fugitive emissions of unburned biogas and the operation of the flare will be minimised. The provision of adequately sized CHP plants and the flare will prevent venting of biogas. Biogas flares operates over 1000°C with 0.3 seconds retention time at this temperature Height >2m height very quiet when running Any significant fugitive emissions of unburned biogas, including the operation of pressure relief valves and the operation of the flare shall be recorded. The flare is checked daily and serviced as per schedule.
	b.	Monitoring and recording as part of flare management – see examples	Compliant in the Future BAT 16b requires continuous monitoring of the quantity of gas sent to flaring. An additional performance parameter has therefore been included within Table S4.3 of the permit to require the Operator to monitor and report annually the amount of gas sent to the flare.
NOISE AND VIBRATIONS			
17	Set up, implement, and regularly review a Noise and Vibration Management Plan (as part of the EMS) where nuisance is expected and/or has been substantiated. Include <u>ALL</u> of the following:		
	I.	Protocol with actions and timelines	
	II.	Noise and vibration monitoring plan/protocol	

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	III.	Noise & vibration complaint response plan/protocol	Currently Compliant The site has a Noise Management Plan in place which is implemented and monitored regularly by the site team including completion of daily noise checks are conducted. Detailed noise monitoring/assessment will be undertaken in the event of noise complaints, a report and remedial actions recorded and made available to the regulatory bodies upon request. Noise assessment completed does not find any issues and all recommendations made are implemented.
	IV.	Noise and vibration reduction programme	
18	Techniques to prevent, or where not practicable reduce noise and vibration emissions. Use one or a combination of the following:		Currently Compliant The Operator implements the following measures to prevent or where not practical to reduce noise on site: The principle noise sources are the CHP unit. The CHP, however, benefits from acoustic housing to control the noise at source. The reception hall area and the workshop areas are both in building. The flare operates during emergency only at a very low noise level, almost negligible. The carbon filters fans speed is controlled by variable speed with reduced speed at night time to reduce noise. Noise Assessment has been undertaken and all recommendations implemented. Site has a Noise Management Plan which is implemented and reviewed annually or if there are significant changes. All plant will be regularly serviced and maintained (preventative maintenance as per the accredited IMS).
	a.	Appropriate location of equipment and buildings	
	b.	Operational measures – see examples	
	c.	Low-noise equipment – see examples	
	d.	Noise & vibration control equipment – see examples	
	e.	Noise attenuation – see examples	

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			Daily checks include noise monitoring. Noise assessment completed does not find any substantiated impacts at the identified receptors.
EMISSIONS TO WATER			
19	Optimise water consumption, reduce wastewater generation and prevent or where not practicable reduce emissions to soil and water. Use one or a combination of the following:		
	a.	Water management – see examples	Currently Compliant. Operator has annual targets and objectives which are reviewed quarterly, and management review will track evidence of compliance with set targets to reduce water usage.
	b.	Water recirculation	Currently Compliant. The site's wastewater sealed drainage system lends the opportunity to return all wastewater for re-use in the process which further improves water management. Site has a drainage plan and a process flow diagram
	c.	Impermeable surface	Currently Compliant. The operator has indicated that all processing areas on site, including the storage reception hall for waste and the tank farm area which holds all tanks and storage vessels are impermeable and benefit from a sealed drainage system. The tank farm bund has been designed in accordance with Ciria R164: Design of containment systems for the prevention of water pollution from industrial accidents (R164 – current at time of design). The integrity of tanks is inspected daily.

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			The site's wastewater sealed drainage system lends the opportunity to return all wastewater for re-use in the process which further improves water management. Site has a drainage plan and a process flow diagram
	d.	Reduce likelihood and impact of tank/vessel overflows and failures – see examples	Currently Compliant. Tanks and associated pipe work are sealed and situated on an impermeable concrete base within an impermeable bund and therefore any spills/leaks would be contained. In the event of a spill/leak the area would be hosed down and any associated washdown water/rainwater would be directed into a sealed sump and manually pumped back into the raw waste reception tank. The concrete bund for the process tanks sits within an earth secondary containment bund with a minimum of 110% capacity of the largest tank
	e.	Roofing of waste storage and treatment areas	Currently Compliant. All processing tanks have covers / roofs. The processing hall/ waste reception hall is all sealed and contained including roof and impermeable floor to prevent both rain and escape of leachate and the leachate from the floor drains into sump which is reused for processing within the system
	f.	Segregation of water streams (being mindful of existing plant constraints)	Currently Compliant. Water streams are segregated on site. The area of concrete immediately adjacent to the reception hall door is contoured to fall to two drains which also enter the sealed system; therefore, any leak prior to discharge would be directed to the sealed system. Drains are colour coded with foul water drains painted red and surface water drains blue.

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	g.	Adequate drainage infrastructure	Currently Compliant. Site drainage is designed so that all wastewater and/rainwater is collected in the sump and pumped back for processing. Water in bund sump and storm water are tested for contamination as per the site's Permit for Ammonia (not > 0.3ppm) and visible check for oil and grease. Only discharged off site if below limits of parameters tested. If >0.3ppm, the water is directed back to the process and fully treated. It then forms part of the final product (digestate). Site has a rainwater harvesting tank for collecting rainwater
	h.	Design and maintenance provisions to allow risk-based leak detection and repair. Minimise use of underground components.	Currently Compliant The Operator implements the following measures to demonstrate adequate drainage infrastructure on site: • The tanks are all purpose built with a minimum 30-year design – catastrophic failure of a tank is very unlikely. However, in the event of tank failure the material would be contained within the bunded area • The external purpose-built process tanks, i.e. raw waste buffer, digesters, pasteurisers and associated pipe work are sealed and situated on an impermeable concrete base within an impermeable bund and therefore any spills/leaks would be contained. In the event of a spill/leak the area would be hosed down and any associated washdown water/rainwater would be directed into a sealed sump and manually pumped back into the raw waste reception tank.

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
		• The tank farm bund has been designed in accordance with Ciria R164: Design of containment systems for the prevention of water pollution from industrial accidents (R164 – current at time of design) • Frequent inspections for tank and bund integrity take place to ensure they remain fit for purpose. • Daily checks are undertaken around the site to inspect for any signs of leaks/spills, only once the site manager is satisfied that there is no risk of contamination within the sump must the sump water be discharged (this is a manual activity) in accordance with the Sump Inspection and Release Procedure. If the sump water is contaminated or spills/leaks noted within the bunded area the contaminated water is directed back into the process. • The sumps are visually inspected daily, where in structural integrity is in doubt the structure is hydraulically tested to ensure they remain fit for purpose • To prevent wrong drainage connections, Site plans are held onsite for all pipework including drainage. Engineering works/re-fits are carried out by personnel conversant with the site design and following a full evaluation of the existing set-up • The tank farm bund has been designed requirements and the concrete bund for the process tanks sits within an earth bund with a minimum of 110% capacity of the largest tank • There is operator training on operation of plant and environmental awareness training.

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			• Staff completes regular scheduled maintenance and daily inspections for integrity of pipes and vessels. • The plant has been designed such that in the event of operator error or plant malfunction any release would be contained within the site boundary. Aerial release is more difficult to contain; however, the pressure relief valves would be a last resort. • The Site Manager will immediately notify the Compliance Team of any releases which could have potential for adverse environmental impact
	i.	Appropriate buffer storage capacity (being mindful of existing plant constraints)	Currently Compliant The Operator implements the following measures to demonstrate there is appropriate buffer storage capacity on site: • All tanks levels are monitored and recorded. Monitoring of these levels are also done during out of hours’ time and weekends (remotely) so that overfilling is impossible, and all tanks have high level sensors • Site will only process within permitted limits and during any equipment breakdown, waste will be diverted to other sites to prevent over processing which can impact on the levels of the tanks • All site processing area including the reception hall and the tank farm are designed on impermeable floor and with sealed drainage system. Site will not accept/process waste more than available safe volume permitted. • The tank farm bund has been designed in accordance with Ciria

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			R164: Design of containment systems for the prevention of water pollution from industrial accidents (R164 – current at time of design) Daily checks are undertaken around the site to inspect for any signs of leaks/spills, only once the site manager is satisfied that there is no risk of contamination within the sump must the sump water be discharged (this is a manual activity) in accordance with the Sump Inspection and Release Procedure. If the sump water is contaminated or spills/leaks noted within the bunded area the contaminated water are directed back into the process.
20	Treat wastewater using a combination of:		
	<i>Preliminary, primary and general treatment</i>		
	a.	Equalisation	Not Applicable. Although the Operator has provided evidence against this BAT conclusion, the site's activities do not include any treatment of wastewater therefore these forms of treatment are not considered applicable. All dirty water is contained and fed into the AD plant.
	b.	Neutralisation	
	c.	Physical separation	
	<i>Physico-chemical treatment</i>		
	d.	Adsorption	Not Applicable. Activities on site do not include physico-chemical treatment of wastewater therefore these forms of wastewater treatment are not considered applicable.
	e.	Distillation/rectification	
	f.	Precipitation	
	g.	Chemical oxidation	
	h.	Chemical reduction	
	i.	Evaporation	

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	j.	Ion exchange	
	k.	Stripping	
	Biological treatment		
	l.	Activated sludge process	Not Applicable. Activities on site do not include biological treatment of wastewater therefore these forms of treatment are not considered applicable.
	m.	Membrane bioreactor	
	Nitrogen removal		
	n.	Nitrification/denitrification (where biological treatment used)	Not Applicable. Activities on site do not include the removal of nitrogen via means of nitrification / denitrification. This form of wastewater treatment is not considered applicable.
	Solids removal		
	o.	Coagulation and flocculation	Currently Compliant. The site operates a sealed drainage system within only clean surface water discharging off site. Surface water enters a large reception tank which allows for any solids (albeit unlikely) to settle. Any water which has greater than 0.3ppm ammonia will be returned to the process
	p.	Sedimentation	
	q.	Filtration (sand, micro, ultra)	
	r.	Flotation	
	BAT-AELs for DIRECT discharges to a receiving waterbody (mg/l) Table 6.1 and its supporting notes. Monitoring requirements are outlined in BAT 7		
	TOC	10.0-60 10-100 for water-based liquid waste	Not applicable Permitted activities on site do not include any direct discharges of these parameters to any receiving waterbody. BAT-EALs are therefore not applicable. Operator has confirmed
	COD (TOC is preferred)	30-180 30-300 for water-based liquid waste	

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	Suspended solids	5.0-60	there are no direct discharges to surface or groundwaters. Only clean surface water run-off discharges from site.
	HOI	0.5-10 applying to specific waste treatments	
	Total N	1-25 for biological treatment and waste oil re-refining 10-60 for water-based liquid waste	
	Total P	0.3-2 for biological treatment 1-3 for water-based liquid waste	
	Phenol	0.05-0.2 for waste oil re-refining and physio-chemical treatment of waste with CV 0.05-0.3 for water-based liquid waste	
	Free CN-	0.02-0.1 for water-based liquid waste	
	AOX	0.2-1 for water-based liquid waste	
	Metals & Metalloids – specific waste treatments as listed in Table 6.1		Not applicable Permitted activities on site do not include any direct discharges of these parameters to any receiving waterbody. BAT-EALs are therefore not applicable. Operator has confirmed there are no direct discharges to surface or groundwaters
	As	0.01-0.05	
	Cd	0.01-0.05	
	Cr	0.01-0.15	
	Cu	0.05-0.5	
	Pb	0.05-0.1	
	Ni	0.05-0.5	

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant	
	Hg	0.5-5	Not applicable Permitted activities on site do not include any direct discharges of these parameters to any receiving waterbody. BAT-EALs are therefore not applicable. Operator has confirmed there are no direct discharges to surface or groundwaters	
	Zn	0.1-1		
	Metals & Metalloids – treatment of water-based liquid waste			
	As	0.01-0.1		
	Cd	0.01-0.1		
	Cr	0.01-0.3		
	Hexavalent Cr [Cr(VI)]	0.01-0.1		
	Cu	0.05-0.5		
	Pb	0.05-0.3		
	Ni	0.05-1		
	Hg	1.0-10		
	Zn	0.1-2		
	BAT-AELs for INDIRECT discharges to a receiving waterbody (mg/l)			
	Table 6.2 and its supporting notes. Monitoring requirements are outlined in BAT 7			
	HOI	0.5-10 applying to specific waste treatments		Not applicable Permitted activities on site do not include any indirect discharges to any receiving waterbody. BAT-EALs are therefore not applicable. Operator has confirmed there are no discharges to sewer from the site
	Free CN-	0.02-0.1 for water-based liquid waste		
	AOX	0.2-1 for water-based liquid waste		
Metals & Metalloids – specific waste treatments as listed in Table 6.2				

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	As	0.01-0.05	Not applicable Permitted activities on site do not include any indirect discharges to any receiving waterbody. BAT-EALs are therefore not applicable. Operator has confirmed there are no discharges to sewer from the site
	Cd	0.01-0.05	
	Cr	0.01-0.15	
	Cu	0.05-0.5	
	Pb	0.05-0.1	
	Ni	0.05-0.5	
	Hg	0.5-5	
	Zn	0.1-1	
	Metals & Metalloids – treatment of water-based liquid waste		
	As	0.01-0.1	Not applicable Permitted activities on site do not include any indirect discharges to any receiving waterbody. BAT-EALs are therefore not applicable. Operator has confirmed there are no discharges to sewer from the site
	Cd	0.01-0.1	
	Cr	0.01-0.3	
	Hexavalent Cr [Cr(VI)]	0.01-0.1	
	Cu	0.05-0.5	
	Pb	0.05-0.3	
	Ni	0.05-1	
	Hg	1.0-10	
	Zn	0.1-2	

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
EMISSIONS FROM ACCIDENTS AND INCIDENTS		
21	Techniques to prevent or limit the environmental consequences of accidents and incidents, as part of the Accident Management Plan. Use <u>ALL</u> of the following:	
	a.	Protection measures – see examples
	Currently Compliant. The site is securely fenced to prevent unauthorised entry. The site also benefits from CCTV which can be accessed remotely. Operator implements a Fire Risk Assessment for the site. Spill kits, fire extinguishers, contact numbers and emergency preparedness procedures are in place in the event of an emergency	
	b.	Management of incidental or accidental emissions
	Currently Compliant. The site implements an Emergency Preparedness and Response procedure to which all staff are trained and are familiar with in the event of unforeseen incident. Site has stock of spill kits located close to all areas of spill risk to quickly contain spillage in the event of any leaks or spillage	
	c.	Incident/accident registration and assessment system – see examples
Currently Compliant. All near misses and incidents are logged onto the company's electronic IMS (ACTIV) to allow for prompt investigation and corrective actions. Site has daily checks records for all critical equipment's on site as well as daily site shut down sheet which is completed to ensure that site is safely closed after which the site is remotely monitored by the on-call duty manager.		
MATERIAL EFFICIENCY		

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
22	Use materials efficiently by substituting materials with waste e.g. waste acids/alkalis for pH adjustment, fly ashes for binders	Currently Compliant. Feedstocks for the plant are primarily food / liquid wastes rather than purpose grown energy crops. The site also re-circulates substrate and harvests rainwater for use in plant rather than potable water. Material efficiency measures implemented are as follows: • Site has annual targets and objective to minimise material usage as well as water consumption which is reviewed quarterly, and management review will track evidence of compliance with set targets to reduce water usage/ material usage • Site has the provision to return material processed to aid processing at the start of the process and pumpability of the material hence reducing material and water usage • A Hazard Analysis and Critical control point Analysis is completed for the process to manage all foreseeable hazards and risks including pathogens, toxins, chemical contamination, sharps, metal, plastics among others with all identified critical point's limit monitored and controlled. • Wastewater and harvested are used for processing to improve water management • Site can return processed material to front end to make the processing of waste pumpable thereby reducing the use of water.
ENERGY EFFICIENCY		

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
23	Use energy efficiently by using <u>both</u> of the following techniques:	
	a.	Energy efficiency plan
	b.	Energy balance record
Compliant in the Future The following measures are taken in order to reduce energy consumption on site: The site is designed and the process tanks and building insulated to ensure energy efficiency. The plant will use a combination direct start and soft start with inverter drives. In the main any motor over 10kw will use a soft start to lower the torque loading for these motors, therefore reducing the electricity usage. The energy required for running the motors will all be generated from the CHP's within the plant and therefore will all come from renewable energy. The CHP is under premium O&M and will therefore be monitored to ensure maximum efficiency. The O&M contract includes 24/7 remote monitoring and management. The company includes KPI targets for generation and these are continually monitored by the senior management team. An energy efficiency plan will be in place and any recordings will be made available for inspection by the NRW. Energy balance record in the form of Overall Equipment Effectiveness (OEE) Monitoring which records energy loss throughout the process. An improvement condition has been included within the permit to ensure the site implements an Energy Efficiency Plan and Energy Balance Record prior to compliance deadline (IC5)		

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
REUSE OF PACKAGING		
24	Maximise the reuse of packaging as part of a Residues Management Plan (see BAT 1 XII.)	Compliant in Future The Operator implements the following measures: Waste Acceptance and Handling procedures are in place. These are included on the electronic IMS. Though site does not take packaged waste, this is communicated and strictly enforced on the contracts set up with waste supply customers, the waste acceptance criteria is in place which layout the percentage of packaging accepted in packaged waste. Where this is exceeded quarantine and rejection procedures are implemented. Packaging reused, however is limited due to ABPR. KPI are in place to reduce the amount of waste sent to landfills The site implements the above measures to maximise the reuse of packaging, however no evidence has been provided to confirm the site implements a Residues Management Plan. An improvement condition has been included within the permit to ensure the site implements a Residues Management Plan prior to compliance deadline. (IC6)
MECHANICAL TREATMENT OF WASTE (GENERAL BAT)		

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
25	Reduce emissions to air of dust, particulate-bound metals, PCDD/F and dioxin-like PCBs by applying BAT 14d AND using one or a combination of the following techniques:	
	a.	Cyclone – see S6.1
	b.	Fabric filter – see S6.1
	c.	Wet scrubbing – see S6.1
	d.	Water injection into the shredder
	BAT-AEL for channelled dust emissions to air from the mechanical treatment of waste (mg/Nm³) <i>Table 6.3 and its supporting note. Monitoring requirements are outlined in BAT 8</i>	
	Dust	2.0-5.0
Not applicable Operator has stated N/a within response as there are no activities involving the mechanical treatment of waste undertaken at the AD Plant		
MECHANICAL TREATMENT OF METAL WASTE BY SHREDDING		
26	Improve overall environmental performance and prevent emissions due to accidents and incidents. Use BAT 14g AND ALL of the following techniques:	
	(a)	Detailed inspection procedure for baled waste before shredding
	(b)	Remove dangerous items from waste inputs and dispose of them in a safe manner
	(c)	Treatment of containers accompanied by a declaration of cleanliness
27 Prevent deflagrations and reduce emissions from deflagrations. Use technique a. <u>AND ONE OR BOTH</u> of techniques b. and c.		
Not applicable Operator has stated N/a within response as there are no activities involving the mechanical treatment of metal waste by shredding undertaken at the AD Plant		

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	a.	Deflagration management plan with reduction programme, incident review and response protocol	Not applicable Operator has stated N/a within response as there are no activities involving the mechanical treatment of metal waste by shredding undertaken at the AD Plant
	b.	Pressure relief dampers	
	c.	Pre-shredding (device)	
28	Use energy efficiently by keeping the shredder feed stable		Not applicable Operator has stated N/a within response as there are no activities involving the mechanical treatment of metal waste by shredding undertaken at the AD Plant
MECHANICAL TREATMENT OF WEEE CONTAINING VFCs AND/OR VHCs			
29	Techniques to prevent, or where not practicable reduce emissions of organic compounds to air. Apply BAT 14d <u>AND</u> BAT14h <u>AND</u> technique a. <u>AND ONE OR BOTH</u> of techniques b. and c.		
	a.	Optimised removal and capture of refrigerants and oils	Not applicable Operator has stated N/a within response as there are no activities involving the mechanical treatment of WEE containing VFCs and/or VHCs undertaken at the AD Plant
	b.	Cryogenic condensation	
	c.	Adsorption	
	BAT-AELs for channelled TVOC and CFC emissions to air from treatment of WEEE containing VFCs and/or VHCs (mg/Nm3) <i>Table 6.4. Monitoring requirements are outlined in BAT 8</i>		
	TVOC	3.0-15	Not applicable Operator has stated N/a within response as there are no activities involving the mechanical treatment of WEE containing VFCs and/or VHCs undertaken at the AD Plant
	CFCs	0.5-10	
30	Prevent emissions due to explosions when treating WEEE containing VFCs and/or VHCs. Use <u>EITHER</u> of the following techniques:		
	a.	Inert atmosphere e.g. N2	

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	b.	Forced ventilation	Not applicable Operator has stated N/a within response as there are no activities involving the mechanical treatment of WEE containing VFCs and/or VHCs undertaken at the AD Plant
MECHANICAL TREATMENT OF WASTE WITH CALORIFIC VALUE			
31	Reduce emissions to air of organic compounds by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:		
	a.	Adsorption – see S6.1	Not applicable Operator has stated N/a within response as there are no activities involving the mechanical treatment of metal waste with calorific value undertaken at the AD Plant
	b.	Biofilter – see S6.1	
	c.	Thermal oxidation – see S6.1	
	d.	Wet scrubbing – see S6.1	
	BAT-AEL for channelled TVOC emissions to air from the mechanical treatment of waste with calorific value (mg/Nm3) Table 6.5 and its supporting note. Monitoring requirements are outlined in BAT 8		
	TVOC	10.0-30.0	Not applicable Operator has stated N/a within response as there are no activities involving the mechanical treatment of metal waste with calorific value undertaken at the AD Plant
MECHANICAL TREATMENT OF WEEE CONTAINING MERCURY			
32	Reduce mercury emissions to air by collecting them at source, sending them to abatement and carrying out adequate monitoring. This includes <u>ALL</u> of the following:		
	Equipment is enclosed, under negative pressure and connected to a LEV system		

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	Waste gas treated using dedusting techniques – see examples – followed by adsorption on activated carbon		Not applicable Operator has stated N/a within response as there are no activities involving the mechanical treatment of WEEE containing mercury undertaken at the AD Plant
	Monitoring of waste gas treatment efficiency		
	Mercury levels measured at least weekly within treatment and storage areas		
	BAT-AEL for channelled mercury (Hg) emissions to air from the mechanical treatment of WEEE containing mercury (µg/Nm3) <i>Table 6.6. Monitoring requirements are outlined in BAT 8</i>		
	Hg	2.0-7.0	Not applicable Operator has stated N/a within response as there are no activities involving the mechanical treatment of WEEE containing mercury undertaken at the AD Plant
BIOLOGICAL TREATMENT OF WASTE (GENERAL BAT)			
33	Reduce odour emissions and improve overall environmental performance by selecting the waste input (to ensure its suitability for biological treatment). See also BAT 2		Currently Compliant •The list of feedstocks to be accepted on site is as per Schedule 2 table S2.1 of the site environmental permit EPR/DP3735NP. This waste will be securely stored within the enclosed Reception hall at all times.
34	Reduce emissions to air of dust, organic compounds and odorous compounds (including H2S & NH3) by using one or a combination of the following techniques:		
	a.	Adsorption – see S6.1	Currently Compliant The site has carbon filters for abating odour from the process. And an associated odour abatement maintenance procedure which details all required scheduled checks for maintenance and services that must be completed.

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	b.	Biofilter – see S6.1	Not applicable The site does not have a biofilter
	c.	Fabric filter – see S6.1.	Not applicable The site does not use Fabric Filters
	d.	Thermal oxidation – see S6.1	Not applicable The site does not use Thermal Oxidation
	e.	Wet scrubbing – see S6.1	Not applicable The site does not have a wet scrubber
	BAT-AEL for channelled NH3, odour, dust and TVOC emissions to air from the biological treatment of waste (mg/Nm3) (ou_E/m3) <i>Table 6.7 and its supporting notes. Monitoring requirements are outlined in BAT 8</i>		
	NH3	0.3-20	Compliant in Future The site has carbon filters for abating odour from the process. And an associated odour abatement maintenance procedure which details all required scheduled checks for maintenance and services that must be completed. The process is wet based, and site has a Fugitive management plan which covers dust. The site does not currently monitor for any of these parameters from their carbon filter emission point. Monitoring of Ammonia and Hydrogen Sulphide added to Table S3.1 within Schedule 3 (b). Emissions and monitoring effective from 17 August 2022
	Odour	200-1000	
	Dust	2.0-5.0	
	TVOC	5.0-40	
35	Reduce the generation of wastewater and reduce water usage by using <u>ALL</u> of the following:		
	a.	Segregation of water streams (see also BAT 19f)	Currently Compliant The Operator implements a number of measures to segregate different water streams. These are as follows: • Document Ref: Water drainage plan (Waen) • The area of concrete immediately adjacent to the reception hall door is designed to return material into the drains which also enter the sealed system; therefore, any leak prior to discharge would be

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	b.	Water recirculation
	c.	Minimisation of the generation of leachate
		directed to the sealed system. • All drains on site are colour coded with foul water drains painted red and surface water drains blue. Currently Compliant The Operator implements a number of water recirculation measures. These are as follows: • Site has a rainwater tank for harvesting rainwater on site and this is recirculated back into the process. • Dirty water and surface water is always reused in the process and directed into sealed drainage and processed back into the process for reuse. The site has been designed to ensure that only clean uncontaminated water is discharged from the site. • The discharge/unloading, handling and pre-treatment of waste is undertaken within impermeable Reception bays which benefits from a sealed drainage system. • The drainage in the Reception bays is directed into a sump chamber, this material is then returned to the process for full treatment. All tanks are contained within secondary containment, i.e. a concrete bund. This has high level sensor which is tested regularly in case of overflow Site have a grey water tank specific for water harvesting.
		Currently Compliant The Operator implements a number of measures to minimise the generation of leachate. These are as follows:

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			• Document Ref: Water drainage plan (Waen) • Food waste is stored undercover within a sealed reception building. The area of concrete immediately adjacent to the reception hall door is designed to return material into the drains which also enter the sealed system; therefore, any leak prior to discharge would be directed to the sealed system. • All drains on site are colour coded with foul water drains painted red and surface water drains blue.
BIOLOGICAL TREATMENT OF WASTE: AEROBIC METHODS			
36	Reduce emissions to air and improve overall environmental performance by monitoring and/or controlling key waste and process parameters. Include following elements:		
	Waste input characteristics e.g. C to N ratio, particle size		Not applicable Operator has stated N/a within response as there are no activities involving aerobic methods of treatment of waste undertaken at the AD Plant
	Temperature and moisture content within windrows (Moisture monitoring not needed for enclosed processes where H&S issues have been identified)		
	Aeration of the windrow		
	Windrow porosity, height and width		
37	Reduce diffuse emissions to air of dust, odour and bioaerosols from open-air treatment steps. Use ONE OR BOTH of the following techniques:		
	a.	Use of semi-permeable membrane covers	Not applicable Operator has stated N/a within response as there are no activities involving aerobic methods of treatment of waste undertaken at the AD Plant
	b.	Adaptation of operations to the meteorological conditions	

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
BIOLOGICAL TREATMENT OF WASTE: ANAEROBIC METHODS		
38	Reduce emissions to air and improve overall environmental performance by monitoring and/or controlling key waste and process parameters. Include following elements:	
	Implement a manual and/or automatic monitoring system to:	
	Ensure a stable digester operation	Currently Compliant The site's AD system is run through SCADA which is an automatic and /or manual monitoring system This system monitors temperatures, flow, feed rates, tank levels, open/closed status of valves etc, to ensure stable digester operation Procedures are in place both with regards to feedstock pre-acceptance and process monitoring in order to prevent or control, operational difficulties such as foaming The system is also equipped with early warning systems in the form of alarms and pre-set logic that's would shut down parts or the system as a whole in cases of system failures, particularly those that would lead to loss of containment and explosions. The system is accessible 24 hours a day 7 days a week and site teams operate in shifts to ensure there is a duty manager available at all times to monitor site operations. Included in the Duty Manager's role is the need to regularly carryout physical and visual checks around site rather than only relying on information displayed on SCADA.
	Minimise operational difficulties and associated odour emissions	
	Provide sufficient early warning of system failures	
	Windrow porosity, height and width	

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
			For the process parameters monitored please see document referenced Document Reference - BAT 3 (iii) Reference document. Adjustments made (where required) at least weekly. Site also carryout regular maintenance which include planned preventative maintenance to ensure a continuous process and reduce down time or any incidents likely to result in pollution
	Monitoring and/or control of key waste and process parameters – examples below:		
	pH and alkalinity of the digester feed	Compliant in the Future The site's Anaerobic Digestion system is run through SCADA which is an automatic and /or manual monitoring system This system monitors temperatures, flow, feed rates, tank levels, open/closed status of valves etc, to ensure stable digester operation. The Operator has not provided sufficient information in order to demonstrate full compliance with this BAT conclusion. Thus, an improvement condition has been included within the permit for the sites process monitoring procedures to be amended to ensure compliance with BAT 38 prior to compliance deadline (IC7)	
	Digester operating temperature		
	Hydraulic and organic loading rates of the digester feed		
	Volatile fatty acids and NH3 concentrations within digester & digestate		
	Biogas quantity, composition (e.g. H2S) and pressure		
	Liquid and foam levels in the digester		
MECHANICAL BIOLOGICAL TREATMENT (MBT) OF WASTE			
39	Reduce emissions to air. Generally applicable to new plants, existing plants may have layout constraints. Use BOTH of the following techniques:		

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	a.	Segregation of the waste gas streams (refer to inventory described in BAT 3)	Not applicable Operator has stated N/a within response as there are no activities involving the mechanical biological treatment (MBT) of waste undertaken at the AD Plant
	b.	Recirculation of waste gas. Waste gas treatment is described in BAT 34 and recirculation in BAT 35.	
PHYSICO-CHEMICAL TREATMENT OF SOLID AND/OR PASTY WASTE			
40	Improve overall environmental performance by monitoring the waste input as part of the waste pre-acceptance and acceptance procedures. See also BAT 2.		
	Monitoring the waste input		
	Content of organics, oxidising agents, metals, salts, odorous compounds		Not applicable Operator has confirmed within response there are no activities involving the physical-chemical treatment of solid and/or pasty waste undertaken at the AD plant
H2 formation potential upon mixing of flue-gas treatment residues/ashes with water			
41	Reduce emissions to air of dust, organic compounds and NH3 by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:		
	a.	Adsorption – see S6.1	Not applicable Although the Operator has provided a response to this BAT, there are no activities involving the physical-chemical treatment of solid and/or pasty waste undertaken at the AD plant
	b.	Biofilter – see S6.1	
	c.	Fabric filter – see S6.1.	
	d.	Wet scrubbing – see S6.1	
BAT-AEL for channelled NH3, odour, dust and TVOC emissions to air from the physico-chemical treatment of solid and/or pasty waste (mg/Nm3)			
Table 6.8. Monitoring requirements are outlined in BAT 8			

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	Dust	2.0-5.0	Not applicable Although the Operator has provided a response to this BAT, there are no activities involving the physical-chemical treatment of solid and/or pasty waste undertaken at the AD plant
RE-REFINING OF WASTE OIL			
42	Improve overall environmental performance by monitoring the waste input as part of the waste pre-acceptance and acceptance procedures. See also BAT 2.		
	Monitoring the waste input		
	Chlorinated compounds e.g. solvents or PCBs		Not applicable Operator has confirmed within response there are no activities involving the re-refining of waste oil undertaken at the AD plant
43	Reduce quantity of waste sent for disposal by using <u>ONE OR BOTH</u> of the following techniques:		
	a.	Material recovery e.g. organic residues in asphalt products	Not applicable Operator has confirmed within response there are no activities involving the re-refining of waste oil undertaken at the AD plant
	b.	Energy recovery	
44	Reduce emissions to air of organic compounds by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:		
	a.	Adsorption – see S6.1	Not applicable Operator has confirmed within response there are no activities involving the re-refining of waste oil undertaken at the AD plant
	b.	Thermal oxidation – see S6.1	
	c.	Wet scrubbing – see S6.1	
	The BAT-AEL for TVOC emissions to air set in Section 4.5 (below) applies.		
Monitoring requirements are outlined in BAT 8			

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
PHYSICO-CHEMICAL TREATMENT OF WASTE WITH CALORIFIC VALUE			
45	Reduce emissions to air of organic compounds by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:		Not applicable Operator has confirmed within response there are no activities involving the physico-chemical treatment of waste with calorific value at the AD plant
	a.	Adsorption – see S6.1	
	b.	Cryogenic condensation – see S6.1	
	c.	Thermal oxidation – see S6.1	
	d.	Wet scrubbing – see S6.1	
<i>The BAT-AEL for TVOC emissions to air set in Section 4.5 (below) applies. Monitoring requirements are outlined in BAT 8</i>			
REGENERATION OF SPENT SOLVENTS			
46	Improve overall environmental performance by using <u>ONE OR BOTH</u> of the following techniques:		Not applicable Operator has confirmed within response there are no activities involving the regeneration of spent solvents undertaken at the AD plant
	a.	Material recovery (by evaporation from distillation residues)	
	b.	Energy recovery e.g. using distillation residues	
47	Reduce emissions to air of organic compounds by applying BAT 14d <u>AND</u> using <u>a combination of</u> the following techniques:		Not applicable Operator has confirmed within response there are no activities involving the regeneration of spent solvents undertaken at the AD plant
	a.	Recirculation of process off-gases in a steam boiler. Avoid generating PCBs and/or PCDD/Fs	
	b.	Adsorption – see S6.1	
	c.	Thermal oxidation – see S6.1. Avoid generating PCBs and/or PCDD/Fs	
	d.	Condensation or cryogenic condensation	

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	e.	Wet scrubbing – see S6.1	
<i>The BAT-AEL for TVOC emissions to air set in Section 4.5 (below) applies.</i> <i>Monitoring requirements are outlined in BAT 8</i>			
BAT-AEL FOR EMISSIONS OF ORGANIC COMPOUNDS TO AIR – SECTION 4.5 (RE-REFINING OF WASTE OIL) (PHYSICO-CHEMICAL TREATMENT OF WASTE WITH CV) (REGENERATION OF SPENT SOLVENTS)			
<i>BAT-AEL for channelled TVOC emissions to air from the re-refining of waste oil, physico-chemical treatment of waste with calorific value and regeneration of spent solvents (mg/Nm3)</i> <i>Table 6.9 and its supporting note. Monitoring requirements are outlined in BAT 8</i>			
	TVOC	5.0-30	Not applicable Operator has confirmed within response there are no activities involving the regeneration of spent solvents undertaken at the AD plant
THERMAL TREATMENT OF SPENT ACTIVATED CARBON, WASTE CATALYSTS AND EXCAVATED CONTAMINATED SOIL			
48	Improve overall environmental performance by using <u>ALL</u> of the following techniques:		
	a.	Heat recovery from the furnace off-gas e.g. for preheating combustion air or steam generation	Not applicable Operator has confirmed within response there are no activities involving the thermal treatment of spent activated

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	b.	Indirectly fired furnace i.e. avoids contact between the furnace contents and the burner flue-gases. Note applicability constraints.	carbon, waste catalysts and excavated contaminated soil undertaken at the AD plant
	c.	Process-integrated techniques to reduce emissions to air – see examples	
49	Reduce emissions to air of HCl, HF, dust and organic compounds by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:		Not applicable Operator has confirmed within response there are no activities involving the thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil undertaken at the AD plant
	a.	Cyclone – see S6.1	
	b.	Electrostatic precipitator (ESP) – see S6.1	
	c.	Fabric filter – see S6.1	
	d.	Wet scrubbing – see S6.1	
	e.	Adsorption – see S6.1	
	f.	Condensation – see S6.1	
	g.	Thermal oxidation – see S6.1	
Note supporting text for BAT 49g (thermal oxidation) Monitoring requirements are outlined in BAT 8. No BAT-AELs have been set for this BATc.			
WATER WASHING OF EXCAVATED CONTAMINATED SOIL			
50	Reduce emissions to air of dust and organic compounds from the storage, handling and washing steps by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:		
	a.	Adsorption – see S6.1	
	b.	Fabric filter – see S6.1	

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	c.	Wet scrubbing – see S6.1	Not applicable Operator has confirmed within response there are no activities involving the washing of excavated contaminated soils at the AD Plant
	<i>Monitoring requirements are outlined in BAT 8. No BAT-AELs have been set for this BATc.</i>		
Decontamination of equipment containing PCBs			
51	Reduce emissions to air of PCBs and organic compounds and improve overall environmental performance by using <u>ALL</u> of the following techniques:		
	a.	Coating of the storage and treatment areas – see examples	Not applicable Operator has confirmed within response there are no activities involving the decontamination of equipment containing PCBs undertaken at the AD Plant
	b.	Implementation of staff access rules to prevent dispersion of contamination – see examples	
	c.	Optimised equipment cleaning and drainage – see examples	
	d.	Control and monitoring of emission to air – see examples	
	e.	Disposal of waste treatment residues – see examples	
	f.	Recovery of solvent when solvent washing is used	
		<i>Monitoring requirements are outlined in BAT 8. No BAT-AELs have been set for this BATc.</i>	
TREATMENT OF WATER-BASED LIQUID WASTE			
52	Improve overall environmental performance by monitoring the waste input as part of the waste pre-acceptance and acceptance procedures. See also BAT 2.		
	<i>Monitoring the waste input</i>		

BATc number		Summary of BAT Conclusion requirement	Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	Bioeliminability e.g. BOD, BOD-COD ratio, Zahn-Wellens test, biological inhibition potential		Not applicable Operator has confirmed within response there are no water-based liquid wastes accepted at the AD Plant
	Feasibility of emulsion breaking e.g. lab testing		
53	Reduce emissions to air of HCl, NH3 and organic compounds by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:		
	a.	Adsorption – see S6.1	Not applicable Although the Operator has provided a response to this BAT, the site does not treat water-based liquid wastes through the AD Plant
	b.	Biofilter – see S6.1	Not applicable Although the Operator has not provided a response to this BAT, the site does not treat water-based liquid wastes through the AD Plant
	c.	Thermal oxidation – see S6.1.	
	d.	Wet scrubbing – see S6.1	
	BAT-AELs for channelled HCl and TVOC emissions to air from the treatment of water-based liquid waste (mg/Nm3) <i>Table 6.10 and its supporting notes. Monitoring requirements are outlined in BAT 8</i>		
	HCl	1.0-5.0	Not applicable Although the Operator has not provided a response to this BAT, the site does not treat water-based liquid wastes through the AD Plant
TVOC	3.0-20		