Natural Resources Wales permitting decisions

Variation and Consolidation of a bespoke Permit – Anglesey Energy Limited

We have decided to issue a Natural Resources Wales initiated variation for Mona Anaerobic Digestion Plant in Mona Industrial Estate, Gwalchmai, Isle of Anglesey, LL65 4RJ operated by Anglesey Energy Limited.

The permit number is EPR/AP3033HY.

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 Mona Anaerobic Digestion Plant against the published BAT conclusions for Waste Treatment.
- Annex 1 – Decision Checklist regarding relevant BAT Conclusions

Assessment of Mona Anaerobic Digestion Plant against the published BAT conclusions for Waste Treatment

1. Our decision

We have issued a variation, which will allow Anglesey Energy 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 27 June 2011 and subsequent variations, 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 to standard by 17 August 2022.

2. The legal framework

The Variation and Consolidation Notice (which includes the consolidated permit as Schedule 2) 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 Industrial Emissions Directive (IED);
- subject to aspects of other relevant legislation which also have to be addressed.

We consider that, in issuing the Variation and Consolidated Permit, 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 24 March 2020 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 Regulation 61(1) Notice required the operator to:

- Describes the techniques that will be implemented before 17 August 2022, which will then ensure that operations meet the revised standard, or
- Justifies why standards will not be met by 17 August 2022, and confirmation of the date when the operation of those processes will cease within the installation or an explanation of why the revised BAT standard is not applicable to those processes, or
- Justifies why an alternative technique will achieve the same level of environmental protection equivalent to the revised 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, Anglesey Energy 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 is established 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. Anglesey Energy Limited have not provided a baseline report or summary report referring to information previously submitted in line with point 6 of the Regulation 61(1) Notice. A Site Condition Report dated February 2016 is held on file at NRW but does not include soil and groundwater data nor information on relevant hazardous substances used, produced or released at the installation.

- Where their permitted activity involves the use, production, storage or release of a priority hazardous substances and any other relevant substances., as defined by the Water Framework Directive, Anglesey Energy 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 is established the operator is 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. The installation does not have any direct or indirect discharges of waste water to water or sewer, only clean uncontaminated surface water drainage.
- Where the operator proposed that they were not intending to meet a BAT standard, that also included a BAT Associated Emission Level (BAT-AEL) described in the BAT Conclusions Document, the Regulation 61(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 20 September 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 response

BAT Conclusions for the Waste Treatment were published as a 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.

A basic response was received from Anglesey Energy Limited. Following assessment of the Regulation 61(1) response, no further information was requested from Anglesey Energy 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, improvement conditions have been set to address gaps in the response from the Operator.

5. Changes we have made

Improvement Conditions

Based on the information provided in the Regulation 61(1) response, 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
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 Conclusion of the Waste Treatment BREF Document (EU 2018): • BAT 1 (IV)(XII)(XIII) Environment Management System • BAT 2(b) and BAT 2(c) – Improving environmental performance	17th February 2022 or otherwise agreed in writing with Natural Resources Wales

	• BAT 3(i)(a) and BAT 3(i)(b) – Establish and maintain a waste water and waste gas inventory as part of the EMS • BAT4(b) – Adequate strorage capacity • BAT 8 – Monitoring emissions to air • BAT 19 (c) – Impermeable surface • BAT 21 – Emissions from accidents and incidents • BAT 24 – Reuse of packaging • BAT 34 – Reduce emissions to air of dust, organic compounds and odourous compounds (including H_2S and NH_3) • BAT 36 – Biological treatment of waste: aerobic methods • BAT 37 – Biological treatment of waste: aerobic methods	
IC6	The Operator shall submit for written approval a methodology for meeting the process parameters listed in 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.	17th February 2022 or otherwise agreed in writing with Natural Resources Wales
IC7	The Operator shall submit a written report to Natural Resources Wales for approval detailing how the site will implement the latest version of 'Technical Guidance Note M9 Environmental monitoring of bioaerosols at regulated facilities dated July 2018 Version 2'. The written report shall be submitted to Natural Resources Wales by July 31st 2021 and provide procedures and timelines for implementing the new methodology by October 31st 2021.	31 July 2021 and 31 October 2021 or otherwise agreed in writing with Natural Resources Wales

IC6 has been included on the permit for the operator to demonstrate that they have control over their anaerobic treatment of waste process. BATc 38 of the Waste Treatment BREF requires the Operator to reduce emissions to air and to improve the overall environmental performance. BAT to is to monitor and/or control the key waste and process parameters. The description requires the operator to have a manual and/or automatic system and lists a number of example process parameters.

The approach taken by NRW is to have an improvement condition for the operator to submit a methodology for how they will address the requirements listed in Table S3.3 of the permit. The Operator will confirm how the information will be gathered, for example, using a SCADA system, on-site testing, sampling etc as well as the frequency this information will be recorded. Where the operator does not undertake certain monitoring parameters they must provide suitable justification and/or offer an alternative parameter.

This IC is for the operator to demonstrate control over their process. NRW need to understand trigger levels on site by the Operator as well as the frequency of the monitoring. This information will help inform NRW that the process is stable. The monitored parameters may be submitted as part of the annual report, however, if there is an issue at the site the Schedule 5 Notification Form should be sent to NRW informing us of any issues or exceedances of trigger levels.

This procedure should be reflected within the sites EMS with the site having appropriate backup of this information. The resulting response to IC will become part of the Operating Techniques in Table 1.2.

In addition to NRW's statutory requirement to review and incorporate BAT and BAT-AELs following the publication of the revised BREF for Waste Treatment, NRW are also required to review the permit against any relevant newly published or updated Technical Guidance Notes. An additional Improvement Condition (IC7) has been added to the permit in order for the Operator to provide detail of how they will implement the latest version of 'Technical Guidance Note M9 Environmental Monitoring of bioaerosols at regulated

facilities dated July 2018 Version 2.' The site already conducts bioaerosol monitoring therefore this IC is needed to ensure they are implemented the latest monitoring standard. Table S3.4 in the permit has been updated to reflect the monitoring standard changes effective from 17 August 2022.

Other changes, flare limits - The permit has ELV's set for the emergency flare (A2). The use of the ELVs is from the permitting of landfills where flares are used more due to the fluctuating gas production, whereas for AD plants this is not an issue due to the constant flow of gas to the engines. It is not in operators' interest to burn via a flare and there are no BAT AEL's set in the Waste Treatment BAT conclusions document for emissions from flares. Based on this we have removed the ELVs from the permit. There is further process monitoring for gas production and gas sent to engines and flares per annum. If it looks like there is too much gas production for the facility, then the site would have to adjust their throughput or install new engines to ensure the gas produced is sent to engines for electricity generation. Monitoring is a requirement if the flare is operational for more than 10% of the year therefore the pollutants and monitoring standards will remain in the permit.

Operational Changes

It is understood from review of the Environmental Management System held on file, that the installation has a 4.68 MWth CHP engine and also a 2 MW standby generator. ELVs and monitoring for existing MCPs & SGs is not required until 1st January 2025 at the earliest. As this is some way off, we decided to maintain any existing ELVs and monitoring requirements in the permit and not to impose MCPD requirements ahead of time.

Emissions to Water

As part of our delivery of the Water Framework Directive requirements, we need to identify and assess the impact for all discharges to surface waters and/or sewer from the site for priority hazardous substances and any other relevant substances. The emissions monitoring for these substances should be carried out using the methods and standards described in the M18 guidance on "Monitoring of discharges to water and sewer".

With reference to the risk assessment guidance on the gov.uk website entitled "Surface water pollution risk assessment for your environmental permit" (accessible via: https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit) the company was required to carry out the following assessments:

- Screening tests for priority hazardous pollutants and any other relevant priority hazardous substances.
- For any substance which is not screened out by the screening tests further modelling, as described in the risk assessment guidance "Surface water pollution risk assessment for your environmental permit".

As there are no discharges of waste water to surface water or sewer, only clean uncontaminated discharge to surface water, a H1 assessment was not carried out.

The specific BAT Conclusions on water emissions were also reviewed based on the Waste Treatment BREF and the no changes are made to the ELV's for emissions to water taking into account BAT Conclusion 20 from the BREF as there are no emissions to water associated with the permitted activity.

Emissions to Water – Article 15(4) Derogations

No derogations

Emissions to Air

There were 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 (and BAT 8):

Effective until 16 August 2022

Release point	Parameter	Limit/ BAT AEL	Effective until

A3 Odour Control Unit	None	None	16 August 2022

Effective from 17 August 2022

Release point	Parameter	Limit/ BAT AEL	Effective from
A3 Odour Control Unit	Ammonia Note 2	20 mg/Nm^3	17 August 2022
	Hydrogen Sulphide Note 2	None	
	Odour Note 2	1000 OU_E/Nm^3	

Note 2: Parameters, limits and monitoring requirements to be agreed upon completion of Improvement Condition IC5. As per BAT Conclusion 8 of the Waste Treatment BRef Document (EU 2018), odour may be monitored instead of hydrogen sulphide and ammonia. As per BAT Conclusion 34 of the Waste Treatment BRef Document (EU 2018) either the BAT-AEL for ammonia or the BAT-AEL for the odour concentration applies.

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

Other IED BREFs relevant to the permit review

There is one other listed activity on the permit: Section 4.3 Part A(1): producing (including any blending which is related to their production) phosphorus-nitrogen- or potassium-based fertilisers (simple or compound) fertilisers. This

activity is subject to the following IED BREF: Large Volume Inorganic Chemicals – Ammonia, Acids and Fertilisers. This BREF was published in 2007, the permit was issued in 2011 with subsequent variations, therefore this BREF has already been considered either in intial permit application determination or during a subsequent variation.

6. Conclusion

We consider that the installation already employed what used to be BAT, and that the operator requires some improvements to achieve revised BAT. 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 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 a Commission Implementing Decision (EU 2018/1147) in the Official Journal of the EU on 10 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) – ALL of the following:**		
	I.	Management commitment	***Currently compliant*** The operator has stated they are compliant with this BAT and that policy documents are signed off at Director level and that the Environmental Management System (EMS) (AEL - EMS 3407-819) is reviewed by management. The full EMS AEL - EMS 3407-819 under the current operators name is not held on file at NRW however it has been assumed upon review of the summary EMS January 2020 held on file, which appears identical to the previous EMS (Grays EMS 3407-819 dated 23 February 2017), that the EMS implemented by

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 previous operator has remained implemented. Section 1 'Technical competence' covers this.
	II.	Environmental policy development including CI of performance	***Currently compliant*** The operator has stated they are compliant with this BAT and that there is an Environment policy in place which sets out a continuous improvement target.
	III.	Planning and implementing procedures & targets in conjunction with financial planning & investment	***Currently Compliant*** The operator has stated they are compliant with this BAT and that detailed budgeting and long term investment is included for all elements of the plant.
	IV.	***Implementation of procedures***	
		(a) Structure & responsibility	***Currently Compliant*** The operator has stated that there are procedures detailed in the EMS (AEL - EMS 3407-819) and has noted changes are required following a staff change.
		(b) Recruitment, training, awareness & competence	***Currently compliant*** The operator has stated they are compliant with this BAT and that there are procedures detailed in the EMS (AEL - EMS 3407-819). The EMS held on file at NRW covers this in Section 11 'Training for site staff'.
		(c) Communication	***Compliant in future*** The operator has stated that reporting and communications are formalised and they will be included in the updated EMS (AEL - EMS 3407-819).

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
		(d) Employee involvement	***Compliant in future*** The operator has stated that the EMS (AEL - EMS 3407-819) needs to be updated to include details of employee involvement. Due to a small team this is achieved but not currently detailed. An improvement condition has been set.
		(e) Documentation	***Currently compliant*** The operator has stated they are compliant with this BAT and that this feature is referenced in the EMS (AEL - EMS 3407-819).
		(f) Effective process control	***Currently compliant*** The operator has stated they are compliant with this BAT and that the EMS (AEL - EMS 3407-819) details process control and that the SCADA system allows for real time logging with on site records and analysis. The EMS held on file at NRW covers this in section 3 operating conditions.
		(g) Maintenance programmes	***Currently compliant*** The operator has stated they are compliant with this BAT and that the maintenance programme is detailed in the EMS (AEL - EMS 3407-819). The EMS held on file at NRW covers this in section 3 maintenance procedures and section 9 covers site inspections and maintenance.
		(h) Emergency preparedness & response	***Currently compliant*** The operator has stated they are compliant with this BAT and that an emergency plan is included in the EMS (AEL - EMS 3407-819). The EMS held on file at NRW covers this in section 10 emergency

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
			procedures (including general, fire, spillages, operational failure and bomb scare).
		(i) Safeguarding compliance with environmental legislation	***Currently compliant*** The operator has stated they are compliant with this BAT and that the EMS (AEL - EMS 3407-819) provides details. The EMS held on file at NRW covers this in section 1 within technical competence.
	V.	***Checking performance and taking corrective action***	
		(a) Monitoring & measurement	***Currently compliant*** The operator has stated they are compliant with this BAT and that there are procedures detailed in the EMS (AEL - EMS 3407-819). The EMS held on file at NRW covers this in section 3 sampling and testing, section 4 covers emissions monitoring as well as Appendix C.
		(b) Corrective and preventive action	***Currently compliant*** The operator has stated they are compliant with this BAT and that there are procedures detailed in the EMS (AEL - EMS 3407-819). Section 3 'auditing' and section 10 'operational failure' in the EMS held on file at NRW cover this.
		(c) Maintenance of records	***Currently compliant*** The operator has stated they are compliant with this BAT that there are procedures detailed in the EMS (AEL - EMS 3407-819). The EMS held on file at NRW covers this in section 3 'records' and 'site log and record filing' with section 8 covering 'record keeping'.
		(d) Independent (where practicable) internal or external EMS auditing	***Currently Compliant***

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 operator has stated that Oaktree environmental or another suitable company will be commissioned for external EMS auditing. The EMS held on file at NRW covers auditing in section 3. The BAT conclusion does not require external auditing and the auditing already completed at the site remains sufficient.
	VI.	Senior management review of EMS	***Currently Compliant*** The operator has stated they are compliant with this BAT and that management have signed off the EMS (AEL - EMS 3407-819) and annual reviews by senior management are undertaken.
	VII.	Following development of cleaner technologies	***Currently Compliant*** The operator has stated they are compliant with this BAT and that senior management reviews the development of cleaner technologies.
	VIII.	Whole life cycle considerations when designing a new plant i.e. impacts from eventual decommissioning and throughout its operating life	***Currently Compliant*** The operator has stated they are compliant with this BAT and that this is included in the EMS (AEL - EMS 3407-819). Section 1 indicates a Site Closure Plan will be developed which will cover decommissioning of the plant.
	IX.	Regular sectoral bench marking	***Currently Compliant*** The operator has stated they are compliant with this BAT and that there is a review and they assess sectoral benchmarking through trade bodies.
	X.	Waste stream management (BAT 2)	***Currently compliant***

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 operator has stated they are compliant with this BAT and that this is covered in the EMS (AEL - EMS 3407-819). Section 1 of the EMS covers pre-acceptance and acceptance procedures and section 3 of the EMS covers the anaerobic digestion (AD) process including reference to an operating procedures manual. See BAT 2 for detail.
	XI.	Inventory of waste water & waste gas streams (BAT 3)	***Currently compliant*** The operator has stated they are compliant with this BAT and that this is covered in the EMS (AEL - EMS 3407-819). Section 4 of the EMS covers emissions, section 7 drainge and section 9 covers odour control. See BAT 3 for detail.
	XII.	Residues Management Plan – S6.5	***Compliant in future*** The operator has stated they are compliant with this BAT and that all residues are included in the EMS. The EMS held on file does not include a Residue Management Plan and the operators response to BAT 24 (Residue Management Plan) states 'not applicable' but provides no reasoning. An improvement condition has been set.
	XIII.	Accident Management Plan – S6.5	***Compliant in the future*** See BAT 21
	XIV.	Odour Management Plan (BAT 12)	***Currently compliant*** The operator has stated that they are compliant with this BAT and an Odour Management Plan (OMP) is included in the EMS. An OMP dated 16 June 2016 is held on file at NRW and implemented in the permit through IC3.
	XV.	Noise & Vibration Management Plan (BAT 17)	***Currently compliant***

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 operator has stated they are compliant with this BAT and that a Noise and Vibration Management Plan (NMP) is included in the EMS. The NMP EMS held on file at NRW indicates this is contained in Appendix B. An NMP dated 1 July 2016 is held on file at NRW and is implemented in the permit through the IC2 and operating techniques.
2	**Improving overall environmental performance – <u>ALL</u> of the following:**		
	a.	Set up and implement waste characterisation & pre-acceptance procedures	***Currently compliant*** The operator has stated they are compliant with this BAT and that this technique is detailed in the EMS (AEL - EMS 3407-819). Section 1 'waste and material acceptance and procedures' of the summary EMS covers pre-acceptance.
	b.	Set up and implement waste acceptance procedures	***Compliant in future*** The operator has stated that they are compliant with this BAT and this technique is detailed in the EMS (AEL - EMS 3407-819). Section 1 'waste and material acceptance and procedures' and 'non-conforming wastes' of the summary EMS covers waste acceptance. However, NRW notes that these sections do not currently include the BAT 2 requirement for the operator to check the facility has adequate capacity to receive the waste as part of the waste acceptance procedure (see Section 2.3.2.3. of the Waste Treatment BREF). The EMS should be updated to include this and an improvement condition (IC5) has been set.

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.	Set up and implement a waste tracking system & inventory	***Compliant in future*** The operator has stated they are compliant with this BAT and that this technique is detailed in the EMS (AEL - EMS 3407-819). It is not clear from the EMS held on file at NRW which section of the EMS covers this. An improvement condition (IC5) has been set and section 2.3.2.5 of the Waste Treatment BREF provides further detail on what this system should include.
	d.	Set up and implement an output quality management system	***Currently compliant*** The operator has stated they are compliant with this BAT and that this technique is detailed in the EMS (AEL - EMS 3407-819). Section 3 'quality management system' in the EMS covers this.
	e.	Ensure waste segregation	***Currently compliant*** The operator has stated they are compliant with this BAT and that this technique is detailed in the EMS (AEL - EMS 3407-819). Section 1 'waste and material acceptance and procedures' of the EMS waste and biomass discharge areas are clearly marked and separated so that there is no cross contamination between the feedstocks and section 2 'storage of fuel, oil and other liquids' includes information on storage of waste oils.
	f.	Ensure waste compatibility prior to mixing or blending	***Currently compliant*** The operator has stated they are compliant with this BAT and that this technique is detailed in the EMS (AEL - EMS 3407-819). The pre-acceptance and acceptance procedures ensure waste compatibility for the process.

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*** The operator has stated they are compliant with this BAT and that this technique is detailed in the EMS (AEL - EMS 3407-819). Section 5 'waste and material storage' of the EMS indicates how solid waste (chicken litter) will be stored as well as how biomass silage, glycerol and liquid wastes will be stored. No sorting is required due to the limited inputs.
3	**Establish and maintain a waste water and waste gas inventory as part of the EMS - ALL of the following:**		
	Information on characteristics of waste and waste treatment processes		
	(i)(a)	simplified process flow sheets showing emission sources	***Compliant in future*** The operator has stated they are compliant with this BAT and that this is detailed in the EMS (AEL - EMS 3407-819). It is not clear from the EMS held on file which section of the EMS covers this. The 'A2529UK_MONA_Flowsheet_B.4' held on file does not include the relevant emissions sources i.e. odour control units. An improvement condition (IC5) has been set.
	(i)(b)	Process-integrated and waste water/waste gas treatment descriptions including performance	***Compliant in future*** The operator has stated they are compliant with this BAT and that this is detailed in the EMS (AEL - EMS 3407-819). Section 4 of the EMS covers emissions, section 7 drainage and section 9 covers odour control. However performance of the odour control unit for the chicken litter reception hall and liquid feedstock tanks is not included. An improvement condition (IC5) has been set.
	Information on characteristics of waste water streams		

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
	(ii)(a)	*Mean and variability of:*	
		Flow	***Currently compliant*** The operator has stated they are compliant with this BAT and flow of waste water is measured through the SCADA system.
		pH	***Currently compliant*** The operator has stated they are compliant with this BAT with pH of the waste water tested routinely on site and with off site lab analysis.
		Temperature	***Currently compliant*** The operator has stated they are compliant with this BAT with temperature of the waste water monitored through the SCADA system.
		Conductivity	***Currently compliant*** The operator has stated they are compliant with this BAT with conductivity of the waste water analsysed with routine lab samples.
	(ii)(b)	*Mean concentration, load and variability of:*	
		Total suspended solids	***Currently compliant*** The operator has stated they are compliant with this BAT with total suspended solids in the waste water analsysed with routine lab samples.
		COD/TOC	***Currently compliant*** The operator has stated they are compliant with this BAT with COD/TOC of the waste water analsysed with routine lab samples.
		Nitrogen species	***Currently compliant***

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 operator has stated they are compliant with this BAT with nitrogen species in the waste water analsysed with routine lab samples.
		Phosphorous	***Currently compliant*** The operator has stated they are compliant with this BAT with phosphorous in the waste water analsysed with routine lab samples.
		Metals	***Currently compliant*** The operator has stated they are compliant with this BAT with metals in the waste water analsysed with routine lab samples.
		Priority substances/micropollutants	***Currently compliant*** The operator has stated they are compliant with this BAT with priority substances/micropollutants in the waste water analsysed with routine lab samples.
		Any other relevant compounds	***Currently compliant*** The operator has stated they are compliant with this BAT with any other relevant compounds in the waste water analsysed with routine lab samples.
	(ii)(c)	*Bioeliminability data (see BAT 52):*	
		BOD	***Not applicable*** *Not treatment of water based liquid waste.*
		BOD to COD ratio	
		Zahn-Wellens test	
		Biological inhibition potential	
	Information on characteristics of waste gas streams		
	(iii)(a)	*Mean and variability of:*	

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
		Flow	***Currently compliant*** The operator has stated they are compliant with this BAT as the SCADA system monitors and records flow of the waste gas.
		temperature	***Currently compliant*** The operator has stated they are compliant with this BAT as the SCADA system monitors and records temperature of the waste gas.
	(iii)(b)	*Mean concentration, load and variability of relevant substances:*	
		Organic compounds	***Currently compliant*** The operator has stated they are compliant with this BAT as organic compounds form part of the standard data taken for routine feeds, new or poorly characterised waste streams.
		POPs e.g. PCBs	***Currently compliant*** The operator has stated they are compliant with this BAT as organic compounds form part of the standard data taken for routine feeds, new or poorly characterised waste streams.
		Any other relevant compounds	***Currently compliant*** The operator has stated they are compliant with this BAT but has not provided further comment on what other relevant compounds are monitored in the waste gas.
	(iii)(c)	Flammability	***Currently compliant*** The operator has stated they are compliant with this BAT as organic compounds form part of the standard data taken for routine feeds, new or poorly characterised waste streams.

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
		Lower and Higher Explosive Limits	***Currently compliant*** The operator has stated they are compliant with this BAT
		Reactivity	***Currently compliant*** The operator has stated they are compliant with this BAT
	(iii)(d)	*Presence of other substances that may affect the gas treatment system or plant safety:*	***Not Applicable*** No waste gas treatment
		O2	***Not applicable*** The operator has stated this is not applicable.
		N2	***Not applicable*** The operator has stated this is not applicable.
		Water vapour	***Not applicable*** The operator has stated this is not applicable.
		Dust	***Not applicable*** The operator has stated this is not applicable.
4	**Reducing environmental risk associated with waste storage – <u>ALL</u> of the following:**		
	a.	Optimised storage location	***Not applicable*** Technique a is 'generally applicable to new plants'.
	b.	Adequate storage capacity	***Compliant in future*** The operator has stated that the plant has been designed for the proposed capacity. Section 5.1.8 of the EMS provides information on where the different wastes are stored and the maximum storage capacity and residence times of waste for the different waste and raw materials streams.The EMS section 2.1.15 held on file states that hydraulic and lubricating oils, including waste oils, will be stored in a

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
			secure lockable container provided with a spillage containment tray. All drums and similar containers stored within the facility will be clearly marked with their contents and capacity. Drum openings will be securely sealed before being moved to or from the facility to prevent spillages. All storage facilities will be kept locked at all times when not in use. Further information is required in order to ascertain if this technique is met in relation to regularly monitoring the quantity of waste stored against the maximum allowed. An improvement condition (IC5) has been set.
	c.	Safe storage operation	***Currently compliant*** The operator has stated that waste storage is contained securely with a locked door. The EMS states solid feedstock delivery vehicles will be directed into the appropriate storage area for unloading and checking and that liquid feedstock deliveries will be directed to the reception unloading area at the side of the chicken litter storage shed. The tanker can be connected to the pipe work, open the correct valves under the supervision of a trained operator who will transfer the material to the appropriate tank. The valves and pipe work are coded and labelled clearly to ensure that correct valves are opened and the correct tank is used. Section 5.1.8 of the EMS held on file notes incoming waste and materials will be stored within the designated storage containers; solid waste i.e., chicken litter within designated chicken storage hall. Liquid wastes (DAF) will be stored within sealed tanks. Biomass will be stored in silage clamps. Glycerol which is bought in as a product, is stored in designated sealed 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 envirionmental permit states the digester tanks, storage tanks and post digester tank are located within a containment area that is sealed and bunded.
	d.	Separate area for storage & handling of packaged hazardous waste	***Not applicable*** Hazardous waste is not accepted at the site.
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 has stated that they are currently compliant with this BAT technique and the EMS (AEL - EMS 3407-819) training section (section 11) contains further details. Section 1.1.14 also contains detail on the technically competent manager for the site.
	Duly documented, validated and verified		***Currently compliant*** The operator has stated that they are currently compliant with this BAT technique and the EMS (AEL - EMS 3407-819) contains further details (section 1 ' stage 2 - waste acceptance procedures on site', section 2 'site office', section 8 'weighing and categorising loads', section 3 'records').
	Spill prevention, detection and mitigation measures		***Currently compliant*** The operator has stated that they are currently compliant with this BAT technique and the EMS (AEL - EMS 3407-819) contains further details (section 9 'breakdowns and spillages' and 'site inspections and maintenance', section 10 'spillages', section 5 'liquid feedstock

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
		loading and digestate removal', 'section 11 'plant operation training').
	Take precautions when mixing or blending wastes	***Currently compliant*** The operator has stated that they are currently compliant with this BAT technique and the EMS (AEL - EMS 3407-819) contains further details (section 5 'feedstocks'). Liquids are fed to the digesters automatically, with chicken litter and silage being fed manually via telehandler transfer into hoppers where the two are layered to enter the digester in a mixed form. The solid feedstocks are then fed automatically into the digesters.
	Procedures are risk-based and consider likelihood of accidents, incidents and their environmental impact	***Currently Compliant*** Accident Management Plan in place, see BAT 21.
MONITORING		
6	**Relevant emissions to water: monitor key process parameters at key locations**	
	Key process parameters	
	Waste water flow	***Not applicable*** There are no emissions to water direct or indirect other than clean surface water from the surface water lagoon. All waste water is collected in a leachate drainage system and stored in an 80,000 L tank before being pumped into the anaerobic digestion (AD) process.
	pH	
	Temperature	
	Conductivity	
	BOD	
	Other process parameters	

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
	Key monitoring locations	
	Pre-treatment inlet and/or outlet	***Not applicable*** As above
	Final treatment inlet	
	Discharge point (to the environment)	
	Other location	
7	Monitoring emissions to water (refer to table) Monitoring parameters depend on waste treatment process(es) involved	***Not applicable*** There are no emissions to water direct or indirect other than clean surface water from the surface water lagoon.
8	Monitoring emissions to air (refer to table) Monitoring parameters depend on waste treatment process(es) involved	***Compliant in future*** The operator has stated that they are compliant with the monitoring requirements in accordance with a plan included in the EMS (AEL - EMS 3407-819). It is not clear what section of the EMS covers the monitoring of the required parameters however and therefore this has been changed to 'compliant in future'. The point source emissions to air from the treatment of waste are emissions associated with the Odour Control unit (residual exhaust air vented via a vertical flue adjacent to the chicken litter storage shed) serving the chicken hall shed and the liquid feed storage vessels in relation to the biological treatment of waste activities. As such the relevant parameters to be monitored are hydrogen sulphide and ammonia or odour and these have been added to the permit. The Operator has not specified which of the parameters they are to monitor therefore IC5 has been set in order to provide this information. There is not 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
			odour issue at the site therefore the Operator has a choice as detailed in Note 2 in Table S3.1 of the 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 that there are no diffuse emission from processes involving solvents. BAT 9 refers to monitoring of diffuse emissions of organic compounds to air from the regeneration of spent solvents, the decontamination of equipment containing POPs with solvents and the physico-chemical treatment of solvents for the recovery of their caloric value. None of these activities are undertaken at the installation.
	b	Emissions factor calculation	***Not applicable*** As above
	c	Mass balance calculation	***Not applicable*** As Above
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		***Not applicable*** Daily 'odour intensity' sniff test monitoring is undertaken and is sufficient as 'first line' monitoring (Odour Management Plan 16 June 2016).
	Use equivalent methods e.g. ISO / national / international monitoring standards		***Currently compliant*** The operator has stated that they are compliant with this technique and odour is assessed and monitored in line with industry 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
		Daily 'odour intensity' sniff test monitoring is undertaken in line with H4 Odour Management guidance which is considered sufficient unless an odour issue is identified which requires further investigation.
11	**Annual monitoring for:**	
	- **Water, energy and raw materials**	***Currently compliant*** The operator has stated that they are compliant with this BAT and monitoring for consumption of water, energy and raw materials is included in monitoring systems. 'Total raw materials used' has been added to the performance parameters and reporting requirements in the permit.
	- **Generation of residues and waste water**	***Currently compliant*** The operator has stated that they are compliant with this BAT and the generation of residues and waste water are monitored annually with the site waste returns detailing quantities. 'Generation of residues' and 'Generation of waste water' have been added to the performance parameters and reporting requirements in the permit.
EMISSIONS TO AIR		
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 ALL of the following:**	
	Protocol containing actions and timelines	***Currently compliant***

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 operator has stated that they are compliant with this BAT and has indicated they implement an odour management plan (OMP). A copy of the OMP has not been provided. The OMP 16 June 2016 on file at NRW (part of the previous operators EMS) includes actions to be taken in the event of an odour issue.
	Protocol for conducting odour monitoring (BAT 10)	***Currently compliant*** The operator has stated that they are compliant with this BAT and has indicated they implement an odour management plan (OMP). A copy of the OMP has not been provided. The OMP 16 June 2016 on file at NRW (part of the previous operators EMS) includes a protocol for odour monitoring.
	Protocol for response to odour incidents/complaints	***Currently compliant*** The operator has stated that they are compliant with this BAT and has indicated they implement an odour management plan (OMP). A copy of the OMP has not been provided. The OMP 16 June 2016 on file at NRW (part of the previous operators EMS) includes a protocol for responding to odour incidents and complaints.
	Odour prevention and reduction programme	***Currently compliant*** The operator has stated that they are compliant with this BAT and has indicated they implement an odour management plan (OMP). A copy of the OMP has not been provided. The OMP 16 June 2016 on file at NRW (part of the previous operators EMS) includes an odour prevention and reduction programme.
13	**Techniques to prevent, or where not practicable reduce odour emissions. 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 residence times (open systems only)	***Not applicable*** The operator has stated that this is not applicable. No open systems are used to store/handle waste. It is noted that biomass crops/silage (noted in the EMS as a non-waste seasonal feestock) is stored outside but is stored in covered clamps and only opened to enable loading / unloading then closed again.
	b.	Use chemical treatment (N/A if desired output is hampered)	***Not applicable*** The operator has stated that this is not applicable. The 'iPurtech System Description - odour and ammonia control system for Grays Biogas Ltd 1 August 2016' on file at NRW describes the odour control system used for the chicken manure storage shed (and DAF tanks) as a stainless steel chamber with alternate layers of honeycomb / glass beads coated with a catalyst (unnamed) which is activated by UV emitters. The number of layers provide stage reduction in molecular sizes as the odourous organic compounds are broken down.
	c.	Optimising aerobic treatment – see examples. Refer to BAT 36 for wastes other than water-based liquid waste.	***Not applicable*** This technique relates to aerobic treatment of water-based liquid waste which is not undertaken at this facility.
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:**		
	a.	Minimising potential diffuse emission sources – see examples	***Not applicable*** The operator has indicated they do not use this technique. As BAT 14 requires 'one or a combination of' techniques a – h, BAT is still considered met through other techniques employed.

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.	Select and use high-integrity equipment – see examples	***Currently compliant*** The operator has stated that they comply with this BAT technique and notes that the site used state of the art design standards and materials e.g. reinforced concrete tanks with insulation between concrete panel. It is not clear from the operators response what high integrity equipment is used as per the BAT 14b list but the operator has stated they comply with this technique.
	c.	Corrosion prevention – see examples	***Currently compliant*** The operator has stated that they comply with this BAT technique as the design is appropriate for the conditions and high standards of maintenance ensure ongoing prevention.
	d.	Containment, collection and treatment of diffuse emissions – see examples	***Not applicable*** The operator has indicated they do not use this technique. As BAT 14 requires 'one or a combination of' techniques a – h, BAT is still considered met through other techniques employed.
	e.	Dampening (with water or fog)	***Not applicable*** The operator has indicated they do not use this technique. As BAT 14 requires 'one or a combination of' techniques a – h, BAT is still considered met through other techniques employed.
	f.	Maintenance – see examples	***Currently compliant*** The operator has stated that they comply with this BAT technique and the site maintenance programme ensures ongoing compliance.
	g.	Cleaning of waste treatment and storage areas – see examples	***Currently compliant***

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 operator has not indicated whether they comply or not but has referenced the EMS. Section 9 'breakdowns and spillages' notes sweeping of debris, cleaning of spillages, cleaning of the access road. The OMP 2016 states that daily cleaning of reception, loading/unloading and manoeuvring areas within the building is undertaken.
	h.	Leak Detection And Repair (LDAR) programme for organics – S6.2	The operator has not indicated whether or not they comply with this BAT technique but has stated that annual methane escape surveys are undertaken along with weekly visual site inspections. In order to meet BAT for this technique the LDAR programme requires either the sniffing method as per EN 15446 (using hand-held organic compound analysers) or optical gas imaging methods (optical imaging using hand-held cameras). It is not clear from the operators response if either of these techniques are used at the site however, overall, BAT 14 is still met as not all techniques need to be implemented.
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*** The operator has stated that they comply with this BAT technique and that an experienced design and construction team was used. The EMS states biogas will only be diverted to the flare during periods of maintenance and engine downtime. The '2529-04 Technical Specification (Basic Design) 11 November 2015' document held on file at NRW states the site has gas storage facilities (post

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
			digestion tank gas holder with an approximate volume of 1000m^3 and digestate storage tank gas holder with approximate volume of 1000m^3) with pressure relief valves on the digestion system. It also states the emergency flare was designed for a flow rate of 800 -850 Nm^3/h.
	b.	Plant management including gas system balancing and advanced process control	***Currently compliant*** The operator has stated that they comply with this BAT technique using SCADA for advanced process control.
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*** The operator has stated that they comply with this BAT technique with overall design of the plant on site, including the flare, having been implemented to a high standard. The '2529-04 Technical Specification (Basic Design) 11 November 2015' document held on file at NRW provides detail on the flare specification: flare system consisting of base plate, tubing with connection flange, casing with injector, mixing and combustion chamber and wind protection ring. The flare is made of stainless steel and is equipped with a shut-off device for manual operation, deflagration arrester, on-site switchboard protection, automatic ignition device, automatic main gas-valve with slow resolve/quick shutoff and condensate stripper.
	b.	Monitoring and recording as part of flare management – see examples	***Compliant in future*** The operator has stated that they comply with this BAT technique with details recorded in the site diary and specialists used for routine

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
			maintenance. However, this BAT technique requires continuous monitoring of the quantity of gas sent to the flare (as well as recording flaring events). The permit has been updated to provide for continuous monitoring of the quantity of gas sent to 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 ALL of the following:**		
	I.	Protocol with actions and timelines	***Currently compliant*** The operator has stated that they comply with this BAT technique and referred to the Noise and Vibration Management Plan (NMP). The NMP 2016 (previous operators) refers to a Noise Assessment which concluded there would be a low impact from the site activities during day time but an adverse impact was found during night time. Mitigation was recommended to enhance the CHP acoustic insulation which the operator agreed to implement and the report concluded a suitable and commensurate level of protection against noise would be provided to the nearest sensitive receptors. The NMP developed includes actions to be taken to prevent or minimise noise.
	II.	Noise and vibration monitoring plan/protocol	***Currently compliant***

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 operator has stated that they comply with this BAT technique and referred to the NMP. The NMP 2016 includes noise monitoring by hand held equipment.
	III.	Noise & vibration complaint response plan/protocol	***Currently compliant*** The operator has stated that they comply with this BAT technique and referred to the NMP. The NMP 2016 complaints procedure states all noise complaints and actions taken in response will be recorded and dealt with in accordance with the EMS complaints procedure.
	IV.	Noise and vibration reduction programme	***Currently compliant*** The operator has stated that they comply with this BAT technique and referred to the NMP. The NMP 2016 includes actions to be taken to prevent or minimise noise.
18	**Techniques to prevent, or where not practicable reduce noise and vibration emissions. Use one or a combination of the following:**		
	a.	Appropriate location of equipment and buildings	***Currently compliant*** The operator has stated that they comply with this BAT technique as an appropriate location of equipment and buildings was taken into consideration in the site design.
	b.	Operational measures – see examples	***Currently compliant*** The operator has not commented on this technique. The NMP 2016 notes certain operations operate under restricted operating hours; adequate maintenance is undertaken to minimise the risk of generating excessive noise, vehicles operated with silencers, site speed limit of 5 mph, engines to be switched off when not in use.

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.	Low-noise equipment – see examples	***Currently compliant*** The operator has not commented on this technique. The '2529-04 Technical Specification (Basic Design) 11 November 2015' document notes lightweight low-noise reed valves are implemented on the compressed air distribution system.
	d.	Noise & vibration control equipment – see examples	***Currently compliant*** The operator has not commented on this technique. The '2529-04 Technical Specification (Basic Design) 11 November 2015' document notes that both the CHP and the standby generator are housed in a sound insulated container. The hoppers are also housed in a container.
	e.	Noise attenuation – see examples	The operator has not indicated whether or not they implent this BAT technique. However, overall, BAT 18 is still met as not all techniques need to be implemented.
EMISSIONS TO WATER			
19	**Optimise water consumption, reduce waste water 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	The operator has stated that they comply with this BAT technique and referred to the segregation of clean and dirty water streams. This relates to technique f however. It is not clear whether the operator optimises water consumption by using measures such as water saving plans or optimising washing water etc. However,

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, BAT 19 is still met as not all techniques need to be implemented.
	b.	Water recirculation	***Currently compliant*** The operator has stated that they comply with this BAT technique as water is reused in the process where practicable.
	c.	Impermeable surface	***Compliant in future*** The operator has stated that they comply with this BAT technique as they have implemented a fully bunded and impermeable surface for the waste treatment process. Further information is required on the engineering standard to which the surface complies and the engineering sign off. An improvement condition has been set.
	d.	Reduce likelihood and impact of tank/vessel overflows and failures – see examples	***Currently compliant*** The operator has stated that they comply with this BAT technique as tanks are bunded with flood gates. The EMS (7.1.14) held on file at NRW notes the bund area has a capacity of at least 110% of the largest vessel or 25% of the total tank volume whichever is the greater. The 'Level Control – A2529 UK Mona' document held on file at NRW also notes each digester has level control via radar sensor and upper/lower switches; capacity sensors in the digester roofs – in the event of an overfill alarm a hardware contact turns off the feeding pumps; and overfill safety in the form of hydrostatic sensors in the lower part of the tank as a safeguard for the hydrostatic level control. The post digesterand storage tanks also have hydrostatic level control via sensor and switches to control pumping and a

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
			vibration sensor which in the case of an overfill alarm has a hardware contact to turn off feeding.
	e.	Roofing of waste storage and treatment areas	***Currently compliant*** The operator has stated that they comply with this BAT technique. The chicken litter is stored in a building and liquid feestocks are stored in enclosed tanks. The AD process is a closed system process undertaken in tanks and the drying process is undertaken within a building.
	f.	Segregation of water streams (being mindful of existing plant constraints)	***Currently compliant*** The operator has stated that they comply with this BAT technique. The 'AD Plant Mona – Drainage Strategy' document held on file at NRW clearly identifies segregated drainage: uncontaminated surface water drainage, leachate drainage and domestic foul drainage. Surface water from the containment area is tested prior to release to the surface water system (and if found contaminated directed to the leachate drainage system).
	g.	Adequate drainage infrastructure	***Currently compliant*** The operator has stated that they comply with this BAT technique and the infrastructure includes an interceptor (surface water system). As noted in technique f, surface water is tested prior to release to the surface water drainage system. Dirty water in the leachate system drains to an 80,000 L storage tank where it is recirculated back to the AD process ('AD Plant Mona – Drainage Strategy').

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
	h.	Design and maintenance provisions to allow risk-based leak detection and repair. Minimise use of underground components.	***Currently compliant*** The operator has stated that they comply with this BAT technique although there are some below ground tanks used 'only where unavoidable'. It is unclear from the operators response what regular monitoring for potential leakages is undertaken or what secondary containment of underground components is in place.
	i.	Appropriate buffer storage capacity (being mindful of existing plant constraints)	The operator has stated that they comply with this BAT technique as the site was 'overdesigned' for the intended throughput. It is not clear from the operators response what buffer storage capacity is provided for waste water generated during other than normal operating conditions. However, overall, BAT 19 is still met as not all techniques need to be implemented.
20	**Treat waste water using a combination of:**		
	Preliminary, primary and general treatment		
	a.	Equalisation	***Not applicable*** Waste water is not discharged from site.
	b.	Neutralisation	As above
	c.	Physical separation	As above
	Physico-chemical treatment		
	d.	Adsorption	***Not applicable*** Waste water is not discharged from site.
	e.	Distillation/rectification	As above
	f.	Precipitation	As above
	g.	Chemical oxidation	As above

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
	h.	Chemical reduction	As above
	i.	Evaporation	As above
	j.	Ion exchange	As above
	k.	Stripping	As above
	Biological treatment		
	l.	Activated sludge process	***Not applicable*** Waste water is not discharged from site.
	m.	Membrane bioreactor	As above
	Nitrogen removal		
	n.	Nitrification/denitrification (where biological treatment used)	***Not applicable*** Waste water is not discharged from site.
	Solids removal		
	o.	Coagulation and flocculation	***Not applicable*** Waste water is not discharged from site.
	p.	Sedimentation	As above
	q.	Filtration (sand, micro, ultra)	As above
	r.	Flotation	As above
	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*** Waste water is not discharged from site.
	COD (TOC is preferred)	30-180 30-300 for water-based liquid waste	As above

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	As above
	HOI	0.5-10 applying to specific waste treatments	As above
	Total N	1-25 for biological treatment and waste oil re-refining 10-60 for water-based liquid waste	As above
	Total P	0.3-2 for biological treatment 1-3 for water-based liquid waste	As above
	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	As above
	Free CN-	0.02-0.1 for water-based liquid waste	As above
	AOX	0.2-1 for water-based liquid waste	As above
	Metals & Metalloids – specific waste treatments as listed in Table 6.1		
	As	0.01-0.05	As above
	Cd	0.01-0.05	As above
	Cr	0.01-0.15	As above
	Cu	0.05-0.5	As above
	Pb	0.05-0.1	As above
	Ni	0.05-0.5	As above

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	As above
	Zn	0.1-1	As above
	Metals & Metalloids – treatment of water-based liquid waste		
	As	0.01-0.1	As above
	Cd	0.01-0.1	As above
	Cr	0.01-0.3	As above
	Hexavalent Cr [Cr(VI]	0.01-0.1	As above
	Cu	0.05-0.5	As above
	Pb	0.05-0.3	As above
	Ni	0.05-1	As above
	Hg	1.0-10	As above
	Zn	0.1-2	As above
	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*** Waste water is not discharged from site.
	Free CN-	0.02-0.1 for water-based liquid waste	As above
	AOX	0.2-1 for water-based liquid waste	As above

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
	Metals & Metalloids – specific waste treatments as listed in Table 6.2		
	As	0.01-0.05	As above
	Cd	0.01-0.05	As above
	Cr	0.01-0.15	As above
	Cu	0.05-0.5	As above
	Pb	0.05-0.1	As above
	Ni	0.05-0.5	As above
	Hg	0.5-5	As above
	Zn	0.1-1	As above
	Metals & Metalloids – treatment of water-based liquid waste		
	As	0.01-0.1	As above
	Cd	0.01-0.1	As above
	Cr	0.01-0.3	As above
	Hexavalent Cr [Cr(VI]	0.01-0.1	As above
	Cu	0.05-0.5	As above
	Pb	0.05-0.3	As above
	Ni	0.05-1	As above
	Hg	1.0-10	As above
	Zn	0.1-2	As above

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	***Compliant in the future*** The operator has stated that they comply with this BAT technique and has referenced the Accident Management Plan (AMP) a copy of which has not been provided and therefore has not been reviewed. Improvement Condition (IC5) has been set.
	b.	Management of incidental or accidental emissions	***Compliant in the future*** The operator has stated that they comply with this BAT technique and has referenced the Accident Management Plan a copy of which has not been provided and therefore has not been reviewed. Improvement Condition (IC5) has been set.
	c.	Incident/accident registration and assessment system – see examples	***Compliant in the future*** The operator has stated that they comply with this BAT technique and has referenced the Accident Management Plan a copy of which has not been provided and therefore has not been reviewed. Improvement Condition (IC5) has been set.
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*** The operator has stated that they comply with this BAT technique and that the feedstock for the process is based on maximising the use of wastes. There is limited applicability of this technique as limited raw materials are used in the AD process; the majority of input to the treatment process being waste. The permit contains an existing condition to review suitable alternative materials to improve the efficiency of raw materials every 4 years.
ENERGY EFFICIENCY			
23	**Use energy efficiently by using <u>both</u> of the following techniques:**		
	a.	Energy efficiency plan	***Currently compliant*** The operator has stated that they comply with this BAT technique as an energy efficiency plan is included in the planned use of resources on an annual basis.
	b.	Energy balance record	***Currently compliant*** The operator has stated that they comply with this BAT technique as performance against the energy efficiency plan is recorded monthly.
REUSE OF PACKAGING			
24	**Maximise the reuse of packaging as part of a Residues Management Plan (see BAT 1 XII.)**		***Compliant in future***

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 operator has stated that this BAT technique is not applicable but has not indicated why. This contradicts the response to BAT 1 XII. An improvement condition (IC5) has been set.
MECHANICAL TREATMENT OF WASTE (GENERAL BAT)			
25	**Reduce emissions to air of dust, particulate-bound metals, PCDD/F and dioxin-like PCBs by applying BAT 14d <u>AND</u> using one or a combination of the following techniques:**		
	a.	Cyclone – see S6.1	***Not applicable*** Only applies to mechanical treatment of waste when it is not combined with biological treatment.
	b.	Fabric filter – see S6.1	As above
	c.	Wet scrubbing – see S6.1	As above
	d.	Water injection into the shredder	As above
	BAT-AEL for channelled dust emissions to air from the mechanical treatment of waste (mg/Nm3) *Table 6.3 and its supporting note. Monitoring requirements are outlined in BAT 8*		
	Dust	2.0-5.0	***Not applicable*** Only applies to mechanical treatment of waste when it is not combined with biological treatment.
MECHANICAL TREATMENT OF METAL WASTE BY SHREDDING			

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
26	**Improve overall environmental performance and prevent emissions due to accidents and incidents. Use BAT 14g <u>AND ALL</u> of the following techniques:**		
	(a)	Detailed inspection procedure for baled waste before shredding	***Not applicable*** Only applies to mechanical treatment of waste when it is not combined with biological treatment.
	(b)	Remove dangerous items from waste inputs and dispose of them in a safe manner	As above
	(c)	Treatment of containers accompanied by a declaration of cleanliness	As above
27	**Prevent deflagrations and reduce emissions from deflagrations. Use technique a. <u>AND ONE OR BOTH</u> of techniques b. and c.**		
	a.	Deflagration management plan with reduction programme, incident review and response protocol	***Not applicable*** Only applies to mechanical treatment of waste when it is not combined with biological treatment.
	b.	Pressure relief dampers	As above
	c.	Pre-shredding (device)	As above
28	**Use energy efficiently by keeping the shredder feed stable**		***Not applicable*** Only applies to mechanical treatment of waste when it is not combined with biological treatment.
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.**		

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.	Optimised removal and capture of refrigerants and oils	***Not applicable*** Only applies to mechanical treatment of waste when it is not combined with biological treatment. Further the site does not treat WEEE.
	b.	Cryogenic condensation	As above
	c.	Adsorption	As above
	BAT-AELs for channelled TVOC and CFC emissions to air from treatment of WEEE containing VFCs and/or VHCs (mg/Nm3) *Table 6.4. Monitoring requirements are outlined in BAT 8*		
	TVOC	3.0-15	***Not applicable*** Only applies to mechanical treatment of waste when it is not combined with biological treatment. Further the site does not treat WEEE.
	CFCs	0.5-10	As above
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	***Not applicable*** Only applies to mechanical treatment of waste when it is not combined with biological treatment. Further the site does not treat WEEE.
	b.	Forced ventilation	As above
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:**		

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.	Adsorption – see S6.1	***Not applicable*** Only applies to mechanical treatment of waste when it is not combined with biological treatment.
	b.	Biofilter – see S6.1	As above
	c.	Thermal oxidation – see S6.1	As above
	d.	Wet scrubbing – see S6.1	As above
	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*** Only applies to mechanical treatment of waste when it is not combined with biological treatment.
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		***Not applicable*** Only applies to mechanical treatment of waste when it is not combined with biological treatment.
	Waste gas treated using dedusting techniques – see examples – followed by adsorption on activated carbon		As above
	Monitoring of waste gas treatment efficiency		As above

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
	Mercury levels measured at least weekly within treatment and storage areas		As above
	BAT-AEL for channelled mercury (Hg) emissions to air from the mechanical treatment of WEEE containing mercury (µg/Nm3) *Table 6.6. Monitoring requirements are outlined in BAT 8*		
	Hg	2.0-7.0	***Not applicable*** Only applies to mechanical treatment of waste when it is not combined with biological treatment.
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 operator has not commented on this BAT technique. The operators pre-acceptance procedure as part of the EMS gathers information to allow the operator to: identify any substances used in the producers processing that may impact the operators anaerobic digestion process (including contraries that may affect waste preparation); identify any substances within the waste that may effect the treatment process (for example chemicals that are toxic to anaerobic bacteria); and identify any substances within the waste that may react with other wastes in the process.
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	**Not applicable**
	b.	Biofilter – 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.	Fabric filter – see S6.1.	The Operator does not use any of these techniques listed in BAT 34. There is a statement in the BRef document stating that the techniques listed and described in these BAT conclusions are neither prescriptive nor exhaustive and other techniques may be used that ensure at least an equivalent level of environmental protection. The operator has stated that this technique is used in relation to the odour control unit on the reception hall for extracted air prior to release. However the technique used (iPurtech) is oxidation via passing the gas over a catalyst under a UV source. The 'iPurtech system description 2016' held on file at NRW describes the process as a photocatalyst technology that breaks down the offending compounds. The odour control is carried out in a stainless steel chamber which has alternate layers of honeycomb/ glass beads coated with catalyst and a source of energy to activate the catalyst. i.e UV emitters. The surface area of each layer is calculated to match a required air speed and therefore dwell time. The number of layers provide stage reduction in molecular sizes as the odourous organic compounds ae broken down. The end result is the destruction of the common odour molecules associated with waste products giving a residual odour of nothing, or a feint "wet cardboard" smell. This is dissipated from the exhaust within a few feet. Bacteria and viruses are also destroyed. The iPurtech website https://www.ipurtech.com/ describes the process as "the air
	d.	Thermal oxidation – see S6.1	
	e.	Wet scrubbing – 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
		purification system breaks down airborne chemicals by passing them over a catalyst under a matched UV source. The UV light excites the catalyst to create very active oxidising agents which are able to breakdown unwanted particles into simpler non-toxic chemicals". We consider that this technique is suitable and achieves an equivalent level of environmental protection, there has been no previous odour issues or compliants at the site using this technology.
BAT-AEL for channelled NH3, odour, dust and TVOC emissions to air from the biological treatment of waste (mg/Nm3) ($ou_E/m3$) *Table 6.7 and its supporting notes. Monitoring requirements are outlined in BAT 8*		
NH3	0.3-20	***Compliant in future*** The operator has stated that they will be compliant in the future subject to a review of the waste gas stream and abatement systems. The site has not indicated whether or not they monitor for this parameter from their odour control system emission points nor the performance that the system can achieve. An NH_3 emission limit has been set in the permit to be monitored from the compliance date, with a caveat stating to be agreed upon completion of improvement condition IC5.
Odour	200-1000	***Compliant in future*** Odour concentration monitoring is not required in addition to NH_3 (and H_2S) as there has not been any problems with odour impacting sensitive receptors in the past and the operator may choose either an emission limit for NH_3 or an emission limit for odour

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
			concentration which will need to be monitored from the odour control system outlet. An odour concentration emission limit has been set in the permit to be monitored from the compliance date, with a caveat stating to be agreed upon completion of improvement condition IC5.
	Dust	2.0-5.0	***Not applicable*** BAT-AEL relates to mechanical biological treatment of waste.
	TVOC	5.0-40	***Not applicable*** BAT-AEL relates to mechanical biological treatment of waste.
35	**Reduce the generation of waste water 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 has not indicated if they comply with this BAT technique but has commented that segregation of water streams is inherent in the design of the site which separates drainage areas. The operator is compliant with BAT 19 f and the 'AD Plant Mona – Drainage Strategy' document held on file at NRW clearly identifies segregated drainage.
	b.	Water recirculation	***Currently compliant*** The operator has not indicated if they comply with this BAT technique but has commented that water is reused in the process as much as possible. As noted in BAT 19 g dirty water in the leachate system drains to an 80,000 L storage tank where it is recirculated back to the AD process ('AD Plant Mona – Drainage Strategy').
	c.	Minimisation of the generation of leachate	***Currently compliant***

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 operator has not indicated if they comply with this BAT technique but has commented that this is inherent in the design of the site. As the main feedstocks for the AD process consist chicken manure and liquid and these are balanced with silage the moisture content of the waste can be considered optimised. Further, leachate generation is minimised as described in BAT 19 e with storage of wastes in buildings / enclosed tanks / covered silage clamps.
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		Compliant in the future There is a composting activity in the permit listed as a directly associated activity. In the response the Operator has stated this is not applicable, however it is as there is a composting activity listed in the permit. Improvement Condition (IC5) set in order for the Operator to provide detail on how they achieve this BATc.
	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 <u>ONE OR BOTH</u> of the following techniques:**		
	a.	Use of semi-permeable membrane covers	Compliant in the future Same as above.
	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 operator has stated that they comply with this BAT technique and do so via SCADA monitoring, daily checks and weekly analysis and have referenced the EMS. The '2529-04 Technical Specification (Basic Design) 11 November 2015' document held on file at NRW contains information on the 'electrical, measuring and control technology' and also the 'process control technology' which includes centralised control of the plant. Feeding of the digester via the hopper, and pump control is via the control system. An improvement condition has been added for the operator to submit a methodology to identify each of the process parameters monitored 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.
	Minimise operational difficulties and associated odour emissions	***Currently compliant***

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 operator has stated that they comply with this BAT technique and do so via SCADA monitoring, daily checks and weekly analysis and have referenced the EMS. The '2529-04 Technical Specification (Basic Design) 11 November 2015' document held on file at NRW contains information on the 'electrical, measuring and control technology' and also the 'process control technology' which includes evaluation of the operating conditions and foam measurement in digestion tank by sensor.
	Provide sufficient early warning of system failures	***Currently compliant*** The operator has stated that they comply with this BAT technique and do so via SCADA monitoring and alarm system. Design has several failure mechanisms prior to uncontrolled release. The '2529-04 Technical Specification (Basic Design) 11 November 2015' document held on file at NRW contains information on the 'electrical, measuring and control technology' and also the 'process control technology' which includes process control alerts re malfunctions.
	Monitoring and/or control of key waste and process parameters – examples below:	
	pH and alkalinity of the digester feed	***Currently compliant*** The operator has stated that they monitor for these parameters and that the pre- acceptance test in the EMS provides the detail.
	Digester operating temperature	***Currently compliant***

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 operator has stated that they monitor for this parameter via constant SCADA monitoring.
			Hydraulic and organic loading rates of the digester feed	***Currently compliant*** The operator has stated that they monitor for this parameter via a projected feed plan and actual feed plan.
			Volatile fatty acids and NH3 concentrations within digester & digestate	***Currently compliant*** The operator has stated that they monitor for this parameter via laboratory sampling.
			Biogas quantity, composition (e.g. H2S) and pressure	***Currently compliant*** The operator has stated that they monitor for this parameter via constant SCADA monitoring.
			Liquid and foam levels in the digester	***Currently compliant*** The operator has stated that they monitor for this parameter via constant SCADA monitoring.
MECHANICAL BIOLOGICAL TREATMENT (MBT) OF WASTE				
39	**Reduce emissions to air. Generally applicable to new plants, existing plants may have layout constraints. Use <u>BOTH</u> of the following techniques:**			
	a.		Segregation of the waste gas streams (refer to inventory described in BAT 3)	***Not applicable*** The site does not undertake mechanical biological treatment of waste.
	b.		Recirculation of waste gas. Waste gas treatment is described in BAT 34 and recirculation in BAT 35.	As above

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 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*** The site does not undertake physico-chemical treatment of waste.
	H2 formation potential upon mixing of flue-gas treatment residues/ashes with water		As above
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*** The site does not undertake physico-chemical treatment of waste.
	b.	Biofilter – see S6.1	As above
	c.	Fabric filter – see S6.1.	As above
	d.	Wet scrubbing – see S6.1	As above
	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*		
	Dust	2.0-5.0	***Not applicable*** The site does not undertake physico-chemical treatment of 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
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*** The site does not undertake re-refining of waste oil treatment.
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*** The site does not undertake re-refining of waste oil treatment.
	b.	Energy recovery	As above
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*** The site does not undertake re-refining of waste oil treatment.
	b.	Thermal oxidation – see S6.1	As above
	c.	Wet scrubbing – see S6.1	As above
	The BAT-AEL for TVOC emissions to air set in Section 4.5 (below) applies. *Monitoring requirements are outlined in BAT 8*		
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:**		
	a.	Adsorption – see S6.1	***Not applicable***

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 does not undertake physico-chemical treatment of waste with calorific value.
	b.	Cryogenic condensation – see S6.1	As above
	c.	Thermal oxidation – see S6.1	As above
	d.	Wet scrubbing – see S6.1	As above
	The BAT-AEL for TVOC emissions to air set in Section 4.5 (below) applies. *Monitoring requirements are outlined in BAT 8*		
REGENERATION OF SPENT SOLVENTS			
46	**Improve overall environmental performance by using <u>ONE OR BOTH</u> of the following techniques:**		
	a.	Material recovery (by evaporation from distillation residues)	***Not applicable*** The site does not undertake regeneration of spent solvents.
	b.	Energy recovery e.g. using distillation residues	As above
47	**Reduce emissions to air of organic compounds by applying BAT 14d <u>AND</u> using <u>a combination of</u> the following techniques:**		
	a.	Recirculation of process off-gases in a steam boiler. Avoid generating PCBs and/or PCDD/Fs	***Not applicable*** The site does not undertake regeneration of spent solvents.
	b.	Adsorption – see S6.1	As above
	c.	Thermal oxidation – see S6.1. Avoid generating PCBs and/or PCDD/Fs	As above
	d.	Condensation or cryogenic condensation	As above
	e.	Wet scrubbing – see S6.1	As above
	The BAT-AEL for TVOC emissions to air set in Section 4.5 (below) applies.		

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
	Monitoring requirements are outlined in BAT 8		
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)			
	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) *Table 6.9 and its supporting note. Monitoring requirements are outlined in BAT 8*		
	TVOC	5.0-30	***Not applicable*** The site does not undertake these waste treatment processes.
THERMAL TREATMENT OF SPENT ACTIVATED CARBON, WASTE CATALYSTS AND EXCAVATED CONTAMINATED SOIL			
48	**Improve overall environmental performance by using ALL of the following techniques:**		
	a.	Heat recovery from the furnace off-gas e.g. for preheating combustion air or steam generation	***Not applicable*** The site does not undertake thermal treatment of spent activated carbon, waste catalysts or excavated contaminated soil.
	b.	Indirectly fired furnace i.e. avoids contact between the furnace contents and the burner flue-gases. Note applicability constraints.	As above

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.	Process-integrated techniques to reduce emissions to air – see examples	As above
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:**		
	a.	Cyclone – see S6.1	***Not applicable*** The site does not undertake thermal treatment of spent activated carbon, waste catalysts or excavated contaminated soil.
	b.	Electrostatic precipitator (ESP) – see S6.1	As above
	c.	Fabric filter – see S6.1	As above
	d.	Wet scrubbing – see S6.1	As above
	e.	Adsorption – see S6.1	As above
	f.	Condensation – see S6.1	As above
	g.	Thermal oxidation – see S6.1	As above
	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	***Not applicable*** The site does not undertake water washing of excavated contaminated soil.

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.	Fabric filter – see S6.1	As above
	c.	Wet scrubbing – see S6.1	As above
	Monitoring requirements are outlined in BAT 8. No BAT-AELs have been set for this BATc.		
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*** The site does not undertake decontamination of equipment containing PCBs.
	b.	Implementation of staff access rules to prevent dispersion of contamination – see examples	As above
	c.	Optimised equipment cleaning and drainage – see examples	As above
	d.	Control and monitoring of emission to air – see examples	As above
	e.	Disposal of waste treatment residues – see examples	As above
	f.	Recovery of solvent when solvent washing is used	As above
	Monitoring requirements are outlined in BAT 8. No BAT-AELs have been set for this BATc.		
TREATMENT OF 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
52	**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		
	Bioeliminability e.g. BOD, BOD-COD ratio, Zahn-Wellens test, biological inhibition potential		***Not applicable*** The site does not undertake treatment of water-based liquid waste.
	Feasibility of emulsion breaking e.g. lab testing		
53	**Reduce emissions to air of HCl, NH3 and organic compounds by applying BAT 14d AND using one or a combination of the following techniques:**		
	a.	Adsorption – see S6.1	***Not applicable*** The site does not undertake treatment of water-based liquid waste.
	b.	Biofilter – see S6.1	As above
	c.	Thermal oxidation – see S6.1.	As above
	d.	Wet scrubbing – see S6.1	As above
	BAT-AELs for channelled HCl and TVOC emissions to air from the treatment of water-based liquid waste (mg/Nm3) *Table 6.10 and its supporting notes. Monitoring requirements are outlined in BAT 8*		
	HCl	1.0-5.0	***Not applicable*** The site does not undertake treatment of water-based liquid waste.
	TVOC	3.0-20	As above

Annex 2: Consultation on the draft decision where an Article 15(4) derogation has been applied

No derogations.