

Natural Resources Wales permitting decisions

Variation and consolidation of a bespoke permit – Enfinium Parc Adfer Operations Ltd

We have decided to issue a Natural Resources Wales initiated variation and consolidated permit for Parc Adfer Energy Recovery Facility in Deeside Industrial Park, Flintshire operated by Enfinium Parc Adfer Operations Ltd.

The permit number is EPR/AB3092CV/V006.

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 Document (BREF) for Waste Incineration. The associated BAT conclusions to this document were published on 3 December 2019 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 Incineration sector. These include the amendment of the wording of several permit conditions including 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 3 December 2023.

The opportunity has been taken to consolidate the original permit and subsequent variations. The rest of the installation is unchanged and continues to be operated as stated in the permit.

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 the installation against the published BAT conclusions for Waste Incineration
- Annex 1 – Decision Checklist regarding relevant BAT Conclusions for Waste Incineration.
- Annex 2 – Decision Checklist regarding additional information requested in Regulation 61(1) Notice

Assessment of the installation against the published BAT conclusions for Waste Incineration

1. Our decision

We have issued a variation, which will allow the Operator 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 this and any 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 BAT and BAT-Associated Emission Levels (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 27/10/2014, and any subsequent variations, ensured that the installation, employed 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 or demonstrated compliance with BAT, Improvement Conditions have been included to ensure compliance with the latest BAT standards by 3 December 2023.

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);
- an operation covered by the Waste Framework Directive;

- subject to aspects of other legislation including the Well-Being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016 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 EPR on 6 July 2021 requiring the operator to provide information to demonstrate how the operation of their installation currently meets, or will meet by the compliance date of 3 December 2023, the revised standards described in the relevant BAT Conclusions document.

The Regulation 61(1) Notice required the operator to undertake the following actions, where relevant:

1. Confirm whether or not they currently comply with the requirements of the BAT Conclusion, including any associated emission levels, providing a description of the techniques in place and how they meet the standard
2. If they do not comply with the BAT conclusion, describe how and by when they intend to meet the standard, before the compliance date
3. Confirm if they intend to continue operating in a manner which would not comply with the relevant new BAT Conclusion after the compliance date, if so, provide a justification for being allowed to do so and by what date they intend to come into full compliance, or a description of alternative measures to be adopted that will provide equivalent environmental protection
4. Where the BAT conclusion has a BAT-AEL specified, with which they will not comply with by the compliance date, requirement that the operator should consider requesting a derogation. The notice also explained the strict criteria under which a derogation application may be considered and made clear that any application is the responsibility of the operator.

The following additional information was also required:

- A. Where compliance with the BAT conclusions leads to the substantial refurbishment or installation of a new industrial installation with an aggregate thermal input of greater than 20 MWth, which generated more than 100 KWth of waste heat, the Operator must provide sufficient technical and commercial evidence to demonstrate compliance with Article 14, paragraph 5 of directive 2012/27/EU on Energy Efficiency.
- B. For all discharges to surface water and/or sewers from the site, the Operator must provide information for priority hazardous substances and any other relevant substances.

- C. Where their permitted activity involves the use, production or release of a relevant hazardous substances (as defined in Article 3(18) of the IED) the Operator was required to carry out a risk assessment considering the possibility of soil and groundwater contamination at the permitted installation with such substances.
- D. Provide us with details of fixed combustion plant from 1 MWth up to but not including 50 MWth.
- E. Provide an updated completed OPRA spreadsheet for the facility.

The Regulation 61(1) Notice response from the Operator was received originally received on 22 December 2021 but this was superseded by an updated response received 29 March 2022. A detailed response was received from the Operator. Following assessment of the Regulation 61(1) response, further information was requested from the Operator which was received on 06 Oct 2022. Where the Operator has concluded that they have achieved BAT, and we are in agreement, no further information or justification has been sought by Natural Resources Wales.

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 Waste Incineration were published as Commission Implementing Decision EU 2019/2010/EU in the Official Journal of the EU on 3 December 2019. There are 37 BAT Conclusions. Annex 1 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. Annex 2 provides a record of decisions made in relation to each of the five additional requested items (A – E as above).

The main changes introduced by the latest BAT conclusions include:

- Introduction of new, more stringent BAT-Associated Emission Limits (AELS) for certain substances, as detailed below
- Enhanced monitoring requirements for certain emissions
- Further enhancements to required management systems and processes, for example the requirement for every site for an OTNOC (other than normal operating conditions) management plan.

Other IED BREFs relevant to the permit review

There is a S5.4 activity listed within Table S1.1 of the permit which relates to treatment of bottom ashes and slags. The scope of the BAT Conclusions for Waste Treatment (2018) specifically excludes 'Treatment of slags and bottom ashes' and the scope of the BAT Conclusions for Waste Incineration includes 'treatment of slags and bottom ashes from the incineration of waste'. Therefore we consider BAT for this activity is

addressed by the BAT Conclusions for Waste Incineration and no additional assessment is needed with the BAT Conclusions for Waste Treatment.

Note that during this review the Operator has confirmed that this activity is currently mothballed. Please see section 5 for more information.

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 2023.

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<p>The operator shall submit an Other than normal operating conditions (OTNOC) management plan to Natural Resources Wales for approval.</p> <p>The OTNOC management plan shall be produced in line with all relevant current guidance provided by Natural Resources Wales to the operator and shall consider the requirements of the following BAT conclusions of the Waste Incineration BREF Document (EU 2019):</p> <ul style="list-style-type: none"> • BAT 1 (xxiv) – BAT is also to incorporate the following features in the EMS: <ul style="list-style-type: none"> ○ (xxiv) for incineration plants, an OTNOC management plan (see BAT 18) • BAT 5 – BAT is to appropriately monitor channelled emissions to air from the incineration plant during OTNOC • BAT 18 – In order to reduce the frequency of the occurrence of OTNOC and to reduce emissions to air and, where relevant, to water from the incineration plant during OTNOC, BAT is to set up and implement a risk based OTNOC management plan as part of the environmental management system (BAT 1) that includes all of the following elements: <ul style="list-style-type: none"> ○ Identification of potential OTNOC (e.g. failure of equipment critical to the protection of the environment ('critical equipment')), of their root causes and of their potential consequences, and regular review and update of the list of identified OTNOC following the periodic assessment below; ○ Appropriate design of critical equipment (e.g. compartmentalisation of the bag filter, techniques to heat up the flue-gas and obviate the need to bypass the bag filter during start-up and shutdown, etc.); ○ Set-up and implementation of preventative maintenance plan for critical equipment (see BAT 1(xii)) ○ Monitoring and recording of emissions during OTNOC and associated circumstances (see BAT 5) ○ Periodic assessment of the emissions during OTNOC (e.g. frequency of events, duration, amount of pollutants emitted) and implementation of corrective actions if necessary. <p>The OTNOC management plan shall be submitted to Natural Resources Wales for approval by the date specified.</p>	03 June 2023 or otherwise agreed in writing with Natural Resources Wales
IC8	The operator shall perform a study to determine the extent to which the operation of the current systems in place at the plant to minimise NOx emissions can be further optimised such that emissions are reduced as	30 September 2023 or otherwise as

	<p>far as possible below 180 mg/Nm³ as a daily average, without significantly increasing emissions of other pollutants or having a significant negative effect on plant operation, reliability or bottom ash quality. The study shall be based on the results of trials carried out at the installation. A written report of the study shall be submitted to Natural Resources Wales which shall include but not necessarily be limited to the following:</p> <ul style="list-style-type: none"> • A brief description of the currently installed measures at the installation to minimise NOx emissions, including details of how the reagent dosing system responds to emissions monitoring data and historic data which illustrates the current achievable level of daily NOx emissions. • The results of trials conducted to further reduce daily average NOx emissions using currently installed measures, including: <ul style="list-style-type: none"> ○ a description of the parameters that were varied during the trial e.g. ammonia or urea feed rates, physical form of urea injected, air flows, and the range over which they were varied ○ the levels of NOx achieved and associated levels of ammonia and nitrous oxide emissions and reagent consumption ○ observed effects and predicted long-term impacts on plant operation, reliability and maintenance regime ○ any changes to the composition of the bottom ash and boiler ash and the implications of those changes for the ability to process and use the ash, as well as for the pollution potential of the ash both during processing and its subsequent use as a secondary aggregate ○ any other relevant cross-media effects <p>The report shall also include a description of the extent to which current systems in place at the plant to minimise NOx emissions can be optimised on a permanent basis, including justification and an implementation plan where relevant.</p>	<p>agreed in writing with Natural Resources Wales</p>
IC9	<p>The operator shall carry out a programme of mercury monitoring over a period and frequency agreed with Natural Resources Wales. The operator shall submit a report to Natural Resources Wales with an analysis of whether the waste feed to the plant can be proven to have a low and stable mercury content.</p>	<p>30 September 2023 or otherwise agreed in writing with Natural Resources Wales</p>

IC7 has been included in the permit for the Operator to demonstrate compliance with all relevant BATc relating to the OTNOC management plan

IC8 has been included in the permit in line with the UK BATC Interpretation Document which states an Improvement Condition will be added to existing permits which require operators to optimise their de-NOx systems including through the use of trials. NRW has adopted the UK BATC Interpretation Document.

IC9 has been included in the permit as the Operator is currently unable to satisfy the mercury sampling protocol.

Other changes

Pre-operational conditions

The Operator has confirmed there is no bottom ash treatment plant in place at the facility. Therefore, activity S5.4 A1 (b) (iii) relating to bottom ash treatment (listed as AR2 in the permit) has been mothballed as part of this variation. Table S1.4B 'Pre-operation measures for future development' has been added to the permit. This details a pre-operational condition which requires the Operator to submit a written report to NRW for written approval that details how the relevant and latest BAT conclusions including both narrative BAT and BAT-AEL for that activity are achieved prior to commencing any bottom ash treatment at the facility. Please see below:

2.5.2 The operations specified in schedule 1 table S1.4B shall not commence until the measures specified in that table have been completed.

Table S1.4B Pre-operational measures for future development		
Reference	Operation	Pre-operational measures
PO7	Activity reference AR2 in Table S1.1	Prior to the commencement of activity AR2 in Table S1.1 of this permit (which is currently mothballed), the Operator shall submit a written report to NRW for written approval that details how the relevant and latest BAT conclusions including both narrative BAT and BAT-AEL for that activity are achieved. NRW will only issue approval to the report when it is satisfied that all BAT requirements have been met.

Operating techniques

The operating techniques have been updated to incorporate the responses to the Regulation 61(1) Notice and the OTNOC management plan.

Changes to permit conditions

The permit has been consolidated which means it has taken account of all previous variations and been issued in line with our modern permit template. Therefore, there will have been changes to the permit conditions due to the consolidation. Where we have added specific conditions these are discussed below. We have not detailed any existing conditions that have been amended due to the review of our permit template.

Circular economy conditions

We have added the following conditions to the permit. These conditions have been added to ensure compliance with the Waste (England and Wales) Regulations 2011:

2.3.4 Waste paper, metal, plastic or glass that has been separately collected for the purpose of preparing for re-use or recycling shall not be accepted. Waste from the treatment of these separately collected wastes shall only be accepted if

incineration delivers the best environmental outcome in accordance with regulation 12 of the Waste (England and Wales) Regulations 2011.

2.3.5 Separately collected fractions other than those listed in condition 2.3.4 shall not be accepted unless they are unsuitable for recovery by recycling.

Monitoring of N₂O, flow and CO₂

We have added the monitoring of N₂O, volumetric flow and CO₂ into Table S3.1 from the BREF compliance date (3 December 2023). We have implemented this to improve the quality of the data supply for UK Pollutant Release and Transfer Register (PRTR) reporting. This monitoring is already being completed on a voluntary basis at sites and now becomes part of the permit requirements. This requirement is currently only needed for municipal waste incinerators.

Medium Combustion Plant

The Operator confirmed they have an new MCP at the site, therefore we have added all relevant conditions to the permit as required by Schedule 25A of EPR. The MCP is considered new as first put into operation after 20 December 2018 as confirmed by the Operator. We have added the MCP into Table S1.1 of the permit and amended the site plan in the permit to include the emission point from the MCP.

Site Plan

The existing permit did not have a site plan showing all emissions points. An updated plan has been provided which details all existing emission points, including the MCP which has been added to the permit as part of this variation.

Emissions to Air

There is one emission to air relating to the waste incineration activity (emission point A1).

There were changes to the ELVs for emissions to air taking into account BAT Conclusions 25 to 31. There are also changes to the monitoring of emissions to air taking into account BATc 4 as detailed in Annex 1.

The tables below outline the changes to the ELVs.

Release point	Parameter	Reference Period	Limit / BAT-AEL (effective until 2 December 2023)	Limit / BAT-AEL (effective from 3 December 2023)
A1	Particulate matter	daily average	10 mg/Nm ³	5 mg/Nm ³
	Hydrogen chloride	daily average	10 mg/Nm ³	8 mg/Nm ³
	Hydrogen fluoride	periodic	2 mg/Nm ³	1 mg/Nm ³
	Sulphur dioxide	daily average	50 mg/Nm ³	40 mg/Nm ³
	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	daily average	200 mg/Nm ³	180 mg/Nm ³
	Cadmium & thallium and their compounds (total)	periodic	0.05 mg/Nm ³	0.02 mg/Nm ³
	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	periodic	0.5 mg/Nm ³	0.3 mg/Nm ³

	Mercury and its compounds	periodic	0.05 mg/Nm ³	0.02 mg/Nm ³
		daily average	No limit currently set	0.02 mg/Nm ³
	Dioxins / furans (I-TEQ)	periodic	0.1 ng/Nm ³	0.06 ng/Nm ³
		value over sampling period of 2 to 4 weeks	No limit currently set	0.08 ng/Nm ³

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, in which case these are retained to ensure no backsliding of emission limits.

Emissions to Air – Article 15(4) Derogations

No derogations.

Emissions to water

The installation has one discharge to surface water (emission point W1). This is drainage of uncontaminated surface water via an attenuation pond and oil interceptor. Water is held in the attenuation pond where it is inspected and tested prior to release via a lockable penstock valve to an off-site tributary of the River Dee. Water can be pumped back to the process water pit for re-use.

There are no direct or indirect emissions to a receiving water body from the following processes:

- Flue-gas cleaning (FGC)
- Bottom ash treatment

As per BATc 33, BAT-AELs apply to direct and indirect emissions from FGC and/or bottom ash treatment. Therefore BATc 33 and the BAT-AELs do not apply, therefore there are no changes to any current ELVs.

Emissions to Water – Article 15(4) Derogations

No derogations

6. Conclusion

We consider that the installation already employed what used to be BAT, and that the operator will achieve significant improvements in performance by the compliance date since the permit was originally granted. The revised BREF and its BAT-AELs provide the opportunity to implement 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 or 3 Dec 2023.

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 for Waste Incineration

BAT Conclusions for Waste Incineration were published as Commission Implementing Decision EU 2019/2010/EU in the Official Journal of the EU on 3 December 2019. There are 37 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 permit. For definitions and acronyms see the BAT Conclusions Document: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D2010&from=EN>

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
1	<p>Environmental management systems (EMS) – In order to improve the overall environmental performance, BAT is to elaborate and implement an environmental management system (EMS) that incorporates all of the following features:</p> <p>(i) Commitment, leadership and accountability of the management, including senior management, for the implementation of an effective EMS;</p> <p>(ii) An analysis that includes the determination of the organisation’s context, the identification of the needs and expectations of interested parties, the identification of characteristics of the installation that are associated with possible risks for the environment (or human health) as well as of the applicable legal requirements relating to the environment;</p> <p>(iii) Development of an environmental policy that includes the continuous improvement of the environmental performance of the installation;</p> <p>(iv) establishing objectives and performance indicators in relation to significant environmental aspects, including safeguarding compliance with applicable legal requirements;</p> <p>(v) Planning and implementing the necessary procedures and actions (including corrective and preventive actions where needed), to achieve the environmental objectives and avoid environmental risks;</p> <p>(vi) Determination of structures, roles and responsibilities in relation to environmental aspects and objectives and provision of the financial and human resources needed;</p> <p>(vii) Ensuring the necessary competence and awareness of staff whose work may affect the environmental performance of the installation (e.g. by providing information and training);</p> <p>(viii) Internal and external communication;</p> <p>(ix) Fostering employee involvement in good environmental management practices;</p>	<p>Currently Compliant – The Operator has confirmed the EMS in place is compliant with each subsection of this BATc. The EMS is accredited to ISO14001:2015 standard. We consider this sufficient of demonstrating compliance with the BATc.</p>

(x)	Establishing and maintaining a management manual and written procedures to control activities with significant environmental impact as well as relevant records;	
(xi)	Effective operational planning and process control;	
(xii)	Implementation of appropriate maintenance programmes;	
(xiii)	Emergency preparedness and response protocols, including the prevention and/or mitigation of the adverse (environmental) impacts of emergency situations;	
(xiv)	When (re)designing a (new) installation or a part thereof, consideration of its environmental impacts throughout its life, which includes construction, maintenance, operation and decommissioning;	
(xv)	Implementation of a monitoring and measurement programme, if necessary, information can be found in the Reference Report on Monitoring of Emissions to Air and Water from IED Installations;	
(xvi)	Application of sectoral benchmarking on a regular basis;	
(xvii)	Periodic independent (as far as practicable) internal auditing and periodic independent external auditing in order to assess the environmental performance and to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;	
(xviii)	Evaluation of causes of nonconformities, implementation of corrective actions in response to nonconformities, review of the effectiveness of corrective actions, and determination of whether similar nonconformities exist or could potentially occur;	
(xix)	Periodic review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;	
(xx)	Following and taking into account the development of cleaner techniques.	
Specifically for incineration plants and where relevant, bottom ash treatment plants, BAT is to also incorporate the following features in the EMS:		
(xxi)	For incineration plants, waste stream management (see BAT 9);	See BAT 9
(xxii)	For bottom ash treatment plants, output quality management (see BAT 10);	See BAT 10
(xxiii)	A residues management plan including measures aimed to: (a) Minimise the generation of residues (b) Optimise the reuse, regeneration, recycling of and/or energy recovery from the residues (c) Ensure the proper disposal of residues	Currently Compliant – The Operator has confirmed that they have procedure documents in place which meet this BAT requirement
(xxiv)	For incineration plants, an OTNOC management plan (see BAT 18);	See BAT 18
(xxv)	For incineration plants, an accident management plan;	Currently Compliant - The Operator has confirmed several procedure documents are in place which meet this BAT requirement

	(xxvi)	For bottom ash treatment plants, diffuse dust emissions management (see BAT 23);	See BAT 23
	(xxvii)	An odour management plan where an odour nuisance at sensitive receptors is expected and/or has been substantiated;	Not Applicable – Odour nuisance at sensitive receptors is not expected nor has been substantiated
	(xxviii)	A noise management plan (see BAT 37) where a noise nuisance at sensitive receptors is expected and/or has been substantiated;	See BAT 37
MONITORING			
2	BAT is to determine either the gross electrical efficiency, the gross energy efficiency, or the boiler efficiency of the incineration plant as a whole or of all the relevant parts of the incineration plant.		Currently Compliant – The Operator has determined Gross Electrical Efficiency to be 29.37% and boiler efficiency to be 85.76%.
3	BAT is to monitor key process parameters relevant for emissions to air and water including those given below:		
	Stream/location	Parameter(s)	Monitoring
	Flue-gas from the incineration of waste	Flow, oxygen content, temperature, pressure, water vapour content	Continuous
	Combustion chamber	Temperature	
	Waste water from wet FGC	Flow, pH, temperature	
Waste water from bottom ash treatment plants	Flow, pH, conductivity		
			Currently Compliant – The Operator has confirmed that they have duty and Standby Continuous Emissions Monitoring Systems in place to monitor flow, oxygen, temperature, pressure, and water vapour content of the flue gas.
			Currently Compliant - The Operator has confirmed that they have calibrated temperature probes installed to measure combustion chamber temperature and feedback readings to the distributed control system, with interlocks in place to prevent waste feeding if the combustion chamber temperature drops below 850°C.
			Not Applicable – The Operator has confirmed there is no waste water from flue gas treatment to measure due to installation of dry sorbent injection system
			Not Applicable - The original BREF response stated this BATc did not apply as no bottom ash treatment plant is in place at the plant.

				<p>This was queried with the Operator during this review as the existing permit includes activity S5.4 A1 (b) (iii) “treatment of slags and ashes” and references a bottom ash treatment plant throughout (e.g. Table 2.3 Permitting waste types and quantities for incinerator bottom ash treatment plant).</p> <p>The Operator confirmed that the incinerator does not have a bottom ash treatment plant installed despite the permit including the relevant provisions.</p> <p>As part of this review a pre-operational condition will be put into the permit which requires the Operator in the event they was to install a treatment plant, to carry out an assessment against all the relevant BATcs which have currently been determined to not apply.</p>
4	<p>BAT is to monitor channelled emissions to air with at least the frequency given and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quantity.</p> <p>Refer to monitoring emissions to air table in BAT Conclusion 4: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D2010&from=EN</p>			<p>Compliant in the future – The Operator has confirmed that they currently monitor all parameters at the stated frequency of this BATc except for Hg.</p> <p>Hg As per footnote 5, continuous monitoring can be replaced by periodic measurements where emissions levels are proven to be sufficiently stable. The Operator has confirmed that 6 triplicate tests will be undertaken in 2022 and early 2023 to adhere to the UK Mercury Monitoring Protocol on demonstrating low and stable Mercury emissions. The suitability of periodic monitoring will be</p>

		<p>assessed with an improvement condition in the permit. Monitoring requirements of the BATc to be implemented in the permit from the compliance date.</p> <p>HF As per footnote 4, continuous monitoring can be replaced with periodic where HCl emissions are proven to be sufficiently stable. We have interrogated annual monitoring reports for 2020 and 2021 and these indicate HCl are sufficiently stable. Therefore, we consider it appropriate to continue with periodic monitoring as per the existing permit.</p> <p>PBDD/F The UK WI BREF Interpretation Document states monitoring will be required if a plant is taking waste streams that are known to contain materials treated with brominated flame retardants.</p> <p>The Operator has confirmed the site does accept soft furnishings; a waste stream known to contain brominated flame retardants. Therefore, monitoring of PBDD/F (brominated dioxins/furans) will be implemented in the permit from the compliance date.</p> <p>Dioxins/furans (PCDD/F) & Dioxin-like PCBs Footnote 7 states for long-term sampling 'the monitoring does not apply if the emission levels and proven to be sufficiently stable'. The UK Dioxin Monitoring Protocol is the UK approach to determining whether 'emission levels are</p>
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		<p>sufficiently stable'. If the Operator satisfies the protocol they can remain on periodic monitoring, if they cannot, long-term sampling is required.</p> <p>The Operator submitted test house reports to satisfy the protocol, which we have reviewed and agree the last 6 results satisfy the protocol. Therefore currently they remain on periodic monitoring of both Dioxins/furans and Dioxin-like PCBs, however the requirement to satisfy the protocol is an ongoing requirement therefore both long-term sampling and periodic monitoring will be set in the permit if in the future they can no longer satisfy the protocol.</p>
5	BAT is to appropriately monitor channelled emissions to air from the incineration plant during OTNOC.	Compliant in the Future – The Operator has confirmed they will create an OTNOC management plan. We will regulate compliance with this BAT C via an improvement condition.
6	BAT is to monitor emissions to water from FGC and/or bottom ash treatment with at least the frequency given and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quantity.	
	Refer to monitoring emissions to water table in BAT Conclusion 6: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D2010&from=EN	Not Applicable – The Operator has confirmed there are no emissions to water from FGC or bottom ash treatment.
7	BAT is to monitor the content of unburnt substance in slags and bottom ashes at the incineration plant with at least the frequency given and in accordance with EN standards.	
	Refer to monitoring table in BAT Conclusion 7: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D2010&from=EN	Currently Compliant – The Operator has confirmed that they have currently monitor TOC and LOI is currently monitored every 3 months. Note that the permit requires that they monitor TOC. The Operator has confirmed they are compliant with the current 3% permitted limit.

8	For the incineration of hazardous wastes containing POPs, BAT is to determine the POP content in the output streams (e.g. slags and bottom ashes, flue-gas, waste water) after the commissioning of the incineration plant and after each change that may significantly affect the POP content in the output stream.	Not Applicable – The Operator has confirmed the installation does not accept hazardous waste.
GENERAL ENVIRONMENTAL AND COMBUSTION PERFORMANCE		
9	In order to improve the overall environmental performance of the incineration plant by waste stream management (see BAT 1), BAT is to use all of the techniques (a), (b) and (c) given below, and, where relevant, also techniques (d), (e) and (f).	<p>Currently Compliant -</p> <p>The Operator has provided a Waste Acceptance Procedure which confirms that techniques a, b, c, d and e are in place by detailing:</p> <ul style="list-style-type: none"> • the type of waste that can be incinerated • the set-up and implementation of waste characterisation • pre-acceptance procedures • how weighbridge and plant data records (midnight readings sheet) detail all the required information regarding the source of the wastes, how much of the waste has been incinerated or is currently stored in the bunker • how waste deemed unsuitable incineration is suitably segregated in accordance with site management instructions
(a)	Determination of the types of waste that can be incinerated	
(b)	Set-up and implementation of waste characterisation and pre-acceptance procedures	
(c)	Set-up and implementation of waste acceptance procedures	
(d)	Set-up and implementation of a waste tracking system and inventory	
(e)	Waste segregation	
(f)	Verification of waste compatibility prior to the mixing or blending of hazardous wastes	
10	In order to improve the overall environmental performance of the bottom ash treatment plant, BAT is to include output quality management features in the EMS (see BAT 1)	Not Applicable – The Operator has confirmed that no bottom ash treatment plant is in place at the plant (see BAT 3).
11	<p>In order to improve the overall environmental performance of the incineration plant, BAT is to monitor the waste deliveries as part of the waste acceptance procedures (see BAT 9(c)) including, depending on the risk posed by the incoming waste, the element given.</p> <p>Refer to monitoring table in BAT Conclusion 11: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D2010&from=EN</p>	<p>Currently Compliant - The Operator has confirmed the following monitoring is completed on the waste deliveries in their waste acceptance procedures:</p> <ul style="list-style-type: none"> • Weighing

			<ul style="list-style-type: none"> • Visual inspection • Periodic sampling (the Operator has confirmed they use BIOMA software to determine calorific and biogenic/fossil content of the waste) <p>As per the UK WI BREF Interpretation Document the UK Radioactive Substances Regulation is sufficiently robust to minimise the risk of radioactive material inadvertently being sent to incinerators, therefore the current UK regulators position is that radioactivity detection is not required at any incineration plant.</p>
12	In order to reduce the environmental risks associated with the reception, handling and storage of waste, BAT is to use both of the techniques given below:		
	(a)	Impermeable surfaces with an adequate drainage infrastructure	Currently Compliant – the Operator has confirmed the waste reception and storage area is constructed of impermeable re-enforced concrete with a suitable drainage system installed (surface drainage is into an attenuation pond via two stage interceptors).
	(b)	Adequate waste storage capacity	Currently Compliant – the Operator has confirmed that storage is adequate and monitored and recorded each shift.
13	In order to reduce the environmental risk associated with the storage and handling of clinical waste, BAT is to use a combination of the techniques given below:		
	(a)	Automated or semi-automated waste handling	Currently Compliant – The Operator has confirmed that volumes of clinical waste received is minimal. When received this waste type is manually handled. We consider this appropriate where given the low risk posed by this type of waste acceptance at this site (which is mostly municipal).
	(b)	Incineration of non-reusable sealed containers, if used	
	(c)	Cleaning and disinfection of reusable containers, if used	

14	In order to improve the overall environmental performance of the incineration of waste, to reduce the content of unburnt substances in slags and bottom ashes, and to reduce emissions to air from the incineration of waste, BAT is to use an appropriate combination of the techniques given below:		<p>Currently Compliant – The Operator has confirmed that techniques a, b and c are in place at the plant where:</p> <ul style="list-style-type: none"> waste blending and mixing is carried out by overhead cranes an advanced control system is installed for the incineration process. the incineration process is optimised by the use of auto controllers which use data from the raw gas analysers to alter the reagent injection or combustion air.
	(a)	Waste blending and mixing	
	(b)	Advanced control system	
	(c)	Optimisation of the incineration process	
<p>Table 1 including footnotes: BAT-associated environmental performance levels for unburnt substances in slags and bottom ashes from the incineration of waste Associated monitoring given in BAT 7 <i>Footnote 1: Either the BAT-AEPL for TOC content or the BAT-AEPL for the loss on ignition applies</i> <i>Footnote 2: The lower end of the BAT-AEPL range can be achieved when using fluidised bed furnaces or rotary kilns operating in slagging mode</i></p>			<p>Currently Compliant – The existing permit has a limit of 3% for TOC in bottom ash. Previous monitoring data indicates the Operator has been compliant with this limit and is therefore compliant with the BAT-AEPL.</p> <p>As per the footnote the BAT-AEPL for TOC content of LOI applies. The BAT-AEPL for TOC content will continue to be implemented in the permit.</p>
TOC content in slags and bottom ashes (1)	1 – 3 Dry wt-% (2)		
Loss on ignition of slags and bottom ashes (1)	1 – 5 Dry wt% (2)		
15	In order to improve the overall environmental performance of the incineration plant and to reduce emissions to air, BAT is to set up and implement procedures for the adjustment of the plant's settings, e.g. through the advanced control system, as and when needed and practicable, based on the characterisation and control of the waste (see BAT 11)		<p>Currently Compliant – The Operator has confirmed that that the plant is fitted with an advanced combustion control system. Manual adjustments are made based on emission trends and plant performance</p>

		<p>and warning alarms are activated if emissions trends increase. The plant is monitored continuously by trained and competent operators.</p> <p>SeeBAT 11 for more information on characterisation and control of waste.</p>
16	<p>In order to improve the overall environmental performance of the incineration plant and to reduce emissions to air, BAT is to set up and implement operational procedures (e.g. organisation of the supply chain, continuous rather than batch operation) to limit as far as practicable shutdown and start-up operations.</p>	<p>Currently Compliant – The Operator has confirmed:</p> <ul style="list-style-type: none"> • they operate on a continuous basis with only one planned outage occurring per year • waste inputs are managed to ensure plant capacity is not exceeded and suitable types of waste are sourced • hold monthly supplier review meetings and; • the waste acceptance procedure controls waste inputs to ensure non-conforming wastes are identified and rejected where necessary
17	<p>In order to reduce emissions to air and, where relevant, to water from the incineration plant, BAT is to ensure that the FGC system and the waste water treatment plant are appropriately designed (e.g. considering the maximum flow rate and pollutant concentrations), operated within their design range, and maintained so as to ensure optimal availability.</p>	<p>Currently Compliant – The Operator has confirmed that pre-acceptance testing of the plant has confirmed emissions abatement systems adequately control the flow and concentrations of Flue Gas. There is no waste water treatment plant in place at the site.</p>
18	<p>In order to reduce the frequency of the occurrence of OTNOC and to reduce emissions to air and, where relevant, to water from the incineration plant during OTNOC, BAT is to set up and implement a risk-based OTNOC management plan as part of the environmental management system (see BAT 1) that includes all of the following elements:</p> <p>Identification of potential OTNOC (e.g. failure of equipment critical to the protection of the environment ('critical equipment')), of their root causes and of their potential consequences, and regular review and update of the list of identified OTNOC following the periodic assessment below;</p>	<p>Compliant in the future</p> <p>The Operator has confirmed there is no OTNOC management plan in place. We will review compliance with this BATc via an improvement condition in the permit.</p>

	Appropriate design of critical equipment (e.g. compartmentalisation of the bag filter, techniques to heat up the flue-gas and obviate the need to bypass the bag filter during start-up and shutdown etc.)	
	Set-up and implementation of a preventative maintenance plan for critical equipment (see BAT 1 (xii))	
	Monitoring and recording of emissions during OTNOC and associated circumstances (see BAT 5)	
	Periodic assessment of the emissions occurring during OTNOC (e.g. frequency of events, duration, amount of pollutants emitted) and implementation of corrective actions if necessary.	
ENERGY EFFICIENCY		
19	In order to increase the resource efficiency of the incineration plant, BAT is to use a heat recovery boiler.	Currently Compliant – The Operator has confirmed a heat recovery boiler is in place.
20	In order to increase the energy efficiency of the incineration plant, BAT is to use an appropriate combination of the techniques given below:	Currently Compliant – The Operator has confirmed techniques b, c, d and g are in place where: <ul style="list-style-type: none"> • a flue gas re-circulation fan reduces the flue gas flow. • their boiler is thermally insulated and as discussed above, flue gas if re-circulated. • the boiler is cleaned online every quarter by explosive charge and online cleaning systems such as steam blowing and rapping systems are also in place. • the plant is designed to cogenerate heat and electricity <p>The plant is “CHP-ready” but as noted in the BATc, the requirement is only “applicable within the constraints associated with the local heat and power demand and/or availability of networks”. To date at that location no viable heat user / network has been identified.</p>
(a)	Drying of sewage sludge	
(b)	Reduction of the flue-gas flow	
(c)	Minimisation of heat losses	
(d)	Optimisation of the boiler design	
(e)	Low-temperature flue-gas heat exchangers	
(f)	High steam conditions	
(g)	Cogeneration	
(h)	Flue-gas condenser	
(i)	Dry bottom ash handling	
Table 2 including footnotes: BAT-associated energy efficiency levels for incineration of waste Associated monitoring given in BAT 2		

<p>Footnote 1: The BAT-AEEL only applies where a heat recovery boiler is applicable</p> <p>Footnote 2: The BAT-AEELs for gross electrical efficiency only apply to plants or parts of plants producing electricity using a condensing turbine</p> <p>Footnote 3: The higher end of the BAT-AEEL range can be achieved when using BAT 20 (f)</p> <p>Footnote 4: The BAT-AEELs for gross energy efficiency only apply to plants or parts of plants producing only heat or producing electricity using a back-pressure turbine and heat with the steam leaving the turbine</p> <p>Footnote 5: A gross energy efficiency exceeding the higher end of the BAT-AEEL range (even above 100 %) can be achieved where a flue-gas condenser is used</p> <p>Footnote 6: For the incineration of sewage sludge, the boiler efficiency is highly dependent on the water content of the sewage sludge as fed into the furnace</p>				
Plant	Municipal solid waste, other non-hazardous waste and hazardous wood waste	Hazardous waste other than hazardous wood waste (1)	Sewage sludge	<p>Currently Compliant – See BAT 2.</p> <p>As per footnote 4, the BAT-AEELs for gross energy efficiency does not apply where the Operator has confirmed that a back pressure turbine is not in place.</p>
	Gross electrical efficiency (2)(3)	Gross energy efficiency (4)	Boiler efficiency	
New plant	25 – 35 %	72 – 91 %	60 – 80 %	60 – 70 % (6)
Existing plant	20 – 35 %			
EMISSIONS TO AIR				
DIFFUSE EMISSIONS				
21	In order to prevent or reduce diffuse emissions from the incineration plant, including odour emissions, BAT is to:			
	Store solid and bulk pasty wastes that are odorous and/or prone to releasing volatile substances in enclosed building under controlled sub-atmospheric pressure and use the extracted air as combustion air for incineration or sent it to another suitable abatement system in the case of a risk of explosion			Currently Compliant – The Operator has confirmed that the waste storage bunker is within an enclosed building under atmospheric pressure and extracted air is used as combustion air.
	Store liquid wastes in tanks under appropriate controlled pressure and duct the tank vents to the combustion air feed or to another suitable abatement system			Not Applicable - The plant does not handle liquid wastes.
	Control the risk of odour during complete shutdown periods when no incineration capacity is available, examples given.			Currently Compliant – The Operator has confirmed there is a separate extraction system with carbon filters which is used when the plant is in shut down.
22	In order to prevent diffuse emissions of volatile compounds from the handling of gaseous and liquid wastes that are odour and/or prone to releasing volatile substances at incineration plants, BAT is to introduce them into the furnace by direct feeding.			Not Applicable - The plant does not handle gaseous and liquid wastes.
23	In order to prevent or reduce diffuse dust emissions to air from the treatment of slags and bottom ashes, BAT is to include in the environmental management system (see BAT 1) the following diffuse dust emissions management features:			

	Identification of the most relevant diffuse dust emission sources (e.g. using EN 15445)	Applicable – The Operator has confirmed that no bottom ash treatment plant is in place at the plant (see BAT 3).		
	Definition and implementation of appropriate actions and techniques to prevent or reduce dust emissions over a given time frame			
24	In order to prevent or reduce diffuse dust emissions to air from the treatment of slags and bottom ashes, BAT is to use an appropriate combination of the techniques given below:			
	(a) Enclose and cover equipment	Applicable – The Operator has confirmed that no bottom ash treatment plant is in place at the plant (see BAT 3).		
	(b) Limit height of discharge			
	(c) Protect stockpiles against prevailing winds			
	(d) Use water sprays			
	(e) Optimise moisture content			
	(f) Operate under sub-atmospheric pressure			
CHANNELLED EMISSIONS				
<i>EMISSIONS OF DUST, METALS AND METALLOIDS</i>				
25	In order to reduce channelled emissions to air of dust, metals and metalloids from the incineration of waste, BAT is to use one or a combination of the techniques given below			
	(a) Bag filter	Currently Compliant – The Operator has confirmed that the following techniques a and c are in place where the plant is fitted with a bag filter and also uses dry sorbet injection abatement systems.		
	(b) Electrostatic precipitator			
	(c) Dry sorbent injection			
	(d) Wet scrubber			
	(e) Fixed- or moving-bed adsorption			
Table 3 including footnote: BAT-AELs for channelled emissions to air of dust, metals and metalloids from the incineration of waste Associated monitoring given in BAT 4 <i>Footnote 1: For existing plants dedicated to the incineration of hazardous waste and for which a bag filter is not applicable, the higher end of the BAT-AEL range is 7 mg/Nm³</i>				
	Parameter	BAT-AEL (mg/Nm³)	Averaging period	
	Dust	<2 – 5 (1)	Daily average	Currently Compliant - 2021 monitoring data indicates the plant is compliant the BAT-AEL for dust and the daily average well below the upper end of the BAT-AEL range (0.25 mg/Nm ³). The BAT-AEL will be implemented in the permit from the compliance date.
	Cd+Tl	0.005 – 0.02	Average over sampling period	Currently Compliant –2021 monitoring data indicates that the plant is compliant with BAT-AEL for Cd+Tl with an annual average well below the upper end of the

				BAT-AEL range (0.00048 mg/Nm ³). The BAT-AEL will be implemented in the permit from the compliance date.
	Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V	0.01 – 0.3	Average over sampling period	Currently Compliant - 2021 monitoring data indicates that the plant is compliant with the BAT-AEL for Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V with an annual average well below the upper end of the BAT-AEL range (0.025 mg/Nm ³). The BAT-AEL will be implemented in the permit from the compliance date.
26	In order to reduce channelled dust emissions to air from the enclosed treatment of slags and bottom ashes with extraction of air (see BAT 24(f)), BAT is to treat the extracted air with a bag filter.			Applicable – The Operator has confirmed that no bottom ash treatment plant is in place at the plant (see BAT 3).
	Table 4: BAT-AELs for channelled emissions to air of dust from the enclosed treatment of slags and bottom ashes with extraction of air Associated monitoring given in BAT 4			
	Parameter	BAT-AEL (mg/Nm³)	Averaging period	
	Dust	2 – 5	Average over the sampling period	
<i>EMISSIONS OF HCl, HF AND SO₂</i>				
27	In order to reduce channelled emissions of HCl, HF and SO₂ to air from the incineration of waste, BAT is to use one or a combination of the techniques given below:			Currently Compliant – The Operator has confirmed that technique c is in place where the plant uses dry sorbent injection (hydrated lime).
	(a)	Wet scrubber		
	(b)	Semi-wet absorber		
	(c)	Dry sorbent injection		
	(d)	Direct desulphurisation		
	(e)	Boiler sorbent injection		
28	In order to reduce channelled peak emissions of HCl, HF and SO₂ to air from the incineration of waste while limiting the consumption of reagents and the amount of residues generated from dry sorbent injection and semi-wet absorbers, BAT is to use technique (a) or both of the techniques given below:			Currently Compliant – The Operator has confirmed that the plant uses a recirculation of reagents system. HCl and SO ₂ are continuously monitored to automatically control reagent dosing.
	(a)	Optimised and automated reagent dosage		
	(b)	Recirculation of reagents		
	Table 5 including footnote: BAT-AELs for channelled emissions to air HCl, HF and SO₂ from the incineration of waste Associated monitoring given in BAT 4			

<i>Footnote 1: The lower end of the BAT-AEL range can be achieved when using a wet scrubber, the higher end of the range may be associated with the use of dry sorbent injection</i>				
Parameter	BAT-AEL (mg/Nm ³)		Averaging period	
	New plant	Existing plant		
HCl	<2 – 6 (1)	<2 – 8 (1)	Daily average	Currently Compliant - 2021 monitoring data indicates that the plant is compliant with the BAT-AEL for HCL with a daily average below the upper end of the BAT-EAL range (5.05 mg/Nm ³). The BAT-AEL will be implemented in the permit from the compliance date.
HF	<1	<1	Daily average of average over the sampling period	Currently Compliant - 2021 monitoring data indicates that the plant is compliant with the BAT-AEL for HF with a highest daily maximum below the upper end of the BAT-EAL range (0.21 mg/Nm ³). The BAT-AEL will be implemented in the permit from the compliance date.
SO ₂	5 - 30	5 - 40	Daily average	Currently Compliant - 2021 monitoring data indicates that the plant is compliant with the BAT-AEL for SO ₂ with a daily average below the upper end of the BAT-EAL range (18.75 mg/Nm ³). The BAT-AEL will be implemented in the permit from the compliance date.
<i>EMISSIONS OF NO_x, N₂O, CO AND NH₃</i>				
29	In order to reduce channelled NO_x emissions to air while limiting the emissions of CO and N₂O from the incineration of waste and the emissions of NH₃ from the use of SNCR and/or SCR, BAT is to use an appropriate combination of the techniques given below:			
	(a)	Optimisation of the incineration process		Currently Compliant – The Operator has confirmed techniques a, b, c and f are in place where: <ul style="list-style-type: none">The plant uses an automated combustion control systemThe plant is fitted with a flue gas recirculation fan
	(b)	Flue-gas recirculation		
	(c)	Selective non-catalytic reduction (SNCR)		
	(d)	Selective catalytic reduction (SCR)		
	(e)	Catalytic filter bags		
	(f)	Optimisation of the SNCR/SCR design and operation		
	(g)	Wet scrubber		

				<ul style="list-style-type: none"> The plant is fitted with a selective non-catalytic reduction (SNCR) system The SNCR is optimised and designed to ensure NH₃ emissions are controlled. 	
<p>Table 6 including footnotes: BAT-AELs for channelled NO_x and CO emissions to air from the incineration of waste and for channelled NH₃ emissions to air from the use of SNCR and/or SCR</p> <p>Associated monitoring given in BAT 4</p> <p><i>Footnote 1: The lower end of the BAT-AEL range can be achieved when using SCR. The lower end of the BAT-AEL range may not be achievable when incinerating waste with a high nitrogen content (e.g. residues from the production of organic nitrogen compounds)</i></p> <p><i>Footnote 2: The higher end of the BAT-AEL range is 180 mg/Nm³ where SCR is not applicable</i></p> <p><i>Footnote 3: For existing plants fitted with SNCR without wet abatement techniques, the higher end of the BAT-AEL range is 15 mg/Nm³</i></p>					
	Parameter	BAT-AEL (mg/Nm³)		Averaging period	
		New Plant	Existing plant		
	NO _x	50 – 120 (1)	50 – 150 (1) (2)	Daily average	Currently Compliant – 2021 monitoring data indicates that the plant is compliant with the BAT-AEL for NO _x (for sites where footnote 2 applies) where the daily average is below the upper end of the BAT-EAL range (174.09 mg/Nm ³). The BAT-AEL will be implemented in the permit from the compliance date.
	CO	10 – 50	10 – 50		Currently Compliant – 2021 monitoring data indicates that the plant is compliant with the BAT-AEL for CO where the daily average is below the upper end of the BAT-EAL range (8.04 mg/Nm ³). The BAT-AEL will be implemented in the permit from the compliance date.
	NH ₃	2 – 10 (1)	2 – 10 (1) (3)		Currently Compliant – 2021 monitoring data indicates that the plant is compliant with the BAT-AEL for NH ₃ where the daily average is below the BAT-EAL range (0.14 mg/Nm ³). There is currently a tighter ELV than the BAT-AEL in the permit so this will be retained.
EMISSIONS OF ORGANIC COMPOUNDS					

30	In order to reduce channelled emissions to air of organic compounds including PCDD/F and PCBs from the incineration of waste, BAT is to use techniques (a), (b), (c), (d) and one or a combination of techniques (e) to (i) given below:			
	(a)	Optimisation of the incineration process		<p>Currently Compliant – the Operator has confirmed that techniques a, c, d and e are in place where:</p> <ul style="list-style-type: none"> The plant uses automatic combustion control The boiler is online cleaned every 3 months by use of explosive charge in addition to a thorough boiler clean during the annual outage which involves shot blasting to free up debris before removal of debris by vacuum tanker The flue gas is rapidly cooled from 400°C to below 250°C before the flue gas stream enters the bag filtration system Dry sorbent injection of activated carbon followed by capture of particles in the bag filtration system is also in place
	(b)	Control of the waste feed		
	(c)	On-line and off-line boiler cleaning		
	(d)	Rapid flue-gas cooling		
	(e)	Dry sorbent injection		
	(f)	Fixed- or moving- bed adsorption		
	(g)	SCR		
	(h)	Catalytic filter bags		
	(i)	Carbon sorbent in a wet scrubber		
<p>Table 7 including footnotes: BAT-AELs for channelled emissions to air of TVOC, PCDD/F and dioxin-like PCBs from the incineration of waste</p> <p>Associated monitoring given in BAT 4</p> <p><i>Footnote 1: Either the BAT-AEL for PCDD/F or the BAT-AEL for PCDD/F + dioxin-like PCBs applies</i></p> <p><i>Footnote 2: The BAT-AEL does not apply if the emission levels are proven to be sufficiently stable</i></p>				
Parameter	Unit	BAT-AEL		Averaging period
		New plant	Existing plant	
TVOC	mg/Nm ³	<3 – 10	<3 – 10	Daily average
<p>Currently Compliant - 2021 monitoring data indicates that the plant is compliant with the BAT-AEL for TVOC where the daily average is below the lower end of the BAT-EAL range (0.65 mg/Nm³). The BAT-AEL will be implemented in the permit from the compliance date.</p>				

	PCDD/F (1)	ng I-TEQ/Nm ³	<0.01 – 0.04	<0.01 – 0.06	Average over the sampling period	<p>Currently Compliant - 2021 monitoring data indicates that the plant is compliant with the BAT-AEL for PCDD/F where the average is below the lower end of BAT-EAL range (0.00815 mg/Nm³).</p> <p>Both BAT-AELs will be set in the permit from the compliance date, caveats will apply to reflect the footnotes in the BATc and ongoing requirement to satisfy the UK Dioxin Monitoring Protocol.</p>	
			<0.01 – 0.06	<0.01 – 0.08	Long-term sampling period (2)		
	PCDD/F + dioxin-like PCBs (1)	ng WHO-TEQ/Nm ³	<0.01 – 0.06	<0.01 – 0.08	Average over the sampling period		<p>Not applicable – The Operator has confirmed that 6 periodic tests for PCDD/F + dioxin-like PCBs indicates emissions and low and stable. Monitoring results provided by the Operator indicate that emissions are below the BAT-AEL range.</p> <p>The Operator has chosen the BAT-AEL for PCDD/F as per Footnote 1, however as per BAT4 monitoring of PCDD/F + dioxin-like PCBs still applies. See BAT4 for further information on satisfaction of the protocol.</p>
			<0.01 – 0.08	<0.01 – 0.1	Long-term sampling period (2)		

EMISSIONS OF MERCURY

31	In order to reduce channelled mercury emissions to air (including mercury emission peaks) from the incineration of waste, BAT is to use one of a combination of the techniques given below:	
	(a)	Wet scrubber (low pH)
	(b)	Dry sorbent injection
	(c)	Injection of special, highly reactive activated carbon
	(d)	Boiler bromine addition
	(e)	Fixed- or moving-bed adsorption
<p>Table 8 including footnotes: BAT-AELs for channelled mercury emissions to air from the incineration of waste</p> <p>Associated monitoring given in BAT 4</p> <p><i>Footnote 1: Either the BAT-AEL for daily average or average over the sampling period or the BAT-AEL for long-term sampling period applies. The BAT-AEL for long-term sampling may apply in the case of plants incinerating waste with a proven low and stable mercury content (e.g. mono-streams of waste of a controlled composition)</i></p> <p><i>Footnote 2: The lower end of the BAT-AEL ranges may be achieved when:</i></p> <p><i>- incinerating wastes with a proven low and stable mercury content (e.g. mono-streams of waste of a controlled composition); or</i></p>		<p>Currently Compliant – The Operator has confirmed technique b is in place where the plant uses absorption of activated carbon combined with bag filter and a reaction layer is created in the filter cake.</p>

<p>- using specific techniques to prevent or reduce the occurrence of mercury peak emissions while incinerating non-hazardous waste. The higher end of the BAT-AEL ranges may be associated with the use of dry sorbent injection.</p> <p>As an indication the half-hourly average mercury emissions level will generally be:</p> <p>- <15 – 40 µg/Nm³ for existing plants;</p> <p>- <15 – 35 µg/Nm³ for new plants</p>				
Parameter	BAT-AEL (µg/Nm ³) (1)		Averaging period	<p>Compliant in the future - As per the BATc either the BAT-AEL for periodic or continuous or long-term sampling applies. The Operator has indicated they wish to satisfy the UK Mercury Monitoring Protocol and remain on periodic as opposed to long-term sampling. They are currently gathering data to satisfy the protocol. The protocol will determine if they can remain on periodic monitoring or are required to implement continuous monitoring.</p> <p>Both BAT-AELs will be set in the permit from the compliance date, caveats will apply to reflect the footnotes in the BATc and ongoing requirement to satisfy the UK Mercury Monitoring Protocol. As the Operator has not yet satisfied the protocol, assessment of this will be achieved through an Improvement Condition included in the permit.</p>
	New plant	Existing plant		
Hg	<5 – 20 (2)	<5 – 20 (2)	Daily average or average over the sampling period	
	1 - 10	1 - 10	Long-term sampling period	
EMISSIONS TO WATER				
32	<p>In order to prevent the contamination of uncontaminated water, to reduce emissions to water, and to increase resource efficiency, BAT is to segregate waste water streams and to treat them separately, depending on their characteristics.</p>			<p>Currently Compliant – The Operator has confirmed that uncontaminated water is collected in the site's attenuation pond which is fitted with two oil/sludge interceptors. Water is either re-circulated for use or discharged into an off-site brook. Rainwater from roof areas is collected in underground rainwater harvesting tank for re-use.</p>

		<p>Water from boiler blowdown, ash quenching discharge water wash down from process area drains and surface water from IBA storage areas is directed to an on-site decantation pit where is held for re-use ash quenching water.</p> <p>Foul sewage is treated in an underground waste water treatment plant and pumped back for re-use.</p>
33	In order to reduce water usage and to prevent or reduce the generation of waste water from the incineration plant, BAT is to use one or a combination of the techniques given below:	
	(a)	Waste water free FGC techniques
	(b)	Injection of waste water from FGC
	(c)	Water reuse/recycling
	(d)	Dry bottom ash handling
		<p>Currently Compliant - The Operator has confirmed the following techniques a, b and c are in place where</p> <ul style="list-style-type: none"> • A dry sorbent injection system is in place • Waste water from the process is re-used in as bottom ash quenching water • Rainwater is collected for or re-use • Attenuation pond water is re-used
34	In order to reduce emissions to water from FGC and/or from the storage and treatment of slags and bottom ashes, BAT is to use an appropriate combination of the techniques given below, and to use secondary techniques as close as possible to the source in order to avoid dilution:	
	Primary techniques	
	(a)	Optimisation of the incineration process (see BAT 14) and/or of the FGC system (e.g. SNCR/SCR, see BAT 29(f))
	Secondary techniques – preliminary and primary treatment	
	(b)	Equalisation
	(c)	Neutralisation
	(d)	Physical separation, e.g. screens, sieves, grit separators, primary settlement tanks
	Secondary techniques – physico-chemical treatment	
(e)	Adsorption on activated carbon	
		<p>Currently Compliant – the Operator has confirmed water is not used in the flue gas cleaning process. There is no bottom ash treatment plant on site but bottom ashes are stored. The Operator has confirmed secondary technique (f) is in place where a water misting dust suppression system is used to control dust from the bottom ash storage area. This is only used during dry and windy conditions.</p>

(f)	Precipitation			
(g)	Oxidation			
(h)	Ion exchange			
(i)	Stripping			
(j)	Reverse osmosis			
Secondary techniques – final solids removal				
(k)	Coagulation and flocculation			
(l)	Sedimentation			
(m)	Filtration			
(n)	Flotation			
Table 9 including footnote: BAT-AELs for direct emissions to a receiving water body				
Associated monitoring given in BAT 6				
<i>Footnote 1: The averaging periods are defined in General considerations</i>				
Parameter		Process		Unit
Total suspended solids (TSS)		FGC		mg/l
		Bottom ash treatment		
Total organic carbon (TOC)		FGC		10 – 30
		Bottom ash treatment		15 – 40
Metals and metalloids	As	FGC		0.01 – 0.05
	Cd	FGC		0.005 – 0.03
	Cr	FGC		0.01 – 0.1
	Cu	FGC		0.03 – 0.15
	Hg	FGC		0.001 – 0.01
	Ni	FGC		0.03 – 0.15
	Pb	FGC		0.02 – 0.06
		Bottom ash treatment		
	Sb	FGC		0.02 – 0.9
	Tl	FGC		0.005 – 0.03
Zn	FGC		0.01 – 0.5	
Ammonium-nitrogen (NH ₄ -N)		Bottom ash treatment		10 – 30
Sulphate (SO ₄ ²⁻)		Bottom ash treatment		400 – 1000
PCDD/F		FGC		ng I-TEQ/l
				0.01 – 0.05
Not Applicable – The Operator has confirmed that no bottom ash treatment plant is in place at the plant (see BAT 3) and no water is used in FGC process.				

Table 10 including footnote: BAT-AELs for indirect emissions to a receiving water body					
Associated monitoring given in BAT 6					
<i>Footnote 1: The averaging periods are defined in General considerations</i>					
<i>Footnote 2: The BAT-AELs may not apply if the downstream waste water treatment plant is designed and equipped appropriately to abate the pollutants concerned, provided this does not lead to a higher level of pollution in the environment</i>					
Parameter		Process	Unit	BAT-AEL (1)(2)	Not Applicable – The Operator has confirmed that no bottom ash treatment plant is in place at the plant (see BAT 3) and no water is used in FGC process.
Metals and metalloids	As	FGC	mg/l	0.01 – 0.05	
	Cd	FGC		0.005 – 0.03	
	Cr	FGC		0.01 – 0.1	
	Cu	FGC		0.03 – 0.15	
	Hg	FGC		0.001 – 0.01	
	Ni	FGC		0.03 – 0.15	
	Pb	FGC Bottom ash treatment		0.02 – 0.06	
	Sb	FGC		0.02 – 0.9	
	Tl	FGC		0.005 – 0.03	
Zn	FGC	0.01 – 0.5			
PCDD/F		FGC	ng I-TEQ/l	0.01 – 0.05	
MATERIAL EFFICIENCY					
35	In order to increase resource efficiency, BAT is to handle and treat bottom ashes separately from FGC residues.				Currently Compliant – The Operator has confirmed that they store bottom ash separately from all air pollution residues.
36	In order to increase resource efficiency for the treatment of slags and bottom ashes, BAT is to use an appropriate combination of the techniques given below based on a risk assessment depending on the hazardous properties of the slags and bottom ashes:				Not Applicable – The Operator has confirmed that no bottom ash treatment plant is in place at the plant (see BAT 3).
(a)	Screening and sieving				
(b)	Crushing				
(c)	Aeraulic separation				
(d)	Recovery of ferrous and non-ferrous metals				
(e)	Ageing				
(f)	Washing				
NOISE					
37	In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to use one or a combination of the techniques given below:				
(a)	Appropriate location of equipment and buildings				
(b)	Operational measures				

	(c)	Low-noise equipment	<p>Currently Compliant – The Operator has confirmed techniques a, b, d and e are in place where:</p> <ul style="list-style-type: none"> • The noisiest items of equipment are installed within acoustic enclosures • Site door opening is kept to a minimum and fast closing roller shutter doors are in place. • The planned preventative maintenance routines ensure plant and equipment is adequately maintained to prevent noise being generated. • Noisy tasks are not conducted at night and frequent site boundary noise checks are completed. • Occupational noise surveys are conducted by a specialised consultant on an annual basis to verify levels are within the compliance limits • Noise silencers are fitted to steam release points and fans and • Buildings are well insulated to reduce noise emissions <p>(c) does not apply in this instance as all equipment is installed.</p>
	(d)	Noise attenuation	
	(e)	Noise-control equipment/infrastructure	

Annex 2: Decision Checklist regarding additional requested items

Item as listed in Regulation 61(1) Notice and Section 3 above	Comment on Operator's response to request
A – Energy Efficiency Directive	As per the notice, this request is not applicable as there is no requirement for substantial refurbishment or installation of a new industrial installation with an

	aggregate thermal input of greater than 20 MWth, which generates more than 100 kWth of waste heat.
B – Discharges to surface waters and/or sewers	The Operator has assessed the requirement for a risk assessment and has determined that there are no priority hazardous substances or any other relevant priority hazardous substances within the discharge. Therefore, the screening tests are not required.
C – Soil and groundwater contamination – baseline report	The Operator has provided an updated baseline report which contains the information necessary to determine the current state of soil and groundwater contamination. The report states the results of recent intrusive investigations (2021) are generally comparable with the findings of the initial permit application investigations therefore thus far we are satisfied the site has not deteriorated during the lifetime of the permit and the measures in place to protect soil and groundwater remain appropriate.
D – Medium Combustion Plant	<p>The Operator has provided detail of a Medium Combustion Plant on site. This is a 1 x 2.47MWth input diesel (gas oil) fuelled generator which is used for emergency electric power. The MCP is considered a limited operating hours existing MCP as first put into operation before 20 Dec 2018 and operates for less than 500 hours per year. We included this emission point on the site plan on the permit.</p> <p>Note the applicant also included details of 2 x 20.5MWth diesel (gas oil) fuel burners which are used for during start-up, shut down and/or for combustion support purposes. We consider these are exempt from the MCPD as are subject to Chapter IV of IED.</p>
E – OPRA profile	NRW has reviewed the OPRA score as part of this variation. The OPRA score is now 191 (previously 219).

