Natural Resources Wales permitting decisions

Variation and consolidation of a bespoke permit – Biomass UK No.2 Limited

We have decided to issue a Natural Resources Wales initiated variation and consolidated permit for Barry Energy Production Facility in Woodham Road, Barry, Vale of Glamorgan, CF63 4JE operated by Biomass UK No.2 Limited.

The permit number is EPR/AB3790ZB/V003.

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 07/02/18 and the subsequent variation V002, ensured that the installation, employed BAT and ensured a high level of protection for human health and the environment. In our decision we refer to V002 as the "current" permit, with V003 replacing it upon issue alongside this decision document. We have altered the permit (V003) 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.

The plant is not currently operating, but is permitted to do so and meets the definition of an "existing plant" in the WI BAT conclusions for the purposes of this assessment. The regulation 61 response states that "*the plant was constructed and commissioned in 2018*" but the plant annual report indicate that while substantial progress on commissioning has been achieved, full long-term commercial operation has not yet commenced; "*The plant was only temporarily operational only in Q3 of 2021 in a very limited capacity after which plant was switched off*". The reasons for shut-down are outside the scope of EPR regulation. In common with a completely new plant, this means that the site cannot yet have all the data to demonstrate BAT compliance, as it is dependent on operational results and information. As detailed in Annex 1 below, where the operator has indicated that they are "currently compliant" (by design) but have yet to demonstrate this operationally, we have determined that they will be compliant in the future, subject to appropriate verification.

Therefore where the site cannot currently fully demonstrate compliance with BAT, Improvement Conditions have been included to ensure compliance with the latest BAT standards by 3 December 2023 or within a specified standard time of operation at or after the completion of commissioning (as defined by Natural Resources Wales). The requirement to achieve certain objectives "*within x months of completion of commissioning*" is standard for any permitted co-incineration plant which is not yet operational, and amended wording "*within x months of operation following completion of commissioning*" has been used in this specific case. Furthermore, any improvement conditions relating to the commissioning of the plant in the current permit have been updated to our latest standard ,and included in the revised permit.

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 15 June 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 Dec 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 that 20 MW_{th}, which generated more than 100 KW_{th} 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 MW_{th} up to but not including 50 MW_{th}.
E. Provide an updated completed OPRA spreadsheet for the facility.

The Regulation 61(1) Notice response from the operator was received on 13 January 2022. A detailed response was received from the Operator. Where the operator has concluded that they have achieved BAT and we are in agreement, or we are satisfied that they will achieve BAT before the compliance date or completion date referred to above, 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 are no scheduled activities other than incineration listed within Table S1.1 of the permit, no other BREFs are applicable.

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 (IC). 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 the appropriate date, as referred to above. The following table lists the IC's set, with the reason for inclusion of each briefly outlined. Broadly, there are two main reasons for inclusion of the IC's listed: (1) to ensure new BREF-related requirements are fulfilled, (2) to satisfy existing ICs in the permit which had not been discharged. In this case, such ICs are updated to our modern standard wording and/or amended as necessary to the current situation:

Improvement programme requirements			
Reference	**Requirement**	**Date**	**Reason**
IC1	The Operator shall submit a written report to Natural Resources Wales on the implementation of its Environmental Management System (EMS) and the progress made in the certification of the system by an external body or if appropriate submit a schedule by which the EMS will be certified. The report shall also include details of a review of the OTNOC management plan and any updates to the plan following the review.	Within 12 months of operation following the completion of commissioning.	Updated existing IC6 re-set with added OTNOC reference / requirement reflecting new BATc (see also PO7)
IC2	The Operator shall submit a written proposal to Natural Resources Wales to carry out tests to determine the size distribution of the particulate matter in the exhaust gas emissions to air from emission point A1, identifying the fractions within the PM_{10}, and $PM_{2.5}$ ranges. The proposal shall include a timetable for approval by Natural Resources Wales to carry out such tests and produce a report on the results. On receipt of written approval from Natural Resources Wales to the proposal and the timetable, the Operator shall carry out the tests and submit to Natural Resources Wales a report on the results.	Within 6 months of operation following the completion of commissioning.	Former IC5 re-set with no substantive change in meaning

IC3	The Operator shall submit a written report to Natural Resources Wales on the commissioning of the installation. The report shall summarise the environmental performance of the plant as installed against the design parameters set out in the Application. The report shall also include a review of the performance of the facility against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions and confirm that the Environmental Management System (EMS) has been updated accordingly.	Within 4 months of operation following the completion of commissioning.	Former IC1 re-set with no substantive change in meaning
IC4 (a)	The operator shall notify Natural Resources Wales of the proposed date(s) that validation testing is planned for.	Notification at least 3 weeks prior to validation testing	revised and updated standard version of former IC2 re-set, but with similar overall requirements to previous IC.
IC4 (b)	During commissioning the operator shall carry out validation testing to validate the residence time, minimum temperature and oxygen content of the gases in the furnace whilst operating under normal load and most unfavourable operating conditions. The validation shall be to the methodology as approved through pre-operational condition PO6.	Validation tests completed before the end of commissioning	
IC4 (c)	The operator shall submit a written report to Natural Resources Wales on the validation of residence time, oxygen and temperature whilst operating under normal load, minimum turn down and overload conditions. The report shall identify the process controls used to ensure residence time and temperature requirements are complied with during operation of the incineration plant	Report submitted within 2 months of operation following the completion of commissioning.	
IC5	The Operator shall submit a written report to Natural Resources Wales describing the performance and optimisation of: o The lime injection system for minimisation of acid gas emissions o The carbon injection system for minimisation of dioxin and heavy metal emissions. o The Selective Non Catalytic Reduction (SNCR) and selective catalytic reduction (SCR) systems, and combustion settings to minimise oxides of nitrogen (NOx). The report shall include an initial assessment of the level of NO_X, N_2O and NH_3 emissions that can be achieved under optimum operating conditions.	Within 4 months of operation following the completion of commissioning.	Revised and updated version of former IC3 re-set, but with y similar overall requirements to previous IC.
IC6	The operator shall carry out a further study on the potential to further reduce NO_X emissions from the plant below an emissions limit value [ELV] of 225 mg/Nm3 as a daily average on a long-term basis. The study shall be based on trials carried out at the installation. The study shall include but not necessarily be limited to the following: • A brief description of the currently installed measures at the installation to minimise NO_X emissions and data which illustrates the best NO_X performance that can currently be achieved. • The results of trials conducted to further reduce daily average NO_X emissions as far as possible below 225 mg/Nm3 using currently installed measures, including: ▪ quantification of the reduction in NO_X levels ▪ associated levels of ammonia and nitrous oxide emissions, and reagent consumption ▪ any effects on plant operation and reliability ▪ 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 ▪ an assessment whether a lower ELV of 225 mg/Nm3 as a daily average is achievable on a consistent basis and any alternative	Within 18 months of operation following the completion of commissioning	New IC ensuring BATc requirements for NO_X emissions and UK regulatory position on the same, are fulfilled.

	ELVs which would provide an equivalent level of NO_x reduction on a long-term basis such as an annual mass emission limit or percentile-based ELV. A written report of the study shall be submitted to Natural Resources Wales. If required by Natural Resources Wales in writing, the operator shall carry out a further study on the additional measures that could be applied at the installation to further reduce NO_x emissions beyond the ELV(s) identified as being achievable in the initial study. The study shall include a cost-benefit assessment of the additional measures identified. A written report of the study shall be submitted to Natural Resources Wales.	Further study within 6 months from the written notification by Natural Resources Wales	
IC7	The Operator shall carry out an assessment of the impact of emissions to air of the following component metals subject to emission limit values: Cd, $Cr^{(VI)}$, As. A report on the assessment shall be made to Natural Resources Wales. Emissions monitoring data obtained during the first year of operation shall be used to compare the actual emissions with those assumed in the impact assessment submitted with the Application. An assessment shall be made of the impact of each metal against the relevant ES. In the event that the assessment shows that an environmental standard can be exceeded, the report shall include proposals for further investigative work.	Within 15 months of operation following the completion of commissioning	Former IC7 re-set with no substantive change in meaning
IC8	The Operator shall submit a written summary report to Natural Resources Wales to confirm that the performance of Continuous Emission Monitors for parameters as specified in Table S3.1 and Table S3.1(a) complies with the requirements of EN 14181, specifically the requirements of QAL1, QAL2 and QAL3. The report shall include the results of calibration and verification testing,	Initial calibration report to be submitted within 3 months of operation following completion of commissioning. Full summary evidence compliance report to be submitted within 18 months of operation following completion of commissioning.	Former IC8 re-set with no substantive change in meaning
IC9	The operator shall carry out a programme of dioxin 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 dioxin emissions can be considered to be stable.	Within 6 months of operation following completion of commissioning or as agreed in writing with Natural Resources Wales	New IC ensuring BATc requirements for dioxin monitoring and UK regulatory position on the same are fulfilled.
IC10	The operator shall carry out a programme of mercury monitoring over a period and frequency agreed with Natural Resources Wales. The	Within 6 months of	New IC ensuring BATc

	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.	operation following completion of commissioning or as agreed in writing with Natural Resources Wales	requirements for mercury monitoring, and UK regulatory position on the same are fulfilled.
IC11	During commissioning, the operator shall carry out tests to assess whether the air monitoring location(s) meet the requirements of BS EN 15259 and supporting Method Implementation Document (MID). A written report shall be submitted to Natural Resources Wales for approval setting out the results and conclusions of the assessment including where necessary proposals for improvements to meet the requirements. The report shall specify the design of the ports for PM10 and PM2.5 sampling. Where notified in writing by Natural Resources Wales that the requirements are not met, the operator shall submit proposals or further proposals for rectifying this in accordance with the time scale in the notification. The proposals shall be implemented in accordance with Natural Resources Wales' written approval.	Report to be submitted within 3 months of operation following completion of commissioning.	New IC ensuring CEN standards for monitoring facilities and UK regulatory position on the same are fulfilled. This IC is applied to all plant in commissioning, and thus is relevant to this facility.
IC12	The Operator shall calculate the gross electrical efficiency using the method set out in the general considerations section of the Waste Incineration BAT conclusions and submit details of the calculation to Natural Resources Wales in a written report for approval. If the calculated gross electrical efficiency is below the range specified in BAT 20 of the BAT conclusions, the operator shall carry out an assessment of the opportunities to increase the energy efficiency of the installation. The assessment shall include but not necessarily be limited to: • Improvements that could be made to the furnace (including control systems) in order to increase the amount of thermal energy produced per unit of thermal energy in the waste. • Improvements that could be made to the steam system and related components to allow a greater quantity of electricity to be generated per unit of thermal energy in the steam. • Improvements in the heat and electrical efficiency of the plant's ancillary systems that could be made in order to reduce the parasitic heat and electrical loads of the plant. • Where relevant, an implementation plan for the improvements identified, including the anticipated increase in the gross and/or net electrical efficiency of the plant which would be achieved. • A review of the viability of Combined Heat and Power (CHP) implementation. If required, the assessment shall be submitted to Natural Resources Wales in the written report referred to above.	Within 6 months of operation following completion of commissioning.	New IC ensuring BATc requirements for energy efficiency, and UK regulatory position on the same are fulfilled.
IC13	Following successful commissioning and establishment of routine steady operation, the Operator shall undertake noise monitoring at the nearest local receptors. An addendum to the existing noise impact assessment for the site shall be submitted to Natural Resources Wales for approval This shall include: o A full noise monitoring survey and assessment meeting the BS4142:2014 standard o 1/3rd octave and narrow band (FFT) measurements to identify any tonal elements or low frequency noise	Within 6 months of operation following completion of commissioning	revised and updated version of former IC4 re-set, but with similar overall requirements to previous IC.

- Reference to the Welsh Government Noise and soundscape action plan 2018-2023

The Operator shall submit the revised noise impact assessment to Natural Resources Wales for approval. The assessment shall refer to the predictions in the report produced as part of the new bespoke permit application. If rating levels likely to cause adverse impact at sensitive receptors are detected, the assessment shall include identification of the most suitable abatement techniques, an estimate of the cost and a proposed timetable for their installation.

Pre-operational Conditions

Pre-operational conditions which have been previously set have been confirmed by NRW as having been discharged, and are removed from the permit. One new pre-operational condition has been set for future development, which requires that an Other Than Normal Operating Conditions (OTNOC) plan must be submitted to NRW for approval, prior to the re-commencement of the commissioning or operation of the permitted activity. Such a plan must be in place for all plant, either by the BREF compliance date of 3rd December 2023 if operational by that date, or otherwise before any plant operation. We therefore consider it reasonable to make this a pre-requisite to restarting permitted operations at this site, even though this may bring the compliance requirement date forward:

Table S1.4 Pre-operational measures for future development		
Reference	**Operation**	**Pre-operational measures**
PO7	Recommencement of commissioning or operation of permitted activity	The operator shall submit an Other than normal operating conditions (OTNOC) management plan to Natural Resources Wales for approval prior to the re-commencement of commissioning. The OTNOC management plan shall be produced in line with all relevant current guidance provided by Natural Resources Wales to the operator and the requirements of the following BAT conclusions of the Waste Incineration BREF Document (EU 2019): • BAT 1 (xxiv) – BAT is also to incorporate the following features in the EMS: o (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: o 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; o 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.); o Set-up and implementation of preventative maintenance plan for critical equipment (see BAT 1(xii)) o Monitoring and recording of emissions during OTNOC and associated circumstances (see BAT 5) o Periodic assessment of the emissions during OTNOC (e.g. frequency of events, duration, amount of pollutants emitted) and implementation of corrective actions if necessary. The OTNOC management plan shall include: o a list of any potential OTNOC situations that are considered to be abnormal operation under the definition in Schedule 6 of this permit. o a definition of start-up and shut-down conditions having regard to any relevant regulatory guidance on start-up and shut-down. o any updates on the design of critical equipment to minimise OTNOC since the permit application

Other changes

Site-specific

- Consistent with the V002 permit and the original application information, abnormal operation (*special provisions under Chapter IV and annex VI of the Industrial Emissions Directive*) continues to be prohibited. Therefore permit references to abnormal operation provisions are removed, where some were previously erroneously included.
- Backup generator which was referenced in the original application has, with agreement of the operator, been included as a directly associated activity (Table S1.1), additional air emission point without ELVs or monitoring (Table S3.1), and identifying marker inserted on the site plan (schedule 7). The operator indicated in their Regulation 61 response that the generator formed part of the installation, but was not covered by Medium Combustion Plant regulations in EPR.
- Various other minor errors/inconsistencies in existing permit were corrected, such as previously incompletely drafted definition of "start up", and insufficient definition of "bottom ash" (referring to a grate, which is inappropriate for fluidised bed combustion)

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 N_2O and flow

We have added the monitoring of N_2O and volumetric flow 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.

Emissions to Air

There were changes to the ELVs for emissions to air taking into account BAT Conclusions 25 to 31.

The tables below summarise the changes to the ELVs for A1, the main co-incineration air emission point for substances where the BREF sets lower limits than previous BREF/Annex VI of IED. As the plant is a co-incinerator the ELVs are stated at 6 % oxygen content. BAT-AELs in the BREF are stated in 11 % oxygen content therefore they have been converted into 6 % oxygen (ELV @11% x1.5 = ELV @6%).

Parameter	Daily average limit / BAT-AEL (effective until 2 December 2023)	Daily average limit / BAT-AEL (effective from 3 December 2023)
Particulate matter	15 mg/Nm^3	7.5 mg/Nm^3
Hydrogen chloride	15 mg/Nm^3	12 mg/Nm^3
Hydrogen fluoride	3 mg/Nm^3	1.5 mg/Nm^3
Sulphur dioxide	75 mg/Nm^3	60 mg/Nm^3
Oxides of nitrogen (NO and NO_2 expressed as NO_2)	300 mg/Nm^3	225 mg/Nm^3
Ammonia	5 mg/Nm^3	Unchanged at 5 mg/Nm^3 as previously implemented ELV tighter than revised BAT-AEL
Cadmium & thallium and their compounds (total)	0.05 mg/Nm^3	0.03 mg/Nm^3
Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg/Nm^3	0.45 mg/Nm^3
Mercury and its compounds	0.05 mg/Nm^3	0.03 mg/Nm^3
Dioxins / furans (I-TEQ)	0.01 ng/Nm^3	Unchanged at 0.01 ng/Nm^3 as previously implemented ELV tighter than revised BAT-AEL
Specific individual poly-cyclic aromatic hydrocarbons (PAHs), as specified in Schedule 6 of the permit.	0.001 mg/m^3	Unchanged at 0.001 mg/Nm^3 as previously implemented ELV tighter than revised BAT-AEL

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

Two emissions to water are permitted. The only emission direct to surface water (W1) is of accumulated surface and roof water run off released from an attenuation tank (i.e. un-contaminated rainwater). A emission point to sewer (S1) permits discharge of boiler blow down water and waste water from the plant boiler water treatment plant

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

- Flue-gas cleaning (FGC)

- Bottom ash treatment

The BAT-AELs only apply if either of these two processes are being carried out. Therefore, the BAT-AELs do not apply and there are no changes to the current permit requirements in respect of water discharges.

6. Conclusion

We consider that the installation already employed what used to be BAT, and that the operator will achieve 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 3 December 2023 or the relevant date following the completion of commissioning as explained above.

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	**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:		
	(i)	Commitment, leadership and accountability of the management, including senior management, for the implementation of an effective EMS;	Currently Compliant. These standard requirements of an EMS have been confirmed to be present by the operator, who states in their response that they have implemented an EMS that complies with the requirements of ISO 14001. General compliance was reviewed under previous permit pre-operational condition 1 (now discharged), and will be reviewed on an ongoing basis, and prior to completion of improvement condition IC1
	(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;	
	(iii)	Development of an environmental policy that includes the continuous improvement of the environmental performance of the installation;	
	(iv)	establishing objectives and performance indicators in relation to significant environmental aspects, including safeguarding compliance with applicable legal requirements;	
	(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;	

BATc number	Summary of BAT Conclusion requirement		**Status/comment** **One of the following:** Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	(vi)	Determination of structures, roles and responsibilities in relation to environmental aspects and objectives and provision of the financial and human resources needed;	
	(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);	
	(viii)	Internal and external communication;	
	(ix)	Fostering employee involvement in good environmental management practices;	
	(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	

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
		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);	**Currently Compliant** – See also BAT9. Waste pre-acceptance and acceptance procedures in place; waste streams are pro-actively managed by permitted operational controls in that only one waste EWC is permitted
	(xxii)	For bottom ash treatment plants, output quality management (see BAT 10);	**Not applicable** – no bottom ash treatment plant permitted
	(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** – in the R61 response the operator has in error struck through requirement (xxiii). However, the subsequent narrative confirms that residue management forms part of the EMS. We consider that the EMS fulfils the BREF requirements owing to the response, current permit conditions and responses given in original permit application
	(xxiv)	For incineration plants, an OTNOC management plan (see BAT 18);	**Compliant in the future.** See BAT18. The operator has indicated that OTNOC situations have been identified and management processes in place. PO7 and IC1 require these to be reviewed by NRW to confirm timely adherence to new/additional requirements of the new BREF
	(xxv)	For incineration plants, an accident management plant;	**Currently Compliant** – in the R61 response the operator has indicated suitable and sufficient accident management

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
			plans and fire prevention plans. These will be further reviewed by NRW under IC1
	(xxvi)	For bottom ash treatment plants, diffuse dust emissions management (see BAT 23);	**Not applicable** – no bottom ash treatment plant permitted
	(xxvii)	An odour management plan where an odour nuisance at sensitive receptors is expected and/or has been substantiated;	**Not applicable** – no odour issues expected or substantiated – see BAT 21 below.
	(xviii)	A noise management plan (see BAT 37) where a noise nuisance at sensitive receptors is expected and/or has been substantiated;	**Currently Compliant** – an approved noise management plan is in place -see permit and 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.**		**Compliant in the future** The installation is a co-incineration plant that produces electricity using a condensing turbine, so the relevant BAT 2 requirement is to determine the gross electrical efficiency using the formula in the BATc (see "general considerations" section of the BATc). The operator has indicated that they have completed a performance test to determine the gross electrical efficiency and are compliant with the BATc, but have not provided this to NRW with the Regulation 61 response. The permit requirements for efficiency testing/reporting are changed by the new BATc. As the plant has not yet completed commissioning, the performance test results have not yet been reported to, and approved by NRW and may be repeated. Improvement Condition IC 12 has been included to require this information with 6 Months of operation following completion of commissioning. The requirement to determine gross electrical efficiency has been added to Table S3.4 (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
				monitoring) within 6 months of any modification that significantly affects energy efficiency. This complements existing.
3	**BAT is to monitor key process parameters relevant for emissions to air and water including those given below:**			**Compliant in the future:**
	Stream/location	**Parameter(s)**	**Monitoring**	
	Flue-gas from the incineration of waste	Flow, oxygen content, temperature, pressure, water vapour content	Continuous	**Compliant in the future**. The operator has indicated in their response that they consider they are currently compliant as all the required parameters are continuously measured. However, as NRW have not yet formally accepted that commissioning of the plant is complete, with all monitoring fully operational (V002 IC1, IC2 and IC 8), we will confirm assessment of BAT 3 conformance when we sign off the relevant re-issued improvement conditions. For all parameters other than flow, the permit already requires these parameters to be measured, with flow being added in this variation to ensure BAT compliance. In the permit, the parameters are updated from Table S3.4 process monitoring to Table S3.1 emissions monitoring.
	Combustion chamber	Temperature		
	Waste water from wet FGC	Flow, pH, temperature		**Not applicable-** the installation does not use wet FGC or include bottom ash treatment therefore there is no waste water stream from FGC or bottom ash treatment plant for monitoring
	Waste water from bottom ash treatment plants	Flow, pH, conductivity		
4	**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.**			
	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			**Compliant in the future.** The operator has indicated in their response that they consider they are currently compliant as arrangements are in place to ensure that all

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 required emission parameters are measured continuously or periodically. However, NRW have not yet formally accepted that commissioning of the plant is complete, with continuous monitors fully calibrated (V002 IC 8), and routine reporting and NRW assessment of monitoring results established (V002 condition 4.2.3 and Table S4.1). We will formally confirm assessment of BAT 4 conformance when we sign off the relevant re-issued improvement conditions and associated operational monitoring results. The following are measured continuously by the plant: NO_X, NH_3,N_2O, CO, SO_2, HCl (including as a surrogate to assure HF performance), Dust, TVOC, The following are measured periodically by the plant: HF, Metals and metalloids (As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Sb, Tl, V), Benzo(a)Pyrene (see PAHs // B(a)P in permit) The following shall at least be measured periodically, and/or continuous monitoring may be required by NRW as detailed in the permit: Mercury/Hg (see IC 10) PCDD/F (polychlorinated dioxins/furans) and dioxin-like PCBs (see IC 9). The following BAT monitoring is not relevant to the plant and is not required: PBDD/F (polybrominated dioxins/furans) – see BAT 4 table footnote 6 – neither are brominated flame retardants incinerated (or reasonably

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
		expected in waste stream at significant concentration) nor is continuous injection of bromine employed under BAT 31. For most parameters, the permit is unchanged, with continuous or periodic monitoring continuing as already specified. For dioxin and mercury monitoring, compliance will be fully demonstrated when new improvement conditions IC 9 and IC 10, respectively, have been satisfied in order to determine whether continuous sampling/monitoring is now required. The revised permit specifies appropriate monitoring
5	**BAT is to appropriately monitor channelled emissions to air from the incineration plant during OTNOC.**	**Compliant in the future.** The operator has indicated in their response that they consider they are currently compliant as CEMS (See BAT4) are operational during all periods of OTNOC. However, as above, NRW have not yet formally accepted that commissioning of the plant is complete and we will confirm assessment of BAT 5 conformance when commissioning is complete. For most parameters, the permit is unchanged, with continuous monitoring continuing as already specified. For PCDD/F, BAT 5 requires periodic measurement campaign(s) during start-up and shutdown as a new requirement. PO7 and IC 1, require an OTNOC management plan, including periodic PCDD/F measurement, and we will confirm conformance with this BATc upon approval of the PO and IC report..

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
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** – BAT 6 stipulates monitoring requirements for emissions to water from flue gas cleaning and bottom ash treatment. There is no wet flue gas cleaning or bottom ash treatment plant at the facility, therefore no associated emissions to water.
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	**Compliant in the future.** The operator has indicated in their response that they consider they are currently compliant as arrangements are in place to ensure bottom ash is periodically tested for TOC. This is a condition of the existing EPR permit and ash sampling protocol has been approved by NRW in accordance with PO4. However, NRW have not yet formally accepted that commissioning of the plant is complete, with routine reporting and NRW assessment of monitoring results established (V002 condition 4.2.3 and Table S4.1). We will formally confirm assessment of BAT 7 conformance when we sign off the relevant re-issued improvement conditions and associated operational monitoring results.
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** – BAT 8 sets requirements in cases where hazardous wastes containing POPs are incinerated. The plant does not incinerate hazardous waste, including hazardous waste containing POPs. It only incinerates non-hazardous waste wood
GENERAL ENVIRONMENTAL AND COMBUSTION PERFORMANCE		

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
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).**		
	(a)	Determination of the types of waste that can be incinerated	(a-c) Currently compliant. The requirement to determine types of waste that can be incinerated pre-date the latest BATc and is already in the site permit (Condition 2.3.1 – 2.3.3, Table S1.2, Table S2.2, including specification of waste (pre-)-acceptance procedures) having been demonstrated during original permit determination and ongoing regulation. The plant is only permitted to process specific mixed waste wood feedstocks produced to a specification. Acceptance criteria based on sampling, inspection and analysis
	(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	Not applicable. As noted in the BATc, (d-f) are applicable "where relevant". As the plant is only permitted (Table S2.2) for a single EWC/waste stream, internal waste tracking, segregation or mixing/blending considerations are not required
	(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** – BAT 10 concerns bottom ash treatment plants. There is no bottom ash treatment plant at the installation.
11	**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.**		
	Refer to monitoring table in BAT Conclusion 11: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D2010&from=EN		Currently Compliant. The monitoring for "municipal solid waste and other non-hazardous waste" type is relevant, others are not. Radioactivity detection is not applicable as per UK Interpretation Document. Processes and systems for waste weighing, visual inspection, and periodic sampling/analysis is in place.
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:**		

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)	Impermeable surfaces with an adequate drainage infrastructure	Currently Compliant. All waste storage, handling and reception infrastructure at the site is sealed and controlled as described in the original permit application, and illustrated in image in the R61 response. Drainage infrastructure is adequate: the waste reception/storage is enclosed, meaning there is no routine water emission from waste handling areas, and surface water releases from other impermeable areas of the site/roofs are controlled using a three stage, oil, water, and sediment interceptor. Waste storage capacity is sufficient as detailed in the original permit application / decision document, corresponding to approximately 3.5 days of continuous operation.
	(b)	Adequate waste storage capacity	
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	**Not Applicable** – BAT 13 is for storage and handling of clinical waste. The installation is not permitted to and does not process clinical waste. It only processes non-hazardous waste wood.
	(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:**		
	(a)	Waste blending and mixing	**Not applicable** to permitted activities. As stated in the original permit application, "*The wood will arrive at the site in the form of pre-processed wood chips in accordance to an agreed fuel supply specification*". As such further blending/mixing is not applicable, a high degree of homogenisation is achieved via off-site fuel processing.
	(b)	Advanced control system	**Currently Compliant.** The plant has been designed and constructed with an advanced control system (DCS and

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
			SCADA) that can optimise the waste feed rates, operational parameters and efficiency of the process. Operating and emissions parameters are monitored as indicated in preceding BAT.
	(c)	Optimisation of the incineration process *Optimisation of the waste feed rate and composition, of the temperature, and of the flow rates and points of injection of the primary and secondary combustion air to effectively oxidise the organic compounds while reducing the generation of NO_x. Optimisation of the design and operation of the furnace (e.g. flue- gas temperature and turbulence, flue-gas and waste residence time, oxygen level, waste agitation).*	**Compliant in the future**. The operator has indicated in their response that they consider they are currently compliant. We agree that incineration process optimisation by design has been demonstrated at the permit application stage and in fulfilment of pre-operational conditions (including completed PO3, PO6). However, as NRW have not yet formally accepted that commissioning of the plant is complete, we will confirm assessment of BAT 14(c) conformance when we sign off the relevant re-issued improvement conditions relating to operational optimisation, notably IC3, IC4, IC5, IC6 (commissioning, time-temperature validation, general abatement optimisation, further NO_X abatement optimisation) as these factors cannot be fully demonstrated until the plant is fully operational.
	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** *Footnote 1: Either the BAT-AEPL for TOC content or the BAT-AEPL for the loss on ignition applies* *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*		
	TOC content in slags and bottom ashes (1)	1 – 3 Dry wt-% (2)	**Compliant in the future.** The existing permit already specifies that TOC shall be <3%, so there is no change to regulation. The original application indicates that this performance level is expected. However, as NRW have not yet formally accepted that commissioning of the plant is complete, we will confirm assessment of BAT 14 AEPL

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
			conformance when we have received and reviewed the necessary operational monitoring results.
	Loss on ignition of slags and bottom ashes (1)	1 – 5 Dry wt% (2)	Not applicable- the other unburnt carbon BAT-AEPL (above) is applied.
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)**		**Compliant in the future.** The operator has indicated in their response that they consider they are currently compliant. The plant has been designed and constructed ("*set up*") with an advanced control system (DCS and SCADA) that can optimise the waste feed rates, operational parameters and efficiency of the process. However, as NRW have not yet formally accepted that commissioning of the plant is complete, we will confirm assessment of BAT 15 conformance when commissioning is complete ("*implement*"), and notably that IC3, IC5, IC6 (commissioning, time, general abatement optimisation, further NO_X abatement optimisation) are complete.
16	**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.**		**Compliant in the future.** The operator has stated in their response that "*The plant is designed to be operated continuously with minimum uptime of 90%*". In the original application, it was indicated that the plant would operate continuously. Both of these would indicate that BAT 16 is achieved. However, as the plant is not currently operating and NRW have not yet formally accepted that commissioning of the plant is complete, we will confirm assessment of BAT 16 conformance when commissioning is complete and operational reliability demonstrated. It is noted that the complete suspension of operation / commissioning until all matters are resolved nevertheless provides good evidence of compliance with BAT 16 (2021 annual report, "*plant was switched off pending the*

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
		conclusion of the planning regularisation and appeal. The site has been subject to a number of plant engineering reliability modifications with the intention of resolving a number of reliability issues").
17	**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.**	**Compliant in the future.** The operator has indicated in their response that they consider they are currently compliant. The plant FGC system has been appropriately designed to reduce emissions to air, as documented in the original application and NRW decision document. There are no FGC emissions to water therefore this is not applicable. However, as NRW have not yet formally accepted that commissioning of the plant is complete, we will confirm assessment of BAT 17 conformance when commissioning is complete and notably that IC3, IC5, IC6 (commissioning, time, general abatement optimisation, further NO_X abatement optimisation) are complete, when it will be possible to confirm that the equipment is being operated within design range, appropriately maintained, and as necessary (re)optimised to achieve any lower air emissions limits (BAT-AEL) required by these BATc (see BAT 25, 28-31).
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 (see BAT 1) that includes all of the following elements:**	**Compliant in the future.** The operator has indicated in their response that they consider they are currently compliant. The operator has provided several examples of actions already undertaken to minimise OTNOC, but an OTNOC management plan is a new requirement under the BREF and so the operator has yet to submit an OTNOC Management plan to NRW for approval. PO7 and IC 1 require this, and conformance with this requirement will be confirmed upon receipt and approval of the PO and IC

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
		response. Further detail is given below for specific elements of BAT 18.
	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;	**Compliant in the future.** The operator has responded that "*The original plant was designed using a HAZOP process that identified a majority of the potential abnormal operating conditions. Since the construction and initial commissioning of the plant in 2018, a number of minor control modifications have been incorporated into the facility to ensure that the highest levels of reliability are maintained. The company has identified all potential OTNOC situations and manage the site in accordance with a predictive and preventative maintenance system. The site maintenance management software aligns with all identified OTNOC situations and ensures that maintenance activities are scheduled to ensure production uptime and reliability is maintained*". It is highly likely that this will meet the requirements of BAT 18, and will be confirmed by NRW on completion of PO7 and IC1.
	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.)	**Currently compliant** – appropriate design was demonstrated at original permit application / determination, and the requirements are not substantially changed by the new BATc
	Set-up and implementation of a preventative maintenance plan for critical equipment (see BAT 1 (xii))	**Compliant in the future.** PPM is in place (see above) – operation will be confirmed via completion of PO7 and IC1 (OTNOC Management Plan).
	Monitoring and recording of emissions during OTNOC and associated circumstances (see BAT 5)	**Compliant in the future.** Arrangements are in place- see above. CEMS will monitor during OTNOC, PO7 and IC1 will confirm arrangements for measurement campaigns for PCDD/F during start-up/shut down and implementation of corrective actions if necessary.
	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.	

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
	ENERGY EFFICIENCY		
19	**In order to increase the resource efficiency of the incineration plant, BAT is to use a heat recovery boiler.**		**Currently Compliant**. As noted in the original application & decision document, and Reg 61 response, a heat recovery boiler forms part of the installation.
20	**In order to increase the energy efficiency of the incineration plant, BAT is to use an appropriate combination of the techniques given below:**		
	(a)	Drying of sewage sludge	**Not applicable**. Not Sewage Sludge incinerator
	(b)	Reduction of the flue-gas flow	**Currently Compliant**. As noted in the original application & decision document, and Reg 61 response, flue gas recirculation is implemented and is inherent to the gasification process prior to off-gas combustion. Primary and secondary air distribution optimisation has been demonstrated at the design/permitting stage and will further be addressed in Improvement Condition responses (IC4)
	(c)	Minimisation of heat losses	**Currently Compliant**. As noted in the original application & decision document, and Reg 61 response, heat loses are minimised through insulation and flue gas recirculation.
	(d)	Optimisation of the boiler design	**Currently Compliant**. As stated in the Reg 61 response, The boiler has been designed with uniform flue gas velocity and distribution, convection bundles and offline and on-line boiler cleaning. Attainment will be further confirmed through completion of Improvement condition IC 3, 4.
	(e)	Low-temperature flue-gas heat exchangers	**Currently Compliant**. As indicated in the Reg 61 response, low temperature flue gas heat recovery reduces emission temperature to a minimum viable level of approximately 140 ˚C.
	(f)	High steam conditions	**Currently Compliant**. As indicated in the Reg 61 response, High steam conditions are achieved by the plant, of above 400 ˚C and 45 bar.

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)	Cogeneration	**Not applicable.** As indicated in the Reg 61 response, the installation 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.
	(h)	Flue-gas condenser	**Not applicable.** As indicated in the Reg 61 response, and BATc, only applicable where a suitable low-grade heat user / network is operational. The plant does not have a flue gas condenser.
	(i)	Dry bottom ash handling	**Currently Compliant**. As indicated in the Reg 61 response, bottom ash is managed dry in the fluidised bed gasifier / combustor, and so heat is not lost to quench water / evaporation.
	Table 2 including footnotes: BAT-associated energy efficiency levels for incineration of waste **Associated monitoring given in BAT 2** *Footnote 1: The BAT-AEEL only applies where a heat recovery boiler is applicable* *Footnote 2: The BAT-AEELs for gross electrical efficiency only apply to plants or parts of plants producing electricity using a condensing turbine* *Footnote 3: The higher end of the BAT-AEEL range can be achieved when using BAT 20 (f)* *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* *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* *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*		**Compliant in the future** The installation is a co-incineration plant that produces electricity using a condensing turbine, so the relevant BAT-AEEL requirement is a gross electrical efficiency of 20-35%. The operator has indicated that they have completed a performance test to determine the gross electrical efficiency and are compliant with the BATc, with an efficiency >20%, but have not provided this to NRW with the Regulation 61 response. The permit requirements for efficiency are changed by the new BAT-AEEL. As the plant has not yet completed commissioning, the performance test results have not yet been reported to, and approved by NRW and may be repeated. Improvement Condition IC 12 has been included to require this information

<table>
<tr><th>BATc number</th><th colspan="4">Summary of BAT Conclusion requirement</th><th>Status/comment
One of the following:
Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant</th></tr>
<tr><td></td><td colspan="4"></td><td>with 6 Months of completion of commissioning, alongside the requirement in Table S3.4 (process monitoring) for measurement of gross electrical efficiency with a minimum performance specification of >20%. This complements existing IC 3 [commissioning report] which has not yet been discharged. Further energy efficiency monitoring is required after any modification that significantly affects plant energy efficiency, which could include conversion to CHP and application of the gross energy efficiency, with associated determination of BAT-AEEL achievement.</td></tr>
<tr><td></td><td rowspan="2">Plant</td><td colspan="2">Municipal solid waste, other non-hazardous waste and hazardous wood waste</td><td>Hazardous waste other than hazardous wood waste (1)</td><td>Sewage sludge</td><td rowspan="3"></td></tr>
<tr><td>Gross electrical efficiency (2)(3)</td><td>Gross energy efficiency (4)</td><td>Boiler efficiency</td><td rowspan="2">60 – 70 % (6)</td></tr>
<tr><td></td><td>New plant</td><td>25 – 35 %</td><td rowspan="2">72 – 91 %</td><td rowspan="2">60 – 80 %</td></tr>
<tr><td></td><td>Existing plant</td><td>20 – 35 %</td><td></td></tr>
<tr><td colspan="6">EMISSIONS TO AIR</td></tr>
<tr><td colspan="6">DIFFUSE EMISSIONS</td></tr>
<tr><td>21</td><td colspan="4">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 ait as combustion air for incineration or sent it to another suitable abatement system in the case of a risk of explosion</td><td>Not applicable. The operator has indicated they are compliant, as waste storage is inside, with appropriate and relevant dust control. However, the BATc element only applies to “solid and bulk pasty wastes that are odorous and/or prone to relating volatile substances” and does not concern dust. As identified in the R61 response and original application, the wood waste is inherently non-odorous;</td></tr>
</table>

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
			neither will it have a significant volatile release potential. The appropriate control of dust from the waste at the site is nevertheless acknowledged.
	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.** No liquid wastes
	Control the risk of odour during complete shutdown periods when no incineration capacity is available, examples given.		**Not applicable.** No odorous wastes – see above. As odour control by use as combustion air not required during normal operation, no alternative method needed during shutdown
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** – BAT 22 is for handling of gaseous and liquid wastes that are prone to releasing odour and/or volatile substances. The installation is not permitted to and does not process gaseous or liquid wastes, including those to which BAT 22 may apply. It only processes non-hazardous waste wood
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)		**Not Applicable** – BAT 23 concerns management of diffuse emissions from bottom ash treatment plants. There is no bottom ash treatment plant at the installation.
	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	**Not Applicable** – BAT 24 concerns emissions from bottom ash treatment plants. There is no bottom ash treatment plant at the installation.
	(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			
EMISSIONS OF DUST, METALS AND METALLOIDS			

BATc number	Summary of BAT Conclusion requirement			Status/comment One of the following: Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
25	**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 plant is constructed with a suitable bag filter as identified in the R61 response and detailed in the original application.
	(b)	Electrostatic precipitator		Not applicable – not required for this plant/configuration in addition to bag filter
	(c)	Dry sorbent injection		**Currently compliant.** The plant is equipped with dry lime and PAC (powdered activated carbon) injection as identified in the R61 response and detailed in the original application.
	(d)	Wet scrubber		**Not applicable**. Not required for this plant/configuration/waste type in addition to bag filter with dry sorbent injection
	(e)	Fixed- or moving-bed adsorption		**Not applicable.** Not required for this plant/configuration in addition to bag filter with dry sorbent injection
	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 *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*			
	Parameter	**BAT-AEL (mg/Nm³)**	**Averaging period**	
	Dust	<2 – 5 (1)	Daily average	**Compliant in the future.** The operator has indicated in their response that they can meet the 3 ELVs (upper end of range for dust, Cd+Tl and group of 9 metals/metalloids) with current design and consider themselves currently compliant. These will be set as BAT-AEL ELVs in the BREF compliant permit. The footnote is not relevant to the installation. The plant air abatement system has been appropriately designed to reduce emissions to air, as documented in the
	Cd+Tl	0.005 – 0.02	Average over sampling period	
	Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V	0.01 – 0.3	Average over sampling period	

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
				original application and NRW decision document. However, as NRW have not yet formally accepted that commissioning of the plant is complete, we will confirm assessment of BAT 25 conformance when commissioning is complete and notably that IC 3 (commissioning report), IC 5 (relating to abatement optimisation) and IC 8 (CEMs calibration) are complete, when it will be possible to confirm BAT-AEL performance in continuous normal operation.
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.** *Table 4 Contains BAT-AELs for BAT 26*			**Not Applicable** – BAT 26 concerns emissions from certain bottom ash / slag treatment plants. There is no bottom ash or slag treatment plant at the installation.
	EMISSIONS OF HCl, HF AND SO_2			
27	**In order to reduce channelled emissions of HCl, HF and SO_2 to air from the incineration of waste, BAT is to use one or a combination of the techniques given below:**			
	(a)	Wet scrubber		**Not applicable.** Not required for this plant/configuration/waste type given other applied acid gas abatement techniques identified below
	(b)	Semi-wet absorber		**Not applicable.** Not required for this plant/configuration/waste type given other applied acid gas abatement techniques identified below
	(c)	Dry sorbent injection		**Currently compliant.** The plant is equipped with dry lime injection for acid gas abatement as identified in the R61 response and detailed in the original application.
	(d)	Direct desulphurisation		**Currently compliant.** The plant is equipped with a fluidised bed based on lime (calcium) containing bed material that contributes to acid gas abatement by direct desulphurisation as identified in the R61 response.
	(e)	Boiler sorbent injection		Not applicable – not required for this plant/configuration/waste type given other applied acid gas abatement techniques identified above

<table>
<tr><th>BATc number</th><th>Summary of BAT Conclusion requirement</th><th>Status/comment
One of the following:
Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant</th></tr>
<tr><td rowspan="6">28</td><td colspan="2">In order to reduce channelled peak emissions of HCl, HF and SO_2 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:</td><td rowspan="3">Currently compliant. The plant is equipped with dry lime injection for acid gas abatement as identified in the R61 response and detailed in the original application. Reagent recirculation is not described but is not required.</td></tr>
<tr><td>(a)</td><td>Optimised and automated reagent dosage</td></tr>
<tr><td>(b)</td><td>Recirculation of reagents</td></tr>
<tr><td colspan="3">Table 5 including footnote: BAT-AELs for channelled emissions to air HCl, HF and SO_2 from the incineration of waste
Associated monitoring given in BAT 4
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</td></tr>
<tr><td colspan="3"><table>
<tr><th rowspan="2">Parameter</th><th colspan="2">BAT-AEL (mg/Nm^3)</th><th rowspan="2">Averaging period</th></tr>
<tr><th>New plant</th><th>Existing plant</th></tr>
<tr><td>HCl</td><td><2 – 6 (1)</td><td><2 – 8 (1)</td><td>Daily average</td></tr>
<tr><td>HF</td><td><1</td><td><1</td><td>Daily average of average over the sampling period</td></tr>
<tr><td>SO_2</td><td>5 - 30</td><td>5 - 40</td><td>Daily average</td></tr>
</table></td><td>Compliant in the future. The operator has indicated in their response that they can meet the 3 ELVs (upper end of range for HCl, HF and SO_2) with current design and consider themselves currently compliant. These will be set as BAT-AEL ELVs in the BREF compliant permit. The footnote is relevant to the installation in respect of the higher end of the range as specified as dry sorbent injection is employed.

The plant air abatement system has been appropriately designed to reduce acid gas emissions to air, as documented in the original application and NRW decision document. However, as NRW have not yet formally accepted that commissioning of the plant is complete, we will confirm assessment of BAT 28 conformance when commissioning is complete and notably that that IC 3 (commissioning report), IC 5 (relating to abatement</td></tr>
</table>

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
					optimisation) and IC 8 (CEMs calibration) are complete, when it will be possible to confirm BAT-AEL performance in continuous normal operation.
EMISSIONS OF NO_X, N_2O, CO AND NH_3					
29	**In order to reduce channelled NO_x emissions to air while limiting the emissions of CO and N_2O from the incineration of waste and the emissions of NH_3 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		**Compliant in the future**. The operator has indicated in their response that they consider they are currently compliant. We agree that incineration process optimisation by design has been demonstrated at the permit application stage and in fulfilment of pre-operational conditions (including PO3, PO6). However, as NRW have not yet formally accepted that commissioning of the plant is complete, we will confirm assessment of BAT 29(a) conformance when we sign off the relevant re-issued improvement conditions relating to operational optimisation, notably IC 3 (commissioning report), IC4 (combustion conditions validation) IC 5 & IC6 (relating to abatement optimisation) and IC 8 (CEMs calibration) as these factors cannot be fully demonstrated until the plant is consistently in normal operation.
	(b)		Flue-gas recirculation		**Currently compliant.** The plant is equipped with flue gas recirculation for gasification oxygen control and NO_X reduction as identified in the R61 response and detailed in the original application.
	(c)		Selective non-catalytic reduction (SNCR)		**Currently compliant.** The plant is equipped with SNCR within the combustion zone of the gasification plant for NO_X reduction as identified in the R61 response and detailed in the original application.

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)	Selective catalytic reduction (SCR)	**Currently compliant.** The plant is also equipped with SCR within the flue gas treatment for NO_X reduction and ammonia slip minimisation as identified in the R61 response and detailed in the original application.
	(e)	Catalytic filter bags	**Not applicable.** Not required for this plant/configuration/waste type given other applied NO_X control techniques implemented as described
	(f)	Optimisation of the SNCR/SCR design and operation	**Compliant in the future**. See 29 (a)
	(g)	Wet scrubber	**Not applicable.** Not required for this plant/configuration/waste type given other applied NO_X control techniques and ammonia slip reduction techniques implemented as described. Not applicable in isolation unless a wet scrubber forms part of the wider flue gas cleaning plant design philosophy ("*where a wet scrubber is used for acid gas abatement*").

Table 6 including footnotes: BAT-AELs for channelled NO_x and CO emissions to air from the incineration of waste and for channelled NH_3 emissions to air from the use of SNCR and/or SCR
Associated monitoring given in BAT 4
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)
Footnote 2: The higher end of the BAT-AEL range is 180 mg/Nm^3 where SCR is not applicable
Footnote 3: For existing plants fitted with SNCR without wet abatement techniques, the higher end of the BAT-AEL range is 15 mg/Nm^3

Parameter	**BAT-AEL (mg/Nm^3)**		**Averaging period**	
	New Plant	**Existing plant**		
NO_x	50 – 120 (1)	50 – 150 (1) (2)	Daily average	**Compliant in the future.** The operator has indicated in their response that they can meet the 3 ELVs as stated (upper end of range, existing plant) for NO_X, and CO with current design and consider themselves currently compliant. These
CO	10 – 50	10 – 50		
NH_3	2 – 10 (1)	2 – 10 (1) (3)		

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
					will be set as BAT-AEL ELVs in the BREF compliant permit. For NH_3 the V002 previous permitted limit was below the BAT-AEL at 5 mg/m^3, and this emission level formed the basis of impact quantification at original permit determination. Therefore the ELV is maintained at this lower, "beyond BAT" ELV of 5 mg/m^3 following BREF review. As such we consider that the footnote (1) is not relevant, footnote (2) is not relevant in extending the stated BAT-AEL range, and footnote (3) is not relevant as the previously permitted lower ELV is maintained. The plant NO_X and associated pollutant abatement system has been appropriately designed to reduce emissions to air, as documented in the original application and NRW decision document. However, as NRW have not yet formally accepted that commissioning of the plant is complete, we will confirm assessment of BAT 29 conformance when commissioning is complete and notably that IC 3 (commissioning report), IC 5 & 6 (relating to NOX optimisation) and IC 8 (CEMs calibration) are complete, when it will be possible to confirm BAT-AEL performance in continuous normal operation.
EMISSIONS OF ORGANIC COMPOUNDS					

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
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	**Compliant in the future**. The operator has indicated in their response that they consider they are currently compliant. We agree that incineration process optimisation by design has been demonstrated at the permit application stage, in equipment/technology selection and in fulfilment of pre-operational conditions (including PO3, PO6). However, as NRW have not yet formally accepted that commissioning of the plant is complete, we will confirm assessment of BAT 30(a) conformance when we sign off the relevant re-issued improvement conditions relating to operational optimisation, notably IC 3, IC 4, IC5 (commissioning, time-temperature validation, activated carbon dosing optimisation) as these factors cannot be fully demonstrated until the plant is consistently in normal operation.
	(b)	Control of the waste feed	**Currently Compliant**. The operator has indicated in their response that they consider they are currently compliant. We agree that control of waste feed in design has been demonstrated at the permit application stage and in selection of a single waste (EWC) type which is chipped and will thereby enhance consistency of composition and feed. Previously discharged PO7 (EMS) has allowed NRW to confirm compliance. New IC's including IC 3 for commissioning will allow NRW to ensure the requirement is fully demonstrated when the plant is consistently in normal operation.
	(c)	On-line and off-line boiler cleaning	**Currently compliant.** The plant is equipped with on-line and off-line cleaning systems/arrangements as identified in the R61 response and detailed in the original application.

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
			Final optimisation of these systems can be considered under (a) and upon completion of the improvement conditions identified there.
	(d)	Rapid flue-gas cooling	**Currently compliant.** The plant boiler is designed as described in the application and R61 response to cool gases to <140 C with energy recovery while minimising de-novo dioxin/furan synthesis. Operational performance will be confirmed under (a) and upon completion of the improvement conditions identified there
	(e)	Dry sorbent injection	**Currently compliant.** The abatement system is equipped with dry sorbent injection including powdered activated carbon injection for control of organic compounds as described in the application and R61 response. Operational performance will be confirmed under (a) and upon completion of the improvement conditions identified there
	(f)	Fixed- or moving- bed adsorption	**Not applicable.** Not required for this plant/configuration in addition to bag filter with dry sorbent injection
	(g)	SCR	**Currently compliant.** The abatement system is equipped with SCR for NO_X abatement as identified above. This may have a secondary role in control of organic compounds as described in the BATc and R61 response. Operational performance of the overall incineration system for control of organic pollutants will be confirmed under (a) and upon completion of the improvement conditions identified there
	(h)	Catalytic filter bags	**Not applicable.** Not required for this plant/configuration/waste type given other applied organic pollutant control techniques implemented as described
	(i)	Carbon sorbent in a wet scrubber	**Not applicable.** Not required for this plant/configuration which does not have or require a wet scrubber as detailed above

<table>
<tr><th>BATc number</th><th>Summary of BAT Conclusion requirement</th><th>Status/comment
One of the following:
Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant</th></tr>
<tr><td></td><td colspan="2">
Table 7 including footnotes: BAT-AELs for channelled emissions to air of TVOC, PCDD/F and dioxin-like PCBs from the incineration of waste Associated monitoring given in BAT 4
Footnote 1: Either the BAT-AEL for PCDD/F or the BAT-AEL for PCDD/F + dioxin-like PCBs applies
Footnote 2: The BAT-AEL does not apply if the emission levels are proven to be sufficiently stable
<table>
<tr><th rowspan="2">Parameter</th><th rowspan="2">Unit</th><th colspan="2">BAT-AEL</th><th rowspan="2">Averaging period</th><th rowspan="2"></th></tr>
<tr><th>New plant</th><th>Existing plant</th></tr>
<tr><td>TVOC</td><td>mg/Nm^3</td><td><3 – 10</td><td><3 – 10</td><td>Daily average</td><td rowspan="5">Compliant in the future. The operator has indicated in their response that they can meet the applicable ELVs as stated (upper end of range, existing plant) for emissions of organic compounds with current design and consider themselves currently compliant. These will be the maximum ELVs set in the BREF compliant permit. For the reasons set out above, we consider the plant compliant in the future, once commissioning is complete and further operational data is available when it will be possible to confirm BAT-AEL performance in continuous normal operation.

For PCDD/F the V002 previous permitted limit was below the BAT-AEL at 0.01 ng/m^3, and this emission level formed the basis of impact quantification at original permit determination. Therefore the ELV is maintained at this lower, “beyond BAT” ELV of 0.01 ng/m^3 following BREF review.</td></tr>
<tr><td rowspan="2">PCDD/F (1)</td><td rowspan="2">ng I-TEQ/Nm^3</td><td><0.01 – 0.04</td><td><0.01 – 0.06</td><td>Average over the sampling period</td></tr>
<tr><td><0.01 – 0.06</td><td><0.01 – 0.08</td><td>Long-term sampling period (2)</td></tr>
<tr><td rowspan="2">PCDD/F + dioxin-like PCBs (1)</td><td rowspan="2">ng WHO-TEQ/Nm^3</td><td><0.01 – 0.06</td><td><0.01 – 0.08</td><td>Average over the sampling period</td></tr>
<tr><td><0.01 – 0.08</td><td><0.01 – 0.1</td><td>Long-term sampling period (2)</td></tr>
</table>
</td></tr>
</table>

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
						Consistent with the NRW and UK approach, and operator response, limits will be set as indicated – see permit for detail: • for TVOC and PCDD/F, with a separate requirement to monitor PCBs (footnote 1). • For periodic PCDD/F monitoring ("average over sampling period") in all cases, with the long-term sampling requirement included for implementation unless otherwise agreed with NRW. Improvement condition IC9 relates to this BATc.
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)				**Currently compliant.** The applicant notes that owing to the feedstock, anticipated levels of mercury are negligible. The abatement system is however equipped with dry sorbent injection including powdered activated carbon injection which will achieve control of mercury if required, as described in the application and R61 response. The other techniques (a, c, d, e) are therefore not applicable. Operational performance will be confirmed under mercury BAT-AEL and upon completion of the improvement condition identified there
	(b)	Dry sorbent injection				
	(c)	Injection of special, highly reactive activated carbon				
	(d)	Boiler bromine addition				
	(e)	Fixed- or moving-bed adsorption				
	Table 8 including footnotes: BAT-AELs for channelled mercury emissions to air from the incineration of waste Associated monitoring given in BAT 4					

<table>
<tr><th>BATc number</th><th>Summary of BAT Conclusion requirement</th><th>Status/comment
One of the following:
Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant</th></tr>
<tr><td></td><td colspan="2">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)
Footnote 2: The lower end of the BAT-AEL ranges may be achieved when:
- incinerating wastes with a proven low and stable mercury content (e.g. mono-streams of waste of a controlled composition); or
- 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.

As an indication the half-hourly average mercury emissions level will generally be:
- <15 – 40 µg/Nm^3 for existing plants;
- <15 – 35 µg/Nm^3 for new plants
<table>
<tr><th rowspan="2">Parameter</th><th colspan="2">BAT-AEL (µg/Nm³) (1)</th><th rowspan="2">Averaging period</th></tr>
<tr><th>New plant</th><th>Existing plant</th></tr>
<tr><td rowspan="2">Hg</td><td><5 – 20 (2)</td><td><5 – 20 (2)</td><td>Daily average or average over the sampling period</td></tr>
<tr><td>1 - 10</td><td>1 - 10</td><td>Long-term sampling period</td></tr>
</table></td><td>Compliant in the future. The operator has indicated in their response that they can meet the applicable ELVs as stated (upper end of range, existing plant) for emissions of mercury with current design and consider themselves currently compliant, noting that expected mercury levels are negligible. This will be set as BAT-AEL ELV in the BREF compliant permit. For the reasons set out above, we consider the plant compliant in the future, once commissioning is complete and further operational data is available when it will be possible to confirm BAT-AEL performance in continuous normal operation.

Consistent with the NRW and UK approach, and operator response, limits will be set as indicated – see permit for detail:
• For periodic mercury monitoring (“average over sampling period”) initially required, with the continuous monitoring requirement included unless otherwise agreed with NRW (footnote 1, 2). Long-</td></tr>
</table>

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
					term sampling and BAT-AEL is not considered relevant – either periodic sampling or continuous monitoring shall be implemented. Improvement condition IC10 relates to this BATc.
EMISSIONS TO WATER					
32	**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.**				**Currently compliant.** As described in the original permit application and R61 response there are no waste waters from flue gas cleaning or bottom ash treatment (*to which BAT-AEL would apply, see below*). Process and loading/unloading areas have sealed drainage. Uncontaminated surface (rain) water is segregated from roofs and external hardstanding, and is discharged to surface water, for hardstanding via an attenuation tank, oil interceptors and shut-off valve. This arrangement minimises treatment and provides environmental protection in the event of contamination incident. Boiler blowdown and effluent from an on-site treatment plant for process water are discharged to sewer. Thus wastewaters are segregated and appropriately treated (where required) separately.
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			**Currently compliant.** As described above there are no waste waters from flue gas cleaning; dry sorbent injection is used
	(b)	Injection of waste water from FGC			**Not applicable**, no waste water arising from FGC
	(c)	Water reuse/recycling			**Not applicable**, segregated waste waters are appropriately handled as described 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
	(d)	Dry bottom ash handling	**Currently compliant.** As described in the original permit application and R61 response, ash handling is dry (see BAT 20 i)
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:**		**Compliant in the future.** – BAT 34 concerns emissions to water from flue gas cleaning and/or bottom ash storage and treatment. There is no wet flue gas cleaning or bottom ash treatment plant at the facility, therefore no associated emissions to water and listed BAT-AELs are therefore also not applicable. In their response, the applicant has indicated that the BATc is not applicable. Nevertheless, the plant will apply Primary control technique (a) of incineration and FGC system optimisation (BAT 14 and BAT 29(f) to reduce pollutants at source. See those BATc for detail. For the reasons set out above, we consider the plant compliant in the future, once commissioning is complete and further operational data is available when it will be possible to confirm attainment of the related BAT 14 and 29 requirements which will ensure compliance with relevant part of BAT34
MATERIAL EFFICIENCY			
35	**In order to increase resource efficiency, BAT is to handle and treat bottom ashes separately from FGC residues.**		**Currently compliant.** As described in the original permit application and R61 response, ash handling and APC residue handling are separate.
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** – BAT 36 concerns treatment of slags and bottom ashes. There is no slag or bottom ash treatment plant at the facility.
	(a)	Screening and sieving	
	(b)	Crushing	
	(c)	Aeraulic separation	
	(d)	Recovery of ferrous and non-ferrous metals	

BATc number	Summary of BAT Conclusion requirement		**Status/comment** **One of the following:** Not Applicable, Currently Compliant, Compliant in the future (within 4 years of publication of BAT conclusions), Not Compliant
	(e)	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	Currently compliant – as detailed in the R61 response, site configuration maximises distance from most noisy equipment to noise sensitive receptors. As noted in the BATc, further applicability of the technique is limited for existing plants.
	(b)	Operational measures	Compliant in the future – as detailed in the R61 response, site considers they are currently compliant as operations are already subject to control by an NRW approved noise management plan which covers operational measures. Original permit improvement condition IC 4 is retained (renumbered IC13) in the revised permit, and requires the operator to undertake noise validation monitoring once commissioning is complete, and to propose corrective action (which may include BAT 37 measures(b), (c), (d), (e)) if noise rating levels are likely to cause adverse impact at sensitive receptors. NRW will formally confirm compliance with the requirements when the IC is discharged.
	(c)	Low-noise equipment	Currently compliant – as detailed in the R61 response and original permit application, key equipment has been specified as being "low noise". Operational effectiveness will be assured through measures outlined in (b) above.
	(d)	Noise attenuation	Currently compliant – as detailed in the R61 response and original permit application, key equipment has noise attenuation, including enclosures, screens, housings, and

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
			soundproofing to buildings. Operational effectiveness will be assured through measures outlined in (b) above.
	(e)	Noise-control equipment/infrastructure	Currently compliant – as detailed above, and including all 4 of the bulleted techniques identified in the BATc. Operational effectiveness will be assured through measures outlined in (b) above.

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	**Not applicable.** 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	**Currently Compliant**. There is an emission to foul sewer from the regulated facility of boiler blow down water and reverse osmosis plant reject water (following appropriate treatment on site if applicable). Following, consideration, no hazardous substances have been identified in the discharge therefore the screening tests are not required.
C – Soil and groundwater contamination – baseline report	**Currently Compliant.** The Operator has provided a statement referring to information previously submitted (*Baseline site condition report SOL1605BUK201 V3 dated July 2017 and resubmitted with R61 response*) remains relevant and represents the current state of soil and groundwater contamination. We are in agreement with this summary and previously accepted report.

D – Medium Combustion Plant	**Not applicable.** The Operator has confirmed there are no Medium Combustion Plant on site. The only combustion plant aside from the co-incineration activity is an emergency backup generator (DC3-AJ605S-5S1). The operator has stated that this is neither MCP or Specified Generator.
E – OPRA profile	The Operator has provided an updated OPRA profile which we have reviewed and corrected. The OPRA score remains 161 and this will continue to form the basis for ongoing subsistence fees.

Document Issued 21 December 2022