Natural Resources Wales permitting decisions.

Kronospan Ltd (Chirk Particleboard Factory)

Decision Document

Variation and consolidation of a bespoke permit

We have decided to issue a Natural Resources Wales initiated variation and consolidated permit for the Chirk Particleboard Factory operated by Kronospan Limited.

The permit number is EPR/BW9999IG and the variation number is EPR/BW9999IG/V011.

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.

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 - Our decision

- The legal framework
- How we reached our decision
- BAT for the installation
- Key Issues / Regulation 61 Response
- Changes we have made
- Conclusion
- Annex 1 – Decision Checklist regarding relevant BAT Conclusions for Waste Incineration.

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

1. Our decision

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

The variation does three things:

- it consolidates the permit to reflect changes made through this variation;
- the variation uses the 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).

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

The latest consolidated permit, issued on the 15/09/2023 (EPR/BW9999IG/V010) ensured a high level of protection for human health and the environment through the implementation of BAT. As a result of this statutory review, we have made changes to the permit and we are confident that the new requirements will deliver a higher level of protection than previously achieved. Where the site is not currently compliant with BAT, Improvement Conditions have been included to bring the site up to standard. The improvements condition deadlines have been staggered over an 18 month period from issue of this variation.

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);
- includes medium combustion plant subject to Schedule 25A of EPR, implementing requirements of the Medium Combustion Plant Directive (MCPD); and
- 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 Waste Incineration (WI) BAT Conclusions

We issued a notice under Regulation 61(1) of EPR on 30/03/2023 requiring the operator to provide information to demonstrate how the operation of their installation currently meets, or would meet, the revised standards described in the WI 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 WI BAT Conclusions, 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; and

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 Regulation 61(1) Notice response from the operator was received on 05/10/2023 and additional information received on 01/03/2024 and 30/05/2024. Where the operator has concluded that they have achieved BAT, and we are in agreement, no further information or justification has been sought by Natural Resources Wales.

We considered that the response contained sufficient information for us to commence determination of the permit review. The operator made no claim for commercial confidentiality. We have not received any information in relation to the Regulation 61(1) Notice response that appears to be confidential in relation to any part.

4. BAT for the installation

Schedule 7 of the Environmental Permitting (England and Wales) Regulations 2016 requires that we implement relevant parts of the Industrial Emissions Directive (IED) for facilities which we regulate. The co-incineration plants at the Chirk Particleboard Factory, (K7 and K8 biomass boilers), are listed installation activities in Annex 1 and therefore subject to Chapter II of IED. Chapter II, Article 11(b) of the IED requires that the Best Available Techniques (BAT) are applied to the installation, Article 14(6), sets out the process by which BAT is determined for this facility and Articles 21 (3,4) outline the process by which BAT is applied and permits are reviewed. Regulation 34 of EPR requires us to periodically review environmental permits and our core guidance (11.37, 11.41, 11.42) provides information on when we must do so.

Biomass plant K8 falls directly in scope of the BREF for Waste Incineration and the associated published Best Available Techniques (BAT) Conclusions. For the K7 Biomass plant, due to its size and potential to have a significant environmental impact this is the most applicable BREF and BAT conclusions against which it should be benchmarked. This was discussed with the operator following the initial Reg 61(1) notice response submission and further information supplied on 1/03/2024 and 30/05/2024.

K7 and K8 Biomass plants each have a dedicated stack (emission points A26 and A27) and are used to supply steam and heat for MDF2 and MDF1. Each plant is rated below 50MW thermal in size below the threshold for capture under Chapter III of IED. In

addition, combustion gases from the biomass plants are used in MDF 1 & 2 Dryers for direct drying purposes making them exempt from Chapter III of IED.

Chapter IV of IED applies to the K8 biomass boiler because of the acceptance of waste biomass (Table S2.3 in environmental permit) that is not exempt from Chapter IV, specifically waste code 19 12 07 which includes wood from waste management sites and waste code 20 01 38 which includes municipal waste wood. The K7 biomass boiler is only permitted to accept Chapter IV exempt waste biomass (Table S2.2 of the consolidated permit).

The Medium Combustion Plant Directive (MCPD) does not apply to K7, K8 or Dryer No.4 as it is used for direct drying in board production and therefore regulated under the appropriate BREF and associated BAT conclusions through the IED. This is underpinned by Article 2 paragraph 2 paragraph 3(d) of MCPD which states that the directive shall not apply to "combustion plants in which the gaseous products of combustion are used for the direct heating, drying or any other treatment of objects or materials.

5. 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.

The main changes introduced by the WI BAT Conclusions include:

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

6. Changes we have made.

We have varied the permit where appropriate to incorporate BAT and BAT-AELs, along with the necessary monitoring.

Improvement Conditions

Based on the information provided in the Regulation 61(1) response, we consider that we need to set a number of improvement conditions. These conditions are set out below. The improvement conditions ensure compliance with site-specific BAT within 6, 12 and 18 months from issue of permit variation V011 for both biomass plants K7 and K8. This permit review and consolidation updates and replaces the previous permit variation V010.

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
NRW IC56	Following the rebuild of K8 the operator shall submit a written report to Natural Resources Wales describing the performance and optimisation of K8, specifically: o The lime injection system for minimisation of acid gas emissions for HCl and SO_2; o The carbon injection system for minimisation of dioxin and heavy metal emissions; o The Selective Non-Catalytic Reduction (SNCR) system; and o Combustion settings to minimise oxides of nitrogen (NOx). The report shall include an assessment of the level of NO_X, N_2O and NH_3 emissions that can be achieved under optimum operating conditions.	6 months from issue of variation V011
NRW IC57	The operator shall carry out a study to determine measures needed to monitor channelled emissions on K7 emission point A26 to meet the standards specified within BAT Conclusion 4 of the Waste Incineration BREF Document (EU 2019). A written report of the study shall be submitted to Natural Resources Wales. The report shall include, but not be limited to: findings from the study, timescales for installing CEMS on A26 actions required to meet the BAT 4 standards and a timetable for implementation and reporting to NRW.	12 months from issue of variation V011
NRW IC58	Following optimisation and performance testing of K7 (emission point A26) the operator shall undertake a review of emissions over a period and frequency agreed with NRW. Following this a study of the current abatement system on the K7 biomass boiler plant shall take place in order to reduce emissions of HCl, HF and SO_2 . A written report of the study shall be submitted to Natural Resources Wales. The report shall include, but not be limited to: findings from the study, timescales for implementation of any improvements identified, and reporting to NRW.	16 months from issue of variation V011
NRW IC59	The operator shall carry out a study to determine measures needed on K7 emission point A26 to meet the standards specified within BAT Conclusion 29 of the Waste Incineration BREF Document (EU 2019). The study shall include a description of how the measures will be operated on an ongoing basis to minimise NOx, N2O, NH3 and CO emissions, including target emission limit values for NOx and for any reagent used, (including process optimisation and monitoring).	16 months from issue of variation V011

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
	A written report of the study shall be submitted to Natural Resources Wales.	
NRW IC60	The Operator shall calculate the gross energy efficiency using the method set out in the general considerations section of the Waste Incineration BAT conclusions for K7 emission point A26 and submit details of the calculation to Natural Resources Wales in a written report. If the calculated gross energy efficiency is below the range specified in BAT 20 of the Waste Incineration BAT Conclusions, the operator shall carry out a written assessment of the opportunities to increase the energy efficiency of the installation and include this in the report along with proposed improvements and timescales within an action plan for implementation. 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 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.	18 months from issue of variation V011
NRW IC61	The operator shall submit an Other than normal operating conditions (OTNOC) management plan to Natural Resources Wales (NRW) for approval for both K8 and K7. The OTNOC management plan shall be produced in line with all relevant current guidance provided by NRW 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 Environmental Management System (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))	Within 18 months of V011 issue

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
	○ Monitoring and recording of emissions during OTNOC and associated circumstances (see BAT 5) ○ Periodic assessment of the emissions during OTNOC (e.g. frequency of events, duration, amount of pollutants emitted) and implementation of corrective actions if necessary. The OTNOC management plan shall include: ○ a list of any potential OTNOC situations that are considered to be abnormal operation under the definition in Schedule 6 of this permit. ○ a definition of start-up and shut-down conditions having regard to any relevant regulatory guidance on start-up and shut-down. any updates on the design of critical equipment to minimise OTNOC since the permit application.	

IC56 has been included for performance and optimisation following the rebuilding of Biomass Boiler K8.

IC57 has been added to meet the requirements of BAT 4 and the operator's commitment to install CEMS for the monitoring of channelled emissions on K7 Biomass Boiler.

IC 58 has been added as the operator has committed to review the current abatement on K7. This is needed to improve emissions around HCL, HF and SO_2 (see BAT 27). Currently there is limited emissions data and no CEMS present on K7, so a review is required over a set period and frequency agreed with NRW.

IC59 has been included in the permit for the operator to demonstrate compliance with all relevant BATc relating to the measures to control NOx, N_2O, NH3 and CO emissions from the K7 Biomass Boiler (please refer to BATc 29).

IC60 has been included in the permit for the operator to demonstrate compliance with all relevant BATc 20 relating to energy efficiency measures, as investigations on K7 Biomass Boiler were ongoing at the time of writing.

IC61 has been included in the permit for the operator to demonstrate compliance with all relevant BATc relating to the OTNOC and for the completion of a management plan. This improvement condition includes both K8 and K7 as consideration is needed in respect of both biomass plants during such periods for better understanding and process control.

Other changes

The operating techniques in Table S1.2 of the permit have been updated to take account of the regulation 61(1) response from the operator and to incorporate the response due in compliance with improvement condition IC 56 and IC57.

We have added the monitoring of nitrous oxide and monitoring of flow parameters for K8 Biomass Boiler into Table S3.3 of the permit from the BREF. We have therefore removed these flow parameters namely exhaust gas temperature, exhaust gas pressure, exhaust gas water vapour content and exhaust gas oxygen content from 'Table S3.7 Process monitoring requirements'. We have also added the monitoring of flow parameters for K7 Biomass Boiler into the same table. 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 within Table S3.3 for both K7 and K8 in line with the WI BREF reviewed permit requirements.

We have changed the reporting requirement units on water consumption in Table S4.3 to m^3 / tonne of finished product from Kg / tonne of finished product for improved reporting of performance parameters.

The operating techniques (tables S1.2a and S1.2b) have been updated to take account of the regulation 61(1) responses from the operator.

Abnormal operation conditions have been added for K8 Biomass plant and 'no abnormal operation' removed from AR5 with this WI BREF review. These conditions link into the OTNOC management plan improvement condition (IC61) for better process control and understanding during such periods of unavoidable break down etc (see interpretation in Schedule 6 of permit for both abnormal operation and OTNOC) . Abnormal operation is defined in the IED and strict rules governing it and their duration apply so by the addition of the associated conditions and limits such instances are regularises through the WI BREF reviewed permit. In addition to this the associated BAT-AEL's (Table S3.3a) have been included as part of this permit review and in turn this will allow for better understanding and process control around the occurrence of such situations.

For clarification the foot note (1) to Table S3.2 has had 'per year' added to it for ease of reference. The foot note now reads (1) Emission testing required when brough into use for periods which aggregate to >28 days per year.

Emissions to Air

There were changes to the Emission Limit Values (ELVs) and monitoring requirements, for emissions to air taking into account the relevant BAT conclusions and any site specific BAT. Monitoring standard BS EN 15267-3 has also been updated throughout the permit to EN17255. The tables below outline the changes to the ELVs and monitoring requirements for K8 (emissions points A27 and A30) and K7 (emission point A26 and A29). Under normal operating conditions K7 emissions discharge through A29 and K8 emissions discharge through A30.

The original and revised ELV's and monitoring requirements for the dedicated stacks that serve K7 (emission point A26) and K8 (emission point A27) can be seen in the following. As K7 and K8 are co-incinerators the ELV's are stated at 6 % oxygen content. BAT-AELs in the BREF are stated at 11% oxygen content so they have been converted. Please note there are currently no CEMS on K7 so improvement condition IC 57 has been included for the operator to monitor channelled emissions.

Emission Point	**Parameter**	**Original Limit K7 Emission Point A26**	**Limit / BAT-AEL K7 Emission Point A26**	**Brief Justification (see Annex 1 below)**
A26 [on Site Plan in Schedule 7a] K7 Biomass Boiler	Particulate Matter Periodic (average value of three consecutive measurements of at least 30 minutes each)	50 mg/m^3 Quarterly Periodic average value of three consecutive measurements of at least 30 minutes each)	30 mg/m^3 Quarterly Periodic average value of three consecutive measurements of at least 30 minutes each)	Tighter limit added to bring broadly in range and in line with existing MCPD as a minimum combustion standard. Operator has committed to installing CEMS to meet BAT 4 monitoring of channelled emissions IC57 included (see comment below). A permit variation would be required once CEMS are installed.
	Total Organic Carbon (TOC)	Not included on A26 (Under normal operations K7 emissions discharge through A29 (MDF 2 Dryer open cyclones x 4 TOC present)	30mg/Nm^3 Bi-annually (average value of three consecutive measurements of at least 30 minutes each)	Process guidance note PG 5/1(18) for the incineration and combustion of waste wood is regarded as the "minimum BAT standard" recognising that WI limit of 15 mg/Nm3 is unduly onerous and there is not an LCP requirement for TOC for biomass combustion. The published guidance 1/12(13) gives the same TOC BAT limit so it has been applied here. There is a need for good control around products of incomplete combustion (PICs). There is also limit results from the monitoring currently undertaken to date.

Emission Point	Parameter	Original Limit K7 Emission Point A26	Limit / BAT-AEL K7 Emission Point A26	Brief Justification (see Annex 1 below)
	Hydrogen chloride	Not included on A26 (Under normal operations K7 emissions discharge through A29 (MDF 2 Dryer open cyclones x 4 HCl present)	150 mg/Nm^3 Bi-annually	IC58 has been added and depending on the review and consideration of abatement this limit can be tightened but needs data set. Added initially in line with a comparable incinerator.
	Hydrogen Fluoride (average of three consecutive measurements of at least 30 minutes each)	Not included on A26 (Under normal operations K7 emissions discharge through A29 (MDF 2 Dryer open cyclones x 4)	1mg/ Nm^3 Bi-annually Average of three consecutive measurements of at least 30 minutes each	IC58 added and 1mg/ Nm^3 included for this parameter previously not included on A26. This has been added due to ink on paper present in certain feedstocks.
	Carbon Monoxide	150 mg/Nm^3 Quarterly Periodic average value of three consecutive measurements of at least 30 minutes each)	150 mg/Nm^3 Quarterly Periodic average value of three consecutive measurements of at least 30 minutes each)	No Change IC57 included for BAT 4 monitoring of channelled emissions. Following completion of IC57 and improved data set a permit variation will be required.
	Sulphur Dioxide	200 mg/Nm^3 Quarterly Periodic average value of three consecutive measurements of at least 30 minutes each)	200 mg/Nm^3 Quarterly Periodic average value of three consecutive measurements of at least 30 minutes each)	No Change IC57 included for BAT 4 monitoring of channelled emissions. As carbon monoxide above.
	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	250 mg/m^3 Quarterly Periodic average value of three consecutive measurements of at least 30 minutes each)	250 mg/Nm^3 Quarterly Periodic average value of three consecutive measurements of at least 30 minutes each	No Change IC57 included for BAT 4 and BAT 29 for K7 (also see BAT 27). As carbon monoxide above.
	Ammonia (NH_3)	Not included on A26 (Under normal operations K7 emissions discharge through A29 (MDF 2	No Limit Set Annual Average of three consecutive measurements	No SNCR so no limit set

Emission Point	Parameter	Original Limit K7 Emission Point A26	Limit / BAT-AEL K7 Emission Point A26	Brief Justification (see Annex 1 below)
		Dryer open cyclones x 4)	of at least 30 minutes each	
	Cadmium & thallium and their compounds (total) (average of three consecutive measurements of at least 30 minutes each)	Not included on A26 (Under normal operations K7 emissions discharge through A29 (MDF 2 Dryer open cyclones x 4)	0.03 mg/Nm^3 Bi-annually Average of three consecutive measurements of at least 30 minutes each	LCP requires monitor only, as does guidance for combustion of potentially contaminated wood in wood panels BATc. Metals are a good marker of performance (fuel selection / suitability). Precautionary standard limit set so that any high results, which could be indicative of fuel contamination, would be identified and investigated for corrective action by the operator and regulator. While the bag filter provides abatement for solid-phase metals, it is considered that fuel selection is the primary parameter in emission control.
	Mercury and its compounds (average of three consecutive measurements of at least 30 minutes each)	Not included on A26 (Under normal operations K7 emissions discharge through A29 (MDF 2 Dryer open cyclones x 4)	0.03 mg/Nm^3 Bi-annually Average of three consecutive measurements of at least 30 minutes each	As above comment for Cadmium and thallium.
	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total) (periodic over minimum 30-minute, maximum 8 hour period)	(Under normal operations K7 emissions discharge through A29 (MDF 2 Dryer open cyclones x 4)	0.45mg/Nm^3 Bi-annually Average of three consecutive measurements of at least 30 minutes each	Precautionary standard limit set so that any high results, which could be indicative of fuel contamination, would be identified and investigated for corrective action by the operator and regulator. While the bag filter provides abatement for solid-phase metals, it is considered that fuel selection is the primary parameter in emission control.
	Dioxins / furans (I-TEQ) (periodic over minimum 6 hours, maximum 8 hour period)	Not included on A26 (Under normal operations K7 emissions discharge through A29 (MDF 2 Dryer open cyclones x 4)	0.09 ng/Nm^3 Bi annually Periodic over minimum 6 hours, maximum 8 hour period	Dioxin formation is a marker of combustion performance (product of incomplete combustion in certain thermal processes). Precautionary standard limit set so that any high results, which could be indicative of combustion or fuel issues, would be identified and investigated for corrective action by the operator and regulator. There is no active abatement for products of incomplete combustion other than the bag filter, (such as activated carbon), so good combustion and fuel selection are the

Emission Point	Parameter	Original Limit K7 Emission Point A26	Limit / BAT-AEL K7 Emission Point A26	Brief Justification (see Annex 1 below)
				main parameters which control emissions to a very low level. Incinerators are usually required also to measure (without limits) dioxin-like PCBs, polycyclic aromatic hydrocarbons (PAH), and potentially brominated dioxins/furans. We consider Dioxins/furans a suitable marker of PICs, and provided this remains low, monitoring of the others is unnecessary.
	Dioxin-like PCBs (WHO-TEQ Humans / Mammals, Fish, Birds) (periodic over minimum 6 hours, maximum 8 hour period)	Not included on A26 (Under normal operations K7 emissions discharge through A29 (MDF 2 Dryer open cyclones x 4)	(parameter added through WI BRef review of permit to V011) Bi-annually No limit set	Added into Table 3.3 in line with the WI BREF review. No limit has been set.
	Dioxins / furans (WHO-TEQ Humans / Mammals, Fish, Birds) (periodic over minimum 6 hours, maximum 8 hour period)	Not included on A26 (Under normal operations K7 emissions discharge through A29 (MDF 2 Dryer open cyclones x 4)	(parameter added through WI BRef review of permit to V011) Bi-annually No limit set	Added into Table 3.3 in line with the WI BREF review. No limit has been set.
	Specific individual poly-cyclic aromatic hydrocarbons (PAHs) as specified in Schedule 6 (periodic over minimum 6 hours, maximum 8 hour period)	Not included on A26 (Under normal operations K7 emissions discharge through A29 (MDF 2 Dryer open cyclones x 4)	(parameter added through WI BRef review of permit to V011) Annually No limit set	Added into Table 3.3 in line with the WI BREF review. No limit has been set.
	Exhaust gas temperature	Not included	(parameter added through WI BRef review of permit to V011) No limit set Quarterly	Brought into Table 3.3 for consistency in line with the BREF review and for PRTR data requirement and process control.
	Exhaust gas pressure	Not included	(parameter added through WI BRef review	Brought into Table 3.3 for consistency in line with the BREF review and for PRTR data requirement and process control.

Emission Point	Parameter	Original Limit K7 Emission Point A26	Limit / BAT-AEL K7 Emission Point A26	Brief Justification (see Annex 1 below)
			of permit to V011) No limit set Quarterly	
	Exhaust gas flow	Not included	(parameter added through WI BRef review of permit to V011) No limit set Quarterly	Brought into Table 3.3 for consistency in line with the BREF review and for PRTR data requirement and process control.
	Exhaust gas oxygen content	Not included	(parameter added through WI BRef review of permit to V011) No limit set Quarterly	Brought into Table 3.3 for consistency in line with the BREF review and for PRTR data requirement and process control.
	Exhaust gas water vapour content	Not included	(parameter added through WI BRef review of permit to V011) No limit set Quarterly	Brought into Table 3.3 for consistency in line with the BREF review and for PRTR data requirement and process control.
	Nitrous Oxide	Not included	(parameter added through WI BRef review of permit to V011) No limit set Bi-annually	Brought into Table 3.3 for consistency in line with the BREF review and for PRTR data requirement and process control.

K8 (A27) Biomass Boiler Chapter IV IED applies so BAT-AEL applied in the following:

Emission Point	WI BRef Parameter	Original Limit K8 Emission Point A27	Limit / BAT-AEL K8 Emission Point A27
A27 [on Site Plan in Schedule 7a]	Particulate matter (daily average)	15 mg/m^3	7.5 mg/Nm^3
	Particulate matter (½ hourly average)	45 mg/m^3	No change 45mg/Nm^3

Emission Point	WI BRef Parameter	Original Limit K8 Emission Point A27	Limit / BAT-AEL K8 Emission Point A27
K8 Biomass Boiler	Total Organic Carbon (TOC) (daily average)	15 mg/m^3	No Change 15 mg/Nm^3
	Total Organic Carbon (TOC) (½ hour average)	30 mg/m^3	No Change 30 mg/Nm^3
	Hydrogen chloride (daily average)	15 mg/m^3	12 mg/Nm^3
	Hydrogen chloride (½ hourly average)	90 mg/m^3	No Change 90 mg/m^3
	Hydrogen Fluoride (average of three consecutive measurements of at least 30 minutes each)	3 mg/m^3 (Periodic over 1-hour period)	1 mg/Nm^3
	Carbon monoxide (daily average)	75 mg/m^3	No Change 75 mg/Nm^3
	Carbon monoxide (1/2 hour average)	150 mg/m^3	No Change 150 mg/Nm^3
	Sulphur dioxide (daily average)	75 mg/m^3	60 mg/Nm^3
	Sulphur dioxide (½ hourly average)	300 mg/m^3	No Change 300 mg/Nm^3
	Oxides of nitrogen (NO and NO_2 expressed as NO_2) (daily average)	300 mg/m^3	270 mg/Nm^3
	Oxides of nitrogen (NO and NO_2 expressed as NO_2) (½ hourly average)	600 mg/m^3	No Change 600 mg/Nm^3
	Ammonia (NH_3) (daily average)	No Limit Set	22.5 mg/Nm^3
	Cadmium & thallium and their compounds (total) (average of three consecutive measurements of at least 30 minutes each)	0.05 mg/m^3 (periodic over minimum 30-minute, maximum 8 hour period)	0.03 mg/Nm^3
	Mercury and its compounds (average of three consecutive measurements of at least 30 minutes each)	0.05 mg/m^3 (periodic over minimum 30-minute, maximum 8 hour period)	0.03 mg/Nm^3
	Mercury and its components (daily average)	No continuous monitoring in original permit for Mercury	0.03 mg/Nm^3
	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total) (periodic over minimum 30-minute, maximum 8 hour period)	0.05 mg/m^3	0.45mg/Nm^3
	Dioxins / furans (I-TEQ) (periodic over minimum 6 hours, maximum 8 hour period)	0.1 ng/m^3 Quarterly	0.09 ng/Nm^3 Quarterly
	Dioxin-like PCBs (WHO-TEQ Humans / Mammals, Fish, Birds) (periodic over minimum 6 hours, maximum 8 hour period)	Not included	(parameter added through WI BRef review of permit to V011) No limit set
	Dioxins / furans (WHO-TEQ Humans / Mammals, Fish, Birds) (periodic over minimum 6 hours, maximum 8 hour period)	Not included	(parameter added through WI BRef review of permit to V011) No limit set

Emission Point	WI BRef Parameter	Original Limit K8 Emission Point A27	Limit / BAT-AEL K8 Emission Point A27
	Specific individual poly-cyclic aromatic hydrocarbons (PAHs) as specified in Schedule 6 (periodic over minimum 6 hours, maximum 8 hour period)	Not included	(parameter added through WI BRef review of permit to V011) No limit set
	Exhaust gas temperature (1/2 hour average and daily average)	Not included	(parameter added through WI BRef review of permit to V011) No limit set
	Exhaust gas pressure (1/2 hour average and daily average)	Not included	(parameter added through WI BRef review of permit to V011) No limit set
	Exhaust gas flow (1/2 hour average and daily average)	Not included	(parameter added through WI BRef review of permit to V011) No limit set
	Exhaust gas oxygen content (1/2 hour average and daily average)	Not included	(parameter added through WI BRef review of permit to V011) No limit set
	Exhaust gas water vapour content (1/2 hour average and daily average)	Not included	(parameter added through WI BRef review of permit to V011) No limit set
	Nitrous Oxide (1/2 hour average and daily average)	Not included	(parameter added through WI BRef review of permit to V011) No limit set

Where BAT-AELs are identified, 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. Where the operator is within range of the BAT-AEL at emission point A27, a limit has now been set for Dioxins / furans (I-TEQ), Mercury, Metals (Antinomy, Arsenic, Cadmium, Cobalt, Chromium, Copper, Manganese, Nickel, Lead, Thallium &Vanadium) and Ammonia in line with the WI BAT conclusions.

Emissions to Air – Article 15(4) Derogations

No derogations.

Emissions to water

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

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

The BAT-AELs under BATc 33 only apply if either of these two processes are being carried out. Therefore, BAT33 and the associated BAT-AELS for these processes do not apply in this instance.

Emissions to Water – Article 15(4) Derogations
No derogations.

7. Conclusion

We consider that the installation will require improvements in performance to achieve BAT. The revised BREF and its BAT-AELs provide the opportunity to implement environmental improvements.

Coupled with the consolidation we believe this variation provides a sound basis for ongoing regulation of the installation. 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 for K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	**Status/comment** **One of the following for K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
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 The Operator has confirmed that there is an EMS in place that complies with all the points listed in BAT 1. The Operator has stated that the EMS implemented is certified to ISO 14001:2015.	Currently Compliant As K8 opposite for EMS BAT 1.
	(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;		
	(vi)	Determination of structures, roles and responsibilities in relation to environmental aspects and objectives and provision of the financial and human resources needed;		

BATc number	Summary of BAT Conclusion requirement		Status/comment **One of the following for K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	Status/comment **One of the following for K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
	(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 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:			

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following for **K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	Status/comment One of the following for **K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
	(xxi)	For incineration plants, waste stream management (see BAT 9);	Currently Compliant See BAT 9. Operator applies techniques (e) and (f). (e) Waste generated during the manufacturing process is either stored in separate piles in the Log yard or in Silos that feed directly in the K8 Boiler feed hopper. (f) The site has a Boiler fuel creation procedure "KC.LOGY.PRO.0008	Currently Compliant Operator response that indirectly relevant but compliant now. Please refer to BAT 9.
	(xxii)	For bottom ash treatment plants, output quality management (see BAT 10);	Not Applicable No bottom ash treatment plant on site.	Applicable No bottom ash treatment plant on site.
	(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 Although no plan provided in response the operator indicated that forms part of EMS.	Currently Compliant Operator response that indirectly relevant but compliant now.
	(xxiv)	For incineration plants, an OTNOC management plan (see BAT 18);	Compliant in the future The Operator has confirmed that an OTNOC management plan will be in place following publication of the appropriate guidance. Therefore, we will review compliance with	Compliant in the future The Operator has confirmed that an OTNOC management plan will be in place following publication of the appropriate guidance. It is considered that K7 can be included in this plan where

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following for **K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	Status/comment One of the following for **K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
			this BATc via improvement condition in the permit.	appropriate. Therefore, we will review compliance with this BATc via improvement condition IC56 in the permit.
	(xxv)	For incineration plants, an accident management plan;	Currently Compliant Operator indicated that this is part of EMS.	Currently Compliant Operator indicated that this is part of EMS.
	(xxvi)	For bottom ash treatment plants, diffuse dust emissions management (see BAT 23);	Not Applicable No bottom ash treatment taking place on site.	Not Applicable No bottom ash treatment taking place on site.
	(xxvii)	An odour management plan where an odour nuisance at sensitive receptors is expected and/or has been substantiated;	Currently Compliant Operator indicated that this is part of EMS.	Currently Compliant Operator indicated that this is part of EMS.
	(xviii)	A noise management plan (see BAT 37) where a noise nuisance at sensitive receptors is expected and/or has been substantiated;	See BAT 37	See BAT 37
MONITORING				
2	**BAT is to determine either the gross electrical efficiency, the gross energy efficiency, or the boiler efficiency of the incineration plant as a whole or of all the relevant parts of the incineration plant.**		Currently Compliant Energy efficiency figures provided by the operator and found to be in range	Compliant in the future The operator has indicated that a performance test will be conducted in 2024 following work to optimise the efficiency of K7. IC60 has been added
3	**BAT is to monitor key process parameters relevant for emissions to air and water including those given below:**		Currently Compliant	Compliant in the future

<table>
<tr><th>BATc number</th><th>Summary of BAT Conclusion requirement</th><th>Status/comment
One of the following for K8: Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)</th><th>Status/comment
One of the following for K7: Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)</th></tr>
<tr><td></td><td>
<table>
<tr><th>Stream/location</th><th>Parameter(s)</th><th>Monitoring</th></tr>
<tr><td>Flue-gas from the incineration of waste</td><td>Flow, oxygen content, temperature, pressure, water vapour content</td><td rowspan="2">Continuous</td></tr>
<tr><td>Combustion chamber</td><td>Temperature</td></tr>
</table>
</td><td>The Operator has confirmed that process monitoring is carried out in line with BAT 3 requirements for all of the relevant parameters.
The monitoring for wastewater from wet FGC is not applicable as there is no wet FGC in place. The monitoring of wastewater from bottom ash treatment plants is not applicable as there is no bottom ash treatment plant on site.</td><td>The process control system installed on K7 includes temperature monitoring within the combustion chamber and on a quarterly basis via extractive monitoring the oxygen, temperature, pressure of the flue gas. Combustion chamber temperature is monitored continuously.

The operator has committed to CEMS IC57.

There is no wet flue gas treatment on K7 or bottom ash treatment Therefore, monitoring requirements for wastewater from the FGC and IBA treatment are not relevant.</td></tr>
</table>

BATc number	Summary of BAT Conclusion requirement			Status/comment **One of the following for K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	Status/comment **One of the following for K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
	Wastewater from wet FGC	Flow, pH, temperature			
	Wastewater from bottom ash treatment plants	Flow, pH, conductivity			
	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.				
4	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			Currently Compliant Operator has indicated currently compliant so continuous monitoring of channelled emissions has been in line with BREF. **Hydrogen fluoride (HF)** As per footnote 4 continuous monitoring of HF may be replaced by HF if the HCl emissions are proven to be sufficiently stable. The permit allows for this to be replaced with periodic monitoring if proof is submitted and agreed in writing by Natural Resources Wales. **Brominated dioxins/furans**	Compliant in the future There is currently no CEMS on K7 and the operator has periodic monitoring for key parameters however the operator has committed to install CEMS to meet the BAT conclusions, so IC57 has been included in the reviewed permit. Supplementary information was also provided in a letter dated 30 May 2024 outlining the work proposed and this has been taken into account as part of this review. Where monitoring has demonstrated BAT the AEL has been added to

BATc number	Summary of BAT Conclusion requirement	**Status/comment** **One of the following for K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	**Status/comment** **One of the following for K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
		The UK WI BREF Interpretation Document states PBDD/F monitoring will be required if a plant is taking waste streams that are known to contain materials treated with brominated flame retardants. **Mercury** Best Available Techniques (BAT) Reference Document (BREF) for Waste Incineration Conclusion 4 describes that mercury monitoring should be continuous. However, it adds that continuous monitoring does not apply for plants incinerating wastes with a proven low and stable mercury content. The operator has not provided such proof. Therefore, as per the UK WI BREF Interpretation Document continuous monitoring of mercury will	the emission point where previously no limit has been set these include Mercury and Metals (Antimony, Arsenic, Cadmium, Cobalt, Chromium, Copper, Manganese, Nickel, Lead, Thallium & Vanadium). The operator has indicated not applicable however it is indirectly applicable. IC 57 has been included to establish compliance with BAT 4 and the monitoring of channelled emissions. **Dioxins/furans (PCDD/F) & Dioxin-like PCBs** As there are no CEMS on A26 and there was no limit set this has now been included with the review.

BATc number	Summary of BAT Conclusion requirement	**Status/comment** **One of the following for K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	**Status/comment** **One of the following for K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
		be implemented in the permit. **Dioxins/furans (PCDD/F) & Dioxin-like PCBs** Footnote 7 states for long-term sampling 'the monitoring does not apply if the emission levels and proven to be sufficiently stable'. The UK Dioxin Monitoring Protocol is the UK approach to determining whether 'emission levels are sufficiently stable'. If the Operator satisfies the protocol they can remain on periodic monitoring, if they cannot, long-term sampling is required.	
5	**BAT is to appropriately monitor channelled emissions to air from the incineration plant during OTNOC.**	Compliant in the future We will review compliance with this BATc via an improvement condition in the permit. (IC61)	Compliant in the future We will review compliance with this BATc via an improvement condition in the permit. (IC61)

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following for **K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	Status/comment One of the following for **K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
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 No emissions to water from FGC and/or bottom ash treatment from the site.	Not Applicable No emissions to water from FGC and/or bottom ash treatment from the site.
7	**BAT is to monitor the content of unburnt substance in slags and bottom ashes at the incineration plant with at least the frequency given and in accordance with EN standards.**		
	Refer to monitoring table in BAT Conclusion 7: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D2010&from=EN	Currently compliant Quarterly monitoring for Loss on Ignition (LOI) in Table S3.9 of the permit	Currently Compliant Quarterly monitoring for Loss on Ignition (LOI) in Table S3.9 of the permit
8	**For the incineration of hazardous wastes containing Persistent organic pollutants, POPs, BAT is to determine the POP content in the output streams (e.g., slags and bottom ashes, flue-gas, waste water) after the commissioning of the incineration plant and after each change that may significantly affect the POP content in the output stream.**	Not Applicable The operator has stated that this is not relevant due to the nature of the wastes accepted. We have not disputed this assertion. As per the UK WI BATC interpretation document this BATc only applies to plants dedicated to the incineration of hazardous waste.	Not Applicable Not a dedicated hazardous waste incinerator
	GENERAL ENVIRONMENTAL AND COMBUSTION PERFORMANCE		
9	**In order to improve the overall environmental performance of the incineration plant by waste stream management (see BAT 1), BAT is to use all of the techniques (a), (b) and (c) given below, and, where relevant, also techniques (d), (e) and (f).**		

BATc number	Summary of BAT Conclusion requirement		**Status/comment** **One of the following for K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	**Status/comment** **One of the following for K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
	(a)	Determination of the types of waste that can be incinerated	Compliant in the future The Operator has confirmed as part of existing waste acceptance procedures all of techniques a, b and c are carried out. They have also confirmed that technique d will be carried out prior to BAT implementation date.	The operator has indicated that K7 only burns exempt and virgin biomass and that this is not applicable. However, there is a procedure in place to ensure wastes to K7 and K8 are segregated KC.LOGY.PRO.0003 – Recycled timber receipt. NRW considers there are cross overs with K8 response here so compliant in the future.
	(b)	Set-up and implementation of waste characterisation and pre-acceptance procedures		
	(c)	Set-up and implementation of waste acceptance procedures		
	(d)	Set-up and implementation of a waste tracking system and inventory		
	(e)	Waste segregation		
	(f)	Verification of waste compatibility prior to the mixing or blending of hazardous wastes		
10	**In order to improve the overall environmental performance of the bottom ash treatment plant, BAT is to include output quality management features in the EMS (see BAT 1)**		Not Applicable No bottom ash treatment plant on site.	Not Applicable No bottom ash treatment plant on site.
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.**			

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following for **K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	Status/comment One of the following for **K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
	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 Procedures are in place in particular 'KC.LOGY.PRO.0003 Logyard – Recycled timber Receipt' for the use of the stream in the manufacturing process. As per the UK WI BREF Interpretation Document the UK Radioactive Substances Regulation is sufficiently robust to minimise the risk of radioactive material inadvertently being sent to incinerators, therefore the current UK regulators position is that radioactivity detection is not required at any incineration plant.	Not Applicable The operator has indicated that waste is not imported so not applicable. However the facility has a waste acceptance procedure as outlined in BAT 9 BAT11 K8 - KC.LOGY.PRO.0003 Logyard - Recycled Timber Receipt" which also applies to K7 so not directly applicable.
12	**In order to reduce the environmental risks associated with the reception, handling and storage of waste, BAT is to use both of the techniques given below:**			
	(a)	Impermeable surfaces with an adequate drainage infrastructure	Currently Compliant The Operator has indicated that they conform to techniques a and b stating that waste generated that is used in the K8 boiler is stored and contained in a	Not Applicable The operator has stated not applicable as K7 Boiler only burns exempt or virgin biomass.
	(b)	Adequate waste storage capacity		

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following for **K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	Status/comment One of the following for **K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
			silo on hard standing in the log yard. Also confirmed that both impermeable surfaces with adequate drainage and adequate storage capacity are in place.	However, indication of technique (b) is implemented: (b) Material is stored in the Log yard and stocktakes are done to ensure there is sufficient raw material for K7 boiler and the production process.
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 The installation is not a clinical waste facility.	Not Applicable The installation is not a clinical waste facility.
	(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	Currently Compliant The Operator has confirmed that both a and b techniques are currently carried out.	Currently Compliant K7 Boiler only burns exempt or virgin biomass. However, technique (a) is applied to fuel blending and a fuel blending procedure is

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following for **K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	Status/comment One of the following for **K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
				in place to ensure K7 is fed with a consistent fuel mix (KC.LOGY.PRO.0008 Logyard - Boiler fuel creation).
	(b)	Advanced control system		
	(c)	Optimisation of the incineration process		
	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)	Currently Compliant The permit previously contained and continues to contain the appropriate LOI limit of <5%.	Currently Compliant The permit previously contained and continues to contain the appropriate LOI limit of <5%.
	Loss on ignition of slags and bottom ashes (1)	1 – 5 Dry wt% (2)		
15	**In order to improve the overall environmental performance of the incineration plant and to reduce emissions to air, BAT is to set up and implement procedures for the adjustment of the plant's settings, e.g. through the advanced control system, as and when needed and practicable, based on the characterisation and control of the waste (see BAT 11)**		Currently Compliant The operator has confirmed that there is a distributed control system (DCS) present on the K8 boiler which is supported by monitoring of emissions and operating parameters. The DCS ensures the settings for the combustion line are adjusted based on the	Currently Compliant The operator has added not applicable however the narrative also states that there is a control system in place.

BATc number	Summary of BAT Conclusion requirement	**Status/comment** **One of the following for K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	**Status/comment** **One of the following for K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
		control of the fuel feed and oxygen in the flue gas.	
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.**	Currently Compliant The operator has stated: K8 operates continuously to limit shutdown and start-up operations. A preventative and autonomous maintenance plan is in place to limit the requirement to shut down for maintenance as far as reasonably practicable. A maintenance management system is implemented to schedule preventative maintenance and track any defects to ensure rectification. Outages are planned annually to complete maintenance that cannot take place when K8 is operational.	Currently Compliant K7 operates continuously in order to limit the number of shutdown and start-up operations. A preventative and autonomous maintenance plan is in place to limit the requirement to shut down for maintenance as far as reasonably practicable. A maintenance management system is implemented to schedule preventative maintenance and track any defects and ensure these are rectified. Outages are planned annually to complete maintenance which cannot be conducted whilst K7 is operational.
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.**	Currently Compliant The operator has confirmed that the flue gas cleaning is effective in abating the pollutant concentrations and	Compliant in the future The operator response was further supplemented by further information on 30 May 2024.

BATc number	Summary of BAT Conclusion requirement	**Status/comment** **One of the following for K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	**Status/comment** **One of the following for K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
		this is reflective in the CEMS data and compliance with the permit limits. FGC equipment is maintained according to the manufacturer's recommendations. Waste process water generated by K8 Boiler is separate from the site surface water and is collected in a pit and passes through a bow screen and tested prior to being released to the sewer under a trade effluent consent.	Abatement will be considered following the optimisation and performance testing of the K7 boiler. Further IC 58 added for operator to demonstrate compliance with the BAT AELs on K7. All process water is collected separately from site surface water and discharged via a trade effluent consent.
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 confirmed that an OTNOC management plan will be in place Therefore we will review compliance with this BATc via improvement condition IC61 in the permit.	Compliant in the future The operator has indicated not applicable as only exempt or virgin biomass is burnt. NRW has included IC61, and for K7 to be included in an OTNOC management plan at the installation as this is the most applicable BRef and associated BAT conclusions

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following for **K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	Status/comment One of the following for **K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
	Identification of potential OTNOC (e.g. failure of equipment critical to the protection of the environment ('critical equipment')), of their root causes and of their potential consequences, and regular review and update of the list of identified OTNOC following the periodic assessment below;		
	Appropriate design of critical equipment (e.g. compartmentalisation of the bag filter, techniques to heat up the flue-gas and obviate the need to bypass the bag filter during start-up and shutdown etc.)		
	Set-up and implementation of a preventative maintenance plan for critical equipment (see BAT 1 (xii))		
	Monitoring and recording of emissions during OTNOC and associated circumstances (see BAT 5)		
	Periodic assessment of the emissions occurring during OTNOC (e.g. frequency of events, duration, amount of pollutants emitted) and implementation of corrective actions if necessary.		
	ENERGY EFFICIENCY		
19	**In order to increase the resource efficiency of the incineration plant, BAT is to use a heat recovery boiler.**	Currently Compliant Heat is recovered in the K8 Boiler in a number of places and are listed below: 1)Thermal oil heat exchanger which recovers heat directly from the flue gas 2) Air pre-heater, which uses the exhaust from the thermal oil heat exchange to pre heat air for the MDF dryers.	Currently Compliant Heat is recovered in the K7 Boiler in a number of places and are listed below: 1) Thermal oil heat exchanger which recovers heat directly from the flue gas 2) Air pre-heater, which uses the exhaust from the thermal oil heat exchange to pre heat air for the MDF dryers.
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	Currently Compliant	Compliant in the future

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			Operator stated techniques (b), and (c). Techniques (a), (d), (e),(f),(g),(h) and (i) are not deemed applicable for technical or economic reasons. Performance testing and a heat recovery efficiency from the flue gas to the thermal oil stated as 78%. BAT-AEEL is between 60-80%. (b) The combustion process has been designed to optimise both primary and secondary combustion air distribution to improve the efficiency of the process. The volume of both primary and secondary air is regulated by a combustion control system. The feed of primary combustion air is optimised and improved through the continuous monitoring of process variables, including the combustion air flow, O_2 in the exhaust.	Operator response that K7 current performance and arrangements in place to improve its efficiency are being reviewed. IC60 added to the reviewed permit.
	(b)	Reduction of the flue-gas flow		
	(c)	Minimisation of heat losses		
	(d)	Optimisation of the boiler design		
	(e)	Low-temperature flue-gas heat exchangers		
	(f)	High steam conditions		
	(g)	Cogeneration		
	(h)	Flue-gas condenser		
	(i)	Dry bottom ash handling		

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			Optimising the combustion control system reduces the resulting flue gas flow rate by reducing air intake, hence lowering the oxygen content within the furnace and reducing the air output at the boiler exit. However, to ensure that the combustion process remains stable, it is important to maintain a balance between the air intake and the resulting flue gas flow rate. The provision of some excess oxygen is essential to cover any fuel spikes and avoid incomplete combustion, reducing the risk of any spikes in carbon monoxide emissions. (c) Heat losses are minimised via the thermal insulation of the boiler and furnace and by a FGC system.	
	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*			

<table>
<tr><th>BATc number</th><th>Summary of BAT Conclusion requirement</th><th>Status/comment
One of the following for K8: Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)</th><th>Status/comment
One of the following for K7: Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)</th></tr>
<tr><td></td><td colspan="2">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</td><td></td></tr>
<tr><td></td><td colspan="2"><table>
<tr><td>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></tr>
<tr><td></td><td>Gross electrical efficiency (2)(3)</td><td>Gross energy efficiency (4)</td><td colspan="2">Boiler efficiency</td></tr>
<tr><td>New plant</td><td>25 – 35 %</td><td rowspan="2">72 – 91 % (5)</td><td>60 – 80 %</td><td>60 – 70 % (6)</td></tr>
<tr><td>Existing plant</td><td>20 – 35 %</td><td colspan="2"></td></tr>
</table></td><td>Currently Compliant
Existing plant. Boiler efficiency is 60 – 80 %.</td><td>Compliant in the future
Existing Plant. Operator response that K7 current performance and arrangements in place to improve its efficiency are being reviewed. IC60 added to the reviewed permit.</td></tr>
<tr><td colspan="2">EMISSIONS TO AIR</td><td></td><td></td></tr>
<tr><td colspan="2">DIFFUSE EMISSIONS</td><td></td><td></td></tr>
<tr><td rowspan="2">21</td><td colspan="2">In order to prevent or reduce diffuse emissions from the incineration plant, including odour emissions, BAT is to:</td><td></td></tr>
<tr><td>store solid and bulk pasty wastes that are odorous and/or prone to releasing volatile substances in enclosed building under controlled sub-atmospheric pressure and use the extracted air as combustion air for incineration or send it to another suitable abatement system in the case of a risk of explosion</td><td>Not Applicable
No pasty waste (non-pumpable waste (e.g. sludge). Biomass</td><td>Not Applicable
No pasty waste (non-pumpable waste (e.g. sludge). Biomass</td></tr>
</table>

BATc number	Summary of BAT Conclusion requirement	Status/comment One of the following for **K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	Status/comment One of the following for **K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
		feedstocks not inherently odorous	feedstocks not inherently odorous.
	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		
	Control the risk of odour during complete shutdown periods when no incineration capacity is available, examples given.		
22	**In order to prevent diffuse emissions of volatile compounds from the handling of gaseous and liquid wastes that are odorous and/or prone to releasing volatile substances at incineration plants, BAT is to introduce them into the furnace by direct feeding.**	Not Applicable The plant does not receive bulk gaseous or liquid wastes.	Not Applicable The plant does not receive bulk gaseous or liquid wastes.
23	**In order to prevent or reduce diffuse dust emissions to air from the treatment of slags and bottom ashes, BAT is to include in the environmental management system (see BAT 1) the following diffuse dust emissions management features:**		
	Identification of the most relevant diffuse dust emission sources (e.g. using EN 15445)	Not Applicable There is no treatment of slags and bottom ashes on site.	Not Applicable There is no treatment of slags and bottom ashes on site.
	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 There is no treatment of slags and bottom ashes on site.	Not Applicable There is no treatment of slags and bottom ashes on site.
	(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		

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	CHANNELLED EMISSIONS				
	EMISSIONS OF DUST, METALS AND METALLOIDS				
25	**In order to reduce channelled emissions to air of dust, metals and metalloids from the incineration of waste, BAT is to use one or a combination of the techniques given below**				
	(a)	Bag filter		Currently Compliant The Operator has confirmed that a bag filter and dry sorbent injection techniques are in place.	Compliant in the future The operator is considering abatement following performance testing and optimisation.
	(b)	Electrostatic precipitator			
	(c)	Dry sorbent injection			
	(d)	Wet scrubber			
	(e)	Fixed- or moving-bed adsorption			
	Table 3 including footnote: BAT-AELs for channelled emissions to air of dust, metals and metalloids from the incineration of waste Associated monitoring given in BAT 4 *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/Nm^3*				
	Parameter	**BAT-AEL (mg/Nm^3)**	**Averaging period**		
	Dust	<2 – 5 (1)	Daily average	Currently Compliant Operator states that for dust the plant would be able to achieve an emission limit value set at the top end of the range. The BAT-AEL will be implemented in the permit.	Compliant in the future As above For consistency comparable co-incinerator approach taken as currently no CEMS / abatement IC57

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	Cd+Tl	0.005 – 0.02	Average over sampling period	Currently Compliant Operator states that top end of range would be met. The BAT-AEL will be implemented in the permit from the compliance date.	Currently Compliant BAT AEL added as monitoring shows within range
	Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V	0.01 – 0.3	Average over sampling period	Compliant in the future Operator states that top end of range would generally be met, and no derogation has been applied for. The BAT-AEL will be implemented in the permit.	Currently Compliant BAT AEL added as monitoring shows within range
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.**			Not Applicable There is no treatment of slags and bottom ashes on site.	Not Applicable There is no treatment of slags and bottom ashes on site.
	Table 4: BAT-AELs for channelled emissions to air of dust from the enclosed treatment of slags and bottom ashes with extraction of air Associated monitoring given in BAT 4				
	Parameter	**BAT-AEL (mg/Nm^3)**	**Averaging period**	Not Applicable There is no treatment of slags and bottom ashes on site.	Not Applicable There is no treatment of slags and bottom ashes on site.
	Dust	2 – 5	Average over the sampling period		
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		Currently Compliant	Compliant in the future
	(b)	Semi-wet absorber			

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			The Operator has confirmed that dry sorbent injection is used.	Operator has advised that not relevant. However abatement will be looked at following optimisation and performance testing of K7. (see IC58)
	(c)	Dry sorbent injection		
	(d)	Direct desulphurisation		
	(e)	Boiler sorbent injection		
28	**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:**			
	(a)	Optimised and automated reagent dosage	Currently Compliant The Operator has confirmed that methods a and b are used.	Compliant in the future Operator has advised that not relevant. However abatement will be looked at following optimisation and performance testing of K7 (see IC58).
	(b)	Recirculation of reagents		
	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*			
	Parameter	**BAT-AEL (mg/Nm^3)** **New plant** / **Existing plant**	**Averaging period**	
	HCl	<2 – 6 (1) / <2 – 8 (1)	Daily average	Compliant in the future

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					The Operator stated that the BAT-AEL for HCl will not always be met and trials are being undertaken with increasing lime dosing IC56	Under normal operations acid gases are monitored at A29 and are currently compliant with the BAT AEL. No CEMS are present on A29. The operator has stated not applicable as only exempt wood burnt although it is indirectly applicable.
	HF	<1	<1	Daily average of average over the sampling period	Currently Compliant The Operator stated that extractive monitoring results of HF have been below the BAT-AEL and is therefore currently compliant with WI BAT conclusion met. There is no change to the permit limit which is already at BAT-AEL for HF.	Compliant in the future Under normal operations acid gases are monitored at A29 and are currently compliant with the BAT AEL. No CEMS are present on A29. The operator has stated not applicable as only exempt wood burnt although it is indirectly applicable.
	SO_2	5 - 30	5 - 40	Daily average	Compliant in the future The Operator stated that the BAT-AEL for SO_2 is lower that the CEMS data and does not currently comply. Trials are being undertaken with increasing lime dosing IC56	Compliant in the future This is linked to IC 60 that has been included in the revised permit.

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	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 site presently uses techniques a, b, c and f. When K8 was initially optimised without SNCR, however it was further optimised for the abatement of NOx through the commissioning of the K8 plant. K8 currently complies with CO in the WI BAT conclusions however the operator indicated in their response that they do not currently comply with the BAT-AEL in the WI BAT con for NH3 and NOx. Trails are taking place with increased dosing of urea to reduce the concentration of NOx and optimise the dosing system IC56.	Compliant in the future There is currently no CEMS on K7 and the operator has periodic monitoring for key parameters however the operator has committed to install CEMS to meet the BAT conclusions, so IC57 has been included. Supplementary information provided in a letter dated 30 May 2024. Post optimisation abatement considered IC to meet BAT 29 added.
	(b)	Flue-gas recirculation		
	(c)	Selective non-catalytic reduction (SNCR)		
	(d)	Selective catalytic reduction (SCR)		
	(e)	Catalytic filter bags		
	(f)	Optimisation of the SNCR/SCR design and operation		
	(g)	Wet scrubber		
	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**			

<table>
<tr><th>BATc number</th><th>Summary of BAT Conclusion requirement</th><th>Status/comment
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One of the following for K7: Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)</th></tr>
<tr><td></td><td colspan="3">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</td></tr>
<tr><td></td><td>
<table>
<tr><th rowspan="2">Parameter</th><th colspan="2">BAT-AEL (mg/Nm^3)</th><th rowspan="2">Averaging period</th><th rowspan="2"></th><th rowspan="2"></th></tr>
<tr><th>New Plant</th><th>Existing plant</th></tr>
<tr><td>NO_x</td><td>50 – 120 (1)</td><td>50 – 150 (1) (2)</td><td rowspan="3">Daily average</td><td>Compliant in the future
The Operator stated that the BAT-AEL they will be compliant in the future and trails are taking place with increased dosing of urea to reduce the concentration of NOx and optimise the dosing system (IC56).</td><td>Compliant in the future

The operator has committed to installation of CEMS on K7 and NOx reduction IC57 and IC59

No change to limit as within range and there should be no back sliding as a result of the review.</td></tr>
<tr><td>CO</td><td>10 – 50</td><td>10 – 50</td><td>Currently compliant
Operator response has indicated that compliance with the BAT-AEL can be met so added to permit.</td><td>Compliant in the future

The operator has committed to installation of CEMS on K7 IC57.

No change to limit as within range and there should be no back sliding</td></tr>
<tr><td>NH_3</td><td>2 – 10 (1)</td><td>2 – 10 (1) (3)</td><td>Compliant in the future
Ammonia monitoring has demonstrated that the results are above the BAT-</td><td>Currently compliant

Ammonia monitoring appears to be in range so</td></tr>
</table>
</td></tr>
</table>

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					AEL. There is currently no limit in the permit, trials taking place IC56. Limit now added to the permit.	limit now added to the permit
EMISSIONS OF ORGANIC COMPOUNDS						
30	**In order to reduce channelled emissions to air of organic compounds including PCDD/F and PCBs from the incineration of waste, BAT is to use techniques (a), (b), (c), (d) and one or a combination of techniques (e) to (i) given below:**					
	(a)	Optimisation of the incineration process			Currently compliant The Operator has confirmed the following techniques are in place: a, b, c and e and that they can currently achieve the necessary BAT-AELs below.	Currently compliant K7 Boiler burns only exempt or virgin biomass that does not contain halogenated compounds and as such this BAT is not applicable. However the plant currently employs techniques (a), and (c) as outlined below: (a) The temperature within the furnace is maintained above 850°C during operation to ensure that any dioxins and furans are destroyed during the incineration process. (c) Boiler cleaning is done by a combination of online (soot blowing) and offline cleaning during outages. Operators response

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						indicates not applicable however techniques adopted.
	(b)	Control of the waste feed				
	(c)	On-line and off-line boiler cleaning				
	(d)	Rapid flue-gas cooling				
	(e)	Dry sorbent injection				
	(f)	Fixed- or moving- bed adsorption				
	(g)	SCR				
	(h)	Catalytic filter bags				
	(i)	Carbon sorbent in a wet scrubber				
	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*					
	Parameter	**Unit**	**BAT-AEL**		**Averaging period**	
			New plant	**Existing plant**		
	TVOC	mg/Nm^3	<3 – 10	<3 – 10	Daily average	Currently compliant The Operator has stated the plant can currently achieve the BAT-AEL. The BAT-AEL will be implemented in the permit from the compliance date.	Currently compliant No change to existing limit as on A29 and indirectly applicable. The operator has indicated not applicable due to burning of exempt wastes.

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	PCDD/F (1)	ng I-TEQ/Nm^3	<0.01 – 0.04	<0.01 – 0.06	Average over the sampling period	Currently compliant The operator has stated that they are below the upper range	See below The operator has stated not applicable but long-term sampling period added for process control.
			<0.01 – 0.06	<0.01 – 0.08	Long-term sampling period (2)		
	PCDD/F + dioxin-like PCBs (1)	ng WHO-TEQ/Nm^3	<0.01 – 0.06	<0.01 – 0.08	Average over the sampling period	Currently compliant The Operator has stated the plant can currently achieve the BAT-AEL. As per footnote 1, the BAT-AEL for PCDD/F will be set in the permit from the compliance date as opposed the BAT-AEL for PCDD/F + dioxin-like PCBs.	Currently compliant As above
			<0.01 – 0.08	<0.01 – 0.1	Long-term sampling period (2)		
	EMISSIONS OF MERCURY						
31	**In order to reduce channelled mercury emissions to air (including mercury emission peaks) from the incineration of waste, BAT is to use one of a combination of the techniques given below:**						
	(a)	Wet scrubber (low pH)				Currently compliant The Operator has confirmed that techniques b and c in place, dry sorbent injection and activated carbon is injected into the flue gas.	
	(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
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One of the following for K7: Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)</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</td><td></td><td></td></tr>
<tr><td></td><td colspan="2"><table>
<tr><th rowspan="2">Parameter</th><th colspan="2">BAT-AEL (µg/Nm^3) (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>Currently Compliant
The Operator has stated the plant can currently achieve the BAT-AEL. The BAT-AEL will be implemented in the permit.</td><td>Compliant in the future

Hg added to A26 for improved process control

No change to metals on A29 in line with WBP WI Bref indirectly applicable.</td></tr>
<tr><td colspan="2">EMISSIONS TO WATER</td><td></td><td></td></tr>
<tr><td>32</td><td colspan="2">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.</td><td>Not Applicable

No WWT on site and K8 discharges to sewer through</td><td>Not Applicable

No WWT on site and K7 discharges to sewer through a trade effluent</td></tr>
</table>

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following for **K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	Status/comment One of the following for **K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
			a trade effluent consent with the sewerage undertaker.	consent with the sewerage undertaker.
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 The operator has stated that they are compliant with the requirements of BAT33 using technique (a).	None of the techniques within BAT 33 are applied given the process. For instance, the bottom ash handling system uses water to suppress dust. There are no other waste water streams from K7.
	(b)	Injection of waste water from FGC		
	(c)	Water reuse/recycling		
	(d)	Dry bottom ash handling		
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:**			
	See BATc for a full list of primary and secondary techniques		Not Applicable No water emitted from Flue Gas Cleaning and no bottom ash treatment on site.	Not Applicable No water emitted from Flue Gas Cleaning and no bottom ash treatment on site.
MATERIAL EFFICIENCY				
35	**In order to increase resource efficiency, BAT is to handle and treat bottom ashes separately from FGC residues.**		Currently Compliant The Operator has confirmed that incinerator bottom ash	Not Applicable Operator response is that K7 does not generate APC

BATc number	Summary of BAT Conclusion requirement		Status/comment One of the following for **K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	Status/comment One of the following for **K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
			remains separated from all other residues.	residues as there is no flue gas treatment
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:**			
	(a)	Screening and sieving	Not Applicable No treatment of slags and bottom ashes takes place on site.	Not Applicable No treatment of slags and bottom ashes takes place on site.
	(b)	Crushing		
	(c)	Aeraulic separation		
	(d)	Recovery of ferrous and non-ferrous metals		
	(e)	Ageing		
	(f)	Washing		
NOISE				
37	In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to use one or a combination of the techniques given below:			
	(a)	Appropriate location of equipment and buildings	Currently Compliant The Operator has confirmed the use of techniques a, b, d and e.	Currently Compliant a) – K7 is situated toward the SW of the site – closer to the industrial estate than the heavily populated residential areas b) – Planned Preventative Maintenance in place, vibration monitoring of all fans and motors, daily & weekly inspections from maintenance teams, weekly environmental audit by Management, maintenance shutdowns

BATc number	Summary of BAT Conclusion requirement		Status/comment **One of the following for K8:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)	Status/comment **One of the following for K7:** Not Applicable (NA), Currently Compliant (CC), Compliant in the future (CIF) (within 4 years of publication of BAT conclusions), Not Compliant (NC)
				are planned so that noisy activities are carried out during the day (e.g. work involving cranes / industrial cleaning) and avoided at night. d) – The plant is surrounded on 3 sides by buildings, silos & walls. e) – all fans, ductwork, heat exchangers (majority of the plant) is insulated. Kronospan are currently updating the Noise Management Plant and going through a process of identifying high noise sources and looking at further mitigation across the Facility.
	(b)	Operational measures		
	(c)	Low-noise equipment		
	(d)	Noise attenuation		
	(e)	Noise-control equipment/infrastructure		