Determination of an Application for an Environmental Permit under the Environmental Permitting (England & Wales) Regulations 2016

Decision document recording our decision-making process

The Permit Number is: EPR/CP3906LP/V003
The Applicant / Operator is: Indaver Rivenhall Limited
The Installation is located at: Rivenhall Integrated Waste Management Facility

What this document is about

This is a decision document, which accompanies a permit.

It explains how we have considered the Operator's Application, and why we have included the specific conditions in the permit we are issuing to the Operator. It is our record of our decision-making process, to show how we have taken into account all relevant factors in reaching our position. Unless the document explains otherwise, we have accepted the Operator's proposals.

We try to explain our decision as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy, and we would welcome any feedback as to how we might improve our decision documents in future. A lot of technical terms and acronyms are inevitable in a document of this nature: we provide a glossary of acronyms near the front of the document, for ease of reference.

This decision document only presents how we have assessed elements of the facility's operation that will be affected by the applied-for variation. We have not re-visited our decision where already-considered elements of the existing permit remain unchanged.

Preliminary information and use of terms

We gave the application the reference number EPR/CP3906LP/V003. We refer to the application as "the **Application**" in this document in order to be consistent.

We refer to the existing permit as "the **Permit**" in this document.

The Application was duly made on 06/09/2024.

The applicant is Indaver Rivenhall Limited. We refer to Indaver Rivenhall Limited as "the **Operator**" in this document as a permit is already in place.

Indaver Rivenhall Limited's facility is located at Rivenhall Airfield, Woodhouse Lane, Kelvedon, Essex, CO5 9DF. We refer to this as "the **Installation**" in this document.

How this document is structured

Contents

Glossary of acronyms used in this document

(Please note that this glossary is standard for our decision documents and therefore not all these acronyms are necessarily used in this document.)

AAD	Ambient Air Directive (2008/50/EC)
APC	Air Pollution Control
AQS	Air Quality Strategy
BAT	Best Available Technique(s)
BAT-AEL	BAT Associated Emission Level
BREF BAT C	Best Available Techniques (BAT) Reference Documents for Waste Incineration BAT conclusions
CCW	Countryside Council for Wales
CEM	Continuous emissions monitor
CFD	Computerised fluid dynamics
CHP	Combined heat and power
COMEAP	Committee on the Medical Effects of Air Pollutants
CROW	Countryside and rights of way Act 2000
CV	Calorific value
CW	Clinical waste
CWI	Clinical waste incinerator
DAA	Directly associated activity – Additional activities necessary to be carried out to allow the principal activity to be carried out
DD	Decision document
EAL	Environmental assessment level
EIAD	Environmental Impact Assessment Directive (85/337/EEC)
ELV	Emission limit value
EMAS	EU Eco Management and Audit Scheme
EMS	Environmental Management System
EPR	Environmental Permitting (England and Wales) Regulations 2016 (SI 2016 No. 1154) as amended
EQS	Environmental Quality Standard
ES	Environmental standard
EWC	European waste catalogue
FGC	Flue gas cleaning
FPP	Fire prevention plan

FSA	Food Standards Agency
GWP	Global Warming Potential
HHRAP	Human Health Risk Assessment Protocol
HPA	Health Protection Agency (now UKHSA – UK Health Security Agency)
HW	Hazardous waste
HWI	Hazardous waste incinerator
IBA	Incinerator Bottom Ash
IED	Industrial Emissions Directive (2010/75/EU)
IPPCD	Integrated Pollution Prevention and Control Directive (2008/1/EC) – now superseded by IED
I-TEF	Toxic Equivalent Factors set out in Annex VI Part 2 of IED
I-TEQ	Toxic Equivalent Quotient calculated using I-TEF
LCV	Lower calorific value – also termed net calorific value
LfD	Landfill Directive (1999/31/EC)
LADPH	Local Authority Director(s) of Public Health
LOI	Loss on Ignition
MBT	Mechanical biological treatment
MSW	Municipal Solid Waste
MWI	Municipal waste incinerator
NOx	Oxides of nitrogen (NO plus NO_2 expressed as NO_2)
OTNOC	Other than normal operating conditions
PAH	Polycyclic aromatic hydrocarbons
PC	Process Contribution
PCB	Polychlorinated biphenyls
PEC	Predicted Environmental Concentration
PHE	Public Health England (now UKHSA – UK Health Security Agency)
POP(s)	Persistent organic pollutant(s)
PPS	Public participation statement
PR	Public register
PXDD	Poly-halogenated di-benzo-p-dioxins
PXB	Poly-halogenated biphenyls
PXDF	Poly-halogenated di-benzo furans
RDF	Refuse derived fuel

RGN	Regulatory Guidance Note
SAC	Special Area of Conservation
SCR	Selective catalytic reduction
SHPI(s)	Site(s) of High Public Interest
SNCR	Selective non-catalytic reduction
SPA(s)	Special Protection Area(s)
SS	Sewage sludge
SSSI(s)	Site(s) of Special Scientific Interest
SWMA	Specified waste management activity
TDI	Tolerable daily intake
TEF	Toxic Equivalent Factors
TGN	Technical guidance note
TOC	Total Organic Carbon
UHV	Upper heating value –also termed gross calorific value
UN_ECE	United Nations Environmental Commission for Europe
US EPA	United States Environmental Protection Agency
WFD	Waste Framework Directive (2008/98/EC)
WHO	World Health Organisation
WID	Waste Incineration Directive (2000/76/EC) – now superseded by IED

Links to guidance documents

The table below provides links to the key guidance documents referred to in this document. The links were correct at the time of producing this document.

Name of guidance document	**Link**
RGN 6: Determinations involving sites of high public interest	RGN 6
CHP Ready Guidance for Combustion and Energy from Waste Power Plants	CHP ready
Risk assessments for your environmental permit	Risk assessments
Guidance to Applicants on Impact Assessment for Group 3 Metals Stack Releases – version 4".	Metals guide
The Incineration of Waste (EPR 5.01)	EPR 5.01
Waste incineration BREF and BAT conclusions	BREF and BAT C
UKHSA: Municipal waste incinerators emissions: impact on health	UKHSA reports

1 Our proposed decision

We have decided to grant the varied permit to the Operator. This will allow it to operate the Installation, subject to the conditions in the Permit.

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

This Application is to operate an installation which is subject principally to the Industrial Emissions Directive (IED).

Whilst this variation has been determined, we carried out an assessment of the facility against the waste incineration BAT conclusions. This assessment was independent of this variation (V003) and similar assessments have been carried out for all permitted incinerators in England. The completion of this assessment was a legal requirement and was undertaken with reference to the decision made by the European Commission establishing best available techniques (BAT) conclusions ('BAT conclusions') for incineration as detailed in document reference C(2019) 7987. Our assessment agreed that the proposed facility will meet the requirements of the BAT conclusions.

The changes contained within the permit, when compared to EPR/CP3906LP/V004, are as follows:

1. Modifications to the emission profiles and modelling parameters of the site resulting from the phased construction strategy of the Integrated Waste Management Facility (IWMF). Prior to this variation, modelling assumptions were predicated on all permitted activities and associated structures being fully operational at the commencement of operations. The variation amends the permit, considering the fact that of the permitted activities only operation of the incineration activity (AR1) and its Directly Associated Activities will currently take place.
2. The addition of an emission of clean, uncontaminated surface water arising from the incineration activity (and other areas of the Integrated Waste Management Facility subject to satisfactory completion of Pre-operational Condition for Future Development 2 (POFD2)) to the River Blackwater.
3. Expansion of the list of authorised waste codes permitted to be received under the incineration activity.

As a result of the Air Quality assessment submitted as part of the variation, and our subsequent review, we have also made the following changes:

- A reduction in the TOC daily average limit from 10mg/m^3 to 9mg/m^3
- The addition of Cu to IC6

As the facility will now operate the incineration lines only at this stage, it will therefore not be providing heat to the paper and pulp plant and the wastewater treatment plant. We therefore asked the operator to carry out a cost benefit assessment of providing heat to other local users and included a condition (IC10) which ensures that the operator fully investigates the opportunities presented in this assessment.

Prior to the facility being permitted to accept these new waste codes they must present to us for approval an updated waste pre-acceptance and acceptance procedure. These procedures must demonstrate what measures will be in place to ensure that the wastes received under these codes are suitable for incineration at the facility. This updated procedure will be delivered though POFD3 in the permit.

The application also proposed the removal of the electrical generation limit specified in the permit. Although reference to this has appeared in Table S1.1. of the permit, the value listed in table S1.1 was not intended to be a limit because the Permit requires electrical generation to be maximised. To prevent ambiguity, the electrical generation value in Table S1.1 has been removed. A reference to electrical generation remains in the Introductory Note of the permit; however, this note does not constitute a permit condition and is included solely for informational purposes.

The Permit contains many conditions taken from our standard Environmental Permit template including the relevant Annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations (EPR) and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the permit, we have considered the Application and accepted that the details provided are sufficient and satisfactory to make use of the standard condition acceptable and appropriate. This document does, however, provide an explanation of our use of “tailor-made” or installation-specific conditions, or where our Permit template provides two or more options, an explanation of the reason(s) for choosing the option that has been specified.

2 How we reached our decision

2.1 Receipt of Application

The Application was duly made on 27/08/2024. This means we considered it was in the correct form and contained sufficient information for us to begin our determination but not that it necessarily contained all the information we would need to complete that determination: see section 2.3 below.

The Operator made no claim for commercial confidentiality. We have not received any information in relation to the Application that appears to be confidential in relation to any party.

2.2 Consultation on the Application

We carried out consultation on the Application in accordance with the EPR, our statutory Public Participation Statement (PPS) and our own internal guidance RGN 6 for Determinations involving Sites of High Public Interest. RGN 6 was withdrawn as external guidance, but it is still relevant as Environment Agency internal guidance.

We consider that this process satisfies, and frequently goes beyond the requirements of the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, which are directly incorporated into the IED, which applies to the Installation and the Application. We have also taken into account our obligations under the Local Democracy, Economic Development and Construction Act 2009 (particularly Section 23). This requires us, where we consider it appropriate, to take such steps as we consider appropriate to secure the involvement of representatives of interested persons in the exercise of our functions, by providing them with information, consulting them or involving them in any other way. In this case, we consider that our consultation already satisfies the requirements of the 2009 Act.

We advertised the Application by a notice placed on our website, which contained all the information required by the IED, including telling people where and when they could see a copy of the Application. We also placed an advertisement in the Essex Chronicle on 12/12/2024 that contained the same information.

We made a copy of the Application and all other documents relevant to our determination available to view on our Public Register. Anyone wishing to see these documents could do so and arrange for copies to be made. We communicated with the local liaison group through a briefing note which included a link to where the application could be viewed. The Application documents were made available to view on our 'citizen space' webpage. People could also submit comments via this webpage.

We sent copies of the Application to the following bodies, which includes those with whom we have "Working Together Agreements":

- Local Authority – Environmental Protection Department
- Local Authority – Planning
- Director of PH/UKHSA
- Health and Safety Executive
- Food Standards Agency
- Sewerage Authority

These are bodies whose expertise, democratic accountability and/or local knowledge make it appropriate for us to seek their views directly. Note under our Working Together Agreement with Natural England, we only inform Natural England of the results of our assessment of the impact of the installation on designated Habitats sites.

In addition to our advertising the Application, we undertook a programme of extended public consultation. Further details along with a summary of consultation comments and our response to the representations we received can be found in Annex 4. We have taken all relevant representations into consideration in reaching our determination.

2.3 Requests for Further Information

Although we were able to consider the Application duly made, we did in fact need more information in order to determine it and issued information notices on 13/03/2025 and 14/04/2025. A copy of each information notice was placed on our public register as were the responses when received.

In addition to our information notices, we received additional information on 08/04/2025, during the determination, following a clarification request from us on the operator's response to our information notice dated 13/03/2025. We made a copy of this information available to the public in the same way as the responses to our information notices.

Finally, consulted on our draft decision from 21/08/2025 to 02/10/2025. A summary of the consultation responses and how we have taken into account all relevant representations is shown in Annex 4B.

3 The legal framework

The variation is granted, under Regulation 20 of the 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* and a *waste incineration plant* as described by the IED;
- an *operation* covered by the WFD, and
- subject to aspects of other relevant legislation which also have to be addressed.

We address some of the major legal requirements directly where relevant in the body of this document. Other requirements are covered in section 8 towards the end of this document.

We consider that, in granting the Permit variation, 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.

4 The installation

4.1 Description of the Installation and related issues

4.1.1 The permitted activities

The Installation is subject to the EPR because it intends to carry out various activities listed in Part 1 of Schedule 1 to the EPR. The listed activity affected by this variation is:

- Section 5.1 Part A(1)(b) – incineration of non-hazardous waste in a waste incineration plant or waste co-incineration plant with a capacity of 3 tonnes or more per hour.

Whilst it is the case that this variation only affects the above listed activity, as a result of the aforementioned staged approach to construction of the wider IWMF, the other listed activities have been prevented from being operated under this variation (V003). These other listed activities and their directly associated activities, which would not be able to be operated under the permit or until such a time that POFD2 is agreed to by the Environment Agency upon issue of this variation are as follows:

- Paper pulp plant – Section 6.1 A(1)(a).
- Anaerobic digestion (AD) facility with the combustion of resultant biogas – Section 5.4 A(1)(b)(i).

See Annex 2 for how we have used the permit to limit the facility's operations.

The changes that this variation makes to the Permit are listed in section 1 above.

Further detail on the site's location, process and the abatement measures in place is included in the introductory note within the Permit.

5 Key Issue in the Determination – Air Quality

The Operator has presented a new air quality assessment which takes into consideration the staged build of the IWMF, resulting in only the incineration activity being constructed and operated, and the impacts that this will have on the plume dispersion characteristics arising from the incineration activity.

We have treated this revised air quality assessment as if it were a new application. The below presents the conclusions of the presented worst-case construction scenario in terms of impact on emissions to air i.e. the full build-out of the incineration activity in isolation.

5.1 Assessment Methodology

5.1.1 Application of Environment Agency guidance 'risk assessments for your environmental permit'

A methodology for risk assessment of point source emissions to air, which we use to assess the risk of applications we receive for permits, is set out in our guidance 'Air emissions risk assessment for your environmental permit' and has the following steps:

- Describe emissions and receptors
- Calculate process contributions
- Screen out insignificant emissions that do not warrant further investigation
- Decide if detailed air modelling is needed
- Assess emissions against relevant standards
- Summarise the effects of emissions

The methodology uses a concept of "process contribution (PC)", which is the estimated concentration of emitted substances after dispersion into the receiving environmental media at the point where the magnitude of the concentration is greatest. The methodology provides a simple method of calculating PC primarily for screening purposes and for estimating process contributions where environmental consequences are relatively low. It is based on using dispersion factors. These factors assume worst case dispersion conditions with no allowance made for thermal or momentum plume rise and so the process contributions calculated are likely to be an overestimate of the actual maximum concentrations. More accurate calculation of process contributions can be achieved by mathematical dispersion models, which take into account relevant parameters of the release and surrounding conditions, including local meteorology – these techniques are expensive but normally lead to a lower prediction of PC.

5.1.2 Use of Air Dispersion Modelling

For incineration applications, we normally require the Applicant to submit a full air dispersion model as part of their application. Air dispersion modelling enables the process contribution to be predicted at any environmental receptor that might be impacted by the plant.

Once short-term and long-term PCs have been calculated in this way, they are compared with Environmental Standards (ES) for air emissions. ES are described in our web guide 'Air emissions risk assessment for your environmental permit'.

Our web guide sets out the relevant ES as:

- Air Quality Standards Regulations 2010 Limit Values
- Air Quality Standards Regulations 2010 Target Values
- UK Air Quality Strategy Objectives
- Environmental Assessment Levels

Where a Limit Value exists, the relevant standard is the Limit Value. Where a Limit Value does not exist, target values, UK Air Quality Strategy (AQS) Objectives or Environmental Assessment Levels (EALs) are used. Our web guide sets out EALs which have been derived to provide a similar level of protection to human health and the environment as the limit values, target values and AQS objectives. In a very small number of cases, e.g. for emissions of lead, the AQS objective is more stringent that the Limit Value. In such cases, we use the AQS objective for our assessment.

Target values, AQS objectives and EALs do not have the same legal status as Limit Values, and there is no explicit requirement to impose stricter conditions than BAT in order to comply with them. However, they are a standard for harm and any significant contribution to a breach is likely to be unacceptable.

PCs are screened out as **Insignificant** if:

- the **long-term** PC is less than **1%** of the relevant ES; and
- the **short-term** PC is less than **10%** of the relevant ES.

The **long term** 1% PC insignificance threshold is based on the judgements that:

- It is unlikely that an emission at this level will make a significant contribution to air quality;
- The threshold provides a substantial safety margin to protect human health and the environment.

The **short term** 10% PC insignificance threshold is based on the judgements that:

- spatial and temporal conditions mean that short term process contributions are transient and limited in comparison with long term process contributions;
- the threshold provides a substantial safety margin to protect human health and the environment.

Where an emission is screened out in this way, we would normally consider the Applicant's proposals for the prevention and control of the emission to be BAT. That is because if the impact of the emission is already insignificant, it follows that any further reduction in this emission will also be insignificant.

However, where an emission cannot be screened out as insignificant, it does not mean it will necessarily be significant.

For those pollutants which do not screen out as insignificant, we determine whether exceedences of the relevant ES are likely. This is done through detailed audit and review of the Applicant's air dispersion modelling taking background concentrations and modelling uncertainties into account. Where an exceedance of an AAD limit value is identified, we may require the applicant to go beyond what would normally be considered BAT for the Installation or we may refuse the application if the applicant is unable to provide suitable proposals. Whether or not exceedences are considered likely, the application is subject to the requirement to operate in accordance with BAT.

This is not the end of the risk assessment, because we also take into account local factors (for example, particularly sensitive receptors nearby such as a SSSIs, SACs or SPAs). These additional factors may also lead us to include more stringent conditions than BAT.

If, as a result of reviewing the risk assessment and taking account of any additional techniques that could be applied to limit emissions, we consider that emissions **would cause significant pollution**, we would refuse the Application.

5.2 Assessment of Impact on Air Quality

The Operator's assessment of the impact of air quality is set out in 'Rivenhall IWMF Dispersion Modelling Assessment Revision number 1 dated 17/07/2024' and 'Rivenhall IWMF Dioxin Pathway Intake Assessment Revision number 0, dated 19/07/2024' of the Application. The assessment comprises:

- Dispersion modelling of emissions to air from the operation of the incinerator.
- A study of the impact of emissions on nearby protected conservation areas

This section of the decision document deals primarily with the dispersion modelling of emissions to air from the incinerator chimney and its impact on local air quality. The impact on conservation sites is considered in section 5.4.

The Operator has assessed the Installation's potential emissions to air against the relevant air quality standards, and the potential impact upon local conservation and habitat sites and human health. These assessments predict the potential effects on local air quality from the Installation's stack emissions using the air dispersion model software ADMS 6 dispersion model, which is a commonly used computer model for regulatory dispersion modelling. The model used 5 years of meteorological data collected from the weather station at Andrewsfield meteorological recording station between 2018 and 2022. The justification for using the Andrewsfield meteorological station for the dispersion modelling assessment was based on its proximity and representativeness of the local conditions at the Rivenhall Integrated Waste Management Facility (IWMF).

The ADMS 6 dispersion model used in the assessment includes a complex terrain module (FLOWSTAR), which can simulate how terrain affects air flow and pollutant dispersion. However, the terrain around the IWMF was assessed as generally flat or gently sloping, with no areas exceeding a gradient of 1 in 10 (except within the immediate quarry area).

According to guidance from the model developers (CERC), the complex terrain module is typically recommended when gradients exceed 1 in 10 within 500 m of the modelling domain. Since the surrounding terrain did not meet this threshold, the effects of terrain were considered minimal and the complex terrain module was not activated in the model.

The air impact assessments, and the dispersion modelling upon which they were based, employed the following assumptions.

- First, they assumed that the ELVs in the Permit would be the maximum permitted by Article 15(3), Article 46(2) and Annex VI of the IED. These substances are:

    - Oxides of nitrogen (NO_x), expressed as NO_2
    - Total dust
    - Carbon monoxide (CO)
    - Sulphur dioxide (SO_2)
    - Hydrogen chloride (HCl)
    - Hydrogen fluoride (HF)
    - Metals (cadmium, thallium, mercury, antimony, arsenic, lead, chromium, cobalt, copper, manganese, nickel and vanadium)
    - Polychlorinated dibenzo-para-dioxins and polychlorinated dibenzo furans (referred to as dioxins and furans)
    - Gaseous and vaporous organic substances, expressed as Total Organic Carbon (TOC)
    - Ammonia (NH_3)

- Second, they assumed that the Installation operates continuously at the relevant long-term or short-term ELVs, i.e. the maximum permitted emission rate (metals are considered further in section 5.2.3 of this decision document).
- Third, the model also considered emissions of pollutants not covered by Annex VI of IED, specifically, polycyclic aromatic hydrocarbons (PAH) and polychlorinated biphenyls (PCBs). Emission rates used in the modelling have been drawn from data in the Waste Incineration BREF and are considered further in section 5.2.2.

We are in agreement with this approach. The assumptions underpinning the model have been checked and are a reasonable worst-case.

The Operator established the background (or existing) air quality against which to measure the potential impact of the incinerator. We concluded that the background concentrations used in the air quality assessment were appropriate and based on a sound methodology, drawing from a range of credible sources including local monitoring by Braintree District Council, national air quality networks, and Defra background maps. We found no issues with the consultant's selection or application of these background levels and considered them suitable for use in calculating predicted environmental concentrations for all pollutants assessed.

As well as predicting the maximum ground level concentration of the pollutants within the modelling domain, the Applicant has modelled several discrete receptor locations to represent human and ecological exposure.

The Operator's use of the dispersion models, selection of input data, use of background data and the assumptions made, have been reviewed by our modelling specialists to establish the robustness of the Operator's air impact assessment. The output from the model has then been used to inform further assessment of human health impacts and impact on protected conservation areas. Our audit takes account of modelling uncertainties. We make reasonable worst case assumptions and use the uncertainties (minimum 140%) in analysing the likelihood of exceeding any particular standard.

Our review of the Operator's assessment leads us to agree with the Operator's conclusions. We have also audited the air quality and human health impact assessment and similarly agree that the conclusions drawn in the reports were acceptable.

The Operator's modelling predictions are summarised in the following sections.

5.2.1 Assessment of Air Dispersion Modelling Outputs

The Operator's modelling predictions are summarised in the tables below.

The Operator's modelling predicted peak ground level exposure to pollutants in ambient air and at discreet receptors. The tables below show their predicted ground level concentrations at the most impacted receptor.

As part of our checks, we carry out sensitivity analysis of the data provided and conduct our own check modelling to ensure that the Operator's modelling predictions are reliable.

Whilst we have used the Operator's modelling predictions in the table below, we have made our own simple verification calculation of the percentage PC and predicted environmental concentration (PEC). These are the numbers shown in the tables below and so may be very slightly different to those shown in the Application. Any such minor discrepancies do not materially impact on our conclusions.

Non-metals

Pollutant	**ES**		**Back-ground**	**Process Contribution (PC)**		**Predicted Environmental Concentration (PEC)**	
	µg/m^3	**Reference period**	**µg/m^3**	**µg/m^3**	**% of EAL**	**µg/m^3**	**% of EAL**
NO_2	40	Annual mean	14.8	1.71	**4.28**	16.5	41.28
	200	99.79th %ile of 1 hour means	29.6	12.83	6.42	42.4	21.22
PM_{10}	40	Annual mean	18	0.12	0.30	18.1	45.30
	50	90.41st %ile of 24 hour means	36	0.43	0.86	36.43	72.86
$PM_{2.5}$	20	Annual mean	10.9	0.12	0.60	11.02	55.10
SO_2	266	99.9th %ile of 15-min means	7.6	13.18	4.95	20.78	7.81
	350	99.73rd %ile of 1 hour means	7.6	10.36	2.96	17.96	5.13
	125	99.18th %ile of 24 hour means	7.6	5.55	4.44	13.15	10.52
HCl	750	1-hour mean	1.42	3.02	0.40	4.4	0.59
HF	16	Monthly mean	2.35	0.09	0.56	2.44	15.25

	160	1 hour mean	4.7	0.5	0.31	5.20	3.25
CO	10000	Maximum daily running 8 hour mean	454	18.3	0.18	472	4.72
	30000	1 hour mean	454	18.29	0.06	472	1.57
TOC (See Note)	30	Daily mean	0.8	2.26	7.53	3.06	10.20
PAH	0.00025	Annual mean	0.00011	0.0000047	1.88	0.00011	45.88
NH_3	180	Annual mean	1.8	0.24	0.13	2.04	1.13
	2500	1 hour mean	3.6	5.03	0.20	8.63	0.35
PCBs	0.2	Annual mean	0.00013	0.00011	0.06	0.00024	0.12
	6	1 hour mean	0.00026	0.00113	0.02	0.00139	0.02
Note: the operator used the Benzene ES as a proxy to assess the TOC daily mean emissions and also the annual mean TVOC emissions, however, for the TOC annual mean there is an ES for 1,3 Butadiene and also a 24 hour mean (short term) ES for 1,3 Butadiene. We have carried out our own checks using these Butadiene ES as a proxy for TVOC emissions over these reference periods. See TOC section 5.2.2 (iv) for more detail.							
PAH as benzo[a]pyrene							

Metals

Pollutant	ES		Back-ground	Process Contribution		Predicted Environmental Concentration	
	ng/m^3	Reference period	ng/m^3	ng/m^3	% of EAL	ng/m^3	% of EAL
Cd	5	Annual mean	0.48	0.49	**9.80**	0.97	19.40
	30	24 hour mean (short term)	0.96	4.51	**15.03**	5.47	18.23
Hg	600	1 hour mean	5.6	10.06	**1.68**	15.66	2.61
	60	24 hour mean (long term)	5.6	4.51	7.52	10.11	16.85
Sb	5000	Annual mean	1.3	7.31	0.15	8.61	0.17
	150000	1 hour mean	2.6	150.95	0.10	153.55	0.10
Pb	250	Annual mean	2.83	7.31	**2.92**	10.14	4.06
Cu	50	24 hour mean (long term)	4.06	67.64	**135.28**	71.70	**143.40**
Mn	150	Annual mean	2.29	7.31	**4.87**	9.60	6.40
	1500000	1 hour mean	4.58	150.95	0.01	155.53	0.01
V	1000	24 hr average (short term)	1.38	67.64	6.76	69.02	6.90
As	6	Annual mean	0.48	7.31	**121.83**	7.79	**129.83**
Cr (II)(III)	2000	24 hour mean (long term)	1.76	67.64	3.38	69.40	3.47
Cr (VI)	0.25	Annual mean	0.18	7.31	**2924.00**	7.49	**2996.00**
Ni	20	Annual mean	0.47	7.31	**36.55**	7.78	38.90
	700	1 hour mean	0.94	150.9500	**21.56**	151.89	21.70

Assessment of non-metals

(i) Screening out emissions which are insignificant

From the tables above the following emissions can be screened out as insignificant in that the PC is < 1% of the long term ES and <10% of the short term ES. These are:

- NO_2 (Short term only)
- PM_{10}
- $PM_{2.5}$
- SO_2
- HCl
- HF
- CO
- TOC (daily mean as Benzene)
- PAH
- NH_3
- PCBs

Therefore, we consider the Operator's proposals for preventing and minimising the emissions of these substances to be BAT for the Installation subject to the detailed audit referred to below.

(ii) Emissions unlikely to give rise to significant pollution

Also from the tables above, and our audit of the TVOC annual mean and 24 hour mean (short term) as 1,3 Butadiene, the following emissions (which were not screened out as insignificant) have been assessed as being unlikely to give rise to significant pollution in that the PEC is less than 100% (taking expected modelling uncertainties into account) of both the long term and short term ES.

- NO_2 (Long term only).
- TOC (annual mean and 24 hour mean (short term) as 1,3 Butadiene*)*

For these emissions, we have previously concluded that the operator is applying BAT to prevent and minimise emissions.

5.2.2 Consideration of key pollutants

(i) Nitrogen dioxide (NO_2)

The impact on air quality from NO_2 emissions has been assessed against the ES of 40 $\mu g/m^3$ as a long term annual average and 200 $\mu g/m^3$ as a short term hourly average.

The model assumes a 70% NO_X to NO_2 conversion for the long term and 35% for the short term assessment in line with Environment Agency guidance on the use of air dispersion modelling.

The above tables show that the maximum long term PC is greater than 1% of the ES and therefore cannot be screened out as insignificant. However, from the table above, the emission is not expected to result in the ES being exceeded. The maximum short term PC is less 10% of the ES and therefore can be screened out as insignificant.

(ii) Particulate matter PM_{10} and $PM_{2.5}$

The impact on air quality from particulate emissions has been assessed against the ES for PM_{10} (particles of 10 microns and smaller) and $PM_{2.5}$ (particles of 2.5 microns and smaller). For PM_{10}, the ES are a long term annual average of 40 $\mu g/m^3$ and a short term daily average of 50 $\mu g/m^3$. For $PM_{2.5}$ the ES of 20 $\mu g/m^3$ as a long-term annual average was used, having changed from 25 $\mu g/m^3$ in 2020.

The Operator's predicted impact of the Installation against these ES is shown in the tables above. The assessment assumes that **all** particulate emissions are present as PM_{10} for the PM_{10} assessment and that **all** particulate emissions are present as $PM_{2.5}$ for the $PM_{2.5}$ assessment.

The above assessment is considered to represent a worst case assessment in that:

- It assumes that the plant emits particulates continuously at the IED Annex VI limit for total dust, whereas actual emissions from similar plant are normally lower.
- It assumes all particulates emitted are below either 10 microns (PM_{10}) or 2.5 microns ($PM_{2.5}$), when some are expected to be larger.

We have reviewed the Operator's particulate matter impact assessment and are satisfied in the robustness of the Operator's conclusions.

The above table shows that the predicted PC for emissions of PM_{10} is below 1% of the long term ES and below 10% of the short term ES and so can be screened out as insignificant. Therefore, we consider the Operator's proposals for preventing and minimising the emissions of particulates to be BAT for the Installation.

The above table also shows that the predicted PC for emissions of $PM_{2.5}$ is also below 1% of the ES. Therefore, the Environment Agency concludes that particulate emissions from the installation, including emissions of PM_{10} or $PM_{2.5}$, will not give rise to significant pollution.

There is currently no emission limit prescribed nor any continuous emissions monitor for particulate matter specifically in the PM_{10} or $PM_{2.5}$ fraction. Whilst we are confident that current monitoring techniques will capture the fine particle fraction ($PM_{2.5}$) for inclusion in the measurement of total particulate matter, an improvement condition (IC1) has been included that will require a full analysis of particle size distribution in the flue gas, and hence determine the ratio of fine to coarse particles. In the light of current knowledge and available data however

we are satisfied that the health of the public would not be put at risk by such emissions, as explained in section 5.3.3.

(iii) Acid gases, sulphur dioxide (SO_2), hydrogen chloride (HCl) and hydrogen fluoride (HF)

From the tables above, emissions of HCl and HF can be screened out as insignificant in that the process contribution is <10% of the short term ES. The ES for HCl is 750 $\mu g/m^3$, this is an hourly short term average, there is no long term ES for HCl. HF has 2 assessment criteria – a 1-hr ES of 160 $\mu g/m^3$ and a monthly ES of 16 $\mu g/m^3$ – the process contribution is <1% of the monthly ES and so the emission screens out as insignificant if the monthly ES is interpreted as representing a long term ES.

There is no long term EAL for SO_2 for the protection of human health. Protection of ecological receptors from SO_2 for which there is a long term ES is considered in section 5.4. There are three short term ES, hourly of 350 $\mu g/m^3$, 15–minute of 266 $\mu g/m^3$ and daily of 125 $\mu g/m^3$.

From the above table, emissions of SO_2 can be screened out as insignificant in that the short term process contribution is <10% of each of the three short term ES values. Therefore, we consider the Operator's proposals for preventing and minimising the emissions of these substances to be BAT for the Installation.

(iv) Emissions to air of carbon monoxide (CO), Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), Dioxins and ammonia (NH_3)

The above tables show that for CO, the maximum long term PC is less than 1% of the ES and the maximum short term PC is less than 10% of the ES and so can be screened out as insignificant. Therefore, we consider the Operator's proposals for preventing and minimising the emissions of these substances to be BAT for the Installation.

For VOCs, the operator used the Benzene ES to assess the VOC daily mean emissions and also the annual mean TVOC emissions, however, for the VOC annual mean there is an ES for 1,3 Butadiene and also a 24-hour mean (short term) ES for 1,3 Butadiene.

We have carried out our own checks against these Butadiene ES. The annual mean ES is not predicted to be exceeded. If it is assumed that all VOC emitted from the facility is 1,3 Butadiene we find that the 24-hour 1,3-butadiene ES is predicted to be marginally exceeded at receptors to the west of the installation. However, the assumption that all TVOC will be 1,3 Butadiene is very conservative and we are confident that exceedances of the ES are unlikely. Despite this, we have additionally reduced the Emission Limit Value for daily average TOC in the permit from 10mg/m^3 to 9mg/m^3. This will mean that even in a hypothetical scenario where all VOC are 1,3 Butadiene then the ES at all receptors would not be exceeded.

The above tables show that for PAH and PCB emissions, the maximum long term PC is less than 1% of the ES and the maximum short term PC is less than 10% of the ES for PCBs and so can be screened out as insignificant. Therefore, we consider the Operator's proposals for preventing and minimising the emissions of these substances to be BAT for the Installation.

The impact from VOCs was based on the emission limit set in the permit for total organic carbon

The Operator has also used the ES for benzo[a]pyrene (BaP) for their assessment of the impact of PAH. We agree that the use of the BaP ES is sufficiently precautionary.

There is no ES for dioxins and furans as the principal exposure route for these substances is by ingestion and the risk to human health is through the accumulation of these substances in the body over an extended period of time. This issue is considered in more detail in section 5.3

From the tables above all the other emissions can be screened out as insignificant in that the PC is < 1% of the long term ES and <10% of the short term ES.

The ammonia emission is based on a release concentration of 10 mg/m^3. We are satisfied that this level of emission is consistent with the operation of a well-controlled SNCR NO_x abatement system.

Whilst all emissions cannot be screened out as insignificant, the Operator's modelling shows that the installation is unlikely to result in a breach of the ES. The Operator is required to prevent, minimise and control PAH and VOC emissions using BAT and we have previously assessed that BAT is in place

We are satisfied that PAH and VOC emissions will not result in significant pollution.

(V) Summary

For the above emissions to air, for those emissions that have not screened out as insignificant, we agree that they are applying the BAT to prevent and minimise emissions of these substances. Therefore, we consider the Operator's proposals for preventing and minimising emissions to be BAT for the Installation. Dioxins and furans are considered further in section 5.3.2.

5.2.3 Assessment of Emission of Metals

The Operator has assessed the impact of metal emissions to air, as previously described.

There are three sets of BAT AELs for metal emissions:

- An emission limit value of 0.02 mg/m^3 for mercury and its compounds (formerly WID group 1 metals).

- An aggregate emission limit value of 0.02 mg/m^3 for cadmium and thallium and their compounds (formerly WID group 2 metals).
- An aggregate emission limit of 0.3 mg/m^3 for antimony, arsenic, lead, chromium, cobalt, copper, manganese, nickel and vanadium and their compounds (formerly WID group 3 metals).

In addition, the UK is a Party to the Heavy Metals Protocol within the framework of the UN-ECE Convention on long-range trans-boundary air pollution. Compliance with the IED Annex VI emission limits for metals along with the Application of BAT also ensures that these requirements are met.

In section 5.2.1 above, the following emissions of metals were screened out as insignificant:

- Hg (long term only)
- Sb
- Mn (short term)
- V
- Cr (II)(III)

Also in section 5.2.1, the following emissions of metals whilst not screened out as insignificant were assessed as being unlikely to give rise to significant pollution:

- Cd
- Hg (Short term)
- Pb
- Mn (long term)
- Nickel

This left emissions of Cu, As and Cr VI requiring further assessment. For all other metals, the Operator has concluded that exceedances of the EAL for all metals are not likely to occur.

Where the BREF sets an aggregate limit, the Operator's assessment assumes that each metal is emitted individually at the relevant aggregate emission limit value. This is a something which can never actually occur in practice as it would inevitably result in a breach of the said limit, and so represents a very much worst case scenario.

For metals Cu, As and Cr VI the Operator used representative emissions data from other municipal waste incinerators using our guidance note "Guidance to Operators on Impact Assessment for Group 3 Metals Stack Releases – version 4". Measurement of Chromium (VI) at the levels anticipated at the stack emission points is expected to be difficult, with the likely levels being below the level of detection by the most advanced methods.

Based on the above, the following emissions of metals were screened out as insignificant:

- Copper (Cu)
- Arsenic (As)
- Chromium VI (Cr VI)

The installation has been assessed as meeting BAT for control of metal emissions to air.

5.2.4 Consideration of Local Factors

(i) Impact on Air Quality Management Areas (AQMAs)

No AQMAs have been declared within an area likely to be affected by emissions from the Installation.

5.3 Human health risk assessment

5.3.1 Our role in preventing harm to human health

The Environment Agency has a statutory role to protect the environment and human health from all processes and activities it regulates. We assessed the effects on human health for this application in the following ways:

i) Applying Statutory Controls

The plant will be regulated under EPR. The EPR include the requirements of relevant EU Directives, notably, the IED, the WFD, and ADD.

The main conditions in an EfW permit are based on the requirements of the IED. Specific conditions have been introduced to specifically ensure compliance with the requirements of Chapter IV of the IED. The aim of the IED is to prevent or, where that is not practicable, to reduce emissions to air, water and land and prevent the generation of waste, in order to achieve a high level of protection of the environment taken as a whole. IED achieves this aim by setting operational conditions, technical requirements and emission limit values to meet the requirements set out in Articles 11 and 18 of the IED. These requirements may in some circumstances dictate tighter emission limits and controls than those set out in the BAT conclusions (BAT-C) or Chapter IV of IED on waste incineration and co-incineration plants.

ii) Environmental Impact Assessment

Industrial activities can give rise to odour, noise and vibration, accidents, fugitive emissions to air and water, releases to air (including the impact on Photochemical Ozone Creation Potential (POCP)), discharges to ground or groundwater, GWP and the generation of waste. For an installation of this kind, the principal environmental effects are through emissions to air, although we also consider all of the other impacts listed. Section 5.1 and 5.2 above explain how we have approached the critical issue of assessing the likely impact of the emissions to air from the Installation on human health and the environment and any measures we are requiring to ensure a high level of protection.

iii) Expert Scientific Opinion

There is a significant amount of literature on whether there are links between operation of incineration plants and effects on health. We have not referenced them here, but we have included information on one of the most recent studies that was commissioned by the UK Health Security Agency (UKHSA), previously Public Health England (PHE). The overall weight of the evidence is that there is not a significant impact on human health.

UKHSA review research undertaken to examine suggested links between emissions from municipal waste incinerators and effects on health. UKHSA's risk assessment is that modern, well run and regulated municipal waste incinerators are not a significant risk to public health. While it is not possible to rule out adverse health effects from these incinerators completely, any potential effect for people living close by is likely to be very small.

UKHSA keep literature on health effects under review and would inform us if there were any changes to the above position. Similarly, we would consult UKHSA if new evidence was provided to us.

In 2012 the UK Small Area Health Statistics Unit (SAHSU) at Imperial College was commissioned by PHE to carry out a study to extend the evidence base and to provide further information to the public about any potential reproductive and infant health risks from municipal waste incineration (MWIs).

A number of papers have been published by SAHSU since 2012 which show no effect on birth outcomes. One paper in the study looked at exposure to emissions from MWIs in the UK and concluded that exposure was low. Subsequent papers found no increased risk of a range of birth outcomes (including stillbirth and infant mortality) in relation to exposure to PM_{10} emissions and proximity to MWIs, and no association with MWIs opening on changes in risks of infant mortality or sex ratio.

The final part of the study, published on 21/06/19, found no evidence of increased risk of congenital anomalies from exposure to MWI chimney emissions, but a small potential increase in risk of congenital anomalies for children born within ten kilometres of MWIs. The paper does not demonstrate a causal effect, and it acknowledges that the observed results may well be down

to not fully adjusting the study for factors such as other sources of pollution around MWIs or deprivation.

UKHSA have stated that 'While the conclusions of the study state that a causal effect cannot be excluded, the study does not demonstrate a causal association and makes clear that the results may well reflect incomplete control for confounding i.e. insufficiently accounting for other factors that can cause congenital anomalies, including other sources of local pollution. This possible explanation is supported by the fact no increased risk of congenital anomalies was observed as a result of exposure to emissions from an incinerator.'

Following this study, UKHSA have further stated that their position remains that modern, well run and regulated municipal waste incinerators are not a significant risk to public health.

We agree with the view stated by the UKHSA. We ensure that permits contain conditions which require the installation to be well-run and regulate the installation to ensure compliance with such permit conditions.

iv) Health Risk Models

Comparing the results of air dispersion modelling as part of the Environmental Impact assessment against European and national air quality standards effectively makes a health risk assessment for those pollutants for which a standard has been derived. These air quality standards have been developed primarily to protect human health via known intake mechanisms, such as inhalation and ingestion. Some pollutants, such as dioxins, furans and dioxin like PCBs, have human health impacts at lower ingestion levels than lend themselves to setting an air quality standard to control against. For these pollutants, a different human health risk model is required which better reflects the level of dioxin intake.

Models are available to predict the dioxin, furan and dioxin like PCBs intake for comparison with the Tolerable Daily Intake (TDI) recommended by the Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment, known as COT. These include the HHRAP model.

HHRAP has been developed by the US EPA to calculate the human body intake of a range of carcinogenic pollutants and to determine the mathematical quantitative risk in probabilistic terms. In the UK, in common with other European countries, we consider a threshold dose below which the likelihood of an adverse effect is regarded as being very low or effectively zero.

The TDI is the amount of a substance that can be ingested daily over a lifetime without appreciable health risk. It is expressed in relation to bodyweight to allow for different body size, such as for adults and children of different ages. In the UK, the COT has set a TDI for dioxins, furans and dioxin like PCBs of 2 picograms WHO-TEQ/kg-body weight/day (a picogram is a millionth of a millionth (10^{-12}) of a gram).

In addition to an assessment of risk from dioxins, furans and dioxin like PCBs, the HHRAP model enables a risk assessment from human intake of a range of heavy metals. In principle, the respective ES for these metals are protective of human health. It is not therefore necessary to model the human body intake.

The Committee on the Medical Effects of Air Pollution (COMEAP) developed a methodology based on the results of time series epidemiological studies which allows calculation of the public health impact of exposure to the classical air pollutants (NO_2, SO_2 and particulates) in terms of the numbers of "deaths brought forward" and the "number of hospital admissions for respiratory disease brought forward or additional". Defra reviewed this methodology and concluded that the use of the COMEAP methodology is not generally recommended for modelling the human health impacts of individual installations.

Our recommended approach is therefore the use of the methodology set out in our guidance for comparison for most pollutants (including metals) and dioxin intake modelling using the HHRAP model as described above for dioxins, furans and dioxin like PCBs. Where an alternative approach is adopted for dioxins, we check the predictions ourselves.

v) Consultations

As part of our normal procedures for the determination of a permit application, we consult with Local Authorities, Local Authority Directors of Public Health, FSA and UKHSA. We also consult the local communities who may raise health related issues. All issues raised by these consultations are considered in determining the Application as described in Annex 4 of this document.

5.3.2 Assessment of Intake of Dioxins, Furans and Dioxin like PCBs

For dioxins, furans and dioxin like PCBs, the principal exposure route is through ingestion, usually through the food chain, and the main risk to health is through accumulation in the body over the lifetime of the receptor.

The human health risk assessment calculates the dose of dioxins and furans that would be received by local receptors if their food and water were sourced from the locality where the deposition of dioxins, furans and dioxin like PCBs is predicted to be the highest. This is then assessed against the Tolerable Daily Intake (TDI) levels established by the COT of 2 picograms WHO-TEQ / kg body weight/ day.

The results of the Operator's assessment of dioxin intake are detailed in the table below (worst case results for each category are shown). The results showed that the predicted daily intake of dioxins, furans and dioxin like PCBs at all receptors, resulting from emissions from the proposed facility, were significantly below the recommended TDI levels.

The operator's conclusions, which we have audited and with which we agree with the conclusions of, indicate the dioxin, furan and dioxin-like PC intakes

are below 10% of the COT TDI at the maximally impacted location and are not considered a significant risk to health. It is also the case that we find the maximally impacted location PC intakes to be below those presented by the operator.

This also applies to any increased emissions of dioxins, furans and dioxin-like PCBs during worst-case abnormal operations.

This is based on the UKHSA advice that:

- A total exposure including the PC from dioxins, furans and dioxin-like PCBs is without appreciable health risk if the total exposure is below the TDI.
- If total exposure including the PC results in an exceedance of the COT TDI, if the PC from the facility is less than 10% it would be unlikely to result in a significant risk.

Receptor	adult	child
Agricultural	4.63%	6.54%
Residential	0.11%	0.34%

Calculated % of maximum daily intake of dioxins over a lifetime by local receptors resulting from the operation of the proposed facility (WHO-TEQ/ kg-BW/day)

In 2010, the FSA studied the levels of chlorinated, brominated and mixed (chlorinated-brominated) dioxins and dioxin-like PCBs in fish, shellfish, meat and eggs consumed in the UK. It asked COT to consider the results and to advise on whether the measured levels of these PXDDs, PXDFs and PXBs indicated a health concern ('X' means a halogen). COT issued a statement in December 2010 and concluded that "The major contribution to the total dioxin toxic activity in the foods measured came from chlorinated compounds. Brominated compounds made a much smaller contribution, and mixed halogenated compounds contributed even less (1% or less of TDI). Measured levels of PXDDs, PXDFs and dioxin-like PXBs do not indicate a health concern". COT recognised the lack of quantified TEFs for these compounds but said that "even if the TEFs for PXDDs, PXDFs and dioxin-like PXBs were up to four fold higher than assumed, their contribution to the total TEQ in the diet would still be small. Thus, further research on PXDDs, PXDFs and dioxin-like PXBs is not considered a priority."

In the light of this statement, we assess the impact of chlorinated compounds as representing the impact of all chlorinated, brominated and mixed dioxins / furans and dioxin like PCBs.

5.3.3 Particulates smaller than 2.5 microns

The Operator will be required to monitor particulate emissions using the method set out in Table S3.1 of Schedule 3 of the Permit. This method requires that the filter efficiency must be at least 99.5 % on a test aerosol with a mean particle diameter of 0.3µm, at the maximum flow rate anticipated. The filter efficiency

for larger particles will be at least as high as this. This means that particulate monitoring data effectively captures everything above 0.3µm and much of what is smaller. It is not expected that particles smaller than 0.3µm will contribute significantly to the mass release rate / concentration of particulates because of their very small mass, even if present. This means that emissions monitoring data can be relied upon to measure the true mass emission rate of particulates.

Nano-particles are considered to refer to those particulates less than 0.1µm in diameter ($PM_{0.1}$). Questions are often raised about the effect of nano-particles on human health, in particular on children's health, because of their high surface to volume ratio, making them more reactive, and their very small size, giving them the potential to penetrate cell walls of living organisms. The small size also means there will be a larger number of small particles for a given mass concentration. However, the UKHSA statement (referenced below) says that due to the small effects of incinerators on local concentration of particles, it is highly unlikely that there will be detectable effects of any particular incinerator on local infant mortality.

The UKHSA addresses the issue of the health effects of particulates in their September 2009 statement 'The Impact on Health of Emissions to Air from Municipal Incinerators'. It refers to the coefficients linking PM_{10} and $PM_{2.5}$ with effects on health derived by COMEAP and goes on to say that if these coefficients are applied to small increases in concentrations produced, locally, by incinerators, the estimated effects on health are likely to be small. UKHSA note that the coefficients that allow the use of number concentrations in impact calculations have not yet been defined because the national experts have not judged that the evidence is sufficient to do so. This is an area being kept under review by COMEAP.

In December 2010, COMEAP published a report on The Mortality Effects of Long-Term Exposure to Particulate Air Pollution in the United Kingdom. It says that "a policy which aims to reduce the annual average concentration of $PM_{2.5}$ by 1µg/m^3 would result in an increase in life expectancy of 20 days for people born in 2008." However, "The Committee stresses the need for careful interpretation of these metrics to avoid incorrect inferences being drawn – they are valid representations of population aggregate or average effects, but they can be misleading when interpreted as reflecting the experience of individuals."

UKHSA also point out that in 2007 incinerators contributed 0.02% to ambient ground level PM_{10} levels compared with 18% for road traffic and 22% for industry in general. UKHSA noted that in a sample collected in a day at a typical urban area the proportion of $PM_{0.1}$ is around 5-10% of PM_{10}. It goes on to say that PM_{10} includes and exceeds $PM_{2.5}$ which in turn includes and exceeds $PM_{0.1}$. The National Atmospheric Emissions Inventory (NAEI) figures show that in 2016 municipal waste incineration contributed 0.03% to ambient ground level PM_{10} levels and 0.05% to ambient ground level PM2.5 levels. The 2016 data also shows that road traffic contributed to 5.35% of PM10 and 4.96% of PM2.5 and that domestic wood burning contributed 22.4% to PM10 and 34.3% of PM2.5 levels.

This is consistent with the assessment of this Application which shows emissions of PM_{10} to air to be insignificant.
A 2016 paper by Jones and Harrison concluded that 'ultrafine particles (<100nm) in flue gases from incinerators are broadly similar to those in urban air and that after dispersion with ambient air ultrafine particle concentrations are typically indistinguishable from those that would occur in the absence of the incinerator.

We take the view, based on the foregoing evidence, that techniques which control the release of particulates to levels which will not cause harm to human health will also control the release of fine particulate matter to a level which will not cause harm to human health.

5.3.4 Assessment of Health Effects from the Installation

Our assessment of health impacts is summarised below

i. We have applied the relevant requirements of the Environmental legislation in imposing the permit conditions. We are satisfied that compliance with these conditions will ensure protection of the environment and human health.

ii. In carrying out air dispersion modelling as part of the environmental impact assessment and comparing the PC and PEC with the ES, the Operator has effectively made a health risk assessment for many pollutants. The ES have been developed primarily to protect human health. The Operator's assessment of the impact from:

- NO_2 (Short term only)
- PM_{10}
- $PM_{2.5}$
- SO_2
- HCl
- HF
- CO
- TOC (daily mean as Benzene)
- PAH
- NH_3
- PCBs
- Hg (long term only)
- Sb
- Mn (short term)
- V
- Cr (II)(III)

have all indicated that the Installation emissions screen out as insignificant; where the impact of emissions of:

- NO_2 (Long term only).

- TOC (annual mean and 24 hour mean (short term) as 1,3 Butadiene*)*
- Cd
- Hg (Short term)
- Pb
- Mn (long term)
- Nickel
- Copper (Cu)
- Arsenic (As)
- Chromium VI (Cr VI)

have not been screened out as insignificant, the assessment still shows that the PEC are well within the ES. In order to exercise the upmost caution for TOC we have also reduced the ELV in the permit (see section 5.2.2 (iv) above).

iii. We have assessed the health effects from the operation of this installation in relation to the above (sections 5.3.1 to 5.3.3).

iv. We have reviewed the methodology employed by the Operator to carry out the health impact assessment.

Overall, taking into account the conservative nature of the impact assessment (i.e. that it is based upon an individual exposed for a lifetime to the effects of the highest predicted relevant airborne concentrations and consuming mostly locally grown food), it was concluded that the operation of the proposed facility will not pose a significant risk to human health.

v. We agree with the conclusion reached by UKHSA that modern, well-run and regulated municipal waste incinerators are not a significant risk to public health. While it is not possible to rule out adverse health effects from these incinerators completely, any potential effect for people living close by is likely to be very small.

vi. UKHSA and the Local Authority Director of Public Health were consulted on the Application. The UKHSA concluded that they had no significant concerns regarding the risk to the health of humans from the installation. The Local Authority Director of Public Health did not provide a response. The Food Standards Agency was also consulted during the permit determination process and did not provide a response to our consultation. Details of the responses provided by UKHSA can be found in Annex 4.

We are therefore satisfied that the Operator's conclusions presented above are reliable and we conclude that the potential emissions of pollutants including dioxins, furans and metals from the proposed facility are unlikely to have a significant impact on human health.

5.4 Nature conservation, landscape, heritage and protected species and habitat designations

We have checked the location of the application to assess if it is within the screening distances we consider relevant for impacts on nature conservation, landscape, heritage and protected species and habitat designations. The application is within our screening distances for some of these designations.

5.4.1 Sites Considered

There are no Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites within 10km of the proposed Installation.

There are no Sites of Special Scientific Interest (SSSI) within 2km of the proposed Installation.

The following local nature sites (ancient woodlands, local wildlife sites and national and local nature reserves) are located within 2km of the Installation:

- Blackwater Plantation Ancient Woodland / LWS
- Maxey's Spring LWS
- Storey's Wood Ancient Woodland / LWS
- Upney Wood Ancient Woodland / LWS

Despite being slightly outside of the 2km screening distance, the Operator also assessed impacts at Link's Wood Ancient Woodland / LWS and Park House Meadow LWS

5.4.2 Assessment of local nature sites

Conservation sites are protected in law by legislation which provides the highest level of protection for SACs and SPAs, and also for protection of SSSIs. Finally, the Environment Act 1995 provides more generalised protection for flora and fauna rather than for specifically named conservation designations. It is under the Environment Act 1995 that we assess other sites (such as ancient woodlands, local wildlife sites, and national and local nature reserves) which prevents us from permitting something that will result in significant pollution, and which offers levels of protection proportionate with other European and national legislation. However, it should not be assumed that because levels of protection are less stringent for these other sites, that they are not of considerable importance. Local sites link and support EU and national nature conservation sites together and hence help to maintain the UK's biodiversity resilience.

For SACs, SPAs, Ramsars and SSSIs we consider the PC and the background levels, in making an assessment of impact. In assessing the local nature sites under the Environment Act 1995 we look at the impact from the Installation alone to determine whether it would cause significant pollution. This is a proportionate approach, in line with the levels of protection offered by

the conservation legislation to protect these other sites (which are generally more numerous than Natura 2000 or SSSIs) whilst ensuring that we do not restrict development.

Critical levels and loads are set to protect the most vulnerable habitat types. Thresholds change in accordance with the levels of protection afforded by the legislation. Therefore, the thresholds for SAC, SPA, and SSSI features are more stringent than those for local nature sites.

Therefore, we would generally conclude that the Installation is not causing significant pollution at these other sites if the PC is less than the relevant critical level or critical load, provided that the Operator is using BAT to control emissions.

The operator has assessed the dispersion of the relevant pollutants against critical level criteria for the protection of vegetation and ecosystems which is summarised in the following table. The values shown represent the highest concentrations predicted for any of the receptors for each pollutant.

Maximum critical level concentrations on local wildlife sites within 2km of the installation

Pollutant	**Critical level (µg/m^3)**	**PC (µg/m^3)**	**PC as % of Critical level**
SO_2	10 (LT)	0.18 [1]	1.80%
NOx (as NO_2)	30 (LT)	0.60 [1]	2.00%
	75 (ST)	12.21 [2]	16.28%
HF	0.5 (LT)	0.04 [2]	7.19%
	5 (ST)	0.12 [2]	2.44%
NH_3	1 (LT)	0.06 [1]	5.98%
Note [1] – PC given is the worst case results for all non-statutory sites – Upney Wood			
Note [2] – PC given is the worst case results for all non-statutory sites – Maxey's Spring			

The operator has assessed the critical loads for nitrogen and acid deposition against critical load criteria for sites as obtained from the UK Air Pollution Information System (APIS) which is summarised in the following table. The values show represent the highest concentration predicted for an y of the receptors for each parameter.

Maximum critical load concentrations on local wildlife sites within 2 km of the installation

Pollutant	**Critical load (most severe criterion used to exemplify receptors)**	**PC**	**PC as % of Critical load**
Nitrogen deposition	10 kg N/ha/yr	0.59 kg N/ha/yr [1]	5.9%
Acid deposition	1.692 (CLmaxN)	0.061 KEQ/HA/YR [2]	3.6%
Note [1] – PC given is the worst case results for all non-statutory sites – Upney Wood			
Note [2] – PC given is the worst case results for all non-statutory sites – Blackwater Plantation			

The tables above show that the PCs are below 100% of the critical levels or loads. We are satisfied that the Installation will not cause significant pollution at the sites. The Operator is required to prevent, minimise and control emissions using BAT. We are satisfied that BAT will be in place at the facility.

5.5 Impact of abnormal operations

Article 50(4)(c) of the IED requires that waste incineration and co-incineration plants shall operate an automatic system to prevent waste feed, whenever any of the continuous emission monitors show that an ELV is exceeded due to disturbances or failures of the purification devices. Notwithstanding this, Article 46(6) allows for the continued incineration and co-incineration of waste under such conditions provided that this period does not (in any circumstances) exceed 4 hours uninterrupted continuous operation or the cumulative period of operation does not exceed 60 hours in a calendar year. This is a recognition that the emissions during transient states (e.g. start-up and shut-down) are higher than during steady-state operation, and the overall environmental impact of continued operation with a limited exceedance of an ELV may be less than that of a partial shut-down and re-start.

For incineration plant, IED sets backstop limits for particulates, CO and TOC which must continue to be met during abnormal operation. The CO and TOC limits are the same as for normal operation, and are intended to ensure that good combustion conditions are maintained. The backstop limit for particulates is 150 mg/m^3 (as a half hourly average) which is five times the limit in normal operation.

Article 45(1)(f) requires that the permit shall specify the maximum permissible period of any technically unavoidable stoppages, disturbances, or failures of the purification devices or the measurement devices, during which the concentrations in the discharges into the air may exceed the prescribed emission limit values. In this case we have decided to set the time limit at 4 hours, which is the maximum period prescribed by Article 46(6) of the IED.

These abnormal operations are limited to no more than a period of 4 hours continuous operation and no more than 60 hours aggregated operation in any calendar year. This is less than 1% of total operating hours and so abnormal operating conditions are not expected to have any significant long term environmental impact unless the background conditions were already close to, or exceeding, an ES. For the most part therefore consideration of abnormal operations is limited to consideration of its impact on short term ESs.

In making an assessment of abnormal operations the following worst-case scenario has been assumed:

- Dioxin emissions of 100 x normal
- Mercury emissions are 30 times those of normal operation
- NO_x emissions of 500 mg/m^3 (2.5 x normal)
- Particulate emissions of 150 mg/m^3 (5 x normal)
- Metal emissions are 30 times those of normal operation

- SO_2 emissions of 450 mg/m^3 (15x normal)
- HCl emissions of 900 mg/m^3 (150x normal)
- PCBs (100 x normal)

This is a worst case scenario in that these abnormal conditions include a number of different equipment failures not all of which will necessarily result in an adverse impact on the environment (e.g. a failure of a monitoring instrument does not necessarily mean that the incinerator or abatement plant is malfunctioning). This analysis assumes that any failure of any equipment results in all the negative impacts set out above occurring simultaneously.

The result on the Operator's short-term environmental impact is summarised in the tables below.

Non-metals

Pollutant	ES		Back-ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
	µg/m^3		µg/m^3	µg/m^3	% of EAL	µg/m^3	% of EAL
NO_2	200	99.79th %ile of 1 hour means	29.6	64.16	**32.08**	93.76	46.88
PM_{10}	50	90.41st %ile of 24 hour means	36	2.53	5..06	38.53	77.06
SO_2	266	99.9th ile of 15-min means	7.6	197.71	**74.33**	205.31	77.18
	350	99.73rd %ile of 1 hour means	7.6	155.34	**44.38**	162.94	46.55
	125	99.18th %ile of 24 hour means	7.6	18.45	**14.76**	26.05	20.84
HCl	750	1 hour mean	1.42	454	**60.53**	455.42	60.72
HF	160	1 hour mean	4.7	1.82	1.14	6.52	4.08
PCBs	6	1 hour mean	0.00026	0.11273	1.88	0.11299	1.88

Metals

Pollutant	ES		Back-ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
	ng/m^3		ng/m^3	ng/m^3	% of EAL	ng/m^3	% of EAL
Hg	600	1 hour mean	5.6	301.9	**50.32**	307.50	51.25
Sb	150000	1 hour mean	2.6	173.59	0.12	176.19	0.12
Cd	30	24 hour mean (short term)	0.96	13.15	**43.83**	14.11	47.03
Mn	1500000	1 hour mean	4.58	905.71	0.06	910.29	0.06
V	1000	24 hour mean (short term)	1.38	7.89	0.79	9.27	0.93
Ni	700	1 hour mean	0.94	90.57	**12.94**	91.51	13.07

From the table above the emissions of the following substances can still be considered insignificant, in that the PC is still <10% of the short-term ES.

- Particulate Matter (PM10)
- Hydrogen Fluoride (HF)
- PCBs
- Mercury (Hg)
- Antimony (Sb)
- Manganese (Mn)
- Vanadium (V)

Also, from the table above emissions of the following emissions (which were not screened out as insignificant) have been assessed as being unlikely to give rise to significant pollution in that the predicted environmental concentration is less than 100% of short term ES.

- NO2
- SO2

- HCl
- Hg
- Cd
- Ni

We are therefore satisfied that it is not necessary to further constrain the conditions and duration of the periods of abnormal operation beyond those permitted under Chapter IV of the IED.

We have not assessed the impact of abnormal operations against long term ESs for the reasons set out above. Except that if dioxin emissions were at 10 ng/m^3 for the maximum period of abnormal operation, this would result in an increase of approximately 70% in the TDI reported in section 5.3.3. As discussed in section 5.3.2, we consider the consultants figures presented in 5.3.3 to be conservative. Our audit finds that the 10% significance threshold of the TDI attributable to the facility would not be exceeded as a result of worst-case abnormal operations.

6 Operation of the Installation – general issues

6.1 Operating techniques

We have specified that the Operator must operate the Installation in accordance with the following documents in addition to those already specified in table S1.2 of the Permit:

Description	Parts included
Updated information for variation application EPR/CP3906LP/V003	Updated Appendix B to the Supporting Information document "Review of operating techniques" dated 27/11/2024
Updated information for Variation application EPR/CP3906LP/V003	Updated Supporting Information document dated 16/12/2024, Parts 1,2, and 5
Response to Schedule 5 Notice dated 13/03/2025 for EPR/CP3906LP/V003	All information on the drainage designs in place to protect surface water included within Section 1 of the response.
Response to Schedule 5 Notice dated 14/04/2025 and further information request dated 08/04/2025 for EPR/CP3906LP/V003	Information on the principles of the design of the drainage system and suitability of waste code 19 08 14 to be received by the incineration activity.

The details set out above describe the techniques that will be used for the operation of the Installation that have been assessed by us as BAT; they form part of the Permit through Permit condition 2.3.1 and Table S1.2 in the Permit Schedules.

6.2 Addition of waste codes

The operator has requested for the following waste codes to be added to the permit:

03 03 01, 03 03 07, 03 03 08, 04 02 09, 04 02 10, 04 02 21, 04 02 22, 15 01 01, 15 01 02, 15 01 03, 15 01 05, 15 01 06, 15 01 09, 15 02 03, 17 02 01, 17 02 03, 17 09 04, 18 01 04, 18 01 09, 19 08 01, 19 08 14, 20 01 08, 20 01 10, 20 01 11, 20 01 25, 20 01 28, 20 01 30, 20 01 32, and 20 01 36.

Waste codes 20 01 38, 20 01 39, and 20 02 01 were also requested to be added to the permit but they are already present.

Article 45(1) of the IED requires that the Permit must include a list of all types of waste which may be treated using at least the types of waste set out in the European Waste List established by Decision 2005/532/EC, EC, if possible, and containing information on the quantity of each type of waste, where appropriate. The Application contains a list of those wastes coded by the European Waste Catalogue (EWC) number, which the Operator will accept in the waste streams entering the plant and which the plant is capable of burning in an environmentally acceptable way. We have specified the permitted waste types, descriptions and where appropriate quantities which can be accepted at the installation in Table S2.2.

We are satisfied that the Operator can accept the waste codes added to Table S2.2 of the Permit because:

(i) the waste is likely to be within the design calorific value (CV) range for the plant;
(ii) the waste is unlikely to contain harmful components that cannot be safely processed at the Installation.

We have placed a pre-operational condition for future development (POFD 3) in the permit which prevents the new waste codes from being received until an updated waste pre-acceptance and acceptance criteria has been submitted to us and approved by us.

The incineration plant will take municipal waste and commercial waste, which has not been source-segregated or separately collected or otherwise recovered, recycled or composted. The amount of recyclable material in the waste feed is largely outside the remit of this permit determination with recycling initiatives being a matter for the local authority. However, Permit conditions 2.3.5 and 2.3.6 limit the burning of separately collected fractions in line with regulation 12 of the Waste (England and Wales) Regulations 2011.

The Installation will be designed, constructed and operated using BAT for the incineration of the permitted wastes. The plant has been permitted to take a range of municipal and commercial waste streams since the original determination, and we consider that the addition of these types of wastes does not increase the amenity risk posed by the plant. Regardless of the waste types

to be received at the facility the operator will have to meet all permit conditions including air emission limits. We are satisfied that the operating and abatement techniques are BAT for incinerating these types of waste. The abatement techniques in place at the facility have not changed as a result of this variation.

7 Other aspects of the determination

There will be no changes to the technologies or approaches affecting the following considerations which have previously been assessed by us, including:

- Consideration of Furnace Type
- Boiler Design
- Emission Control
- Formation and release of persistent organic pollutants
- The setting of ELVs and other permit conditions
- Monitoring requirements
- Reporting requirements
- Noise, Dust, Odour and fire risk

We have not re-visited our previous decisions on these matters.

7.1 Commissioning

In the existing permit there are a number of pre-operational conditions which need to be signed off by the Environment Agency prior to commissioning commencing on site.

It is also the case that two additional pre-operational conditions for future development will be added by this variation as follows:

- POFD 2 will prevent any of the other activities, aside from the incineration activity, forming part of the permit from being operated until the Operator has suitably demonstrated that they can be operated appropriately.

- POFD 3 will prevent the waste codes requested under variation V003 from being allowed to be received under the permit until the facility's waste pre-acceptance and acceptance criteria has been updated and approved by the Environment Agency.

7.2 Energy efficiency

The operator has requested the removal of the limit in the permit on electricity (49 Mwe) and steam generation (35 MW). This is to align with the recent Development Consent Order (DCO) application to enable the CHP plant to increase the electricity generation to more than 50MWe. Although reference to this has appeared in Table S1.1. of the permit, the value listed in table S1.1

was not intended to be a limit because the Permit requires electrical generation to be maximised.. To prevent ambiguity, the electrical generation value in Table S1.1 has been removed. A reference to electrical generation remains in the Introductory Note of the permit; however, this note does not constitute a permit condition and is included solely for informational purposes.

The removal of this reference does not affect any Operating Techniques or emissions associated with the operation of the CHP Plant.

(i) Consideration of energy efficiency

For incineration facilities we consider the issue of energy efficiency in the following ways:

1. The use of energy within, and generated by, the Installation which are normal aspects of all EPR permit determinations.

2. The extent to which the Installation meets the requirements of Article 50(5) of the IED, which requires "the heat generated during the incineration and co-incineration process is recovered as far as practicable through the generation of heat, steam or power".

3. The combustion efficiency and energy utilisation of different design options for the Installation are relevant considerations in the determination of BAT for the Installation, including the Global Warming Potential of the different options.

4. The extent to which the Installation meets the requirement of Article 14(5) of the Energy Efficiency Directive which requires new thermal electricity generation installations with a total thermal input exceeding 20 MW to carry out a cost-benefit assessment to "assess the cost and benefits of providing for the operation of the installation as a high-efficiency cogeneration installation".
   Cogeneration means the simultaneous generation in one process of thermal energy and electrical or mechanical energy and is also known as combined heat and power (CHP)
   High-efficiency co-generation is cogeneration which achieves at least 10% savings in primary energy usage compared to the separate generation of heat and power – see Annex II of the Energy Efficiency Directive for detail on how to calculate this.

(ii) Use of energy within the Installation

The operating techniques in place to ensure that energy is used efficiently within the Installation will not be affected by this variation. Neither will the specific energy consumption per unit of waste or the LCV of the waste change as a result of this variation.

(iii) Generation of energy within the Installation - Compliance with Article 50(5) of the IED

Article 50(5) of the IED requires that *"the heat generated during the incineration and co-incineration process is recovered as far as practicable*".

Our combined heat and power (CHP) Ready Guidance - February 2013 considers that BAT for energy efficiency for Energy from Waste (EfW) plant is the use of CHP in circumstances where there are technically and economically viable opportunities for the supply of heat from the outset.

The term CHP in this context represents a plant which also provides a supply of heat from the electrical power generation process to either a district heating network or to an industrial / commercial building or process. However, it is recognised that opportunities for the supply of heat do not always exist from the outset (i.e. when a plant is first consented, constructed and commissioned).

In cases where there are no immediate opportunities for the supply of heat from the outset, we consider that BAT is to build the plant to be CHP Ready (CHP-R) to a degree which is dictated by the likely future opportunities which are technically viable and which may, in time, also become economically viable.

Energy efficiency calculations for the staged construction approach of the IWMF have been provided on a 'no heat export' basis. However, the facility has been built to be CHP ready in line with our guidance. The facility has been designed to generate up to 62.37 MWe. Of which 56.9 MW will be exported to the grid and 5.5 MW will be used for power supply to the facility.

The BREF says that 0.4 – 0.8 MWh of electricity can be generated per tonne of waste.

Our technical guidance note, EPR S5.01, states that where electricity only is generated, 5-9 MW of electricity should be recoverable per 100,000 tonnes/annum of waste (which equates to 0.4 – 0.72 MWh/tonne of waste).

The Application states that 62.37 MW of electricity produced for an annual burn of 595,000 tonnes, which represents 9.56 MW per 100,000 tonnes/yr of waste burned (0.83 MWh/tonne of waste). The Installation is therefore at the top end of the indicative BAT range.

The Operator provided a calculation of the gross electrical efficiency and compared it to the BAT AEEL specified in BAT conclusions BAT 20.

The gross electrical efficiency was calculated as 33.9%.

The BAT AEEL for gross electrical efficiency is 20-35 for existing plant.

The value calculated by the Operator is towards the top of the BAT AEEL range.

In accordance with BAT 2 table S3.3 of the Permit requires the gross electrical efficiency to be measured by carrying out a performance test at full load.

Guidance note EPR 5.01 and Chapter IV of the IED both require that, as well as maximising the primary use of heat to generate electricity; waste heat should be recovered as far as practicable.

In the initial application for the facility, we have assessed that the facility is CHP-ready. It was intended for the incineration activity to provide heat to the paper and pulp plant and the wastewater treatment works. This heat will now not initially be provided until full build out of these elements of the permitted activities. As part of this variation determination, we asked the operator to provide updated information on how the heat created during the incineration process will be recovered as far as possible (for example, through combined heat and power, creating process steam or district heating). This is discussed further in the Compliance with Article 14(5) of the Energy Efficiency Directive section below.

We consider that the Installation will recover heat as far as practicable and therefore that the requirements of Article 50(5) are met.

(iv) Compliance with Article 14(5) of the Energy Efficiency Directive

As a result of the proposed staged approach to construction, the onsite heat requirement for the paper and pulp plant and waste water treatment plant will not initially be available. We therefore asked the operator to provide an updated CHP assessment describing how the heat created during the incineration will be recovered as far as possible in order to meet the requirements of Article 14 of the EU Energy Efficiency Directive

The operator has submitted a cost-benefit assessment of opportunities for high efficiency co-generation within 15 km of the installation in which they calculated net present value. If the NPV is positive (i.e. any number more than zero) it means that the investors will make a rate of return that makes the scheme commercially viable. A negative NPV means that the project will not be commercially viable. The Operator's assessment showed a net present value of £0.23 million which demonstrates that operating as a high-efficiency cogeneration installation will be financially viable. We have therefore included conditions in the operator's permit as described in section [v] below.

(v) Permit conditions concerning energy efficiency

Conditions 1.2.2 and 1.2.3 have also been included in the Permit, which require the Operator to review the options available for heat recovery on an ongoing basis, and to provide and maintain the proposed steam/hot water pass-outs.

Condition IC10 has been included in the permit requiring the operator to operate as a high-efficiency co-generation installation in the manner described within the cost-benefit assessment carried out to satisfy the requirements of Article 14(5) of the Energy Efficiency Directive.

The Operator is required to report energy usage and energy generated under condition 4.2 and Schedule 5 of the Permit. The following parameters are required to be reported: total electrical energy generated; electrical energy exported; total energy usage and energy exported as heat (if any). Together with the total MSW burned per year, this will enable us to monitor energy recovery efficiency at the Installation and take action if at any stage the energy recovery efficiency is less than proposed.

There are no site-specific considerations that require the imposition of standards beyond indicative BAT, and so we accept that the Operator's proposals represent BAT for this Installation.

7.3 Other Emissions to the Environment

7.3.1 Emissions to water

The Operator has applied to add a surface water discharge for clean and uncontaminated surface water to the River Blackwater as part of this permit variation determination.

The surface water discharge approach is designed to ensure that only clean and uncontaminated surface water is discharged to the River Blackwater.

The drainage system has been developed in accordance with relevant British Standards, local building regulations, and best practice guidelines. Surface water runoff from roads and hardstanding areas is collected through trapped gullies and proprietary drainage channels, while roof runoff is managed via siphonic and gravity drainage systems. All surface water is directed to the Upper Lagoon, with runoff from vehicle areas passing through full retention oil separators before entering the Upper Lagoon. From the Upper Lagoon water will travel through a pipeline before discharge to the River Blackwater via an existing drainage ditch.

In lower-lying areas of the facility, surface water is pumped to the Upper Lagoon through a pressurised main, also passing through oil separators. The system is designed to prevent the discharge of potentially contaminated water under normal operating conditions.

In the event of an extreme scenario, such as a severe fire coinciding with a worst-case rainfall event, excess water may be manually diverted to the Upper Lagoon. In such cases, the pumping system to the River Blackwater will be disabled until it is confirmed through sampling and analysis that the water is uncontaminated, or until the water is removed from the site by tanker to a licensed waste management facility.

The Operator has stated that water arising from the domestic waste water treatment package plant will be tankered off-site.

Wastewater and fire water containment tanks are designed with no discharge to surface or ground. These waters will be tankered off-site before the tanks reach capacity.

Based upon the information in the Application we are satisfied that appropriate measures will be in place to prevent anything other than clean and uncontaminated emissions to water.

7.3.2 Emissions to sewer

There will not be any emissions to sewer arising from the installation.

8 Other legal requirements

In this section we explain how we have addressed other relevant legal requirements, to the extent that we have not addressed them elsewhere in this document.

8.1 The EPR 2016 and related Directives

The EPR delivers the requirements of a number of assimilated and national laws.

8.1.1 Schedules 1 and 7 to the EPR 2016 – **IED Directive**

We address the requirements of the IED in the body of this document above and the specific requirements of Chapter IV in Annex 1 of this document.

There is one requirement not addressed above, which is that contained in Article 5(3) IED. Article 5(3) requires that "In the case of a new installation or a substantial change where Article 4 of Directive 85/337/EC (now Directive 2011/92/EU) (the EIA Directive) applies, any relevant information obtained or conclusion arrived at pursuant to articles 5, 6 and 7 of that Directive shall be examined and used for the purposes of granting the permit."

- Article 5 of EIA Directive relates to the obligation on developers to supply the information set out in Annex IV of the Directive when making an application for development consent.
- Article 6(1) requires Member States to ensure that the authorities likely to be concerned by a development by reason of their specific environmental responsibilities are consulted on the Environmental Statement and the request for development consent.
- Article 6(2)-6(6) makes provision for public consultation on applications for development consent.

- Article 7 relates to projects with transboundary effects and consequential obligations to consult with affected Member States.

The grant or refusal of development consent is a matter for the relevant local planning authority. The Environment Agency's obligation is therefore to examine and use any relevant information obtained or conclusion arrived at by the local planning authorities pursuant to those EIA Directive articles.

In determining the Application we have considered the following documents: -

- The decision of Essex County Council to grant an amendment (ESS/39/23/BTE/NMA2) to the original planning permission on 28/07/2023
- The report and decision notice of the local planning authority accompanying the grant of the varied planning permission.
- The response of the Environment Agency to the local planning authority in its role as consultee to the planning process.

From consideration of all the documents above, the Environment Agency considers that no additional or different conditions are necessary.

The Environment Agency has also carried out its own consultation on the Environmental Permitting Application which includes the Environmental Statement submitted to the local planning authority. The results of our consultation are described elsewhere in this decision document.

8.1.2 Schedule 9 to the EPR 2016 – **Waste Framework Directive**

As the Installation involves the treatment of waste, it is carrying out a *waste operation* for the purposes of the EPR 2016, and the requirements of Schedule 9 therefore apply. This means that we must exercise our functions so as to ensure implementation of certain articles of the WFD.

We must exercise our relevant functions for the purposes of ensuring that the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste and that any waste generated is treated in accordance with Article 4 of the Waste Framework Directive. (See also section 4.3.9)

The conditions of the permit ensure that waste generation from the facility is minimised. Where the production of waste cannot be prevented it will be recovered wherever possible or otherwise disposed of in a manner that minimises its impact on the environment. This is in accordance with Article 4.

We must also exercise our relevant functions for the purposes of implementing Article 13 of the Waste Framework Directive; ensuring that the requirements in the second paragraph of Article 23(1) of the Waste Framework Directive are met; and ensuring compliance with Articles 18(2)(b), 18(2)(c), 23(3), 23(4) and 35(1) of the Waste Framework Directive.

Article 13 relates to the protection of human health and the environment. These objectives are addressed elsewhere in this document.

Article 23(1) requires the permit to specify:

(a) the types and quantities of waste that may be treated;
(b) for each type of operation permitted, the technical and any other requirements relevant to the site concerned;
(c) the safety and precautionary measures to be taken;
(d) the method to be used for each type of operation;
(e) such monitoring and control operations as may be necessary;
(f) such closure and after-care provisions as may be necessary.

These are all covered by permit conditions.

The permit does not allow the mixing of hazardous waste so Article 18(2) is not relevant.

We consider that the intended method of waste treatment is acceptable from the point of view of environmental protection so Article 23(3) does not apply.

Energy efficiency is dealt with elsewhere in this document but we consider the conditions of the permit ensure that the recovery of energy take place with a high level of energy efficiency in accordance with Article 23(4).

Article 35(1) relates to record keeping and its requirements are delivered through permit conditions.

8.1.3 Schedule 22 to the EPR 2016 – **Water Framework and Groundwater Directives**

To the extent that it might lead to a discharge of pollutants to groundwater (a "groundwater activity" under the EPR 2016), the Permit is subject to the requirements of Schedule 22, which delivers the requirements of EU Directives relating to pollution of groundwater. The Permit will require the taking of all necessary measures to prevent the input of any hazardous substances to groundwater, and to limit the input of non-hazardous pollutants into groundwater so as to ensure such pollutants do not cause pollution, and satisfies the requirements of Schedule 22.

No releases to groundwater from the Installation are permitted. The Permit also requires material storage areas to be designed and maintained to a high standard to prevent accidental releases.

8.1.4 Directive 2003/35/EC – **The Public Participation Directive**

Regulation 60 of the EPR 2016 requires the Environment Agency to prepare and publish a statement of its policies for complying with its public participation duties. We have published our public participation statement.

This Application is being consulted upon in line with this statement, as well as with our guidance RGS6 on Sites of High Public Interest, which addresses specifically extended consultation arrangements for determinations where public interest is particularly high. This satisfies the requirements of the Public Participation Directive.

Our decision in this case has been reached following a programme of extended public consultation, on the original application. The way in which this has been done is set out in Section 2.2. A summary of the responses received to our consultations and our consideration of them is set out in Annex 4.

8.2 National primary legislation

8.2.1 **Environment Act 1995**

(i) Section 4 (Pursuit of Sustainable Development)

We are required to contribute towards achieving sustainable development, as considered appropriate by Ministers and set out in guidance issued to us. The Secretary of State for Environment, Food and Rural Affairs has issued *The Environment Agency's Objectives and Contribution to Sustainable Development: Statutory Guidance (December 2002)*. This document:

> "*provides guidance to the Agency on such matters as the formulation of approaches that the Agency should take to its work, decisions about priorities for the Agency and the allocation of resources. It is not directly applicable to individual regulatory decisions of the Agency*".

The Environment Agency considers that it has pursued the objectives set out in the Government's guidance, where relevant, and that there are no additional conditions that should be included in this Permit to take account of the Section 4 duty

In respect of regulation of industrial pollution through the EPR, the Guidance refers in particular to the objective of setting permit conditions "*in a consistent and proportionate fashion based on Best Available Techniques and taking into account all relevant matters…*". The Environment Agency considers that it has pursued the objectives set out in the Government's guidance, where relevant, and that there are no additional conditions that should be included in this Permit to take account of the Section 4 duty.

(ii) Section 5 (Preventing or Minimising Effects of Pollution of the Environment)

We are satisfied that our pollution control powers have been exercised for the purpose of preventing or minimising, remedying or mitigating the effects of pollution.

(iii) Section 6(1) (Conservation Duties with Regard to Water)

We have a duty to the extent we consider it desirable generally to promote the conservation and enhancement of the natural beauty and amenity of inland and coastal waters and the land associated with such waters, and the conservation of flora and fauna which are dependent on an aquatic environment.

We consider that no additional or different conditions are appropriate for this Permit.

(iv) Section 6(6) (Fisheries)

We have a duty to maintain, improve and develop fisheries of salmon, trout, eels, lampreys, smelt and freshwater fish.

We consider that no additional or different conditions are appropriate for this Permit.

(v) Section 7 (General Environmental Duties)

This places a duty on us, when considering any proposal relating to our functions, to have regard amongst other things to any effect which the proposals would have on sites of archaeological, architectural, or historic interest; the economic and social well-being of local communities in rural areas; and to take into account any effect which the proposals would have on the beauty or amenity of any rural or urban area or on any such flora, fauna, features, buildings, sites or objects.

We considered whether we should impose any additional or different requirements in terms of our duty to have regard to the various conservation objectives set out in Section 7, but concluded that we should not.

(vi) Section 39 (Costs and Benefits)

We have a duty to take into account the likely costs and benefits of our decisions on the applications ('costs' being defined as including costs to the environment as well as any person). This duty, however, does not affect our obligation to discharge any duties imposed upon us in other legislative provisions.

In so far as relevant we consider that the costs that the permit may impose on the Operator are reasonable and proportionate in terms of the benefits it provides.

(viii) Section 81 (National Air Quality Strategy)

We have had regard to the National Air Quality Strategy and consider that our decision complies with the Strategy, and that no additional or different conditions are appropriate for this Permit.

We have also had regard to the clean air strategy 2019 and consider that our decision complies with the Strategy, and that no additional or different conditions are appropriate for this Permit.

We have had regard to the National Air Pollution Control Programme (set under the National Emissions Ceiling Regulations 2018) and consider that our decision complies with the Strategy, and that no additional or different conditions are appropriate for this Permit.

8.2.2 **Section 108 Deregulation Act 2015 – Growth duty**

We considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.

Paragraph 1.3 of the statutory guidance issued by the Department of Business, Energy and Industrial Strategy in March 2017 says:

“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”

We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.

We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards. It also ensures that any pollution that may arise from the regulated facility does not adversely affect local businesses.

8.2.3 **Legislative and Regulatory Reform Act 2006**

In accordance with section 21 of this Act, when making this decision we have had regard to the need to be transparent, accountable, proportionate and consistent, and the need to target action where it is needed.

In accordance with section 22 of the Act we have had regard to the Regulators' Code; in particular the need to base our decision on environmental risk, and to support the Operator to comply and grow, so that burdens have only been imposed where they are necessary and proportionate

8.2.4 **Human Rights Act 1998**

We have considered potential interference with rights addressed by the European Convention on Human Rights in reaching our decision and consider that our decision is compatible with our duties under the Human Rights Act 1998. In particular, we have considered the right to life (Article 2), the right to a fair trial (Article 6), the right to respect for private and family life (Article 8) and the right to protection of property (Article 1, First Protocol). We do not believe that Convention rights are engaged in relation to this determination.

8.2.5 **Countryside and Rights of Way Act 2000 (CROW 2000)**

Section 85 of this Act imposes a duty on Environment Agency to seek to further the purpose of conserving and enhancing the natural beauty of the area of outstanding natural beauty (AONB). There is no AONB which could be affected by the Installation.

8.2.6 **Wildlife and Countryside Act 1981**

Under section 28G of the Wildlife and Countryside Act 1981 the Environment Agency has a duty to take reasonable steps to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which a site is of special scientific interest. Under section 28I the Environment Agency has a duty to consult Natural England in relation to any permit that is likely to damage SSSIs.

There are no SSSIs within screening distance of the facility.

8.2.7 **Natural Environment and Rural Communities Act 2006**

Section 40 of the Natural Environment and Rural Communities Act 2006 has been amended with effect from 1 January 2023 to require consideration as to what action we can properly take, consistently with the proper exercise of our functions, to further the general biodiversity objective, which is to further the conservation and enhancement of biodiversity and having considered, determined such policies and specific objectives as we consider appropriate for taking action to further the general biodiversity objective, and take such action as we consider appropriate, in the light of those policies and objectives, to further that objective.

Section 40(2A) states that in complying with the duty in section 40(1) and (1A) we must have particular regard to any relevant local nature recovery strategy and species protection strategy or protected sites strategy
We have, also, considered the general biodiversity objective when carrying out our permit application determination and, consider that no different or additional conditions are required in the permit.

8.2.9 Countryside Act 1968

Section 11 imposes a duty on the Environment Agency to exercise its functions relating to any land, having regard to the desirability of conserving the natural beauty and amenity of the countryside including wildlife. We have done so and consider that no different or additional conditions in the Permit are required.

8.2.10 National Parks and Access to the Countryside Act 1949

Section 11A and section 5(1) imposes a duty on the Environment Agency when exercising its functions in relation to land in a National Park, to further the purposes of conserving and enhancing the natural beauty, wildlife and cultural heritage of the areas, and of promoting opportunities for the understanding and enjoyment of National Parks by the public.

We have done so and consider that no different or additional conditions in the Permit are required. There is no National Park which could be affected by the Installation.

8.2.12 Environment Act 2021

Section 110(10) requires that we must have regard to a protected site's strategy, which Natural England has prepared and published in relation to improving the conservation and management of a protected site, and managing the impact of plans, projects or other activities (wherever undertaken) on the conservation and management of the protected site, where relevant to exercise of our duties under Conservation of Habitats and Species Regulations 2017, sections 28G to 28I Wildlife and Countryside Act 1981 or Marine and Coastal Access Act 2009.

We have had regard to this in our assessments.

8.3 National secondary legislation

8.3.1 Conservation of Habitats and Species Regulations 2017

There are no sites falling under this legislation which could be affected by the Installation.

8.3.2 **Water Environment (Water Framework Directive) Regulations 2017**

Consideration has been given to whether any additional requirements should be imposed in terms of the Environment Agency's duty under regulation 3 to secure compliance with the requirements of the Water Framework Directive, Groundwater Directive and the EQS Directive through, amongst other things, environmental permits, and its obligation in regulation 33 to have regard to the river basin management plan (RBMP) approved under regulation 31 and any supplementary plans prepared under regulation 32. However, it is felt that existing conditions are sufficient in this regard and no other appropriate requirements have been identified.

8.3.3 **The Persistent Organic Pollutants Regulations 2007**

We have explained our approach to these Regulations, which give effect to the Stockholm Convention on POPs and the EU's POPs Regulation, in the original permit determination.

8.4 Other relevant legal requirements

8.5.1 Duty to Involve

Section 23 of the Local Democracy, Economic Development and Construction Act 2009 require us where we consider it appropriate to take such steps as we consider appropriate to secure the involvement of interested persons in the exercise of our functions by providing them with information, consulting them or involving them in any other way. Section 24 requires us to have regard to any Secretary of State guidance as to how we should do that.

The way in which the Environment Agency has consulted with the public and other interested parties is set out in section 2.2 of this document. The way in which we have taken account of the representations we have received is set out in Annex 4. Our public consultation duties are also set out in the EP Regulations, and our statutory Public Participation Statement, which implement the requirements of the Public Participation Directive. In addition to meeting our consultation responsibilities, we have also taken account of our guidance in Environment Agency Guidance Note RGS6.

Annexes

Annex 1A: Application of chapter IV of the Industrial Emissions Directive

IED Article	Requirement	Delivered by
45(1)(a)	The permit shall include a list of all types of waste which may be treated using at least the types of waste set out in the European Waste List established by Decision 2000/532/EC, if possible, and containing information on the quantity of each type of waste, where appropriate.	Condition 2.3.4(a) and Table S2.2 in Schedule 2 of the Permit.
45(1)(b)	The permit shall include the total waste incinerating or co-incinerating capacity of the plant.	Condition 2.3.4(a) and Table S2.2 in Schedule 2 of the Permit.
45(1)(c)	The permit shall include the limit values for emissions into air and water.	Conditions 3.1.1 and 3.1.2 and Tables S3.1, S3.1(a) in Schedule 3 of the Permit.
45(1)(d)	The permit shall include the requirements for pH, temperature and flow of waste water discharges.	Not Applicable.
45(1)(e)	The permit shall include the sampling and measurement procedures and frequencies to be used to comply with the conditions set for emissions monitoring.	Conditions 3.6.1 to 3.6.4 and Tables S3.1, S3.1(a), S3.3 and S3.4 in Schedule 3 of the Permit.
45(1)(f)	The permit shall include the maximum permissible period of unavoidable stoppages, disturbances or failures of the purification devices or the measurement devices, during which the emissions into the air and the discharges of waste water may exceed the prescribed emission limit values.	Conditions 2.3.14 and 2.3.15.
45(2)(a)	The permit shall include a list of the quantities of the different categories of hazardous waste which may be treated.	Not applicable

IED Article	Requirement	Delivered by
45(2)(b)	The permit shall include the minimum and maximum mass flows of those hazardous waste, their lowest and maximum calorific values and the maximum contents of polychlorinated biphenyls, pentachlorophenol, chlorine, fluorine, sulphur, heavy metals and other polluting substances.	Not applicable
46(1)	Waste gases shall be discharged in a controlled way by means of a stack the height of which is calculated in such a way as to safeguard human health and the environment.	Condition 2.3.1(a) and Table S1.2 of Schedule 1 of the Permit.
46(2)	Emission into air shall not exceed the emission limit values set out in part 3 of Annex VI.	Conditions 3.1.1 and 3.1.2 and Tables S3.1, S3.1a.
46(3)	Relates to conditions for water discharges from the cleaning of exhaust gases.	There are no such discharges as condition 3.1.1 prohibits this.
46(4)	Relates to conditions for water discharges from the cleaning of exhaust gases.	There are no such discharges as condition 3.1.1 prohibits this.
46(5)	Prevention of unauthorised and accidental release of any polluting substances into soil, surface water or groundwater. Adequate storage capacity for contaminated rainwater run-off from the site or for contaminated water from spillage or fire-fighting.	The application explains the measures to be in place for achieving the directive requirements. The permit requires that these measures are used. Various permit conditions address this and when taken as a whole they ensure compliance with this requirement.
46(6)	Limits the maximum period of operation when an ELV is exceeded to 4 hours uninterrupted duration in any one instance, and with a maximum cumulative limit of 60 hours per year. Limits on dust (150 mg/m^3), CO and TOC not to be exceeded during this period.	Conditions 2.3.12 and 2.3.13

IED Article	Requirement	Delivered by
47	In the event of breakdown, reduce or close down operations as soon as practicable. Limits on dust (150 mg/m^3), CO and TOC not to be exceeded during this period.	Condition 2.3.9 and 2.3.11
48(1)	Monitoring of emissions is carried out in accordance with Parts 6 and 7 of Annex VI.	Conditions 3.6.1 to 3.6.4, 3.2.1, 3.2.2, tables S3.1, S3.1(a). Reference conditions are defined in Schedule 6 of the Permit.
48(2)	Installation and functioning of the automated measurement systems shall be subject to control and to annual surveillance tests as set out in point 1 of Part 6 of Annex VI.	Conditions 3.6.1, 3.6.3, table S3.1, S3.1(a), and S3.4
48(3)	The competent authority shall determine the location of sampling or measurement points to be used for monitoring of emissions.	Conditions 3.6.1. Pre-operational condition PO8
48(4)	All monitoring results shall be recorded, processed and presented in such a way as to enable the competent authority to verify compliance with the operating conditions and emission limit values which are included in the permit.	Conditions 4.1.1 and 4.1.2, and Tables S4.1 and S4.4
49	The emission limit values for air and water shall be regarded as being complied with if the conditions described in Part 8 of Annex VI are fulfilled.	Conditions 3.1.1, 3.1.2, 3.2.1, 3.2.2 and tables S3.1, S3.1(a)
50(1)	Slag and bottom ash to have Total Organic Carbon (TOC) < 3% or loss on ignition (LOI) < 5%.	Conditions 3.6.1 and Table S3.4
50(2)	Flue gas to be raised to a temperature of 850ºC for two seconds, as measured at representative point of the combustion chamber.	Condition 2.3.9, Pre-operational condition PO5 and Improvement condition IC4 and Table S3.3
50(3)	At least one auxiliary burner which must not be fed with fuels which can cause higher emissions than	Condition 2.3.14

IED Article	Requirement	Delivered by
	those resulting from the burning of gas oil liquefied gas or natural gas.	
50(4)(a)	Automatic shut-down to prevent waste feed if at start up until the specified temperature has been reached.	Condition 2.3.9
50(4)(b)	Automatic shut-down to prevent waste feed if the combustion temperature is not maintained.	Condition 2.3.9
50(4)(c)	Automatic shut-down to prevent waste feed if the CEMs show that ELVs are exceeded due to disturbances or failure of waste cleaning devices.	Condition 2.3.9 and 2.3.12
50(5)	Any heat generated from the process shall be recovered as far as practicable.	(a) The plant will generate electricity (b)Operator to implement provision of heat in line with IC10 (C) Operator to review the available heat recovery options every 4 years (Conditions 1.2. 1 to 1.2.3)
50(6)	Relates to the feeding of infectious clinical waste into the furnace.	No infectious clinical waste will be burnt
50(7)	Management of the Installation to be in the hands of a natural person who is competent to manage it.	Conditions 1.1.1 to 1.1.3 and 2.3.1 of the Permit.
51(1)	Different conditions than those laid down in Article 50(1), (2) and (3) and, as regards the temperature Article 50(4) may be authorised, provided the other requirements of this chapter are me.	No such conditions Have been allowed
51(2)	Changes in operating conditions do not cause more residues or residues with a higher content of organic polluting substances compared to those residues which could be expected under the conditions laid down in Articles 50(1), (2) and (3).	No such conditions Have been allowed
51(3)	Changes in operating conditions shall include emission limit values	No such conditions Have been allowed

IED Article	Requirement	Delivered by
	for CO and TOC set out in Part 3 of Annex VI.	
52(1)	Take all necessary precautions concerning delivery and reception of Wastes, to prevent or minimise pollution.	Conditions 2.3.1, 2.3.3, 3.3, 3.4, 3.5 and 3.7
52(2)	Determine the mass of each category of wastes, if possible according to the EWC, prior to accepting the waste.	Condition 2.3.4(a) and Table S2.2 in Schedule 3 of the Permit.
52(3)	Prior to accepting hazardous waste, the operator shall collect available information about the waste for the purpose of compliance with the permit requirements specified in Article 45(2).	Not Applicable
52(4)	Prior to accepting hazardous waste, the operator shall carry out the procedures set out in Article 52(4).	Not Applicable
52(5)	Granting of exemptions from Article 52(2), (3) and (4).	Not Applicable
53(1)	Residues to be minimised in their amount and harmfulness, and recycled where appropriate.	Conditions 1.4.1, 1.4.2 and 3.6.1 with Table S3.4
53(2)	Prevent dispersal of dry residues and dust during transport and storage.	conditions 1.4.1 2.3.1, 2.3.2 and 3.3.1.
53(3)	Test residues for their physical and chemical characteristics and polluting potential including heavy metal content (soluble fraction).	Condition 3.6.1 and Table S3.4 and pre-operational condition PO2.
55(1)	Application, decision and permit to be publicly available.	All documents are accessible from the Environment Agency Public Register.
55(2)	An annual report on plant operation and monitoring for all plants burning more than 2 tonne/hour waste.	Condition 4.2.2 and 4.2.3.

Annex 1B: Compliance with Bat Conclusions

BAT conclusion	Criteria	Delivered by
1	Implement environmental management system	Condition 1.1 and Pre-operational condition PO1
2	Determine gross electrical efficiency	Section 7.2 of this decision document. Permit table S3.3
3	Monitor key process parameters	Condition 3.6.1 and table S3.3
4	Monitoring emissions to air	Condition 3.6.1 and table S3.1
5	Monitoring emissions to air during OTNOC	Condition 1.1.1 and pre-operational condition PO1
6	Monitoring emissions to water from flue gas treatment and/or bottom ash treatment	There are no such emissions from the installation
7	Monitor unburnt substances in slags and bottom ashes	Conditions 3.1.3 and 3.6.1, and table S3.4
8	Analysis of hazardous waste	Not applicable
9	Waste stream management techniques	The Application for variation V004 explains the measures that will be used. Permit condition 2.3.1, table S1.2 and pre-operational condition PO4
10	Quality management system for bottom ash treatment plant	This will form part of the EMS as required by condition 1.1 and pre-operational condition PO1
11	Monitor waste deliveries as part of waste acceptance procedures	The Application for variation EPR/CP3906LP/V004 explains the measures that will be used. Permit condition 2.3.1, table S1.2 and pre-operational condition PO4
12	Reception, handling and storage of waste	Measures are described in the Application for variation EPR/CP3906LP/V004 and FPP. Permit conditions 2.3.1, table S1.2 and condition 3.8 and PO10
13	Storage and handling of clinical waste	Not applicable

BAT conclusion	Criteria	Delivered by
14	Improve overall performance of plant including BAT-AELs for TOC or LOI	Techniques described in the Application for variation EPR/CP3906LP/V004. Permit condition 2.3.1, table S1.2, 3.1.3, 3.6.1 and table S3.4
15	Procedures to adjust plant settings to control performance	Measures described in the Application V004 condition 2.3.1 and table S1.2
16	Procedures to minimise start-up and shut down	Measures described in the Application for variation EPR/CP3906LP/V004
17	Appropriate design, operation and maintenance of FGC system	FGC measures described in Application for variation EPR/CP3906LP/V004. Operation and maintenance procedures will form part of the EMS
18	OTNOC management plan	Pre-operational condition PO1
19	Use of heat recovery boiler	Described in the Application for variation EPR/CP3906LP/V004 . Permit condition 2.3.1, table S1.2
20	Measures to increase energy efficiency and BAT AEEL	Measures described in the Application for variation EPR/CP3906LP/V004. Permit condition 2.3.1, table S1.2 Section 7.2 of this decision document.
21	Measures to prevent or reduce diffuse emissions including odour	Measures described in the Application for variation EPR/CP3906LP/V004. Permit conditions 2.3.1, table S1.2, 3.4.1, 3.3.1, 3.3.2.
22	Handling of gaseous and liquid wastes	Not applicable
23	Management system to prevent or reduce dust emissions from treatment of slags and ashes	Not applicable
24	Techniques to prevent or reduce diffuse emissions to air from treatment of slags and ashes	Not applicable

BAT conclusion	Criteria	Delivered by
25	Minimisation of dust and metal emissions and compliance with BAT AEL	Section 5.1 of this decision document. Permit conditions 2.3.1, table S1.2, 3.3.1, 3.3.2. 3.1.1 and 3.1.2 and table S3.1
26	Techniques and BAT AEL for dust emissions from enclosed slags and ashes treatment	Not applicable .
27	Techniques to reduce emissions of HCl, HF and SO_2	Measures described in the Application for variation EPR/CP3906LP/V004. Permit condition 2.3.1 and table S1.2
28	Techniques to reduce peak emissions of HCl, HF and SO_2, optimise reagent use and BAT AELs	Measures described in the Application for variation EPR/CP3906LP/V004. Permit conditions 2.3.1, table S1.2, 3.1.1 and 3.1.2 and table S3.1
29	Techniques to reduce emissions of NO_2, N_2O, CO and NH_3 and BAT AELs	Measures described in the Application for variation EPR/CP3906LP/V004. Permit conditions 2.3.1, table S1.2, 3.1.1 and 3.1.2 and table S3.1
30	Reduce emissions or organic compounds including dioxins/furans and PCBs. BAT AELs	Measures described in the Application for variation EPR/CP3906LP/V004. Permit conditions 2.3.1, table S1.2, 3.1.1 and 3.1.2 and table S3.1
31	Reduce emissions of mercury. BAT AEL	Measures described in the Application for variation EPR/CP3906LP/V004. Permit conditions 2.3.1, table S1.2, 2.3.1, table S1.2, 3.1.1 and 3.1.2 and table S3.1
32	Segregate waste water streams to prevent contamination	Measures described in the Application for variation EPR/CP3906LP/V004 Section 7.3.1 of this decision document. Permit conditions 2.3.1, table S1.2, 3.1.1, 3.1.2 and table S3.2

BAT conclusion	Criteria	Delivered by
33	Techniques to reduce water usage and prevent or reduce waste water	Measures described in the Application for variation EPR/CP3906LP/V004. Permit conditions 1.3.1, 2.3.1, table S1.2
34	Reduce emissions to water from FGC and/or from treatment or storage of bottom ashes. BAT AELs	Not applicable
35	Handle and treat bottom ashes separately from FGC residues	Permit condition 2.3.15
36	Techniques for treatment of slags and bottom ashes	No treatment carried out on site
37	Techniques to prevent or reduce noise emissions.	Measures are described in the Application for variation EPR/CP3906LP/V004. . Permit conditions 2.3.1, table S1.2, 3.5.1, 3.5.2

Annex 2: Pre-Operational Conditions for Future Development

Based on the information on the Application, we consider that we do need to impose two pre-operational conditions for future development. These conditions are set out below and referred to, where applicable, in the text of the decision document. We are using these conditions to require the Operator to confirm that the details and measures proposed in the Application have been adopted or implemented prior to the operation of the detailed elements of the installation. Table S1.4A 'Pre-operational measures' in the permit remains unchanged.

Table S1.4B Pre-operational measures for future development		
Reference	**Operation**	**Pre-operational measures**
POFD2	The following activities listed in table S1.1 AR2 to AR6 and AR9 to AR13	These activities and directly associated activities cannot be commissioned or operated until a report by the operator has been submitted to and approved by the Environment Agency which demonstrates that there will be no increased impacts to air or surface water, as a result of the staged construction of the facility, from those presented in the relevant sections of applications A001, V002 or V003.
POFD3	Specific waste codes detailed in Table S2.2 as referenced by condition 2.3.4 and Table S1.1	The following waste codes cannot be incinerated at the facility until an updated waste pre-acceptance and acceptance procedures has been submitted and approved in writing by the Environment Agency: 03 03 01, 03 03 07, 03 03 08, 04 02 09, 04 02 10, 04 02 21, 04 02 22, 15 01 01, 15 01 02, 15 01 03, 15 01 05, 15 01 06, 15 01 09, 15 02 03, 17 02 01, 17 02 03, 17 09 04, 18 01 04, 18 01 09, 19 08 01, 19 08 14, 20 01 08, 20 01 10, 20 01 11, 20 01 25, 20 01 28, 20 01 30, 20 01 32, 20 01 36

Annex 3: Improvement Conditions

The following Improvement Condition has been added to the permit

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC10	The operator shall submit to the Environment Agency for approval a plan for implementing the district heating scheme identified in the cost benefit analysis (dated 04/04/2025). The plan shall include as a minimum: • A timescale for implementation • A description of any dependencies or further approvals required • A description of any changes that will need to be made to the plant • Confirmation of the energy balance and efficiency when operating in CHP mode • Whether there will be any operational changes which could affect the environmental impact of the installation such as a reduction in stack temperature • Consideration of whether a permit variation will be required	Within 12 months of completion of commissioning or as agreed in writing with the Environment Agency

Annex 4: Consultation Reponses

A) Advertising and Consultation on the Application

The Application has been advertised and consulted upon in accordance with the Environment Agency's Public Participation Statement. The way in which this has been carried out along with the results of our consultation and how we have taken consultation responses into account in reaching our decision is summarised in this Annex. Copies of consultation responses have been placed on the Environment Agency public register.

The Application was advertised on the Environment Agency website from 12/12/2024 to 21/01/2025. The consultation was meant to run until 28/01/2025 but the advert for the consultation was taken down from our website in error on the 21/1/2025 which was flagged to us by a member of the public on 27/01/2025. We reinstated the advert on 27/01/2025 until 07/02/2025 and extended the consultation period to 07/02/2025. Throughout this time the consultation portal remained open and consultees were able to log their responses with us. The consultation was also advertised in the Essex Chronicle on 12/12/2024.

The following statutory and non-statutory bodies were consulted: -

- Local Authority – Environmental Protection Department
- Local Authority – Planning
- Director of PH/UKHSA
- Health and Safety Executive
- Food Standards Agency
- Sewerage Authorities

1) Consultation Responses from Statutory and Non-Statutory Bodies

Response Received from UKHSA	
Brief summary of issues raised:	Summary of action taken / how this has been covered
UKHSA has reviewed research undertaken to examine the suggested links between emissions from municipal waste incinerators and effects on health. UKHSA's position is that modern, well run and regulated municipal waste incinerators are not a significant risk to public health. While it is not possible to rule out adverse health effects from these incinerators completely, any potential effect for people living close by is likely to be very small. This view is based on detailed assessments of the effects of air pollutants on health and on the fact that these	We agree with the consultant's conclusions, that whilst the impact on local air quality will be greater as a result of the phased build approach, emissions are not expected to breach any air quality assessment levels.

incinerators make only a very small contribution to local concentrations of air pollutants. The air dispersion modelling assessment considers modelled scenarios for a phased build approach. The assessment concluded that although the impact on local air quality would be greater with the phased approach, emissions are not predicted to cause a breach of any Air Quality Assessment Levels (AQAL).	
Our position is that pollutants associated with combustion, particularly particulate matter and oxides of nitrogen are non-threshold; i.e. an exposed population is likely to be subject to potential harm at any level and that reducing public exposure to non-threshold pollutants (such as particulate matter and nitrogen dioxide) below air quality standards will have potential public health benefits. We support approaches which minimise or mitigate public exposure to non-threshold air pollutants, address inequalities (in exposure) and maximise co-benefits (such as physical exercise). We encourage their consideration during development design, environmental and health impact assessment, and development consent.	Even though pollutants like nitrogen oxides (NOx) and particulate (PM) can be harmful at any level, regulators still set emission limits to help reduce the overall risk to people and the environment. These limits keep pollution as low as possible using the best technology available Measures in line with Best Available Techniques are in place to prevent and where that is not practicable minimise emissions of oxides of nitrogen and particulate matter.

Response Received from Essex County Council minerals and waste planning team	
Brief summary of issues raised:	Summary of action taken / how this has been covered
Raised concerns as to whether the planning permission is for the full integrated IWMF. Confirmed that planning permission has been amended (ESS/39/23/BTE/NMA2) to allow a drainage pipe to be installed which would allow discharge of water from the IWMF site to the River Blackwater. Confirmed that a Development Consent Order has been granted by the Secretary of State, Thus, the restriction that prevents a CHP generating more than 50MW under a planning permission granted by a local authority planning permission does not apply under the Development Consent Order. As long as the additional waste codes referred to in the permit variation are considered to be Municipal Solid Waste and/or Commercial Industrial Waste, then the WPA would have no objection to the inclusion of the additional waste codes.	The interpretation of planning permissions is not relevant to our permitting determination. This amendment is in line with what has been applied for in this variation. Noted. We are satisfied that the wastes are Municipal Solid waste or Commercial Industrial Waste and that the operator will have the appropriate procedures and operating techniques in place in order to manage them.

2) Consultation Responses from Members of the Public and Community Organisations

The consultation responses received were wide ranging and a number of the issues raised were outside the Environment Agency's remit in reaching its permitting decisions. Specifically, questions were raised which fall within the jurisdiction of the planning system, both on the development of planning policy and the grant of planning permission.

Guidance on the interaction between planning and pollution control is given in the National Planning Policy Framework. It says that the planning and pollution control systems are separate but complementary. We are only able to take into account those issues, which fall within the scope of the Environmental Permitting Regulations.

a) Representations from Councillors and Parish / Town Councils

Representations were received from Feering Parish Council, Coggeshill Parish Council, Braintree District Council and a number of councillors who raised the following issues.

Brief summary of issues raised:	Summary of action taken / how this has been covered
Comments about emissions to water	
Monitoring should be in place to ensure that the surface water entering the lagoon is not contaminated.	We are satisfied that appropriate handling and storage measures of potentially polluting substances will be in place at the facility. These measures will prevent any substances from entering the lagoon and ultimately entering surface water.
Concerns that the surface water discharge will be contaminated with lime and urea.	The previously agreed handling and storage measures that will be in place at the facility have not changed as a result of this variation and will prevent contamination. The operator will also have an accident management plan in place as part of the facility's Environment Management Strategy.
Conditions should be imposed to prevent the release of water from the lagoon during periods where there is potential flood risk in the River Blackwater	Flooding is primarily an issue for the planning process. When making permitting decisions, flood risk is still a relevant consideration, but generally only in so far as it is taken into account in the accident management plan and that appropriate measures are in place to prevent pollution in the event of a credible flooding incident. The control measures in place have not changed as a result of this variation and we are satisfied that the measures proposed in the Application are appropriate.

	Whether this particular site should be developed in the way proposed is primarily a land use matter for the local planning authority. The operator has confirmed that a Sustainable Drainage System will be in place. We don't consider there will be any significant increase in flood risk as a result of the planned surface water discharge.
The facility will now not have 'closed loop water system' and treated site effluent will now be discharged to the River Blackwater.	The operator has applied to discharge clean, uncontaminated surface water to the River Blackwater. A summary of the infrastructure and site practices that are in place to ensure that this water is indeed clean and uncontaminated is provided in section 7.3. Treated site effluent is not proposed to be discharged to surface water and this will not be allowed by the permit.
Comments on Emissions to air	
Additional air quality monitoring should be put in place	Ambient air monitoring around operating incinerators is not a reliable method of establishing the impact as it does not identify the source of the emissions. We consider it is better to use air dispersion modelling to predict the impact based on the highest allowed emissions (emission limit values). We have audited the modelling and we are satisfied that it is suitable for assessing the impact from the Installation. The Permit requires monitoring to be carried out to ensure that the emission limits values that were used in the modelling are met.
Concerns over the increase in waste types, their suitability for incineration and compatibility with a 35m stack.	The Operator will have waste pre-acceptance and waste acceptance procedures to ensure that only waste authorised by the Permit is received and burned. We have placed a pre-operational condition (POFD 3) in the permit which prevents the additional waste codes from being incinerated until an updated waste pre-acceptance and acceptance procedure has been approved by us. Waste types are specified in table S2.2 of the Permit. We are satisfied that these wastes are suitable for burning at the Installation, further details are in section 4.3.6 of this decision document. We are satisfied that the operating techniques will ensure that emission limits can be met, the emission limits apply at all times whatever wastes are being burned. The permitted height of the stack has been determined BAT by us via a previous variation and we don't consider that any of

	the changes proposed by this variation change our conclusions.
Concerns that the phased construction will adversely influence the dispersion of emissions from the stack and whether this will increase the harm to health, local crops and the environment.	We audited the Operator's dispersion modelling. As part of the audit, we checked that the modelling parameters, weather data and background levels used by the Operator were appropriate and we are satisfied that they were. Based on the Operator's modelling, and our review of it, we are satisfied that there will not be a significant impact on human health, locally produced crops or the environment. Further information in section 5 of this decision document for further details.
Comments on Energy use / efficiency / heat use	
Concern that the facility will now be less sustainable from an energy perspective because of the proposed changes. Less waste heat will be used in the other activities on site.	The facility will, initially, no longer provide heat to the paper and pulp plant and waste water treatment works. If these elements of the facility are built in the future then the incineration activity will be able to provide heat to these processes. As a result of the changes proposed by this variation we have asked the operator to provided a cost benefit assessment of providing heat to other local users. In this CBA, calculation suggest that provision of heat to the nearby greenhouse operation will classify the incineration activity as a high efficiency co-generation facility. In the permit we have place an improvement condition IC10 which requires the operator to submit to us a plan for implementing the cogeneration scheme. See section 7.2 above for further details on how we have considered the energy efficiency of the incineration activity

b) Representations from Community and Other Organisations

Representations were received from Kelvedon and Feering Heritage Society, a number of these issues are the same as those raised by the Councillors, parish Councils. Of the additional issues raised,

Brief summary of issues raised:	Environment Agency comment
Concerns about health impacts from Dioxins: • The study does not take into account lifetime exposure • There is not much headroom in the total % of TDI presented in the assessment	Our audit concludes that the Operator's study is very conservative and concludes that the TDI in a worst case agricultural setting for a child is considerably below the contribution to the TDI exposure arising from the facility presented by the operator. We conclude that there the % contribution from the facility to total TDI is lower than that presented by the operator and consequently there is more headroom in the total % of the TDI. It is also the case that our assessment is based on significance of impact. Impact is defined as insignificant if the facility contributes less than 10% to the total TDI. Our audit concludes that this is the case. The impact from dioxins/furans is described in more detail in section 5.3 of this decision document. We are satisfied that impacts will not be significant.
Six habitats sites showed elevated levels of Nitrogen deposition and one site shows elevated levels of acid deposition.	There are only Ancient Woodlands and Local Wildlife Sites within the screening distance of the facility. These sites have an insignificance screening criteria of 100% of the associated critical loads and levels contributed by the facility. We have audited the operator's assessment on the impacts on local habitats sites and are satisfied that the facility will not cause impacts above 100% of the critical levels or loads for those sites. See section 5.4 for more detail.
Request that a time limit with reversion to the original permit is placed in the permit	All of our assessments assume that the changes proposed in a variation application are permanent and are assessed as such. This provides a worst-case scenario. The changes applied for are considered acceptable on a permanent basis.

c) Representations from Individual Members of the Public

A total of 75 of responses were received from individual members of the public. Many of the issues raised were the same as those considered above. Only those issues additional to those already considered are listed below:

Brief summary of issues raised:	Summary of action taken / how this has been covered
Comments about emissions to water	
Concerns over water discharges from the nearby Greenhouses	The nearby greenhouses are not part of the permitted activities and therefore are not regulated by the Environment Agency.
Concern that the discharge of water was originally denied and why it is now proposed	No application to discharge clean and uncontaminated water was originally applied for. It was intended for clean and uncontaminated water to be utilised in the facility's paper and pulp plant.
Comments on wastes to be received	
Concerns that waste from Europe will be sent to the facility.	The site receives wastes coded under the 'European Waste Catalogue' which is a coding system used to classify all waste in England. It does not mean that wastes will be received from Europe. The Permit does not control where the waste comes from because that falls outside the scope of the permitting process.
Concerns over how the composition of waste is monitored Concerns over particular waste types proposed to be incinerated i.e. nappies	The Operator will have waste pre-acceptance and waste acceptance procedures to ensure that only waste authorised by the Permit is received and burned. The Permit does not control where the waste comes from because that falls outside the scope of the permitting process. Waste types are specified in table S2.2 of the Permit. We are satisfied that these wastes are suitable for burning at the Installation, further details are in section 6.2 of this decision document. We are satisfied that the operating techniques already in place and the updated waste pre-acceptance and acceptance criteria as required by Pre-operational condition for future development (POFD3) will ensure that emission limits can be met, the emission limits apply at all times whatever wastes are being burned.
More waste will be incinerated as a result of the new waste codes being added	The annual tonnage of waste permitted to be incinerated at the facility has not been changed as a result of this variation
Comments on Emissions to air	
Concerns over stack height	The stack height of the incineration plant is not changing as a result of this variation.

CO_2 emissions concerns	CO_2 is an inevitable product of the combustion of waste. The amount of CO_2 emitted will be essentially determined by the quantity and characteristics of waste being incinerated, which are already subject to conditions in the Permit. It is therefore inappropriate to set an emission limit value for CO_2, which could do no more than recognise what is going to be emitted. The gas is not therefore targeted as a key pollutant under Annex II of IED, which lists the main polluting substances that are to be considered when setting emission limit values in Permits. We have therefore considered setting equivalent parameters or technical measures for CO_2. However, provided energy is recovered efficiently, there are no additional equivalent technical measures (beyond those relating to the quantity and characteristics of the waste) that can be imposed that do not run counter to the primary purpose of the proposed Installation, which is the recovery of energy from waste. Controls in the form of restrictions on the volume and type of waste that can be accepted at the proposed Installation and permit conditions relating to energy efficiency effectively apply equivalent technical measures to limit CO_2 emissions.
Concern over emissions from traffic.	The air quality assessment considered existing background pollution levels which includes emissions from traffic. Movement of traffic to and from the Installation is outside of our remit but will normally be an issue for the planning authority to consider. Our consideration is whether the emissions from traffic could affect the prevailing pollutant background levels which could be a consideration where there are established high background concentrations contributing to poor air quality. In this case the small increase in pollutants from traffic would not affect the background levels to the point where it would affect the conclusions of the air quality assessment. Vehicle movements within the Installation boundary are considered within the remit of the Environmental Permit. However, the emissions from this limited area are highly unlikely to be significant and will not affect the conclusions of the air quality impact assessment.
Changes in electricity generation will slow the dispersion of emissions.	The assessment of air impacts has been caried out on the basis of electricity-only production

Concerns that providing power / CO_2 to the nearby greenhouses will affect dispersion characteristics.	Any changes in dispersion of emissions arising as a result of any changes in the dispersion characteristics of the plume have been included in the Operator's air quality assessment which we have audited and with which we agree with its conclusions. If any subsequent changes are made which affect air dispersion characteristics, for example the off take of heat for local users, the operator would have to submit a revised air quality assessment for approval, secured through POFD2.
Concerns that a plume condition is being removed.	There are no conditions related to plumes in the existing or varied permit
Comments on general health concerns	
Concern was expressed that there will be an impact on health due to the Installation including: • those with existing health conditions • young people • elderly	We are satisfied that there will not be a significant impact on health due to the Installation. Section 5.3 of this decision document has further details. The standards that we have used to assess against are set to protect all members of the public.
Miscellaneous comments	
Concerns over incineration being unsafe	Our view is that there is not a significant safety risk presented by a well-run, modern incinerator.
Odour concerns	The odour emissions risk profile of the site has not changed as a result of this variation
Dust concerns	The dust emissions risk profile of the site has not changed as a result of this variation
Concerns over the waste that is left after incineration.	The characteristics of the Incinerator bottom ash and the measures for handling it will not change as a result of the addition of the new wastes proposed under this variation. The requirements with regard to incinerator bottom ash remain unchanged as a result of this variation: The permit requires testing of the IBA in line with IED article 53 (3). A sampling protocol will be developed to ensure that the sampling and hazardous testing is done properly. Pre-operational condition (PO2) requires that the protocol is in place and approved. Classification of IBA for its subsequent use or disposal is controlled by other legislation and so is not duplicated within the Permit.
Monitoring of soil should be carried out.	Condition 3.3.4 requires monitoring for groundwater once every 5 years and for soil once every 10 years, this meets the requirements of the Industrial Emissions Directive. If contamination is found, the

	operator will be required to remediate before the permit is surrendered, if not required sooner, ensuring the land is returned to a satisfactory state. Monitoring and reporting of pollution incidents, including spills, is required beyond the soil and groundwater monitoring specified in Permit condition 3.3.4. Condition 4.3.1 requires the Operator to notify the Environment Agency in the event of any accident from the operation of the installation which may significantly affect the environment, or any breach of any permit condition. Should spills or leaks be detected, the Operator will be required to investigate immediately and may need to monitor to confirm whether ground / groundwater has been affected and remediation is required.
Permit conditions should not be allowed to be changed.	We have a legal duty to determine any variation application we receive. Any requested changes to the permit conditions or associated operating techniques are appropriately assessed to ensure suitable measures are in place to protect the environment.
Concerns over a visible plume.	Plumes are primarily a concern for considering visual impacts and as such are generally covered by the planning process. In any event visible plumes are not likely to have a significant effect on health or the environment as plumes are caused by condensation of water vapour.
Concerns over incineration being the worst form of energy production.	We have not compared emissions to coal or gas combustion in our assessment of this variation. The operator is not permitted to operate a power station, they are permitted for an incineration plant with the primary purpose of waste disposal whereas a power station's primary purpose is to generate energy.
Concerns over the facility taking water from the River Blackwater.	No changes to the existing abstraction licence associated with the facility have been requested by this variation.
Moisture from the paper and pulp plant entering the River Blackwater.	Operation of the paper and pulp plant will be prevented from occurring by this variation. The paper and pulp plant would only be permitted to operate upon completion of Pre-operational condition for future development (POFD) 2 through which the operator will need to demonstrate to us that there will be no increased impacts to air or surface water, as a result of the staged construction of the facility, from those presented in the relevant sections of applications A001, V002 or V003..
Operators shouldn't be allowed to monitor their own emissions	The Environment Agency used to carry out check-monitoring when there were relatively few standards for monitoring. Check monitoring is no longer routinely undertaken

	because of increased standards that provide assurance that the results are reliable. There is now a wide variety of standards for monitoring, covering CEMs, periodic monitoring, and quality assurance. We have MCERTS for CEMs and test labs. We have EN 14181 for quality assurance of CEMs. We require CEMs and test labs to be accredited to MCERTS and all the applicable standards. We carry out audits of operators' provisions for monitoring. However, we still do check monitoring where it is considered appropriate. Furthermore, as well as auditing operators' provisions for monitoring, and how they apply the monitoring requirements of the permit, we also regularly audit test laboratories.
A typo was noted in the original supporting information document which was consulted upon: 'As the only water which will be discharged into Upper Lagoon is uncontaminated surface water run-off, there will be pollutants/contaminants being released to the aquatic environment from this discharge; therefore, it will not impact on the water quality of the water in the River Blackwater.' This suggested that water discharge to the River Blackwater would be contaminated.	The missing 'no' was corrected in a later version of the document: 'As the only water which will be discharged into Upper Lagoon is uncontaminated surface water run-off, there will **not** be **any** pollutants/contaminants being released to the aquatic environment from this discharge; therefore, it will not impact on the water quality of the water in the River Blackwater.' We are satisfied that the water discharged to the river blackwater will be uncontaminated.
Responses received after the consultation had closed	
We received two responses after the consultation had closed on 07/02/2025. We have read and considered these responses and the issues raised in those responses have been covered in this decision document.	

d) Representations on issues that do not fall within the scope of this permit determination

Brief summary of issues raised:	Environment Agency comment
Concern over general downgrading of the area including damage to the economy and house prices.	Some of these issues may be a relevant consideration for the granting of planning permission. Our remit relates to whether the incinerator can operate in an environmentally acceptable manner or not.
Visual concerns.	Visual impacts are generally covered by the planning process.
Comments about vehicle access to the installation and traffic movements on local roads.	These are relevant considerations for the grant of planning permission, but do not form part of the Environmental Permit decision making process except where there are established high background concentrations contributing to poor air quality and the increased level of traffic might be significant in these limited circumstances. That is not the case here.
Concerns over continual changes to the planning permissions.	Changes to the planning permission(s) for the site fall under the remit of the planning authority and do not form part of the Environmental Permit decision making process.
Comments about the government position on incineration planning applications.	The Government's announcement of 30th December 2024 (which can be found here Government to crack down on waste incinerators with stricter standards for new builds - GOV.UK) is on the new requirements which energy from waste (EfW) plants will need to meet to get planning permission. This is only for the planning process and does not affect our determination of Environmental Permits.
Concerns over the phased construction of the IWMF and that the other permitted activities will never be built.	The phased construction of the IWMF affects the Environmental Permit decision making process in as far as we must assess any changes in environmental impact coming about because of any proposed changes. Whether the IWMF is built in its entirety is not something we can control through the permit.

B) Advertising and Consultation on the Draft Decision

This section reports on the outcome of the public consultation on our draft decision carried out between 21/08/2025 and 02/10/2025. Initially, this consultation was schedule to close on 18/09/2025, however, the local liaison group was not informed by the applicant that the consultation had gone live until 03/09/2025. We therefore extended the consultation period by 2 weeks to 6 weeks in total to ensure that everyone had a full 4 weeks to make any comments on the draft.

Prior to the minded-to consultation going live, an advert was placed in error in the Essex Chronicle on 24/07/2025 which invited readers to respond to our minded-to decision on the Application. At this stage the minded-to consultation was not live, and readers would not have been able to respond. A full retraction of this advert was made in the Essex Chronicle on 31/07/2025.

In some cases, the issues raised in the consultation were the same as those raised previously and already reported in section A of this Annex and so have not been repeated in this section.

Also, some of the consultation responses received were on matters which are outside the scope of the Environment Agency's powers under the Environmental Permitting Regulations. Our position on these matters is as described previously.

b) Representations from Local MP, Assembly Member (AM), Councillors and Parish / Town / Community Councils

Representations were received from a county and district councillor who raised the following issues:

Brief summary of issues raised:	Summary of action taken / how this has been covered
Comments about odour and air emissions	
Request to put in place conditions to require:	
An odour and pollution complaint log, with EA enforcement response times.	The operator's EMS will have a system for dealing with non-compliances and complaints which would need to include recording them. We will investigate any complaints made to us and ensure they comply with the permit in accordance with our enforcement and sanctions policy.
Periodic review of permit conditions and emissions, especially in light of new health data	The Environment Agency are the regulator and have the authority and competency to substantiate complaints.

	The application has been assessed and the permit conditions put in place in such a way as to ensure that human health will be protected. If new health data comes to light in terms of the impact of pollutants on sensitive receptors, we can review and vary the Permit if required. The EPR also require us to review permits periodically and in accordance with the IED.
Handheld air quality monitors have shown raised levels of PM2.5 and PM10 since the facility has begun commissioning	Ambient air monitoring around operating incinerators is not a reliable method of establishing the impact as it does not identify the source of the emissions. We consider it is better to use air dispersion modelling to predict the impact based on the highest allowed emissions (emission limit values). We have audited the modelling presented by the operator and we are satisfied that it is suitable for assessing the impact from the Installation. The Permit requires monitoring to be carried out to ensure that the emission limits values that were used in the modelling are met

c) Representations from Individual Members of the Public

A total of 151 of responses were received from individual members of the public. Many of the issues raised were the same as those considered above. Only those issues additional to those already considered are listed below:

Brief summary of issues raised:	Summary of action taken / how this has been covered
Comments about impacts of the commissioning of the facility	
Concerns about impacts during commissioning including odour, dust, emission limit exceedances.	Commissioning is not part of this permit variation and any issues that there may have been do not affect our assessments of the environmental impacts in relation to this variation. Amenity issues such as odour have not been substantiated to date by the Environment Agency's investigations. In terms of breaches of the commissioning emission limits, we are satisfied that the operator has taken immediate measures to prevent further non-compliance / emission breaches of a similar nature. The root cause and further measures that have been implemented are subject to ongoing compliance review. Once our review is complete our report will be made publicly available. For further information on the commissioning of the facility, and what the Environment Agency are doing to ensure that

	commissioning is be carried out appropriately can be found here: Rivenhall Integrated Waste Management Facility - Environment Agency - Citizen Space For further information on the commissioning plan and why we have agreed to it please see this document: rivenhall-integrated-waste-management-facility-july-2025-briefingpdf
Indaer are not adhering to the operational times of the facility as imposed by planning.	This is a matter for the planning authority. We are satisfied that the conditions in the Permit will ensure no significant pollution and that no specific restriction on operating hours is required in the Permit.
The Agency has previously stated that only 'steam' would be emitted from the stack.	The stack will emit air emissions arising from the incineration process, which will consist of combustion exhaust gases as well as steam. However, it will be steam in the air emissions that will be the cause of any visible plume from the stack under normal operations.
Problems during commissioning mean that the Operator is not competent to operate the plan in line with the Permit.	Amenity issues such as odour have not been substantiated to date by the Environment Agency's investigations. In terms of breaches of the commissioning emission limits, we are satisfied that the operator has taken immediate measures to minimise further non-compliance / emission breaches of a similar nature. The root cause and further measures that have been implemented are subject to ongoing compliance review. Once our review is complete our report will be made publicly available. We have previously concluded that we are satisfied that the operator will be competent. Part of the purpose of commissioning is to identify any potential issues and ensure that when fully operational the plant will comply with its permit requirements. We are currently satisfied that the operator's response to the issues that have occurred are appropriate and confirm their intention to comply with their permit Our position remains that we are satisfied that the Operator will be able to and will comply with the requirements of the permit.
Comments on air impacts	
Concern over the impacts from NOx, particulates, dioxins, heavy metals and ammonia including cumulative risks.	We have audited the operator's modelling assessment, including the background levels used which will include any pollutants

	present from other, off-site sources, and agree with their conclusions that the facility will not lead to significant impacts on air quality. We are satisfied that there will not be any cumulative impacts on emissions to air arising as a result of the changes proposed by this variation.
There are inaccuracies in the air quality assessment report and in the location of sensitive receptors detailed in this report. Dispersion modelling assumptions should be independently re-verified under worst case scenarios.	We audited the air quality modelling and whilst there can be some errors in an applicants' assessment, we are ultimately satisfied with how it was carried out in terms of its conclusions of impacts including that the maximally impacted receptors were correctly located in the air quality assessment report. We have audited the operator's modelling assessment and agree with their conclusions that the facility will not lead to significant impacts on air quality. We are satisfied that the worst case has been assessed. We have independently assessed the Application on its merits.
The reduction in TOC daily average limit from 10mg/m^3 to 9mg/m^3 is negligible and does not mitigate the scale of the emissions from the facility.	The reasoning behind the reduction of the TOC limit in the permit is described in section 5.2.2. Our assessment is based on conservative assumptions and we are satisfied that no significant impacts on air quality will arise as a result of the operation of the facility.
Concerns on waste types	
Concerned that the facility will be receiving hazardous waste	The facility is not permitted to receive any hazardous waste
Comments of Human Health	
There are inaccuracies in the Dioxin Pathway Intake report and in the location of sensitive receptors detailed in this report.	We audited the Operator's assessment and we are satisfied with how it was carried out. The operator assessed the maximally impacted location as if it were an agricultural receptor and we also carried out our audit on this basis. Our checks indicate if there were people permanently present at the maximally impacted location and they mostly consumed locally grown food then their dioxin-like PCB intake would be below 10% of the COT TDI which would not be considered a significant risk to health. As the impacts at the maximally impacted location were found to be acceptable, it is therefore the case that all discrete receptors will also be acceptable.

Comments on waste types	
The justification that only “contaminated” recyclables will be accepted is vague and unenforceable in practice. This risks undermining recycling targets by enabling the incineration of materials that should otherwise be recycled.	This is primarily outside the scope of this determination. Recycling initiatives are a matter for the local authority. The Permit through conditions 2.3.5 and 2.3.6 restrict wastes that have been separately collected for recycling from being accepted. We are satisfied that this condition is enforceable.
Comments on Monitoring	
The public should have access to real-time monitoring of air emissions	The operator’s monitoring results will be placed on the public registers. If there is a breach then we will take appropriate enforcement action and/or prosecute. The operator must monitor emissions and report the results to us. We will regularly inspect the Installation, review monitoring techniques and assess monitoring results to measure the performance of the plant, review operating techniques and review management systems and plans. We will carry out on-site audits of operator monitoring. The operator must inform us immediately of any breach of the emissions limits, followed by a fuller report of the size of the release, its impact and how they propose to avoid this happening in the future. Real time emissions data will be monitored by the operator. It is not a requirement of the Industrial Emissions Directive to provide real-time monitoring data to the public. We consider the requirements of IED to be appropriate and robust and these have been used to set the frequencies for monitoring and reporting the results
Other / general / cross topic issues	
Concern that land will be contaminated as a result of emissions from the facility.	Land will not become contaminated. This is evidenced by the health risk assessment that showed insignificant impact on the food chain and also the air quality assessment that showed ES will not be exceeded. See sections 5.2 and 5.3 for further information.
Incineration is not sustainable or safe and is old technology	It is argued that Incineration is not an environmentally sustainable technology and therefore almost by definition cannot be considered to be the Best Available Technique (BAT). Mass burn incineration at this scale is considered BAT provided it meets the requirements set out in the BREF and BAT conclusions. Our view is that there is not a significant safety risk posed by incineration plants.
Financial and operational penalties must be put in place to encourage adherence to the agreed emission levels.	The Environment Agency can issue fines and/or revoke a permit if required where breaches of permit conditions take place.

Upload of comments failed.	We monitored our online portal frequently throughout the consultation period and no issues were detected. It is also the case that the consultation page provided an email address to which comments could also be submitted to.
Comments that limits should be set for noise and odour.	The noise and odour risk profile of the facility has not changed as a result of this variation. We do not consider that specific limits are required. However, permit conditions 3.4.1, 3.5.1, 3.4.2 and 3.5.2 will ensure that noise and odour is controlled and will allow us to take further action should it be required.
IC10 only requires a cost benefit assessment..	The operator has already submitted a cost benefit assessment. IC10 is in place to ensure that the operator presents a plan for implementing the district heating scheme that was identified in the CBA. We are satisfied that as much energy as practicable will be recovered from the waste and that the facility will operate to the expected levels of efficiency. Further details are in section 7.2 of this decision document
The precautionary principle should apply.	The United Kingdom Interdepartmental Liaison Group on Risk Assessment (UK-ILGRA) state in their paper "The Precautionary Principle: Policy and Application" that the precautionary principle should be invoked when there is good reason to believe that harmful effects may occur and the level of scientific uncertainty about the consequences or likelihood of the risk is such that the best available scientific advice cannot assess the risk with sufficient confidence to inform decision making. The Health Protection Agency (as it was called then) stated in its response to the British Society for Ecological Medicine Report, "The Health Effects of Waste Incinerators" that "as there is a body of scientific evidence strongly indicating that contemporary waste management practices, including incineration, have at most a minor effect on human health and the environment, there are no grounds for adopting the 'precautionary principle' to restrict the introduction of new incinerators". As explained in section 5.3 the UKHSA maintain their view on impacts from incineration.
The permit does not include effective enforcement mechanisms for permit breaches.	Our view is that the permit will ensure a high level of protection is provided for the environment and human health. We are satisfied that the permit conditions and limits will achieve this, and that the applicant has provided sufficient information

	to demonstrate their capability and commitment to comply with the permit conditions. We will carry out inspection and audits on the Installation and the EMS to ensure that Permit conditions are complied with. The permit itself would not include effective enforcement mechanisms. The permit conditions need to be clear and enforceable, which we consider them to be, and then the mechanisms are set out in Environmental Permitting Regulations. How we will apply them is set out in our policy. Any non-compliances will be dealt with in accordance with the policy. subject to our enforcement and sanctions statement.
Questions as to why residents within 150m of the site only have received consultation information	The way we consulted on the Application is summarised in section 2.2 of this decision document. Our consultation did not include circulation of information to specific addresses around the area of the site. We consider that the steps we have taken were appropriate and effective. .