Environment Agency Decision Document – Consisting of:

Part A – Environment Agency Review of an Environmental Permit for an Installation subject to Chapter II of the Industrial Emissions Directive under the Environmental Permitting (England & Wales) Regulations 2016; and

Part B - Permitting decision, Operator initiated substantial variation application

Part A

Review of an Environmental Permit for an Installation subject to Chapter II of the Industrial Emissions Directive under the Environmental Permitting (England & Wales) Regulations 2016

Decision document recording our decision-making process following review of a permit

The Permit number is:	EPR/WP3007LM
The Operator is:	Thameside Energy Recovery Facility Ltd
The Installation is:	Thameside Energy Recovery Facility
This Variation Notice number is:	EPR/WP3007LM/V002

What this document is about

Article 21(3) of the Industrial Emissions Directive (IED) requires the Environment Agency to review conditions in permits that it has issued and to ensure that the permit delivers compliance with relevant standards, within four years of the publication of updated decisions on best available techniques (BAT) conclusions.

We have reviewed the permit for this installation against the revised BAT Conclusions for waste incineration published on 3rd December 2019. This is our decision document, which explains the reasoning for the consolidated variation notice that we are issuing. This review has been 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. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position. It also provides a justification for the inclusion of any specific conditions in the permit that are in addition to those included in our generic permit template.

It explains how we will ensure that the installation complies with the BAT conclusions upon commissioning. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position. It also provides a justification for the inclusion of any specific conditions in the permit that are in addition to those included in our generic permit template.

As well as ensuring that the Installation complies with the BAT conclusions the consolidated variation notice takes into account and brings together in a single document all previous variations that relate to the original permit issued. It also modernises the entire permit to reflect the conditions contained in our current generic permit template.

The introduction of new template conditions makes the Permit consistent with our current general approach and philosophy and with other permits issued to installations in this sector. Although the wording of some conditions has changed, while others have been removed because of the new regulatory approach, it does not reduce the level of environmental protection achieved by the permit in any way. In this document we therefore address mainly our determination of substantive issues relating to the new BAT Conclusions.

Throughout this document we will use a number of expressions. These are as referred to in the glossary.

We try to explain our decision as accurately, comprehensively and plainly as possible. We would welcome any feedback as to how we might improve our decision documents in future. The use 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.

Glossary of acronyms used in Part A of 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.)

APC	Air Pollution Control
BAT	Best Available Technique(s)
BAT-AEEL	BAT Associated Energy Efficiency Level
BAT-AEPL	BAT Associated environmental performance level
BAT-AEL	BAT Associated Emission Level
BATc	BAT conclusion
BREF	Best available techniques reference document
CEM	Continuous emissions monitor
CHP	Combined heat and power
CV	Calorific value
DAA	Directly associated activity – Additional activities necessary to be carried out to allow the principal activity to be carried out
ELV	Emission limit value derived under BAT or an emission limit value set out in IED
EMS	Environmental Management System
EPR	Environmental Permitting (England and Wales) Regulations 2016 (SI 2016 No. 1154)
EWC	European waste catalogue
FSA	Food Standards Agency
IC	Improvement Condition
IED	Industrial Emissions Directive (2010/75/EU)
NOx	Oxides of nitrogen (NO plus NO_2 expressed as NO_2)
PHE	Public Health England
SAC	Special Area of Conservation
SGN	Sector guidance note
TGN	Technical guidance note
TOC	Total Organic Carbon
WFD	Water Framework Directive (2000/60/EC)

Our decision

We have decided to issue the consolidated variation notice to the operator. This will allow it to continue to operate the Installation, subject to the conditions in the consolidated variation notice.

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

The consolidated variation notice 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 and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the Notice, we consider that those conditions are appropriate.

How we reached our decision

Information to demonstrate compliance with BAT Conclusions for incineration Plant

The operator provided information demonstrating how the operation of their installation currently meets, or will subsequently meet, the revised standards described in the incineration BAT Conclusions document. The operator provided information that describes the techniques that will be implemented upon the commissioning of the facility, which will then ensure that operations meet the revised standards.

Where an Operator is proposing that they were not intending to meet a BAT standard that also included a BAT Associated Emission Level (BAT AEL) described in the BAT Conclusions Document, we request that the Operator make a formal request for derogation from compliance with that AEL (as provisioned by Article 15(4) of IED). In this circumstance, the operator did not make a formal request for derogation.

We considered that the response did not contain sufficient information for us to commence the permit review. We therefore issued a further information request to the Operator on 21/03/2023. Suitable further information was provided by the Operator on 31/03/2023.

We have not received any information in relation to the information provided in relation to the information related to BAT Conclusion compliance that appears to be confidential in relation to any party.

Review of our own information in respect to the capability of the installation to meet revised standards included in the BAT Conclusions document

Based on our records and previous regulatory activities with the facility we have no reason to consider that the operator will not be able to comply with the conditions that we include in the permit.

The legal framework

The consolidated variation notice will be issued 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* as described by the IED;
- subject to aspects of other relevant legislation which also have to be addressed.

We consider that the consolidated variation notice 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.

The key issues

The key issues arising during this permit review are:

- Ensuring the Installation complies with the BAT conclusions.
- Setting emission limits (including BAT AELs) for emissions to air,
- The energy efficiency levels associated with the Best Available Techniques (BAT-AEELs)

Ensuring the Installation complies with the BAT conclusions

We have reviewed the operator's response to the regulation 61 notice and we are satisfied that the Installation will meet the requirements of the BAT conclusions by upon commissioning of the facility. Further detail on our assessment is in annex 1 of Part A of this decision document.

Based on our records and previous regulatory activities with the Installation we have no reason to consider that the operator will not be able to comply with the conditions that we have included in the permit.

Emissions to air and the emission limits applied to the plant

The consolidated permit includes new emission limits for emissions to air. These limits ensure that the installation will comply with the relevant BAT-AELs, as specified in the BAT conclusions, and the relevant limits from IED Annex VI.

A number of general principles were applied during the permit review, including those set out in the UK Waste Incineration BAT Conclusions Interpretation Document . These included:

- The upper value of the BAT-AELs ranges specified were used unless use of the tighter limit was justified.
- The principle of no backsliding where if existing limits in the permit were already tighter than the upper end of the BAT-AEL ranges, the existing permit limits were retained.
- Where a limit was specified in both IED Annex VI and the BAT Conclusions for a particular reference period, the tighter limit was applied and in the majority of cases this was from the BAT Conclusions.

We have set the emissions limit values at the top end of the BAT-AEL range in line with section 4.35 of Defra's Industrial emissions Directive EPR Guidance on Part A installations which states: *Where the BAT AELs are expressed as a*

range, the ELV should be set on the basis of the top of the relevant BAT-AEL range – that is to say, at the highest associated emission level - unless the installation is demonstrably capable of compliance with a substantially lower ELV, based on the BAT proposed by the operator, or exceptional environmental considerations compel a tighter ELV.

We are satisfied that environmental considerations do not require tighter ELVs to be set, and the operator has not proposed any lower ELVs, and so we have set the ELVs at the top end of the BAT-AEL ranges.

We have amended IC5 from within the existing permit which requires the operator to assess options to reduce NO_X emissions below the top of the BAT AEL range.

Energy efficiency

The BAT conclusions specify an energy efficiency level associated with the best available techniques (BAT-AEEL). The BAT AEEL is based on gross electrical efficiency, gross energy efficiency or boiler efficiency depending on the type of plant.

The relevant BAT AEEL for this installation is gross electrical efficiency.

The Applicant stated that gross electrical efficiency is 34.8%. This within the range specified in the BAT conclusions.

Monitoring

The monitoring requirements for mercury and dioxins/furans are dependent on whether the waste has low a low and stable mercury content and whether emissions of dioxins are stable respectively. Improvement conditions IC8 and IC9 require the operator to submit information to enable us to require the correct monitoring.

Issues not directly relating to the BAT conclusions

Emissions to water or sewer

The operator stated that, once operational, there will be an emission to sewer. The discharge consists of boiler blowdown, surface water run-off and wash down water. Effluent will normally re-used but during periods of excess water such as during boiler blow down there is a discharge to sewer. Discharge will be infrequent and volumes are likely to be low.

Annex 1

Decision checklist regarding relevant BAT Conclusions

This annex provides a record of decisions made in relation to each relevant BAT Conclusion applicable to the installation.

The overall status of compliance with the BAT conclusion is indicated in the table below as
NA - Not Applicable
CC - Currently Compliant
FC - Compliant in the future (before the facility is commissioned)
NC - Not Compliant

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
1	EMS	Improve overall performance via use of a compliant EMS.	The EMS will be developed throughout the development stage of the project and will be accredited to a suitably recognised standard. A pre-operational condition is included within the Permit which requires Thameside Energy Recovery Facility Limited (TERFL) to provide a summary of the proposed EMS prior to commencement of operation	FC
2	Energy efficiency	Determine gross electrical efficiency, gross energy efficiency or boiler efficiency (depending on plant type).	The gross electrical efficiency of the plant is calculated to be approximately 34.8 %.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
3	Process Monitoring	Monitor key process parameters for emissions to air and water specified in the corresponding table.	The process parameters for monitoring of emissions to air are as follows: • water vapour content • temperature; and • pressure. The oxygen content and flow rate of the flue gases will also be monitored. Temperature will be monitored in the combustion chamber. There will be no emissions of water from FGC systems and there will be no bottom ash treatment undertaken at the Facility – therefore, the process parameters to be monitored for emissions to water as listed in BAT 3 do not apply to the Facility. TERFL has confirmed that the Facility will include for monitoring of the key process parameters relevant for emissions to air in accordance with BAT 3.	FC
4	Air emissions monitoring	Monitor emissions to air with at least the frequency in the corresponding table and in accordance with the EN standards.	The operator has confirmed that emissions to air will be monitored with frequencies in accordance with the requirements of the BREF. The methods and standards used for emissions monitoring will be in compliance with BREF requirements and other appropriate requirements.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
	PBDD/F	Monitor emissions to air of brominated dioxins and furans periodically if waste streams are known to contain brominated flame retardants are burned	The operator has confirmed that emissions to air will be monitored with frequencies in accordance with the requirements of the BREF. The methods and standards used for emissions monitoring will be in compliance with BREF requirements and other appropriate requirements.	FC
	PCDD/F	Monitor emissions to air of dioxins and furans using a continuous sampler unless emissions are sufficiently stable.	The operator has confirmed that emissions to air will be monitored with frequencies in accordance with the requirements of the BREF. The methods and standards used for emissions monitoring will be in compliance with BREF requirements and other appropriate requirements.	FC
	Mercury	Monitor emissions to air of mercury using continuous monitoring if required.	The operator has confirmed that emissions to air will be monitored with frequencies in accordance with the requirements of the BREF. The methods and standards used for emissions monitoring will be in compliance with BREF requirements and other appropriate requirements.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
5	OTNOC monitoring	Appropriately monitor emissions during OTNOC. Monitor PCCD/F and dioxin-like PCB mass emissions during a planned start-up and shut-down following the successful commissioning of the plant; already-operational plants must carry out this monitoring every 3 years; emissions profiles of continuously monitored pollutants must also be established following successful commissioning and for existing plants; consider further monitoring for plants that use abatement-system bypasses during start-up and/or shut-down.	The continuous emissions monitoring systems (CEMS) installed at the Facility will monitor emissions to air of NOx, NH3, CO, SO2 HCl, dust and TOC during periods of OTNOC. Measurement campaigns to measure dioxins and furans during start up and shutdown operations will be conducted once every 3 years, where it is possible to schedule the monitoring.	FC
6	Water emissions monitoring	Monitor emissions from FGC and/or bottom ash treatment. Monitor to frequencies and standards in corresponding table.	The Facility will utilise a dry flue gas treatment system. Therefore, there will not be any emissions to water from the FGC systems. Furthermore, there will not be any emissions to water from the treatment or handling of bottom ash.	NA

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
		Reduced monitoring frequency permitted if emissions can be shown to be sufficiently stable.	The Facility will utilise a dry flue gas treatment system. Therefore, there will not be any emissions to water from the FGC systems. Furthermore, there will not be any emissions to water from the treatment or handling of bottom ash.	NA
7	Ash monitoring	Monitor LOI or TOI content of bottom ash to the frequencies and standards in corresponding table .	Monitoring of TOC will be carried out once the facility is operational.	FC
8	POP monitoring	For hazardous waste containing POPs, monitor POP content of waste streams (applicable to dedicated hazardous waste incinerators only). After commissioning and then after significant change that could affect POP content.	Not applicable - plant is not a dedicated hazardous waste incinerator	NA

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
9	Waste input controls	Pre-acceptance / acceptance procedures. Use all techniques (a) to (c) in corresponding table, and where relevant (d), (e) and (f).	Techniques set out in BAT 9 (a)-(e) will be in place. Techniques f is not relevant.	FC
10	Bottom ash treatment	Quality output management system part of EMS where bottom ash treatment is carried out.	Not applicable - bottom ash treatment is not carried out.	NA
11	Waste delivery, storage and handling	Monitor waste deliveries in line with corresponding table, depending on the risk posed by the waste type.	Measures in line with BAT 11 will be in place	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
		Radioactivity detection	Not required - no increased risk identified	NA

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
12		Storage and handling. Use both techniques listed in corresponding table.	The surfaces of the waste reception, handling and storage areas have been designed and will be constructed as impermeable structures. Adequate drainage infrastructure will be fitted to areas where receipt, handling and storage of waste takes place – these areas will have appropriate falls to the process water drainage system. The integrity of areas of hardstanding will be periodically verified by visual inspection. Regular maintenance of the drainage systems will be undertaken in accordance with documented management procedures to be developed for the Facility. Adequate waste storage capacity will be available on site – the maximum waste storage capacity of the waste bunker will be clearly established and not exceeded. The quantity of waste will be regularly monitored against the maximum storage capacity. During periods of planned maintenance, quantities of fuel within the bunker will be run down. During extended periods of shutdown, provisions will be made for the waste to be backloaded from the bunker and transferred to alternative licensed waste management facilities. TERFL considers that the proposed arrangements for environmental risks associated with the reception, handling and storage of waste comply with the requirements of BAT 12	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
13		Storage and handling of clinical waste. Combination of techniques listed in corresponding table.	The Facility will not be dedicated to the processing of clinical waste. In addition, the Facility will not receive hazardous clinical waste. Therefore, TERFL Environmental considers that the requirements of BAT 13 are not applicable to the Facility.	NA

14	Overall environment performance	Reduce unburnt substances in slags / bottom ash and reduce emissions. Use a combination of techniques listed in corresponding table	Bunker crane mixing and advanced control systems will be employed at the Facility. A modern and advanced control system, incorporating the latest advances in control and instrumentation technology, will be utilised at the Facility to control operations, optimise the process relative to efficient heat release, good burn-out and minimum particle carry over. As described in Section 2.1 of the Supporting Information submitted in support of the EP application, the system will control and/or monitor the main features of the plant operation including, but not limited to the following: • combustion air; • fuel feed rate; • SNCR system; • flue gas oxygen concentration at the boiler exit; • flue gas composition at the stack (including HCl measurements); • combustion process; • boiler feed pumps and feedwater control; • steam flow at the boiler outlet; • steam outlet temperature; • boiler drum level control; • flue gas control (including differential pressure across the bag filters); • power generation; and • steam turbine exhaust pressure. Water, electricity and auxiliary fuel usage will also be monitored to highlight any abnormal usage. TERFL considers that the proposed arrangements for ensuring the overall environmental performance of the incineration of waste, to reduce the content of unburnt	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
			substances in slags and bottom ashes, and to reduce emissions to air from the incineration of waste comply with the requirements of BAT 14.	
		BAT-AEPL for TOC or LOI	The installation will be able to meet the BAT-AEPL for TOC. Limit in place in the permit,	FC
15		Control plant settings to reduce emissions to air. Use techniques such as an advanced control system.	The Facility will be controlled from a dedicated control room, with an advanced control system to optimise the process. The system will control and/or monitor the main features of the plant operation, as described in the response to BAT 14 above. Emissions to air will be reduced by the adjustment of the plants settings through the advanced control system. TERFL considers that the proposed control systems will ensure that the Facility is designed to allow for the adjustment of the plant's settings to comply with the requirements of BAT 15.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
16		Procedures to limit shutdown and start-up. Set up and implement procedures such as continuous rather than batch operation	The Facility will operate continuously, with planned shutdowns for maintenance limited as far as reasonably practicable. Waste will be kept at suitable levels in the waste bunker to maintain operation during holiday periods. Operational procedures will be developed to limit as far as practicable shutdown and start-up operations. TERFL considers that the operation of the Facility will limit as far as practicable shutdown and start-up operations to comply with the requirements of BAT 16.	FC
17	Emission to air and water	Design of FGC system and waste water treatment plant. Appropriate design, operated in design range, maintained to ensure optimal availability.	The FGT and wastewater treatment systems will be appropriately designed and operated within the design range. The FGC and wastewater treatment systems will be subject to regular maintenance through the implementation of documented management procedures. TERFL considers that the design and operation of the FGC and wastewater treatment plants will ensure that emissions to air (and water where applicable) are reduced, and will ensure their optimal availability, to comply with the requirements of BAT 17.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
18	OTNOC	Reduce frequency of OTNOC by setting up and implementing an OTNOC management plan.	A risk based OTNOC management plan will be incorporated into the Facility EMS. This will include the following elements: • Identification of potential OTNOC, root causes and potential consequences. • Regular update of the list of identified OTNOC following periodic assessment. • Appropriate design of critical equipment (the Facility will utilise compartmentalisation of the bag filter and ensure that the bag filter is not bypassed during periods of start-up or shutdown). • Implementation of preventative maintenance plans for critical equipment. • Monitoring and recording of emissions during OTNOC and associated circumstances. • Periodic assessment of the emissions and circumstances occurring during OTNOC and implementation of corrective actions if necessary. TERFL considers that the incorporation of a risk based OTNOC management plan will ensure the Facility compliance with BAT 18	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
19	Energy efficiency	Increase efficiency by using a heat recovery boiler.	The Facility will use a heat recovery boiler to produce steam which is used to produce electricity. The Facility will also have the provision to export heat to local users. TERFL considers that the use of a heat recovery boiler is in direct compliance with the requirements of BAT 19.	FC
20		Increase efficiency by using a combination of techniques listed in corresponding table.	The Facility will use techniques as described in section 2.6 of the Supporting Information submitted in support of the EP application to increase the energy efficiency of the plant. TERFL considers that the techniques listed above will increase the energy efficiency of the plant and ensure that the Facility will comply with the requirements of BAT 20.	FC
		BAT-AEEL is within the BAT – AEEL range	Boiler Efficiency is calculated to be within the BAT-AEEL range	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
21	Diffuse emissions to air	Prevent or reduce diffuse emissions (including odour) using the listed techniques.	In accordance with the BREF, the Facility will employ the following measures to reduce odour emissions: • Waste in the Facility will be stored in an enclosed building under negative pressure. The extracted air will be used as combustion air for incineration. • The operation of the Facility will not give rise of odorous liquid wastes. Therefore, the requirement to store liquid wastes in tanks under controlled pressure and duct the tank vents to the combustion air feed or other suitable abatement system will not apply to the Facility. • Odour will be controlled during shutdown periods by minimising the amount of waste in storage. Waste will be run-down prior to periods of planned maintenance, and there will also be provisions in place to back-load waste from the waste bunker during extended periods of unplanned shutdown. In addition, doors to the tipping hall will be kept shut during periods of shutdown. The measures listed above to reduce odour emissions will ensure that the Facility will comply with the requirements of BAT 21.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
22		Prevent diffuse emissions of VOCs from gaseous and liquid wastes by direct feed to furnace.	Gaseous wastes will not be accepted by the Facility. It is not anticipated that liquid wastes will be received at the Facility, but should any liquid wastes be received, they will be delivered in containers suitable for incineration (such as drums) and fed directly into the furnace. Therefore, the requirements of BAT 22 do not apply to the Facility.	NA
23		Prevent or reduce diffuse emissions to air from treatment of slags and bottom ashes by including listed measures in the EMS.	There will not be treatment of slags and/or bottom ashes undertaken on-site. Therefore, the requirements of BAT 23 do not apply to the Facility. However, identification of the most relevant diffuse dust emissions, and definition and implementation of appropriate actions and techniques, will be included within the scope of the EMS at the Facility.	NA

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
24		Prevent or reduce diffuse emissions to air from treatment of slags and bottom ashes. Use one or a combination of techniques in corresponding table	There will not be treatment of slags and/or bottom ashes undertaken on-site. Therefore, the requirements of BAT 24 do not apply to the Facility. However, it can be confirmed that the following techniques will be employed at the Facility to minimise dust emissions: • All ash handling including conveying undertaken within enclosed buildings. • Where possible, minimising the height of ash discharge. • Use of a water ash quench to minimise the generation of dusts from ash handling activities.	FC
25	Channelled emissions to air	Reduce emissions of metals and metalloids from incineration of waste. Use one or a combination of techniques in corresponding table.	In accordance with the BREF, the following techniques will be utilised at the Facility to reduce channelled emissions to air: • Bag filters – to reduce particulate content of the flue gas. • Dry sorbent injection – adsorption of metals by injection of activated carbon in combination with injection of dry lime to abate acid gases. The concentrations of metals and metalloids will be monitored in accordance with the EP for the Facility. It is considered by TERFL that the techniques listed above to reduce channelled emissions to air will ensure that the Facility will comply with the requirements of BAT 25.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
		BAT-AELs for dust and metals	The plant will be able to achieve an emission limit value set at the top end of the BAT-AEL	FC
26		Reduce emissions of dust from treatment of slags and bottom ashes. Use a bag filter if treating air from treatment of IBA under sub-atmospheric conditions.	Not applicable - bottom ash treatment is not carried out.	NA
		BAT-AEL for dust from IBA treatment. Applies if using a bag filter to treat air from treatment of IBA under sub-atmospheric conditions	Not applicable - bottom ash treatment is not carried out.	NA

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
27		Reduce emissions of HCl, HF and SO_2 using one or a combination of techniques in corresponding table.	In accordance with the BREF, the following techniques will be utilised at the Facility to reduce channelled emissions to air of HCl, HF and SO2: • Dry sorbent injection – adsorption of metals by injection of activated carbon in combination with injection of dry lime to abate acid gases. It is considered by TERFL that the use of dry sorbent injection to reduce channelled emissions to air of acid gases is in compliance with the requirements of BAT 27.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
28		Reduce peak emissions of HCl, HF and SO_2 and amount of residue produced, using technique (a) or both techniques in corresponding table.	In accordance with the BREF, the following techniques will be employed at the Facility to reduce peak emissions of HCl, HF and SO2 whilst limiting reagent consumption and residue generation from dry sorbent injection: • The concentration of hydrogen chloride in the flue gases upstream of the flue gas treatment system will be measured to optimise the performance of the emissions abatement equipment, including automated reagent dosage. • A proportion of the APC residues will be recirculated to reduce the amount of unreacted reagent in the residues. • The concentrations of HCl, HF and SO2 released from the Facility will comply with BREF limits. The techniques listed above to reduce channelled peak emissions to air of acid gases will ensure that the Facility will comply with the requirements of BAT 28.	FC
		BAT-AELs for HCl, HF and SO2	The plant will be able to achieve an emission limit value set at the top end of the BAT-AEL range.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
29		Reduce emissions of NOx while limiting emissions of CO, N_2O and NH_3 using appropriate combination of techniques in corresponding table.	The following elements have been incorporated into the design of the Facility: • optimisation of the incineration process via the use of an advanced control system and monitoring of process parameters (refer to the response to BAT 14); • an SNCR system; and • optimisation of the design and operation of the SNCR system (through CFD modelling to optimise the location and number of injection nozzles, and optimisation of reagent dosing to minimise ammonia slip). As identified in 2.4.3 of the Supporting Information submitted in support of the EP application, it is currently assumed that flue gas recirculation will be employed at the Facility. The design elements listed above to reduce channelled NOx emissions to air (whilst limiting emissions of CO, N2O and NH3) will ensure that the Facility will comply with the requirements of BAT 29.	FC
		BAT-AELs for NOx, CO and NH_3	The plant will be able to achieve an emission limit value set at the top end of the BAT-AEL range.	FC

30		Reduce emissions of organic compounds including PCDD/F and PCBs using techniques (a), (b), (c), (d) and one or a combination of techniques (e) to (i) in corresponding table	The Facility will employ the following techniques to reduce channelled emission to air of organic compounds: • Optimisation of the incineration process – the boiler will be designed to minimise the formation of dioxins and furans as follows: • Minimise residence time in critical cooling section to avoid slow rates of combustion gas cooling, minimising the potential for 'de-novo' formation of dioxins and furans. • Utilisation of an SNCR system which inhibits dioxin formation and promotes their destruction. • Keep transfer surfaces as low as possible, around 170°C subject to other reaction considerations. • Apply CFD modelling to the design where appropriate to ensure gas velocities are in a range that negates the formation of stagnant pockets/low velocities. • Minimise volume in critical cooling sections. • Prevent boundary layers of slow-moving gas along boiler surfaces via good design and regular maintenance. • Online and offline boiler cleaning through a regular maintenance schedule to reduce dust residence time and accumulation in the boiler, thus reducing PCDD/F formation in the boiler. • Dry sorbent injection using activated carbon and dry lime, in combination with a bag filter. The concentrations of dioxins and furans released from the Facility will comply with BREF limits.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
			The techniques listed above to reduce channelled emission to air of organic compounds will ensure that the Facility will comply with the requirements of BAT 30.	
		BAT-AELs for PCDD/F	The plant will be able to achieve an emission limit value set at the top end of the BAT-AEL range.	FC
31		Reduce mercury emissions using one or a combination of techniques in the corresponding table.	In accordance with the BREF, dry sorbent injection of activated carbon will be employed at the Facility in combination with a bag filter. It is considered by TERFL that the use of these techniques will ensure that the Facility will comply with the requirements of BAT 31.	FC
		BAT-AEL for mercury	The plant will be able to achieve an emission limit value set at the top end of the BAT-AEL range.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
32	Emissions to water	Reduce contamination of uncontaminated water, reduce emissions to water and increase resource efficiency. Segregate waste water streams and treat them separately.	There will be separate foul/domestic water, process water and surface water drainage systems at the Facility. Foul effluents from domestic sources will be discharged to foul sewer. It can be confirmed that there will be no wastewater arising from flue gas treatment. Bottom ash handling will be undertaken in an enclosed building with a dedicated drainage system. The drainage in the Facility waste reception, handling and storage areas will be contained, with any process water collected reused within the process (e.g. in the ash quench). Process water will be collected in an intermediate storage vessel prior to re-use. Uncontaminated water streams, such as surface water run-off, will be segregated from other wastewater streams requiring treatment. Surface water runoff from roadways and vehicle movement areas will pass through interceptors to contain oil and sediments prior to discharge. Areas where liquid raw materials are stored (e.g. liquid ammonia) will be covered to prevent contaminated surface water from leaving the site. It is considered by TERFL that the segregation and treatment of different wastewater streams, as described above, will ensure that the Facility will comply with the requirements of BAT 32.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
33	Water usage	Reduce water usage, prevent waste water generation using one or a combination of techniques in the corresponding table	In accordance with the BREF, the following techniques will be utilised at the Facility to reduce water usage and prevent wastewater generation: • Use of an FGC system that does not generate wastewater – by utilising dry sorbet injection of lime and PAC. • Water reuse and recycling in the process – effluents generated by the process will be re-used within the process, e.g. in the ash quench. Under normal operation the Facility will not generate process effluent. It is considered by TERFL that the techniques listed above to reduce water usage and prevent/reduce the generation of wastewater will ensure that the Facility will comply with the requirements of BAT 33.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
34	Emissions to water	Reduce emissions to water from FGC and/or from storage and treatment of slags and bottom ashes using one or a combination of techniques in the corresponding table and use secondary techniques as close to source as possible.	There will be no treatment of slags and bottom ashes undertaken on-site. In addition, there will be no emission to water from FGC. The risk of emissions to water from the storage of bottom ash at the Facility will be minimised – any overflow from the ash quench will be contained in the process effluent drainage system and hence there will not be any release of effluent from the ash quench system. In accordance with BAT 34 (a), the incineration process and the FGC process will be optimised to target pollutants such as dioxins and furans, and ammonia – refer to the responses to BAT 29 and 30 above. It is considered by TERFL that the Facility will comply with the requirements of BAT 34 by reducing emissions to water from the storage of bottom ash as per the design measures described above.	FC
		BAT-AELs	There will be no treatment of slags and bottom ashes undertaken on-site. There will not be any release of effluent from the ash quench system	NA

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
35	Resource efficiency	Resource efficiency. Handle and treat bottom ashes separately from FGC residues.	It can be confirmed that bottom ash and APCr will be handled and disposed of separately at the Facility. TERFL considers that the Facility will comply with the requirements of BAT 35.	FC
36		Resource efficiency for treatment of slags and bottom ashes. Use appropriate combination of techniques in corresponding table depending on hazardous properties of the slags and bottom ashes.	There will be no bottom ash treatment undertaken at the Facility. Therefore, it is understood that the requirements of BAT 36 do not apply to the Facility.	NA

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
37	Noise	Reduce noise emissions using one or a combination of techniques in the corresponding table.	In accordance with the requirements of BAT 37, it can be confirmed that the following techniques will be employed at the Facility to prevent or reduce noise emissions: • Appropriate location of equipment and buildings – in accordance with normal industry practice, the technology provider will implement an efficient layout to result in relatively quiet operational noise levels. • Operational measures – regular inspection and maintenance of equipment will be undertaken. Doors to buildings will remain closed as far as is reasonably practicable. Waste deliveries will take place primarily during daytime hours. • Low-noise equipment – the proposed technology provider will optimise plant selection to ensure that the most efficient and 'quietest' technology is selected.	FC

Review and assessment of derogation requests made by the operator in relation to BAT Conclusions which include an associated emission level (AEL) value

The IED enables a competent authority to allow derogations from BAT AELs stated in BAT Conclusions under specific circumstances as detailed under Article 15(4):

By way of derogation from paragraph 3, and without prejudice to Article 18, the competent authority may, in specific cases, set less strict emission limit values. Such a derogation may apply only where an assessment shows that the achievement of emission levels associated with the best available techniques as described in BAT conclusions would lead to disproportionately higher costs compared to the environmental benefits due to:

> *(a) the geographical location or the local environmental conditions of the installation concerned; or*
>
> *(b) the technical characteristics of the installation concerned.*

As part of their Regulation 61 Note response, the operator has not requested a derogation from compliance with any AEL values.

1 Summary checklist

Aspect considered	Decision
Receipt of application	
Confidential information	A claim for commercial or industrial confidentiality has not been made.
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential. The decision was taken in accordance with our guidance on confidentiality.
Operating techniques	
General operating techniques	We have reviewed the techniques used by the operator where they are relevant to the BAT Conclusions and compared these with the relevant guidance notes. The permit conditions ensure compliance with the relevant BREF, BAT Conclusions. The ELVs deliver compliance with the BAT-AELs.
Permit conditions	
Updating permit conditions during consolidation	We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide at least the same level of protection as those in the previous permit and in some cases will provide a higher level of protection to those in the previous permit.
Changes to the permit conditions due to an Environment Agency initiated variation	We have varied the permit as stated in the variation notice.
Improvement programme	Based on the information on the application, we consider that we need to impose an improvement programme.
Emission limits	We have decided that emission limits should be set for the parameters listed in the permit. These are described in the relevant BAT Conclusions in Section of this document. It is considered that the ELVs/equivalent parameters or technical measures described above will ensure that significant pollution of

Aspect considered	Decision
	the environment is prevented and a high level of protection for the environment is secured.
Monitoring	We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified. These are described in the relevant BAT Conclusions within this document.
Operator competence	
Management system	There is no known reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.
Growth Duty	
Section 108 Deregulation Act 2015 – Growth duty	We have 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 guidance 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 also 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.

Part B - Permitting decision, Operator initiated substantial variation application

We have decided to grant the operator initiated substantial variation for Thameside Energy Recovery Facility operated by Thameside Energy Recovery Facility Limited EPR/WP3007LM/V002.

The variation application is to make a number of changes to the existing permit and associated agreed operating techniques, as follows:

- Changing the waste incineration technology from a conventional moving grate with spreader stoker system to an inclined moving grate with ram feeder.
- Increase in the annual capacity of the Facility to 379,658 tonnes per annum to align with the planning consent and updated design of the Facility.
- Changes to the firing diagram which include:
    - increasing the thermal capacity of the facility from 57 MWth to 126.4 MWth; and
    - increase in throughput from 14.9 t/h to 43.3 t/h.
- Update the Site Layout to incorporate layout changes following optimisation of the design of the Facility.
- Removal of the SRF preparation facility and associated infrastructure.
- Change the reagent to be used in the SNCR system from urea to ammonia solution.
- Include additional non-hazardous EWC codes to the permitted waste types which can proposed to be processed at the Facility.
- Provision of a Fire Prevention Plan (FPP).

The proposed changes are required by the operator to ensure that the Permit reflects the evolution and optimisation of the design of the Facility.

Note. Part way through the variation, on 12/10/2023, the operator amended their proposal. In the initial application the proposed tonnes per annum to be received at the facility was 350,000. The applicant proposed to increase this tonnage to 379,658. We have based our assessment on this new tonnage. As a result of this change we made appropriate re-assessment of the application and re-consulted with the public and external stakeholders. The outcome of this re-consultation is included in Annex 2 below.

Purpose of this document

This decision document provides a record of the decision-making process. It

- summarises the Key Issues in the Key Issues section
- summarises the decision making process in the decision considerations section to show how the main relevant factors have been taken into account
- summarises the engagement carried out.
- shows how we have considered the consultation responses

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Read the permitting decisions in conjunction with the environmental permit and the variation notice.

BAT has been fully assessed as part of the Permit review process (Part A of this document above) which captures the operating techniques being carried forward following this variation. As such, the following section highlights the key issues that have been identified as requiring specific assessment in order to ensure the proposed changes listed on page 41 have been fully considered but does not repeat a full BAT assessment.

Key issues

Emissions to air

At the time of submission of the original EP application in 2014, the Facility was expected to have an annual processing capacity of 300,000 tonnes of waste per annum. The EP was subsequently varied in November 2014 to reduce the capacity of the EfW facility to 170,000 tonnes of waste per annum and amend the application with the most up-to-date technical information available.

Following a review of the current waste market and discussions with potential technology providers TERFL has reviewed the design of the Facility to maximise its full potential. TERFL has recently been granted an amendment to the planning consent issued by the Department for Business, Energy and Industrial Strategy (BEIS) to enable it to process up to 379,658 tonnes of waste per annum.

In order to demonstrate that air quality impacts associated with this increase in annual tonnage are acceptable, the operator resubmitted air quality modelling. Within their air modelling, the operator presented as-permitted impacts vs proposed facility impacts for comparison. However, in order to

support their conclusions, the operator provided a full air dispersion model which considered the proposed facility's impacts vs a no-facility scenario.

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.

Assessment of Impact on Air Quality

The Applicant's assessment of the impact of air quality is set out in 'Thameside Energy Recovery Facility Limited, Dispersion Modelling Assessment (Dated 27/06/2022)' 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 below.

The Applicant 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 5.2 model, which is a commonly used computer model for regulatory dispersion modelling. The impact of meteorological data has been taken into account by using meteorological data from the Gravesend Broadness meteorological recording station for the years 2014 – 2018 sourced from Air Pollution Services (APS) Limited. Gravesend Broadness is located approximately 1.5 km from the Facility. This is directly upwind of the Facility in the prevailing wind direction. Although on the opposite site of the River Thames from the Facility it is considered by the applicant that the conditions would be similar. This site closed in August 2018. The effect of the terrain surrounding the site upon plume dispersion was considered in the dispersion modelling.

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 and 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 below)
- Third, the model also considered emissions of pollutants not covered by Annex VI of IED, specifically, polycyclic aromatic hydrocarbons (PAH) and polychlorinated biphenyls (PCBs).

The applicant notes that as Thameside Energy Recovery Facility is not yet operational nor constructed and they anticipate that "long-term emission limits from the Waste Incineration BREF will be implemented in accordance with the upper end of the BAT-AEL ranges for a 'new' facility". The Waste Incineration Best Available Techniques (BAT) Reference Document (BREF) requires compliance with BAT Associated Emission Limits (AELs), these are more stringent than IED ELVs and therefore the consultant's predicted process

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

The Applicant established the background (or existing) air quality against which to measure the potential impact of the incinerator. The applicant has used background data from different air quality networks spread across the UK and Defra background maps for the pollutants considered. We have reviewed the data and can confirm they are reasonably representative. We have however identified some minor differences and have used the most conservative background data for all the pollutants in our check modelling assessments.

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 Applicant'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 Applicant'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 Applicant's assessment leads us to agree with the Applicant'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 Applicant's modelling predictions are summarised in the following sections.

Assessment of Air Dispersion Modelling Outputs

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

The Applicant's modelling predicted peak ground level exposure to pollutants in ambient air. We have conservatively assumed that the maximum concentrations occur at the location of receptors.

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

Whilst we have used the Applicant'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.

For non-metal pollutants, the operator has made a comparison with the permitted facility and the proposed facility. We agree with the applicant that the change in impact at the point of maximum impact from permitted and proposed is insignificant. This insignificant increase is due to the increased rate of pollutants associated with the burning of increased volumes of waste is offset by the increase in buoyancy of the plume from the increased velocity and changes in layout of the facility's buildings.

Assessment of Emissions to Air (1)

Pollutant	ES		Back-ground	Maximum Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
	µg/m³	Reference period	µg/m³	µg/m³	% of EAL	µg/m³	% of EAL
NO_2	40	Annual Mean	21.9	0.52	1.30	22.4	56.1
	200	99.79th %ile of 1-hour means	43.8	7.25	3.6	51.1	25.5
PM_{10}	40	Annual Mean	16.4	0.04	0.10	16.4	41.1
	50	90.41st %ile of 24-hour means	32.8	0.14	0.28	32.94	65.9
$PM_{2.5}$	20	Annual Mean	11.2	0.04	0.20	11.24	56.2
SO_2	266	99.9th %ile of 15-min means	27.6	6.1	2.3	33.7	12.7
	350	99.73rd %ile of 1-hour means	27.6	5.07	1.45	32.67	9.3

	125	99.18th %ile of 24-hour means	27.6	1.7	1.4	29.3	23.4
HCl	750	1-hour average	1.42	2.13	0.284	3.6	0.47
HF	16	Monthly average	2.35	0	0.00	2.350	14.69
	160	1-hour average	10.67	0.21	0.13125	10.88	6.8
CO	10000	Maximum daily running 8-hour mean	708	6.6	0.07	715	7.1
	30000	1-hour average	708	10.67	0.04	719	2.4
TOC	2.25	Annual Mean	0.32	0.07	3.11	0.39	17.33
	30	Daily average	1.5	2.18	7.27	3.68	12.27
PAH	0.00025	Annual Mean	0.0007	7.7E-07	0.31	0.00070	280.3
NH_3	180	Annual Mean	1.7	0.04	0.02	1.74	0.97

	2500	1-hour average	3.4	2.13	0.09	5.53	0.2
PCBs	0.2	Annual Mean	0.00013	0.00002	0.01	0.00015	0.08
	6	1-hour average	0.00026	0.00107	0.02	0.00133	0.02

TOC as 1,3 butadiene for long term and benzene for short term
PAH as benzo[a]pyrene

Assessment of Emissions to Air (2) 2

Pollutant	ES		Back-ground	Process Contribution		Predicted Environmental Concentration	
	ng/m³	Reference period	ng/m³	ng/m³	% of EAL	ng/m³	% of EAL
Cd	5	Annual mean	0.35	0.18	3.6	0.53	10.6
Tl							
Hg	250	Annual mean	2.8	0.18	0.07	2.98	1.19
	7500	1-hour average	5.6	10.67	0.14	16.27	0.217
Sb	5000	Annual mean	1.3	1.85	0.04	3.15	0.06
	150000	1-hour average	2.6	106.71	0.07	109.31	0.073
Pb	250	Annual mean	12	1.85	0.74	13.85	5.54
Cu	10000	Annual mean	11	1.85	0.02	12.85	0.129
	200000	1-hour average	22	106.71	0.05	128.71	0.064
Mn	150	Annual mean	6	1.85	1.23	7.85	5.23
	1500000	1-hour average	12	106.71	0.007	118.71	0.01
V	5000	Annual mean	6	1.85	0.04	7.85	0.16
	1000	24-hr average	6	21.45	2.15	27.45	2.75
As	6	Annual mean	1.1	1.85	30.83	2.95	49.2
Cr (II)(III)	5000	Annual mean	2.2	1.85	0.04	4.05	0.081
	150000	1-hour average	4.4	106.71	0.07	111.11	0.0741

Cr (VI)	0.25	Annual mean	0.44	1.85	740.00	2.29	916.0
Ni	20	Annual mean	1.3	1.85	9.25	3.15	15.8

(i) Screening out emissions which are insignificant

From the tables above, most 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.

Therefore we consider the Applicant'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 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.

- Nitrogen Dioxide (Annual Mean)
- VOCs (as 1,3 Butadiene) Annual Mean
- Cadmium (Annual Mean)
- Arsenic (long term)
- Manganese (long term)
- Nickel (long term)

For these emissions, we have carefully scrutinised the Applicant's proposals to ensure that they are applying BAT to prevent and minimise emissions of these substances. This assessment has been carried out as part of the permit review detailed in Part A of this Decision Document.

For Chromium VI, the table above suggest that a PEC of over 100% is possible, however, this is using a worst-case screening assumption, If it is assumed that the Proposed Facility would perform no worse than the maximum monitored concentration from the EA metals guidance, the process contribution is below 1%.

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 μg/m^3 as a long term annual average and 200 μg/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 than 10% of the ES and so can be screened out as insignificant. Therefore, we consider the Applicant's proposals for preventing and minimising the emissions of these substances to be BAT for the Installation.

(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 Applicant'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 Applicant's particulate matter impact assessment and are satisfied in the robustness of the Applicant'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 Applicant's proposals for preventing and minimising the emissions of particulates to be BAT for the Installation.

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 (IC2) is already present within the permit 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 μg/m³, 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 μg/m³ and a monthly ES of 16 μg/m³ – 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 μg/m³, 15 – minute of 266 μg/m³ and daily of 125 μg/m³.

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 Applicant'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 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 and so can be screened out as insignificant. Therefore, we consider the Applicant's proposals for preventing and minimising the emissions of these substances to be BAT for the Installation.

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

The Applicant has used the ES for 1,3 butadiene for their assessment of the impact of VOC. This is based on 1,3 butadiene having the lowest ES of organic species likely to be present in VOC (other than PAH, PCBs, dioxins and furans).

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 Applicant's proposals for preventing and minimising the emissions of these substances to be BAT for the Installation.

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 below

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 Applicant's modelling shows that the installation is unlikely to result in a breach of the ES. The Applicant is required to prevent, minimise and control PAH and VOC emissions using BAT. 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 have carefully scrutinised the Applicant's proposals to ensure that they are applying the BAT to prevent and minimise emissions of these substances. This assessment was carried out as part of the permit review of this permit which is detail in Part A of this Decision Document. Therefore, we consider the Applicant's proposals for preventing and minimising emissions to be BAT for the Installation. Dioxins and furans are considered further below.

Assessment of Emission of Metals

The Applicant 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.

From the tables above, most 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.

Therefore we consider the Applicant'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.

The following emissions of metals whilst not screened out as insignificant were assessed as being unlikely to give rise to significant pollution:

- Cadmium (Annual Mean)
- Arsenic (long term)
- Manganese (long term)
- Nickel (long term)

For Chromium VI, the Applicant Used representative emissions data from other municipal waste incinerators using our guidance note Please refer to "Guidance to Applicants 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. Data for Cr (VI) was based on total Cr emissions measurements and the proportion of total Cr to Cr (VI) in APC residues.

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

Cr (VI)

If it is assumed that the Proposed Facility would perform no worse than the maximum monitored concentration from the EA metals guidance, the process contribution is below 1%.

The installation has been assessed as meeting BAT for control of metal emissions to air. This assessment was carried out as part of the permit review of this permit which is detail in Part A of this Decision Document.

Impact on Air Quality Management Areas (AQMAs)

There are 5 AQMAs within 2km of the facility as declared by Thurrock Council, with respect to Nitrogen Dioxide for:

- AQMA No. 1 – Grays
- AQMA No. 2 – Tilbury
- AQMA No. 3 – Tilbury
- AQMA No. 24 – Tilbury

There is one AQMA with respect to particulate matter concentrations for the Northfleet Industrial Area (as declared by Gravesham Borough Council)

From the Applicants model, the process contribution at all points within each of the AQMAs is predicted to be below 1% of the ES and can be considered insignificant. Therefore, even though the ES could be breached, the contribution from the Installation is negligible.

We have acknowledged all AQMAs within our assessment and considered relevant background concentrations.

The Applicant is required to prevent, minimise and control emissions using the best available techniques. This assessment was carried out as part of the permit review of this permit which is detail in Part A of this Decision Document

Human health risk assessment

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:

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. The assessment of BAT was carried out as part of the permit review of this permit which is detail in Part A of this Decision Document.

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. Sections 5 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.

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.

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.

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 PHE. 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.

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 COT has published a TDI of 2 pg WHO-TEQ/kg(BW)/day. The consultant has assessed impacts of dioxins, furans and dioxin-like PCBs against this TDI. Their predicted maximum contribution presented in Table 8 is 2.28% of the TDI for an adult, and 3.25% of the TDI for a child. Since their predictions are below the TDI they conclude that "the impact of emissions of dioxins and dioxin-like PCBs from the Facility on human health is predicted to be not significant". Note that although these predictions are below the UKHSA screening threshold they are overly conservative. They have calculated combined intakes without adjustment for lifetime exposure. Their percentage predictions should therefore not be used to make direct comparisons with the TDI over a more relevant long term exposure period (e.g. lifetime). We have considered this in our assessment.

UKHSA have advised that overall, an additional dioxin intake of 10% of the TDI on the consumption by the average or high-level adult consumer is unlikely to result in an exceedance of the TDI, and even if exceedance were to occur, it is unlikely that an additional 10% would result in significant risk. As our checks indicate that the predicted maximum contribution is below 10% of the TDI, we do not regard this as a significant risk to health.

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.

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 0.3 µm, 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 0.3 µm and much of what is smaller. It is not expected that particles smaller than 0.3 µm 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 0.1 µm 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 1 $\mu g/m^3$ 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 a 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, which have been updated as part of the permit review, discussed in Part A of this document. 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 Applicant has effectively made a health risk assessment for many pollutants. The ES have been developed primarily to protect human health. The Applicant's assessment indicated that for all pollutants, either the process contributions (PCs) are insignificant, or the predicted environmental concentrations (PEC) are well below the Environmental Standards (ES) for air at all human health receptors. The change in impact from permitted facility to proposed facility is insignificant

iii. We have assessed the health effects from the operation of this installation in relation to the above.

We have reviewed the methodology employed by the Applicant to carry out the health impact assessment. We have audited the consultant's assessments and have made several observations relating to the validity of their assumptions and the model setup. We have conducted our own check modelling including sensitivity analysis to our observations. As a result, we find that:

- For all pollutants, either PCs screen out as insignificant or PECs are below the ES at relevant human health receptors.
- Abnormal emissions will not have a significant impact on air quality.
- The impact of dioxins and furans and dioxin-like PCBs are not significant.

Overall, taking into account the conservative nature of the impact assessment (i.e. that it is based upon an individual exposed for a life-time 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. They concluded that they had no significant concerns regarding the risk to the health of humans from the installation. 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, the Local Authority Director of Public Health and the FSA to the consultation on this Application can be found in Annex 3.

We are therefore satisfied that the Applicant'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.

Impact on protected conservation areas (SPAs, SACs, Ramsar sites and SSSIs and local nature sites)

Sites Considered

The applicant has used a screening distance of 10 km for European sites and Sites of Special Scientific Interest (SSSIs) and 2 km for local sites.

With regard to this, they have included:

- Thames Estuary and Marshes SPA and Ramsar site;
- Swanscombe Peninsula SSSI;
- Purfleet Road Aveley SSSI;
- Globe Pit SSSI, Inner Thames Marshes SSSI;
- Gray's Thurrock Chalk Pit SSSI;
- Hangman's Wood and Denholes SSSI;
- Lion Pit SSSI;
- Mucking Flats and Marshes SSSI;
- West Thurrock Lagoon SSSI;
- Swanscombe Skull Site SSSI;
- Purfleet Chalk Pits SSSI, Darenth Wood SSSI;
- Little Thurrock Reed LWS; and
- Grays Pit Extensions LWS.

We note that Globe Pit, Lion Pit, Swanscombe Skull site, Purfleet Road Aveley and Purfleet Chalk Pits SSSI's are designated for geological interest only and therefore not sensitive to emissions to air.

We identified an additional 4 LWS's (Grays Pit Extensions, Little Thurrock Marshes, Titan Works Grays and Botany Marshes LWS's) that the applicant did not identify. We included these within our checks.

Habitats Assessment

When considering impacts on ecological sites the consultant has used the APIS website to identify the feature habitats, background concentrations and relevant critical levels and critical loads (for nutrient nitrogen and acid deposition). Their acid and nutrient nitrogen deposition predictions have been made following AQTAG069 guidelines. We have checked the critical level and critical load values and are satisfied that they are likely to be representative.

The applicant has presented their results for long-term and short-term impact on ecological receptors from the ERF in their Air Quality Assessment. Their predictions indicate that:

PCs for daily NOX, annual sulphur dioxide (SO2), daily and weekly hydrogen fluoride (HF) and annual ammonia below the insignificance threshold (1% for long-term and 10% for short term) of the relevant critical levels for the SACs, SPAs, Ramsar sites and SSSIs.

PCs for annual NOx not insignificant (>1%) at Swanscombe Peninsula SSSI, Globe Pit SSSI and Hangman's Wood and Denholes SSSI. The PEC at Swanscombe Peninsula SSSI exceeds the critical level. Note Globe pit SSSI is designated for geological interest only (section 3.12).

PCs for annual and daily NOX, annual SO2, daily and weekly HF and annual ammonia below 100% of the relevant critical levels for the local nature sites.

PCs for nutrient nitrogen deposition and acid deposition below 1% of the relevant critical loads for the SACs, SPAs, Ramsar sites and SSSIs.

PCs for nutrient nitrogen deposition and acid deposition below 100% of the relevant critical loads for the local nature sites.

For all pollutants, PCs screen out as insignificant or PECs are below the critical level and loads at all relevant ecological sites, with the exception of annual NOx at Swanscombe Peninsula SSSI where the PEC exceeds the critical level of 30 ug/m^3.

The operator has used the old ELVs in their modelling. When applying new BAT-AELs (placed in the permit following the permit review described in Part A) and accounting for modelling uncertainties it is unlikely to contribute significantly to exceedances of annual NOx at Swanscombe Peninsula SSSI.

We sent the conclusions of our Habitats Assessment to Natural England for information only.

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, the time limit at is already set 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 - the applicant used 10x , but we checked the impact of a 100x increase – see below
- Mercury emissions are 100 times those of normal operation
- NO_x emissions of 500 mg/m^3 (1.25x normal)
- Particulate emissions of 150 mg/m^3 (5 x normal)
- Metal emissions other than mercury are 15 times those of normal operation
- SO_2 emissions of 450 mg/m^3 (2.5x normal)
- HCl emissions of 900 mg/m^3 (15x normal)
- PCBs (10 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 Applicant's short-term environmental impact is summarised in the table below.

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	43.8	17.52	8.8	61.32	30.7
PM_{10}	50	90.41st %ile of 24-hour means	32.8	2.12	4.24	34.92	69.8
SO_2	266	99.9th ile of 15-min means	27.6	54.99	20.7	82.59	31.0
	350	99.9th ile of 15-min means	27.6	42.55	12.16	70.15	20.0
	125	99.18th %ile of 24-hour means	27.6	14.68	11.74	42.28	33.8
HCl	750	1-hr average	1.42	193	25.73	194.4	25.92
HF	160	1-hr average	10.67	4.29	2.68	14.96	9.35
	ng/m3		**ng/m^3**		**ng/m^3**		
Hg	7500	1-hr average	5.6	1072.92	14.31	1078.52	14.380
Sb	150000	1-hr average	2.6	7.18	0.00	9.78	0.007

Cu	200000	1-hr average	22	18.1	0.01	40.1	0.020
Mn	1500000	1-hr average	12	37.45	0.00	49.45	0.0033
PCBs	6000	1-hr average	0.25	107.29	1.79	107.54	1.7923
Cr (II)(III)	150000	1-hr average	78	57.42	0.04	135.42	0.0903

From the table above, all substances, excluding Sulphur Dioxide, Hydrogen Chloride and Mercury, can still be considered insignificant, in that the PC is still <10% of the short-term ES.

Also, as shown in the table above, Sulphur Dioxide, Hydrogen Chloride and Mercury 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

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 67.81% in the TDI. In these circumstances the TDI would be 0.17 fg(WHO-TEQ/ kg-BW/day), which is 5.45% of the COT TDI. At this level, emissions of dioxins will still not pose a risk to human health.

New Environmental Assessment Levels (EAL)

During determination new Environmental Assessment Levels (EAL) were implemented for a few pollutants including some metals. The values were updated on the GOV.UK risk assessment page on 20 November 2023**, *Air emissions risk assessment for your environmental permit - GOV.UK (www.gov.uk)*.**

We checked the applicants modelling against these new EALs and carried out our own screening checks. We are satisfied that the new EALs do no change the conclusions of our audit.

Other Emissions

Noise and vibration

The Application contained a noise impact assessment which identified local noise-sensitive receptors, potential sources of noise at the proposed plant and noise attenuation measures. Measurements were taken of the prevailing ambient noise levels to produce a baseline noise survey and an assessment was carried out in accordance with BS 4142:2014 to compare the predicted plant rating noise levels with the established background levels.

The applicant's assessment predicted that there would not be significant noise or vibration impact from the facility. We have carried out an audit of these findings and conclude that there is enough uncertainty in the applicant's assessment to warrant the inclusion of further assurance within the varied permit. We have therefore included and Improvement Condition (IC10) which require the applicant to undertake an operational BS4142:2014 assessment in order to validate the findings of their initial assessment

Odour and Dust

The applicant has stated that the changes proposed by this variation to do poses an increased odour or dust emission risk when compared with the existing permit. We agree with this. We have not assessed odour or dust as part of this variation as it is also the case that there is a pre-operational condition (PO8) which requires the operator to submit a report for approval by the Environment Agency detailing the design specification of the Line. The report shall include specific details of waste storage arrangements and the dust and odour control measures to be implemented (e.g. air-lock system).

Fire Prevention

The Applicant submitted a Fire Prevention Plan. We have assessed the FPP against our guidance and are satisfied that all requirements are met. The FPP has been added to the operating techniques within the permit.

Annex 1: Pre-Operational Conditions

Based on the information on the Application, we consider that we do need to impose pre-operational conditions. 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 Installation.

PO1 to PO7 are already present within the existing permit, PO8 has been updated, and PO9 and PO10 added, as a direct result of the substantial variation initiated by the applicant.

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
PO1	Prior to the commencement of commissioning of the line, the Operator shall send a summary of the site Environment Management System (EMS) to the Environment Agency and make available for inspection all documents and procedures which form part of the EMS. The EMS shall be developed in line with the requirements set out in Section 1 of How to comply with your environmental permit. The documents and procedures set out in the EMS shall form the written management system referenced in condition 1.1.1 (a) of the permit.
PO2	Prior to the commencement of commissioning of the line, the Operator shall send a report to the Environment Agency which will contain a comprehensive review of the options available for utilising the heat generated by the waste incineration/co-incineration process in order to ensure that it is recovered as far as practicable. The review shall detail any identified proposals for improving the recovery and utilisation of waste heat and shall provide a timetable for their implementation.
PO3	Prior to the commencement of commissioning of the line, the Operator shall submit to the Environment Agency for approval a protocol for the sampling and testing of bottom ash for the purposes of assessing its hazard status. Sampling and testing shall be carried out in accordance with the protocol as approved.
PO4	Prior to the commencement of commissioning of the line; the Operator shall provide a written commissioning plan, including timelines for completion, for approval by the Environment Agency. The commissioning plan shall include the expected emissions to the environment during the different stages of commissioning, the expected durations of commissioning activities and the actions to be taken to protect the environment and report to the Environment Agency in the event that actual emissions exceed expected emissions. Commissioning shall be carried out in accordance with the commissioning plan as approved.
PO5	Prior to the commencement of commissioning of the line, the Operator shall submit a written report to the Agency detailing the waste acceptance procedure to be used at the site. The waste acceptance procedure shall include the process and systems by which wastes unsuitable for incineration at the site will be controlled. The procedure shall be implemented in accordance with the written approval from the Agency.

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
PO6	After completion of furnace design for the line and at least three calendar months before any furnace operation; the operator shall submit a written report to the Environment Agency of the details of the computational fluid dynamic (CFD) modelling. The report shall demonstrate whether the design combustion conditions comply with the residence time and temperature requirements as defined by Article 50(2) of the IED.
PO7	The Operator shall submit the written protocol referenced in condition 3.2.4 for the monitoring of soil and groundwater for approval by the Environment Agency. The protocol shall demonstrate how the Operator will meet the requirements of Articles 14(1)(b), 14(1)(e) and 16(2) of the IED. The procedure shall be implemented in accordance with the written approval from the Environment Agency.
PO8	Prior to the commencement of commissioning of Activity AR1 the Operator shall submit a report for approval by the Environment Agency detailing the design specification of the Line. The report shall include specific details of waste storage arrangements and the dust and odour control measures to be implemented (e.g. air-lock system). If there have been changes to the design of waste storage arrangements and the dust and odour control measures which require a variation to the permit, an application for a variation shall be submitted to the Environment Agency at least 12 months prior to commencement of commissioning of the Line.
PO9	Prior to the commencement of commissioning of Activity AR1 the Operator shall submit an updated site plan, detailing the location of the outfall of discharge arising from the sedimentation pit.

Table S1.4 Pre-operational measures	
Reference	Pre-operational measures
PO10	At least 6 months prior to construction of the Energy Recovery Facility the operator shall submit a report to the Environment Agency providing detailed designs for the proposed flue gas treatment system and obtain the Environment Agency's written approval to it. The report shall include but is not limited to the following considerations: 1. the final operating proposals; 2. that the final design will meet the requirements of BAT; and 3. that the environmental impact assessment still accurately reflects the predicted impacts from the proposal. The operator shall submit a written report to the Environment Agency for approval, 6 months prior to construction, detailing the findings of this review.

Annex 2: Improvement Conditions

Based in the information in the Application we consider that we need to set improvement conditions. These conditions are set out below - justifications for these is provided at the relevant section of the decision document. We are using these conditions to require the Operator to provide the Environment Agency with details that need to be established or confirmed during and/or after commissioning.

ICs1,2,3,4, 6 and 7 are already present within the existing permit, IC5 has been updated to make appropriate following the permit review element of this variation. ICs 8 and 9 and as a result of the permit review element of this variation and IC10 has been added as a result of the substantial variation of the permit initiated by the applicant.

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	The Operator shall submit a written report to the Environment Agency on the implementation of its Environmental Management System and the progress made in the certification of the system by an external body or if appropriate submit a schedule by which the EMS will be certified.	Within 12 months of the date on which waste is first burnt.

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC2	The Operator shall submit a written proposal to the Environment Agency to carry out tests to determine the size distribution of the particulate matter in the exhaust gas emissions to air from emission point A2, identifying the fractions within the PM10, and PM2.5 ranges. The proposal shall include a timetable for approval by the Environment Agency to carry out such tests and produce a report on the results. On receipt of written agreement by the Environment Agency to the proposal and the timetable, the Operator shall carry out the tests and submit to the Environment Agency a report on the results.	Within 6 months of the completion of commissioning of the line.
IC3	The Operator shall submit a written report to the Environment Agency on the commissioning of the installation. The report shall summarise the environmental performance of the plant as installed against the design parameters set out in the Application. The report shall also include a review of the performance of the facility against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions.	Within 4 months of the completion of commissioning of the line.
IC4	The Operator shall carry out checks to verify the residence time, minimum temperature and oxygen content of the exhaust gases in the furnace whilst operating under the anticipated most unfavourable operating conditions. The results shall be submitted in writing to the Environment Agency.	Within 4 months of the completion of commissioning of the line.
IC5	The operator shall carry out a further assessment of the performance of the SNCR system and submit a written report to the Environment Agency on the feasibility of complying with an emission limit value (ELV) for NOx of 100 mg/Nm3 as a daily average, including a description of any relevant cross-media effects identified. If an ELV for NOx of 100 mg/Nm3 as a daily average is determined	Within 4 months of the completion of commissioning of the line.

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
	not to be feasible, the report shall propose an alternative ELV which would provide an equivalent level of NOx reduction on a long-term basis such as an annual mass emission limit or percentile-based ELV.	
IC6	The Operator shall carry out an assessment of the impact of emissions to air of the following component metals subject to emission limit values, i.e. As, Cr, and Ni. A report on the assessment shall be made to the Environment Agency. Emissions monitoring data obtained during the first year of operation shall be used to compare the actual emissions with those assumed in the impact assessment submitted with the Application. An assessment shall be made of the impact of each metal against the relevant EQS/EAL. In the event that the assessment shows that an EQS/EAL can be exceeded, the report shall include proposals for further investigative work.	15 months from commencement of operations of the line.
IC7	The Operator shall submit a written summary report to the Environment Agency to confirm by the results of calibration and verification testing that the performance of Continuous Emission Monitors for parameters as specified in Table S3.1 and Table S3.1(a) complies with the requirements of BS EN 14181, specifically the requirements of QAL1, QAL2 and QAL3.	Initial calibration report to be submitted to the Environment Agency within 3 months of completion of commissioning of the line. Full summary evidence compliance report to be submitted within 18 months of commissioning of the line.
IC8	The operator shall carry out a programme of dioxin and dioxin like PCB monitoring over a period and frequency agreed with the Environment Agency. The operator shall	Within 6 months of completion of commissioning or as agreed in

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
	submit a report to the Environment Agency with an analysis of whether dioxin emissions can be considered to be stable.	writing with the Environment Agency
IC9	The operator shall carry out a programme of mercury monitoring over a period and frequency agreed with the Environment Agency. The operator shall submit a report to the Environment Agency with an analysis of whether the waste feed to the plant can be proven to have a low and stable mercury content.	Within 6 months of completion of commissioning or as agreed in writing with the Environment Agency
IC10	The Operator shall undertake a noise assessment during normal operations in accordance with the procedures given in BS4142:2014 (Rating industrial noise affecting mixed residential and industrial areas) and BS7445: 2003 (Description and measurement of environmental noise) or other methodology as agreed with the Environment Agency - in order to validate the assessment provided within application V002. The assessment shall include, but not be limited to: • A review of the noise sources from the facility. Where any noise source(s) are identified as exhibiting tonal contributions, they shall be quantified by means of frequency analysis. • A review of noise levels from static plant. • Considerations of on-site vehicle movements. A report shall be provided to the Environment Agency detailing the findings of the assessment.	Within 4 months of the completion of commissioning of the line.

Annex 3: 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 draft 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 16/01/2023 to 13/02/2023. Following the changes made by the operator, detailed above on page 40 we re-consulted on the application and advertised this on the Environment Agency website from 30/10/2023 to 27/11/2023. The Application was made available to view at the Environment Public Register. Application documents were also available to view on our citizen space website.

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

- UKHSA
- Food Standards Agency
- HSE
- Director of Public Health at Thurrock Council

There wasn't any additional elements brought to our attention by any statutory and non-statutory bodies following the second consultation running from 30/10/2023 to 27/11/2023. Therefore, the below summaries cover responses received during both consultation periods.

1) Consultation Responses from Statutory and Non-Statutory Bodies

Response Received from Thurrock Council Public Protection Team	
Brief summary of issues raised:	Summary of action taken / how this has been covered
The Environmental Protection Team have received no current substantiated complaints concerning noise, vibration or odour from the facility	Comment included for completeness. The facility is not yet operational

Response Received from Thurrock Council Public Health and Environmental Health team	
Brief summary of issues raised:	Summary of action taken / how this has been covered
Concerns were raised due to the fact that for PAH and Chromium IV, PECs already exceed 100% of the AQAL despite the PC from the installation modelled to be below the 1% significance threshold and questioned whether by accepting the applicant's proposals this could lead to creeping increases in background concentrations.	As discussed above, the impacts from PAH and Cr (VI) have been screened out as insignificant and will make a negligible contribution to background concentrations

It seems that the process contributions have been calculated using a baseline which incorporates emissions from the permitted facility – i.e. the comparison is not between ERF and no ERF but rather between smaller ERF and larger ERF. That would not provide a fair comparison for the calculation of process contributions.	The applicant has made a comparison within their Air Quality Assessment between modelled emissions associated with the current, albeit not yet commissioned, facility and the proposed facility. However, the applicant's assessment of PC and PEC is based on the proposed facility vs no facility rather than the difference between permitted and proposed. This is also what we have based our audit on.
No significant concerns were raised relating to noise impacts arising as a result of this permit application.	As part of the audit, we checked that the modelling parameters, weather data and background levels used by the Applicant were appropriate and we are satisfied that there were. Based on the Applicant's modelling we are satisfied that there will not be a significant impact in air quality

Response Received from UKHSA	
Brief summary of issues raised:	Summary of action taken / how this has been covered
Reducing public exposures to non-threshold pollutants (such as particulate matter and nitrogen dioxide) below air quality standards has potential public health benefits. UKHSA support approaches which minimise or mitigate public exposure to non-threshold air pollutants and address inequalities (in exposure) and encourage their consideration during site design, operational management, and regulation. Based on the information contained in the application contained within the application, UKHSA has no significant concerns regarding the risk to the health of the local population from the installation.	We audited the Applicant's dispersion modelling. As part of the audit, we checked that the modelling parameters, weather data and background levels used by the Applicant were appropriate and we are satisfied that there were. Based on the Applicant's modelling we are satisfied that there will not be a significant impact in air quality. For non-threshold pollutants we are satisfied that the mitigation measures to be in place at the facility will represent BAT.

No responses were received from the HSE or Food Standards Agency.

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

No responses were received