

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

Decision document recording our decision-making process

The Permit Number is: EPR/GP3305LN/C003
The Applicant / Operator is: Viridor South London Limited
The Facility is located at: Beddington ERF and WTS,
 Beddington Lane, Croydon,
 CR0 4TD

What this document is about

This is a decision document, which accompanies a permit.

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

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

Preliminary information and use of terms

The Operator applied to vary and consolidate the permits for Beddington Energy Recovery Facility (ERF) (EPR/GP3305LN) and Beddington Waste Transfer Station (EPR/JB3136RD, also listed as EAWML 104442) into one permit. We gave the applications the reference numbers EPR/GP3305LN/V003 for the Beddington Energy Recovery Facility (ERF) and EPR/JB3136RD/V004 for the Beddington Waste Transfer Station. We refer to the applications as "the **Application**" in this document in order to be consistent. During the permit determination process a new suffix numbering system was initiated. As such, the permit application reference changed from EPR/GP3305LN/V003 to EPR/GP3305LN/C003. This change from V

(variation) to C (consolidation) makes no material difference to the conditions within the permit, or assessments that have been conducted. Reference to EPR/GP3305LN/V003 in the permit and decision document have been amended to EPR/GP3305LN/C003.

The number we have given to the permit is EPR/GP3305LN. We refer to the permit as “the **Permit**” in this document. The Operator has chosen to rename the site as “Beddington ERF and WTS”, so as to better represent the activities undertaken onsite.

The Application for the Beddington Energy Recovery Facility (ERF) was duly made on 19 October 2022. The Application for the Beddington Waste Transfer Station (WTS) was duly made on 21 March 2023.

The Applicant is Viridor South London Limited. We refer to Viridor South London Limited as “the **Applicant**” in this document. Where we are talking about what would happen after the Permit is granted, we call Viridor South London Limited “the **Operator**”.

Viridor South London Limited proposed facility is located at Beddington ERF & WTS, Beddington Lane, Croydon, CR0 4TD. We refer to this as “the Facility” in this document. The Facility comprises both the ERF Installation and the waste transfer station waste operation.

Section 4.1.5 covering the two incidents onsite was added to this decision document following the ‘minded to’ consultation. Other sections have had minor updates to align with the most recent decision document template. These minor updates have no material impact on our decision.

How this document is structured

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Glossary of acronyms used in this document

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

AAD	Ambient Air Directive (2008/50/EC)
APC	Air Pollution Control
AQS	Air Quality Strategy
BAT	Best Available Technique(s)
BAT-AEL	BAT Associated Emission Level
BREF	Best Available Techniques (BAT) Reference Documents for Waste Incineration
CEM	Continuous emissions monitor
CHP	Combined heat and power
COMEAP	Committee on the Medical Effects of Air Pollutants
CROW	Countryside and rights of way Act 2000
CV	Calorific value
DAA	Directly associated activity – Additional activities necessary to be carried out to allow the principal activity to be carried out
DD	Decision document
EAL	Environmental assessment level
EIAD	Environmental Impact Assessment Directive (85/337/EEC)
ELV	Emission limit value
EMAS	EU Eco Management and Audit Scheme
EMS	Environmental Management System
EPR	Environmental Permitting (England and Wales) Regulations 2016 (SI 2016 No. 1154) as amended
ERF	Energy Recovery Facility
ES	Environmental standard
EWC	European waste catalogue
FGC	Flue gas cleaning
FSA	Food Standards Agency
GWP	Global Warming Potential
HHRAP	Human Health Risk Assessment Protocol
HPA	Health Protection Agency (now UKHSA – UK Health Security Agency)
HRA	Human Rights Act 1998
HW	Hazardous waste

HWI	Hazardous waste incinerator
IBA	Incinerator Bottom Ash
IED	Industrial Emissions Directive (2010/75/EU)
I-TEF	Toxic Equivalent Factors set out in Annex VI Part 2 of IED
I-TEQ	Toxic Equivalent Quotient calculated using I-TEF
LCV	Lower calorific value – also termed net calorific value
LfD	Landfill Directive (1999/31/EC)
LOI	Loss on Ignition
MBT	Mechanical biological treatment
MSW	Municipal Solid Waste
MWI	Municipal waste incinerator
NO _x	Oxides of nitrogen (NO plus NO ₂ expressed as NO ₂)
OTNOC	Other than normal operating conditions
PAH	Polycyclic aromatic hydrocarbons
PC	Process Contribution
PCB	Polychlorinated biphenyls
PEC	Predicted Environmental Concentration
PHE	Public Health England
POP(s)	Persistent organic pollutant(s)
PPS	Public participation statement
PR	Public register
PXDD	Poly-halogenated di-benzo-p-dioxins
PXB	Poly-halogenated biphenyls
PXDF	Poly-halogenated di-benzo furans
RDF	Refuse derived fuel
RGS	Regulatory Guidance Series
SAC	Special Area of Conservation
SCR	Selective catalytic reduction
SGN	Sector guidance note
SNCR	Selective non-catalytic reduction
SPA(s)	Special Protection Area(s)
SS	Sewage sludge
SSSI(s)	Site(s) of Special Scientific Interest
SWMA	Specified waste management activity

TDI	Tolerable daily intake
TEF	Toxic Equivalent Factors
TGN	Technical guidance note
TOC	Total Organic Carbon
UN_ECE	United Nations Environmental Commission for Europe
US EPA	United States Environmental Protection Agency
WFD	Waste Framework Directive (2008/98/EC)
WHO	World Health Organisation
WID	Waste Incineration Directive (2000/76/EC) – now superseded by IED

1 Our decision

We have decided to grant the varied and consolidated Permit to the Applicant. This will allow it to operate the Facility, subject to the conditions in the Permit.

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

This Application is to operate an installation which is subject principally to the Industrial Emissions Directive (IED) and waste operations. The Operator has requested the following changes:

- An increase in the EFW throughput from 347,422 tonnes per year to 382,286 tonnes per year
- Amendment to the locations of emission points S1, W1 and W2 to show their correct locations on the site plan
- Add an emission point (A4) for the shredder associated with the waste transfer station activities
- Amend the waste transfer station permit from a standard rules permit (SR2015 No10) to a bespoke permit including hazardous waste transfer station & non-hazardous waste transfer and treatment station activities
- Add waste codes to the waste transfer station activity and remove other waste codes
- Add waste code EWC 20 01 99 to the incineration activity. This is an administrative change only and does not increase the types of waste the Operator can accept into that activity. This change was requested after the 'minded to' consultation was concluded, however as it is an administrative change only, then it is not required to be consulted upon.
- Amend improvement conditions 2 and 6 to mark them as complete.
- Renaming of the site to "Beddington ERF and WTS" to better reflect the activities undertaken onsite.

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

2 How we reached our decision

2.1 Receipt of Application

The Application for the Beddington Energy Recovery Facility (ERF) was duly made on 19 October 2022. The Application for the Beddington Waste Transfer Station (WTS) was duly made on 21 March 2023. This means we considered it was in the correct form and contained sufficient information for us to begin our determination but not that it necessarily contained all the information we would need to complete that determination: see below.

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

2.2 Consultation on the Application

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

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

We advertised the Application by a notice placed on our website, which contained all the information required by the IED, including telling people where and when they could see a copy of the Application. The Application was advertised for an additional two weeks on our website so that it gave more time for those who wished to provide comment. We also placed an advertisement in the London Gazette on 10 November 2022, the Croydon Advertiser on 11 November 2022 and the Sutton & Croydon Guardian on 10 November 2022.

We also informed the Local Councillors, Office of the Mayor of London, Members of Parliament and resident groups for the local area and the local media.

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

- Local Authority – Sutton, Kingston and Merton Councils Departments of Environmental Health
- Local Authorities – South London Waste Partnership
- Director of Public Health & UKHSA (formerly PHE)
- Health and Safety Executive

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

Written comments were also accepted by the Environment Agency beyond the formal consultation period. Further details along with a summary of consultation comments and our response to the representations we received can be found in Annex 3. We have taken all relevant representations into consideration in reaching our determination.

2.3 Requests for Further Information

Although we were able to consider the Application duly made, we did in fact need more information in order to determine it and issued an information notice on 05/05/2023. A copy of the information notice was placed on our public register as well as the response when received.

Finally, we have consulted on our draft decision from 21/07/2023 to 15/09/2023. A summary of the consultation responses and how we have taken into account all relevant representations is shown in Annex 3B.

3 The legal framework

The Permit will be granted under Regulation 20 of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an *installation* and a *waste incineration plant* as described by the IED;
- an *operation* covered by the WFD, and
- subject to aspects of other relevant legislation which also have to be addressed.

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

We consider that in granting the Permit, it will ensure that the operation of the Facility complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

We explain how we have addressed specific statutory requirements more fully in the rest of this document.

4 The Facility

4.1 Description of the Facility and related issues

4.1.1 The permitted activities

The Facility is subject to the EPR because it carries out activities listed in Part 1 of Schedule 1 to the EPR:

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

The IED definition of “waste incineration plants” and “waste co-incineration plants” says that it includes:

“all incineration lines or co-incineration lines, waste reception, storage, on-site pre-treatment facilities, waste, fuel and air supply systems, boilers, facilities for the treatment of waste gases, on-site facilities for treatment or storage of residues and waste water, stacks, devices for controlling incineration or co-incineration operations, recording and monitoring incineration or co-incineration conditions.”

Many activities which would normally be categorised as “directly associated activities” for EPR purposes (see below), such as air pollution control plant, and the ash storage bunker, are therefore included in the listed activity description.

An installation may also comprise “directly associated activities”, which at this Installation includes the generation of electricity using a steam turbine and a back up electricity generator for emergencies. These activities comprise one installation, because the incineration plant and the steam turbine are successive steps in an integrated activity.

Together, these listed and directly associated activities comprise the Facility.

In addition to the Facility there is a waste transfer station that is located slightly to the south of the ERF building. This will take hazardous, clinical and non-hazardous waste. The hazardous, clinical and non-hazardous waste transfer activity is a separate activity in the table S1.1 in the permit. This

Waste Activity is subject to the EPR because it carries out activities listed in Part 1 of Schedule 9 to the EPR.

4.1.2 The Site

The Facility is located within the London Borough of Sutton at Beddington Farmlands, which is south of Mitcham Common and north of Beddington Park. The site is bounded by an industrial unit to the east and the west. The remaining surroundings are open land/wetlands, which form Beddington Farmlands Local Wildlife Site. The nearest residential receptor is 0.3km to the north-east.

The Applicant submitted a plan which we consider is satisfactory, showing the site of the Facility and its extent. A plan is included in Schedule 7 to the Permit, and the Operator is required to carry on the permitted activities within the site boundary.

Further information on the site is addressed below at 4.3.

4.1.3 What the Facility does

The Applicant has described the facility as Energy from Waste. Our view is that for the purposes of IED (in particular Chapter IV) and EPR, the Facility is a waste incineration plant because:

Notwithstanding the fact that energy will be recovered from the process; the process is never the less 'incineration' because it is considered that its main purpose is the thermal treatment of waste.

The changes to the operation of the Facility to allow the increase in energy generation of approximately 3.4MWe are as follows:

- Increase in throughput of the waste from 347,422 tonnes per year to 382,286 tonnes per year.
- Reduction in combustion air temperature within the combustion chamber.
- Increase in thermal load performance through stabilisation of the combustion process.

The key features of the Facility can be summarised in the table below.

Waste throughput, Tonnes/line	Max 382,286/annum Nominal 339,362/annum	21.82 /hour 19.37 /hour
Waste processed	MSW and C&I	
Number of lines	2	
Furnace technology	Moving grate	
Auxiliary Fuel	Gas Oil / Furnace Flame	
Acid gas abatement	Dry	Lime
NOx abatement	SNCR	Urea
Reagent consumption	Auxiliary Fuel: 2,000 te/annum Ammonia/Urea: 860 te/annum Lime/Other: 4,300 te/annum Activated carbon: 120 te/annum Process water: 54,165 te/annum	
Flue gas recirculation	No	
Dioxin abatement	Activated carbon	
Stack	Grid Reference, TQ2922066819	
	Height, 95 m each	Effective diameter, 2.26m (combined)
Flue gas	Flow, 60.9 Nm ³ /s	Velocity, 22.9m/s
	Temperature 138°C	
Electricity generated	29.5 MWe	
Electricity exported	26.5 MWe	
Steam conditions	Temperature, 400 °C	Pressure, 60 bar/MPa
Steam exported	Nil	
Waste heat use	None at present, CHP ready	

4.1.4 Key Aspects in the Determination

The key aspects arising during this determination were emissions to air, measures to prevent exceedances of emissions to air, energy efficiency, the location of the site (AQMA) and greenhouse gas emissions and we therefore describe how we determined these issues in most detail in this document.

4.1.5 Onsite Incidents during Permit Determination

Onsite incident on 16/10/2023 – Emission of black smoke from incinerator stack

Summary of incident.

At 23:00 on 16th October 2023 all power supplied by UK Power Network to the ERF was lost and Island Mode (backup mode) had failed to activate due to the Turbine Generator Unit (TGU) not switching to Island Mode. This resulted in waste smouldering on the grate, which caused a more visible, darker, plume being emitted from the stack. The waste on the combustion grate when the failure occurred could not be safely removed and fresh abatement chemicals could not be dosed. During this period flue-gases passed through the bag filters, which were impregnated with hydrated lime and activated carbon, providing some emissions abatement. The flue gas was released via natural stack draft only, due to the induced draft (ID) fan being inoperable. In order to reduce the environmental impact, all waste feeds were ceased, and all combusted wastes were removed from the combustion grates into the ash discharger as soon as was practicable.

Cause of incident.

The root cause of the TGU not switching to Island Mode was considered to be a failure of the bladder accumulator that supplies a large volume of high pressure oil to power a valve within the TGU.

Actions taken to prevent re-occurrence of the incident.

The accumulator was recharged following the event, but a new replacement unit has now been installed. The existing accumulator will be refurbished to allow the site to hold a spare. In addition, regular checks of the pressure of the oil used in the TGU, as well as checks of the nitrogen pressure within the bladder accumulators will be undertaken. These checks will be carried out during a planned shutdown and maintenance events.

The Operator has improved their knowledge, management systems and response to incidents of this type. Their actions should minimise the likelihood of re-occurrence of the site failing to switch to island mode, however if it were to re-occur, then the duration should be minimised through the availability of the spare bladder.

Onsite incident over period July 2022 to March 2024 – Incorrect calibration of CEMs

Summary of incident.

On 19 March 2024 Viridor's contractor, Element, informed them of an emission calibration error on the continuous emissions monitoring system (CEMS) for oxides of nitrogen (NOx). Viridor notified the EA of the error on 28 March 2024, stating that incorrect NOx emissions data for 18 months, from

July 2022 to March 2024, had been recorded. In total there were 916 exceedances of the daily NO_x ELV between the two incineration lines in the 18 months.

Contributions from the Beddington ERF for the 18 month-period were unlikely to have caused or contributed towards exceedances of the environmental standards set for the protection of human health and checks at protected conservation sites indicate contributions are likely to have been insignificant against the critical levels and critical loads set for the protection of the habitats. Both the annual mean NO₂ and hourly mean NO₂ modelled emissions remained below Air Quality Standards (AQS) at all sensitive receptor locations between 2022 and 2024. Air quality modelling demonstrated a slight increase in NO₂ concentrations at identified receptors, but these remain below the AQS. It is not considered there has been a significant public health impact based on the information provided.

Cause of incident.

Incorrect calibration functions entered into the CEMS by the contractor resulted in lower NO_x emissions being reported than what the actual emissions were, which also meant that the dosing of emissions with urea, to abate them, was set too low.

The responsibility for undertaking monitoring can be delegated; however, process operators have overall responsibility for complying with their permit conditions and must have robust procedures in place for auditing activities that are delegated or subcontracted to third parties.

Actions taken to prevent re-occurrence of the incident.

The Operator has put in place a procedure to periodically request details of the monitoring contractors' methods and processes. This includes reviewing and auditing both monitoring contractor and ENVEA site procedures prior to any testing in line with the Viridor procedure as well as reviewing the process for checking and sign-off of calibration functions inputted into CEMS Data Acquisition and Handling System Software.

The Operator has demonstrated that the staff responsible for the monitoring arrangements and auditing are competent and that there are training plans in place covering emissions monitoring. Assessments and periodic reviews of the required competencies and capabilities have been undertaken and form part of their environmental management system.

In conclusion we do not consider these incidents are systematic of wider concerns, we are satisfied lessons have been learnt and improvements made and overall, we are satisfied that the Operator will operate in accordance with the conditions of their permit.

4.2 The site and its protection

4.2.1 Site setting, layout and history

This is an existing EFW, with an existing waste transfer station adjacent to the site. There are no changes to the site setting or layout. The only change to the Site Condition Report is to consolidate it with the waste transfer station.

4.2.2 Proposed site design: potentially polluting substances and prevention measures

The storage and transfer of hazardous and clinical waste is a new activity. The pollution risk from this activity will be managed through:

- Appropriately sized and constructed bunding for liquid wastes.
- Storage of wastes either in a secure container or within the waste transfer station building.
- No treatment of hazardous or clinical waste is permitted.
- All waste will be stored on an impermeable surface with sealed drainage system.
- Clinical waste will be bagged/in containers that will not be opened.
- A first in first out system is in operation.
- Waste pre-acceptance and waste acceptance criteria are in place.

Under Article 22(2) of the IED the Applicant is required to provide a baseline report containing at least the information set out in paragraphs (a) and (b) of the Article before starting operation. This was provided for the EFW during the original permit application and has been updated to incorporate the waste transfer station activity.

The Applicant has submitted a site condition report which includes a report on the baseline conditions as required by Article 22. We have reviewed that report and consider that it adequately describes the condition of the soil and groundwater prior to the start of operations.

The baseline report is an important reference document in the assessment of contamination that might arise during the operational lifetime of the Facility and at cessation of activities at the Facility. A written management system is in place to identify and minimise risks of pollution, using sufficient competent persons. The management system includes information about the condition of the land before the start of operations and how land will be protected during the life of the permit. At the point of surrender the operator must be able to show all necessary measures have been taken to avoid pollution and ensure that the site is returned to a satisfactory state.

4.2.3 Closure and decommissioning

This information was submitted under the original application and has not changed as a result of this variation.

4.3 Operation of the Facility – general issues

4.3.1 Administrative issues

The Applicant is the sole Operator of the Facility.

We are satisfied that the Applicant is the person who will have control over the operation of the Facility after the granting of the variation; and that the Applicant will be able to operate the Facility so as to comply with the conditions included in the Permit.

4.3.2 Management

The Applicant has stated in the Application that they have an Environmental Management System (EMS) that is certified under ISO14001.

We are satisfied that appropriate management systems and management structures will be in place for this Installation, and that sufficient resources are available to the Operator to ensure compliance with all the Permit conditions.

4.3.3 Site security

The site security has not changed from the original application; therefore, we are satisfied that appropriate infrastructure and procedures will be in place to ensure that the site remains secure.

4.3.4 Accident management

The Applicant has not submitted an Accident Management Plan with this application as there are no significant changes onsite that would require the amendment of the current Accident Management Plan. However, having considered the other information submitted in the Application, we are satisfied that appropriate measures will be in place to ensure that accidents that may cause pollution are prevented but that, if they should occur, their consequences are minimised.

As there was no increase in the tonnage of non-hazardous waste being stored onsite associated with either the waste transfer station or ERF, then there was no requirement to update the existing Fire Prevention Plan, apart from to consolidate the plans together.

4.3.5 Off-site conditions

We do not consider that any off-site conditions are necessary.

4.3.6 Operating techniques

We have specified that the Applicant must operate the Facility in accordance with the following documents contained in the Application:

Description	Parts Included	Justification
Response to Schedule 5 Notice dated 05/05/2023	<p>Beddington ERF Waste Treatment Facility Fire Prevention Plan (Version 1.4), issue date 18/06/2018</p> <p>Waste Acceptance Procedure, document ref ERF-BED-OPS-LMI-ENV-022, version 3, dated 23/05/2023</p> <p>Operation of the shredder – Schedule 5 Notice response – question 5</p>	<p>The Fire Prevention Plan covers the activities undertaken at the waste transfer station. This plan has previously been approved by the Environment Agency.</p> <p>The waste acceptance procedures cover the acceptance of wastes onsite, which is required to ensure that the Operator only accepts wastes that it is permitted to do so.</p> <p>The operation of the shredder covers how the shredder will be managed to ensure impacts from its operation are minimised.</p>

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

We have also specified the following limits and controls on the use of raw materials and fuels, which remains as per the original permit:

Raw Material or Fuel	Specifications	Justification
Gas Oil	< 0.1% sulphur content	As required by Sulphur Content of Liquid Fuels Regulations.

Article 45(1) of the IED requires that the Permit must include a list of all types of waste which may be treated using at least the types of waste set out in the European Waste List established by Decision 2005/532/EC, EC, if possible, and containing information on the quantity of each type of waste, where appropriate. The Application contains a list of those wastes coded by the

European Waste Catalogue (EWC) number, which the Applicant will accept in the waste streams entering the waste transfer station. We have specified the permitted waste types, descriptions and where appropriate quantities which can be accepted at the different activities within the Facility in Table S2.2 (ERF), S2.3 (hazardous waste transfer station) and S2.4 (non-hazardous waste transfer station).

The types of waste in Table S2.2 for the ERF have not changed (apart from the addition of EWC 20 01 99, explained below), only the annual throughput tonnage.

We have also taken the opportunity to include an additional waste code in table S2.2 of the permit – EWC 20 01 99 ‘municipal waste not otherwise specified’. The plant is already allowed to except EWC 18 01 04 ‘wastes whose collection and disposal is not subject to special requirements in order to prevent infection (for example dressings, plaster casts, linen, disposable clothing, diapers)’. EWC 18 01 04 refers to waste which is collected from healthcare facilities such as hospitals. Where the same sort of waste is collected from municipal sources (e.g. hygiene and sanitary waste, nappies and incontinence pads) it should instead be coded as EWC 20 01 99. Some recent checks have identified a need for us to clarify the difference between the two codes to the waste producers. We have also started automatically adding EWC 20 01 99 to energy from waste permits which already have EWC 18 01 04 when we vary them, in order to reduce the likelihood of this type of waste being miscoded. This is effectively an administrative change, and there will be no actual change to the nature or composition of the waste that the plant will be able to receive.

We are satisfied that the Applicant can accept the wastes contained in Tables S2.2, S2.3 and S2.4 of the Permit because: -

- (i) The types of waste in Table S2.4 are either the same, or similar to those already permitted to be accepted at the existing waste transfer station;
- (ii) There will be no change to how non-hazardous wastes are managed at the waste transfer station;
- (iii) The hazardous and clinical wastes in Table S2.3 will not be treated or repackaged, only stored in line with appropriate measures prior to onward transport.
- (iv) The addition of EWC 20 01 99 is administrative only, as detailed above.

The waste codes that have been added to the waste transfer station are:

- EWC 02 01 09
- EWC 04 02 09 and EWC 04 02 10
- EWC 16 01 19
- EWC 16 02 13*
- EWC 16 05 04* and EWC 16 05 05
- EWC 18 01 01, EWC 18 01 03*, EWC 18 01 04 and EWC 18 01 09
- EWC 18 02 02
- EWC 19 03 05 and EWC 19 03 07

- EWC 19 12 12
- EWC 20 01 13*, EWC 20 01 14*, EWC 20 01 15*, EWC 20 01 17*, EWC 20 01 19*, EWC 20 01 21*, EWC 20 01 23*, EWC 20 01 33* and EWC 20 01 35*
- EWC 20 01 99 – other fractions not otherwise specified; comprising separately collected fractions of municipal clinical waste (not arising from healthcare and /or related research i.e. not including natal care, diagnosis, treatment or prevention of disease) which is subject to special requirements in order to prevent infection. Other fractions not otherwise specified comprising only non-clinical human and animal offensive/hygiene waste (not arising from healthcare and /or related research i.e. not including natal care, diagnosis, treatment or prevention of disease) which is subject to special requirements in order to prevent infection.
- EWC 20 03 99 Other municipal waste not otherwise specified - sanitary waste from schools and offices only

The waste codes that the Operator has applied to remove:

- All waste codes starting EWC 01
- EWC 02 04 01 and EWC 02 04 02
- All waste codes starting EWC 06
- All waste codes starting EWC 10, except EWC 10 01 01
- All waste codes starting EWC 11
- All waste codes starting EWC 12, except EWC 12 01 05
- EWC 17 05 08
- EWC 19 01 18 and EWC 19 01 19
- EWC 19 04 01
- EWC 19 13 02

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

We have limited the capacity of the ERF to 382,286 tonnes per annum. This limitation is based on the calorific value of the wastes, the plant capacity per hour (21.83 tonnes per line per hour), plant availability hours/year (8,760 hours per year) and the emissions resulting from the rate of processing. Emission limit values will need to be complied with regardless of the feed rate, plant availability and calorific value of the waste.

We have limited the capacity of the waste transfer station to <75,000 tonnes of non-hazardous waste per annum, as this is the limit that was in their previous permit SR2010 No5. The waste transfer station capacity for hazardous waste has been limited to a maximum storage capacity of 50

tonnes at one time as this is the limit at which it would become a Scheduled Activity under EPR.

The Facility is designed, constructed and operated using BAT for the incineration of the permitted wastes. We are satisfied that the operating and abatement techniques are BAT for incinerating these types of waste. Our assessment of BAT is set out later in this document.

4.3.7 Energy efficiency

(i) Consideration of energy efficiency

We have considered the issue of energy efficiency in the following ways:

1. The use of energy within, and generated by, the Facility which are normal aspects of all EPR permit determinations. This issue is dealt with in this section.
2. The extent to which the Facility meets the requirements of Article 50(5) of the IED, which requires "*the heat generated during the incineration and co-incineration process is recovered as far as practicable through the generation of heat, steam or power*". This issue is covered in this section.
3. The combustion efficiency and energy utilisation of different design options for the Facility are relevant considerations in the determination of BAT for the Facility, including the Global Warming Potential of the different options. This aspect is covered in the BAT assessment in section 6 of this Decision Document.

(ii) Use of energy within the Facility

Having considered the information submitted in the Application, we are satisfied that appropriate measures will be in place to ensure that energy is used efficiently within the Facility.

The Application details a number of measures that will be implemented at the Facility in order to increase its energy efficiency:

- Increase in throughput of the waste from 347,422 tonnes per year to 382,286 tonnes per year.
- Reduction in combustion air temperature within the combustion chamber.
- Increase in thermal load performance through stabilisation of the combustion process.
- Generation of an additional 3.4MWe due to the above changes.

The Application states that the specific energy consumption, a measure of total energy consumed per unit of waste processed, will be 77.4 kWh/tonne. The Facility capacity is 382,286 t/a.

The BREF says that electricity consumption is typically between 60 kWh/t and 190 kWh/t depending on the LCV of the waste.

The LCV in this case is expected to be 8.7 MJ/kg. The specific energy consumption in the Application is in line with that set out above.

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

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

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

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

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

CHP opportunities were explored during the original permit application determination. As this is not a substantial refurbishment then that decision cannot be revisited as part of this permit determination. The Operator is required to review the viability of CHP every 4 years, or response to a number of changing factors.

(iv) R1 Calculation

The R1 calculation does not form part of the matters relevant to our determination. It is however a general indicator that the Facility is achieving a high level of energy recovery.

The Applicant has presented a calculation of the R1 factor (as defined under the WFD 2008). This was updated during the permit determination. The R1 formula is a measure of the extent to which energy is recovered from incineration plant. The formula is:

$$R1 = (Ep - (Ef + Ei)) / (0.97 \times (Ew + Ef))$$

Where:

- Ep means annual energy produced as heat or electricity. It is calculated in the form of electricity being multiplied by 2.6 and heat for commercial use being multiplied by 1.1 (GJ/yr).
- Ef means annual energy input to the system from fuels contributing to the production of steam (GJ/yr).
- Ew means annual energy contained in the treated waste calculated using the net calorific value of the waste (GJ/yr).
- Ei means annual energy imported excluding Ew and Ef (GJ/yr)
- 0.97 is a factor accounting for energy losses due to bottom ash and radiation.

Where municipal waste incinerators can achieve an R1 factor of 0.65 or above, the plant will be considered to be a 'recovery activity' for the purposes of the Waste Framework Directive. Again, whether or not an installation achieves an R1 score of >0.65 is not a matter directly relevant to this determination. However, by being classified as a 'recovery activity' rather than as a 'disposal activity', the Operator could draw financial and other benefits.

The Operator provided an assessment covering the operations during 2021, which concluded the R1 factor was 0.78. This review has no impact upon the decisions detailed in this document.

Ep measures the energy recovered for use from the incinerator. This energy will have been recovered not just from the combustion of waste (Ew), but also from the combustion of the support fuel at start up and shut down and where required to maintain the 850 °C combustion temperature (Ef). Ei is additional energy imported, which will primarily be electricity from the grid. The values of these parameters will depend on the way in which the plant is operated, e.g. number of start ups and shut downs.

Note that the availability or non-availability of financial incentives for renewable energy such as the ROC and RHI schemes is not a consideration in determining this application.

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

As the facility is not new and is not being substantially refurbished, then we consider the position has not changed from the previous determination and is adequately covered by the existing condition. Permit condition 1.2.3 requires the Operator to review the viability of CHP implementation every 4 years or in response to any of the following factors, whichever comes sooner:

- (a) new plans for significant developments within 15 km of the Facility;
- (b) changes to the Local Plan;
- (c) changes to the UK CHP Development Map or similar; and
- (d) new financial or fiscal incentives for CHP.

(vi) Permit conditions concerning energy efficiency

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

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

There are no site-specific considerations that require the imposition of standards beyond indicative BAT, and so the Environment Agency accepts that the Applicant's proposals represent BAT for this Installation.

4.3.8 Efficient use of raw materials

Having considered the information submitted in the Application, we are satisfied that the appropriate measures will be in place to ensure the efficient use of raw materials and water.

The Operator is required to report with respect to raw material usage under condition 4.2. and Schedule 4, including consumption of lime, activated carbon and urea used per tonne of waste burned. This will enable the Environment Agency to assess whether there have been any changes in the efficiency of the air pollution control plant, and the operation of the SNCR to abate NO_x. These are the most significant raw materials that will be used at the Facility, other than the waste feed itself (addressed elsewhere). The efficiency of the use of auxiliary fuel will be tracked separately as part of the energy reporting requirement under condition 4.2.2. Optimising reagent dosage for air abatement systems and minimising the use of auxiliary fuels is further considered in the section on BAT.

4.3.9 Avoidance, recovery or disposal with minimal environmental impact of wastes produced by the activities

This requirement addresses wastes produced at the Facility and does not apply to the waste being treated there. The principal waste streams the Facility will produce are bottom ash, air pollution control residues and recovered metals.

The first objective is to avoid producing waste at all. Waste production will be avoided by achieving a high degree of burnout of the ash in the furnace, which results in a material that is both reduced in volume and in chemical reactivity. Condition 3.6.1 and associated Table S3.5 specify limits for total organic carbon (TOC) of <3% in bottom ash. Compliance with this limit will demonstrate that good combustion control and waste burnout is being achieved in the furnaces and waste generation is being avoided where practicable.

Incinerator bottom ash (IBA) will normally be classified as non-hazardous waste. However, IBA is classified on the European List of Wastes as a “mirror entry”, which means IBA is a hazardous waste if it possesses a hazardous property relating to the content of dangerous substances. Monitoring of incinerator ash will be carried out in accordance with the requirements of Article 53(3) of IED. Classification of IBA for its subsequent use or disposal is controlled by other legislation and so is not duplicated within the permit.

Air pollution control (APC) residues from flue gas treatment are hazardous waste and therefore must be sent for disposal to a landfill site permitted to accept hazardous waste, or to an appropriately permitted facility for hazardous waste treatment. The amount of APC residues is minimised through optimising the performance of the air emissions abatement plant.

Having considered the information submitted in the Application, we are satisfied that the waste hierarchy referred to in Article 4 of the WFD will be applied to the generation of waste and that any waste generated will be treated in accordance with this Article.

We are satisfied that waste from the Facility that cannot be recovered will be disposed of using a method that minimises any impact on the environment. Standard condition 1.4.1 will ensure that this position is maintained.

4.3.10 Previous exceedances of permitted limits for emissions to air

The facility has recorded a number of exceedances of permitted limits for emissions to air from the ERF. Exceedances have been recorded for carbon monoxide, TOC, sulphur dioxide and hydrogen chloride. These exceedances have generally only occurred for a short period of time, before the emissions are brought back below the permitted emission limits. These exceedances all relate to breaches of the short term emission limit values.

The ELVs in the Beddington permit are set based on Best Available Techniques (BAT) i.e. levels that are achievable by current technology and emission control techniques (rather than levels above which a significant impact on the environment could occur). Exceeding one of these limits by a small amount will not necessarily result in a measurable impact on the environment or harm to human health. Exceedance of an ELV does, however, indicate that the plant could have performed better, and we still expect operators to comply with their ELVs at all times and make improvements if

needed. The ELV exceedances encountered at Beddington were marginal and, whilst they were correctly identified as permit breaches and scored accordingly, they were insignificant when assessed against published air quality standards and extremely unlikely to have resulted in any environmental or human health impacts. We did issue minor non-compliances and measures have been put in place by the operator to minimise the risk of these types of event happening in the future.

The Operator has taken action to address the causes of the breaches, including:

- Rectification of the waste slippage/feeder issues through maintenance of the machinery
- Repair of the lime recirculation system
- Continuous manning of the feed crane
- Vigilance for explosives (gas bottles) in the feedstock
- Increase in mixing of the waste to ensure homogeneity
- Additional training for the crane operatives to stop unsuitable wastes entering the combustion chamber
- Work with waste suppliers to identify and remove gas bottles from the incoming waste feedstock

We are satisfied that the actions taken are in line with BAT and have addressed the causes of the previous exceedances and should prevent future exceedances.

5. Minimising the Facilities environmental impact

Regulated activities can present different types of risk to the environment, these include odour, noise and vibration; accidents, fugitive emissions to air and water; as well as point source releases to air, discharges to ground or groundwater, global warming potential and generation of waste and other environmental impacts. Consideration may also have to be given to the effect of emissions being subsequently deposited onto land (where there are ecological receptors). All these factors are discussed in this and other sections of this document.

For an installation of this kind, the principal emissions are those to air, although we also consider those to land and water.

The next sections of this document explain how we have approached the critical issue of assessing the likely impact of the emissions to air from the Facility on human health and the environment and what measures we are requiring to ensure a high level of protection.

During the permit determination, but after the 'minded to' consultation, new EALs for emissions to air were introduced in the UK for the following relevant substances; 1,3-butadiene, cadmium (Cd), chromium III (CrIII), copper (Cu), mercury (Hg) and nickel (Ni). The emissions to air from the facility were re-

assessed against the new (lower) EALs. The tables in this section were amended to reflect these new EALs and conclusions updated in line with the findings of the assessment.

5.1 Assessment Methodology

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

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

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

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

5.1.2 Use of Air Dispersion Modelling

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

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

Our web guide sets out the relevant ES as:

- Ambient Air Directive Limit Values
- Ambient Air Directive and 4th Daughter Directive Target Values
- UK Air Quality Strategy Objectives
- Environmental Assessment Levels

Where an Ambient Air Directive (AAD) Limit Value exists, the relevant standard is the AAD Limit Value. Where an AAD Limit Value does not exist, AAD 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 AAD limit values, AAD target and AQS objectives. In a very small number of cases, e.g. for emissions of lead, the AQS objective is more stringent than the AAD value. In such cases, we use the AQS objective for our assessment.

AAD target values, AQS objectives and EALs do not have the same legal status as AAD 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** process contribution is less than **1%** of the relevant ES; and
- the **short-term** process contribution is less than **10%** of the relevant ES.

The **long term** 1% process contribution 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 health and the environment.

The **short term** 10% process contribution 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 health and the environment.

Where an emission is screened out in this way, we would normally consider that 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 Facility 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 of the risk assessment and taking account of any additional techniques that could be applied to limit emissions, we consider that emissions **would cause significant pollution**, we would refuse the Application.

5.2 Assessment of Impact on Air Quality

The Applicant's assessment of the impact of air quality is set out in their Air Quality Assessment, November 2021, Ref C71-P03-R01. The assessment comprises:

- Dispersion modelling of emissions to air from the operation of the ERF.
- A study of the impact of emissions on nearby sensitive habitat / conservation sites.

The assessment takes into account the total emissions from the combustion of the waste, not just the increase in emissions to air due to the increase in throughput of waste incinerated.

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

The Applicant has assessed the Facilities 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 Facilities stack emissions using the ADMS 5.2 dispersion model, which is a commonly used computer model for regulatory dispersion modelling. The model used 5 years of meteorological data collected from the weather station at Gatwick Airport between 2015 and 2019. This was chosen as it was the nearest weather station with a full meteorological data set suitable for air dispersion modelling. The impact 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 NO₂

- Total dust
- Carbon monoxide (CO)
- Sulphur dioxide (SO₂)
- Hydrogen chloride (HCl)
- Hydrogen fluoride (HF)
- Metals (Cadmium, Thallium, Mercury, Antimony, Arsenic, Lead, Chromium, Cobalt, Copper, Manganese, Nickel and Vanadium)
- Polychlorinated dibenzo-para-dioxins and polychlorinated dibenzo furans (referred to as dioxins and furans)
- Gaseous and vaporous organic substances, expressed as Total Organic Carbon (TOC)
- Ammonia (NH₃)
- Second, they assumed that the Facility operates continuously at the relevant long-term or short-term ELVs, i.e. the maximum permitted emission rate (except for emissions of arsenic, chromium and nickel, which are considered in section 5.2.3 of this decision document).
- Third, the model also considered emissions of pollutants not covered by Annex VI of IED, specifically , polycyclic aromatic hydrocarbons (PAH) and Polychlorinated biphenyls (PCBs). Emission rates used in the modelling have been drawn from data in the Waste Incineration BREF and are considered further in section 5.2.2.

We are in agreement with this approach. The assumptions underpinning the model have been checked and are reasonably precautionary.

The consultant's background concentrations, summarised in Table 2.10 in the Air Quality Assessment, were obtained from various sources including monitoring and national modelling data maps. We have reviewed all background concentrations, with particular focus on recorded values presented in the Annual Status Report of the London Borough of Sutton Council and the UK Air website. We broadly agree with the background concentrations assumed by the consultant.

In the case of copper, the applicant's chosen background concentration already exceeds the updated short-term 24-hour mean EAL. We have investigated the appropriateness of the monitoring site used (Marylebone Road, London) and determined that this monitoring site is likely to have substantially higher concentrations of copper than would be expected in the vicinity of the facility, as the monitoring site is within 1 metre of a busy road and the airborne copper contribution from car engine oil lubricant and brake pads will be higher. We have determined that this site is therefore not representative and have instead used the maximum annual mean concentration measured at London Westminster between 2016 and 2022, for a more appropriate worst-case urban background copper concentration in central London. We have factored this to represent short-term averaging periods.

As well as calculating the peak ground level concentration, the Applicant has modelled the concentration of key pollutants at a number of specified locations within the surrounding area.

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.

5.2.1 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.

Whilst we have used the Applicant's modelling predictions in the table below, we have made our own simple verification calculation of the percentage process contribution and predicted environmental concentration.

Table 1. Assessment of non-metal emissions to air

Pollutant	ES		Back-ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
	µg/m ³	Reference period		µg/m ³	µg/m ³	% of EAL	µg/m ³
NO ₂	40	Annual Mean	31.1	0.7	1.75	31.8	79.5
NO ₂	200	99.79th %ile of 1-hour means	62.2	4.5	2.3	66.7	33.4
PM ₁₀	40	Annual Mean	23	0.061	0.15	23.1	57.7
PM ₁₀	50	90.41st %ile of 24-hour means	27.1	0.19	0.38	27.29	54.6
PM _{2.5}	20	Annual Mean	13.3	0.061	0.31	13.36	66.8
SO ₂	266	99.9th %ile of 15-min means	9.9	4.6	1.7	14.5	5.5
SO ₂	350	99.73rd %ile of 1-hour means	7.4	3.7	1.06	11.1	3.2
SO ₂	125	99.18th %ile of 24-hour means	4.4	2.2	1.8	6.6	5.3

HCl	750	1-hour average	20.4	1.2	0.16	21.6	2.88
HF	16	Monthly average	3	0.0061	0.04	3.006	18.79
HF	160	1-hour average	6	0.12	0.075	6.12	3.8
CO	10000	Maximum daily running 8-hour mean	291	3.6	0.04	295	2.9
CO	30000	1-hour average	416	5.9	0.02	422	1.4
TOC	5	Annual Mean	0.64	0.061	1.22	0.70	14.02
	30	Daily average	0.76	0.061	0.20	0.82	2.74
PAH	0.00025	Annual Mean	1.6E-07	1.2E-09	0.00	0.00000	0.1
NH ₃	180	Annual Mean	3.1	0.073	0.04	3.17	1.76
NH ₃	2500	1-hour average	6.2	1.4	0.06	7.6	0.3

PCBs	0.2	Annual Mean	1.2E-07	3E-08	0.00	0.00000	0.00
PCBs	6	1-hour average	2.4E-07	5.9E-07	0.00	0.00000	0.00

Table 2. Assessment of metal emissions to air

Pollutant	ES		Back-ground	Process Contribution		Predicted Environmental Concentration	
	ng/m ³	Reference period		ng/m ³	ng/m ³	% of EAL	ng/m ³
Cd	5	Annual mean	0.17	0.3	6.0	0.47	9.4
Cd	30	24 hour	0.34	1.04	3.5	1.38	4.6
Tl			No background available	0.3			
Hg	60	24 hour	22	0.12	0.2	22.12	36.5
Hg	600	1-hour average	44	5.9	0.98	49.9	8.3
Sb	5000	Annual mean	No background available	3	0.06	Same as PC	Same as PC
Sb	150000	1-hour average	No background available	58.8	0.04	Same as PC	Same as PC
Pb	250	Annual mean	7.2	3	1.20	10.20	4.08

Co			0.23	3		3.23	
Cu	50	24 hour	16	3	3.66	19.66	35.4
Cu (EAL no longer exists)	200000	1-hour average	118.8	58.8	0.03	177.60	0.089
Mn	150	Annual mean	17	3	2.00	20.00	13.33
Mn	1500000	1-hour average	34	58.8	0.004	92.80	0.01
V	5000	Annual mean	1.1	3	0.06	4.10	0.08
V	1000	24-hr average	1.3	26.2	2.62	27.50	2.75
As	6	Annual mean	0.99	3	50.00	3.99	66.5
Cr (II)(III)	2000	24 hour	9.2	1.8	0.09	11.0	0.55
Cr (II)(III) (EAL no longer exists)	150000	1-hour average	18.4	58.8	0.04	77.20	0.0515
Cr (VI)	0.25	Annual mean	1.84	0.61	244.00	2.45	980.0

Ni	20	Annual mean	1.8	3.0	15.00	4.80	24.0
Ni	700	1 hour	3.6	5.9	0.84	9.5	1.36

(i) Screening out emissions which are insignificant

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

- PM₁₀
- PM_{2.5}
- Polycyclic aromatic hydrocarbons (PAH)
- Dioxins / furans
- Sulphur dioxide (SO₂)
- Carbon monoxide (CO)
- Hydrofluoric acid (HF)
- Hydrochloric acid (HCl)
- Ammonia (NH₃)
- Mercury (Hg)
- Thallium (Tl)
- Antimony (Sb)
- Cobalt (Co)
- Chromium (III)
- Vanadium (V)
- Polychlorinated biphenyls (PCBs)

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

(ii) Emissions unlikely to give rise to significant pollution

Also, from the tables in this section the following emissions (which were not screened out as insignificant) have been assessed as being unlikely to give rise to significant pollution in that the predicted environmental concentration is less than 100% (taking expected modelling uncertainties into account) of both the long term and short term ES.

- Nitrogen dioxide (NO₂)
- Volatile organic compounds (VOCs)
- Cadmium (Cd)
- Arsenic (As)
- Manganese (Mn)
- Nickel (Ni)
- Copper (Cu)
- Lead (Pb)

For these emissions, we have carefully scrutinised the Applicant's proposals to ensure that they are applying the Best Available Techniques to prevent and minimise emissions of these substances. This is reported in section 6 of this document.

(iii) Emissions requiring further assessment

Finally, from the tables above the following emissions are considered to have the potential to give rise to pollution in that the Predicted Environmental Concentration exceeds 100% of the long term or short term ES.

- Chromium VI (Cr VI)

For these emissions, the Applicant has argued that the process contribution to the Predicted Environmental Concentration is negligible. Using Environment Agency (June 2016) Guidance on Assessing Group 3 Metal Stack Emissions from Incinerators (Version 4) the Operator undertook further modelling of the emissions of Cr(VI), the results of which are shown in table 3. This guidance uses monitoring data to produce a % value of the IED group 3 ELV that is Cr VI. This value is 0.03%, which is the value used in the further assessment, from which the modelled concentrations are derived. These results show that the emissions of Cr(VI) can be screened out as insignificant as the PC is <1% of the AQAL.

Table 3. Modelled long term concentrations of Cr(VI)

Parameter	Chromium VI
Maximum off-site (PC) (a)	0.00090 (0.5%)
Assumed background	1.84
Total concentration (PEC) (a)	1.84 (920%)
AQAL	0.25
Significance	Not significant

(a) Values in parentheses are the percentages of the air quality standard

As part of our detailed audit of the Applicant's modelling assessment, we agree with the Applicant's conclusions in this respect taking modelling uncertainties into account.

In any case, with respect to these pollutants, we have carefully scrutinised the Applicant's proposals to ensure that they are applying the Best Available Techniques to prevent and minimise emissions of these substances. This is reported in section 6 of this document.

5.2.2 Consideration of key pollutants

(i) Nitrogen dioxide (NO₂)

The impact on air quality from NO₂ emissions has been assessed against the ES of 40 µg/m³ as a long term annual average and a short term hourly average of 200 µg/m³. The model assumes a 70% NO_x to NO₂ 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 peak long term PC is greater than 1% of the ES and therefore cannot be screened out as insignificant. Even so, from the table above, the emission is not expected to result in the ES being exceeded.

(ii) Particulate matter PM₁₀ and PM_{2.5}

The impact on air quality from particulate emissions has been assessed against the ES for PM₁₀ (particles of 10 microns and smaller) and PM_{2.5} (particles of 2.5 microns and smaller). For PM₁₀, the ES are a long term annual average of 40 µg/m³ and a short term daily average of 50 µg/m³. For PM_{2.5} the ES of 20 µg/m³ as a long-term annual average was used, having changed from 25 µg/m³ in 2020.

The Applicant's predicted impact of the Facility against these ESs is shown in the tables above. The assessment assumes that **all** particulate emissions are present as PM₁₀ for the PM₁₀ 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 (PM₁₀) 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 assessment shows that the predicted process contribution for emissions of PM₁₀ 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 Facility.

The above assessment also shows that the predicted process contribution for emissions of PM_{2.5} is also below 1% of the ES. Therefore, the Environment Agency concludes that particulate emissions from the Facility, including emissions of PM₁₀ or PM_{2.5}, will not give rise to significant pollution.

(iii) Acid gases, SO₂, HCl and 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. There is no long term ES for HCl. HF has 2 assessment criteria – a 1-hr ES and a monthly EAL – the process contribution is <1% of the monthly EAL 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 SO₂ for the protection of human health. Protection of ecological receptors from SO₂ for which there is a long term ES is considered in section 5.4.

Emissions of SO₂ can also be screened out as insignificant in that the short term process contribution is also <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 Facility.

(iv) Emissions to Air of CO, VOCs, PAHs, PCBs, Dioxins and NH₃

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

The Applicant has used the ES for benzene for their assessment of the impact of VOC. This is in line with online technical guidance on assessing emissions to air. The Applicant considers that 1,3 butadiene, which has a lower EQS, is unlikely to be a pollutant of concern.

The above tables show that for PAH and PCB emissions, the peak long term PC is less than 1% of the ES and the peak 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 Facility.

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

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

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

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

The ammonia emission is based on a release concentration of 12 mg/m³. 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 Facility is unlikely to result in a breach of the EAL. The Applicant is required to prevent, minimise and control PAH and VOC emissions using BAT, this is considered further in Section 6. 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 do not screen out, 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 is reported in section 6 of this document. Therefore, we consider the Applicant's proposals for preventing and minimising emissions to be BAT for the Facility. Dioxins and furans are considered further in section 5.3.2.

5.2.3 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 0.05 mg/m³ (current limit) 0.02 mg/m³ (applicable from 02/12/2023) for mercury and its compounds (formerly WID group 1 metals).
- An aggregate emission limit value of 0.05 mg/m³ (current limit) 0.02 mg/m³ (applicable from 02/12/2023) for cadmium and thallium and their compounds (formerly WID group 2 metals).
- An aggregate emission limit of 0.5 mg/m³ (current limit) 0.3 mg/m³ (applicable from 02/12/2023) for antimony, arsenic, lead, chromium, cobalt, copper, manganese, nickel and vanadium and their compounds (formerly WID group 3 metals).

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

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

- Mercury (Hg)
- Thallium (Tl)
- Antimony (Sb)
- Cobalt (Co)
- Vanadium (V)
- Chromium (Cr) VI

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

- Cadmium (Cd)
- Arsenic (As)
- Manganese (Mn)
- Nickel (Ni)
- Lead (Pb)
- Copper (Cu)

There were no metal emissions requiring further assessment. The Applicant has concluded that exceedances of the ES for all metals are not likely to occur. The Facility has been assessed as meeting BAT for control of metal emissions to air. See section 6 of this document. The Environment Agency's experience of regulating incineration plant is that emissions of metals are in any event below the BAT AELs which are lower than the Annex VI limits set in IED, and that the above assessment is an over prediction of the likely impact. We therefore agree with the Applicant's conclusions.

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

For metals; cadmium, arsenic, manganese, nickel and lead 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:

- Mercury (Hg)
- Thallium (Tl)
- Antimony (Sb)
- Cobalt (Co)
- Vanadium (V)
- Chromium (Cr) VI

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

- Cadmium (Cd)
- Arsenic (As)
- Manganese (Mn)

- Nickel (Ni)
- Copper (Cu)
- Lead (Pb)

The Facility has been assessed as meeting BAT for control of metal emissions to air. See section 6 of this document.

5.2.4 Consideration of Local Factors

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

London Borough of Sutton has declared an Air Quality Management Area (AQMA) with respect to nitrogen dioxide and particulate matter (PM₁₀). This covers the entire Borough of Sutton.

London Borough of Merton has declared an AQMA with respect to nitrogen dioxide and particulate matter (PM₁₀). This covers the entire Borough of Merton.

London Borough of Croydon has declared an AQMA with respect to nitrogen dioxide. This covers the entire Borough of Croydon.

The remaining London Boroughs that surround these areas have also declared AQMAs, which are for nitrogen dioxide and some include PM₁₀.

From the Applicant's model, the process contribution for PM₁₀ at all points within each of the AQMAs is predicted to be well below 1% of the ES and can be considered insignificant. Therefore, even if the ES was breached, the contribution from the Facility is negligible.

The Applicant's modelling predictions for nitrogen dioxide concentrations within the AQMA are summarised in the tables in section 5.2.2. The figures shown indicate the predicted peak ground level impact on pollutant concentrations in ambient air within the AQMA.

Overall, whilst emissions cannot be screened out as insignificant, the Applicant's modelling shows that the Facility is unlikely to result in a breach of the ES within the AQMA.

The Applicant is required to prevent, minimise and control emissions using the best available techniques; this is considered further in Section 6.

5.2.5 Mobile Shredder Emissions

The waste transfer station includes a mobile shredder, which has an emission point to air (emission point A4 in table S3.1). The primary pollutants from this emission point are oxides of nitrogen and particulates. The emission rates for this machine are shown in the table below and compared to those from the ERF. The mobile shredder is anticipated to operator up to 30 hours per week (1,560 hours per annum).

The mobile plant shredder is 320kW and is therefore regulated under the Non-Road Mobile Machine Regulations 2018. As the emissions are comparatively low and it is in compliance with the limits set out in the NRMM Regulations, we are satisfied that the emissions from the mobile shredder will not have a significant impact on sensitive receptors.

Table 4. Comparative emission rates for the ERF and mobile shredder

Activity	Pollutant	Emission Rate (g/s)
ERF	NO _x	11.44
	PM	0.572
Mobile Shredder	NO _x	0.036
	PM	0.0022

5.3 Human health risk assessment

5.3.1 Our role in preventing harm to human health

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

i) **Applying Statutory Controls**

The plant will be regulated under EPR. These regulations include the requirements of relevant EU Directives, notably, the industrial emissions directive (IED), the waste framework directive (WFD), and ambient air directive (AAD).

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. 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 or Chapter IV of IED on waste incineration and co-incineration plants. The assessment of BAT for this installation is detailed in section 6 of this document.

ii) Environmental Impact Assessment

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

iii) Expert Scientific Opinion

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

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

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

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

A number of papers have been published by SAHSU since 2012 which show no effect on birth outcomes. One paper in the study looked at exposure to emissions from MWIs in the UK and concluded that exposure was low. Subsequent papers found no increased risk of a range of birth outcomes (including stillbirth and infant mortality) in relation to exposure to PM₁₀ 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 Facility to be well-run and regulate the Facility to ensure compliance with such permit conditions.

iv) Health Risk Models

Comparing the results of air dispersion modelling as part of the Environmental Impact assessment against European and national air quality standards effectively makes a health risk assessment for those pollutants for which a standard has been derived. These air quality standards have been developed primarily in order 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 mathematic 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 in order to allow for different body size, such as for children of different ages. In the UK, the COT has set a TDI for dioxins, furans and dioxin

like PCB's of 2 picograms WHO-TEQ/Kg-body weight/day (N.B. 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 PCB's, 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.

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 (NO₂, SO₂ and particulates) in terms of the numbers of "deaths brought forward" and the "number of hospital admissions for respiratory disease brought forward or additional". COMEAP has issued a statement expressing some reservations about the applicability of applying its methodology to small, affected areas. Those concerns generally relate to the fact that the exposure-response coefficients used in the COMEAP report derive from studies of whole urban populations where the air pollution climate may differ from that around a new industrial installation. COMEAP identified a number of factors and assumptions that would contribute to the uncertainty of the estimates. These were summarised in the Defra review as below:

- Assumption that the spatial distribution of the air pollutants considered is the same in the area under study as in those areas, usually cities or large towns, in which the studies which generated the coefficients were undertaken.
- Assumption that the temporal pattern of pollutant concentrations in the area under study is similar to that in the areas in which the studies which generated the coefficients were undertaken (i.e. urban areas).
- It should be recognised that a difference in the pattern of socio-economic conditions between the areas to be studied and the reference areas could lead to inaccuracy in the predicted level of effects.
- In the same way, a difference in the pattern of personal exposures between the areas to be studied and the reference areas will affect the accuracy of the predictions of effects.

The use of the COMEAP methodology is not generally recommended for modelling the human health impacts of individual installations. However, it may have limited applicability where emissions of NO_x, SO₂ and particulates cannot be screened out as insignificant in the Environmental Impact assessment, there are high ambient background levels of these pollutants and we are advised that its use was appropriate by our public health consultees.

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 model using the HHRAP model as described above for dioxins, furans and dioxin like PCBs. Where an alternative approach is adopted for dioxins, we check the predictions ourselves.

v) Consultations

As part of our normal procedures for the determination of a permit application, we consult with Local Authorities, Local Authority Directors of Public Health, FSA and UKHSA. We also consult the local communities who may raise health related issues. All issues raised by these consultations are considered in determining the application as described in Annex 3 of this document.

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

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

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 bodyweight/ day.

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

Table 5. Dioxin intake assessment results

Receptor	adult	child
Agricultural	0.0033	0.0048
Residential	0.0036	0.011

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

The FSA has reported that dietary studies have shown that estimated total dietary intakes of dioxins and dioxin-like PCBs from all sources by all age groups fell by around 50% between 1997 and 2001, and are expected to continue to fall. A report in 2012 showed that Dioxin and PCB levels in food have fallen slightly since 2001. In 2001, the average daily intake by adults in the UK from diet was 0.9 pg WHO-TEQ/kg bodyweight. The additional daily intake predicted by the modelling as shown in the table above is substantially below this figure.

In 2010, FSA studied the levels of chlorinated, brominated and mixed (chlorinated-brominated) dioxins and dioxin-like PCBs in fish, shellfish, meat and eggs consumed in UK. It asked COT to consider the results and to advise on whether the measured levels of these PXDDs, PXDFs and PXBs indicated a health concern ('X' means a halogen). COT issued a statement in December 2010 and concluded that " The major contribution to the total dioxin toxic activity in the foods measured came from chlorinated compounds. Brominated compounds made a much smaller contribution, and mixed

halogenated compounds contributed even less (1% or less of TDI). Measured levels of PXDDs, PXDFs and dioxin-like PXBs do not indicate a health concern". COT recognised the lack of quantified TEFs for these compounds but said that "even if the TEFs for PXDDs, PXDFs and dioxin-like PXBs were up to four fold higher than assumed, their contribution to the total TEQ in the diet would still be small. Thus, further research on PXDDs, PXDFs and dioxin-like PXBs is not considered a priority."

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

5.3.3 Particulates smaller than 2.5 microns

The Operator will be required to monitor particulate emissions using the method set out in Table S3.1 of Schedule 3 of the Permit. This method requires that the filter efficiency must be at least 99.5 % on a test aerosol with a mean particle diameter of 0.3 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 ($\text{PM}_{0.1}$). 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 HPA 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 HPA (now 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 $\text{PM}_{2.5}$ 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 µg/m³ 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 PM₁₀ 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 PM₁₀. It goes on to say that PM₁₀ 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 PM₁₀ levels and 0.05% to ambient ground level PM_{2.5} levels. The 2016 data also shows that road traffic contributed to 5.35% of PM₁₀ and 4.96% of PM_{2.5} and that domestic wood burning contributed 22.4% to PM₁₀ and 34.3% of PM_{2.5} levels.

This is consistent with the assessment of this application which shows emissions of PM₁₀ 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 Facility

We have assessed the health effects from the operation of this installation in relation to the above (sections 5.3.1 to 5.3.3). We have applied the relevant requirements of the national and European legislation in imposing the permit conditions. We are satisfied that compliance with these conditions will ensure protection of the environment and human health.

Taking into account all of the expert opinion available, we agree with the conclusion reached by UKHSA that “While it is not possible to rule out adverse health effects from modern, well regulated municipal waste incinerators with complete certainty, any potential damage to the health of those living close-by is likely to be very small, if detectable.”

In carrying out air dispersion modelling as part of the Environmental Impact assessment and comparing the predicted environmental concentrations with European and national air quality standards, the Applicant has effectively

made a health risk assessment for many pollutants. These air quality standards have been developed primarily in order to protect human health.

The Applicant's assessment of the impact from PM₁₀, PM_{2.5}, Polycyclic aromatic hydrocarbons (PAH), Dioxins / furans, Sulphur dioxide (SO₂), Carbon monoxide (CO), Hydrofluoric acid (HF), Hydrochloric acid (HCl), Ammonia (NH₃), Mercury (Hg), Thallium (Tl), Antimony (Sb), Cobalt (Co), Copper (Cu), Vanadium (V) and Polychlorinated biphenyls (PCBs) have all indicated that the Facility emissions screen out as insignificant; where the impact of emissions of Nitrogen dioxide (NO₂), Volatile organic compounds (VOCs), Cadmium (Cd), Arsenic (As), Manganese (Mn), Nickel (Ni) and Lead (Pb) have not been screened out as insignificant, the assessment still shows that the predicted environmental concentrations are well within air quality standards or environmental action levels.

Cr (VI) did not screen out and therefore were considered in further detail. Using 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" The results show that the process contribution when using the maximum, mean and minimum emission concentrations from the EA guidance are all below 1 % of the AQAL and, therefore, can be classed as insignificant. See section 5.2.3

The Environment Agency has reviewed the methodology employed by the Applicant to carry out the health impact assessment.

Contributions from the proposed facility are unlikely to exceed any Environmental Standard set for the protection of human health from both regular and abnormal operations. Predicted risks as a consequence of dioxins and furans emissions are well within the screening criteria for the protection of human health. Contributions at the AQMA 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 lifetime to the effects of the highest predicted relevant airborne concentrations and consuming mostly locally grown food), it was concluded that the operation of the proposed facility will not pose a significant carcinogenic or non-carcinogenic risk to human health.

UKHSA were consulted on the Application and concluded that they had no significant concerns regarding the risk to the health of humans from the Facility. The Food Standards Agency was also consulted during the permit determination process, but provided no response. Details of the responses provided by UKHSA to the consultation on this Application can be found in Annex 3.

The Environment Agency is therefore satisfied that the Applicant's conclusions presented above are soundly based and we conclude that the potential emissions of pollutants including dioxins, furans and metals from the proposed facility are unlikely to have an impact upon human health.

5.4 Impact on Habitats sites, SSSIs, non-statutory conservation sites etc.

5.4.1 Sites Considered

The following Habitats (i.e. Special Areas of Conservation, Special Protection Areas and Ramsar) sites are located within 10 km of the Facility:

- Wimbledon Common (SAC)
- Richmond Park (SAC)

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

The following non-statutory local wildlife and conservation sites are located within 2 km of the Facility:

- Bennetts Hole (Local Nature Reserve)
- Cranmer Green (Local Nature Reserve & Local Wildlife Site)
- The Spinney, Carshalton (Local Nature Reserve)
- Spencer Road Wetlands (Local Nature Reserve)
- Wilderness Island (Local Nature Reserve)
- Wandle Valley Wetland (Local Nature Reserve)
- Mitcham Common (Local Wildlife Site)
- Queen Elizabeth Walk (Local Wildlife Site)
- Land north of Goat Road (Local Wildlife Site)
- Caraway Place Pond (Local Wildlife Site)
- Beddington Farmlands (Local Wildlife Site)
- Therapia Lane Rough (Local Wildlife Site)
- Beddington Park (Local Wildlife Site)
- Mill Green (Local Wildlife Site)
- The Spinney (Nightingale Road Bird Sanctuary) (Local Wildlife Site)
- Croydon Cemetery Complex (Local Wildlife Site)
- Upper River Wandle (Local Wildlife Site)

5.4.2 Habitats Assessment

The Applicant's habitats assessment was reviewed by the Environment Agency's technical specialists for modelling, air quality, conservation and ecology technical services, who agreed with the assessment's conclusions, that there would be no likely significant effect on the interest feature(s) of the protected site(s). Section 7.3.1 details what assessments and consultation with Natural England has been undertaken.

Table 6. Pollutant concentrations at Wimbledon Common SAC

Pollutant	ES / EAL ($\mu\text{g}/\text{m}^3$)	Back-ground ($\mu\text{g}/\text{m}^3$)	Process Contribution (PC) ($\mu\text{g}/\text{m}^3$)	PC as % of ES	Predicted Environmental Concentration (PEC) ($\mu\text{g}/\text{m}^3$)	PEC as % ES
Direct Impacts²						
NO _x Annual	30	31.9	0.023	0.1	N/A	N/A
NO _x Daily Mean	75	37.6	0.73	1.0	N/A	N/A
SO ₂	10 ⁽¹⁾	1.2	0.0071	0.1	N/A	N/A
Ammonia	1 ⁽¹⁾	1.9	0.0017	0.2	N/A	N/A
HF Weekly Mean	0.5	3.0	0.0014	0.3	N/A	N/A
HF Daily Mean	5	3.5	0.0044	0.1	N/A	N/A
Deposition Impacts²						
N Deposition (kg N/ha/yr)	10 - 20	16.9	0.012	0.1	N/A	N/A
Acidification (Keq/ha/yr)	0.642 – 0.872	1.2	0.00087	0.3	N/A	N/A

(1) The lichen and bryophyte sensitivity standards for ammonia and sulphur dioxide have been assigned for this assessment as the presence of these features has been recorded in the site Management Plan for at least one of the sections of the site.

(2) Direct impact units are $\mu\text{g}/\text{m}^3$ and deposition impact units are kg N/ha/yr or Keq/ha/yr.

Table 7. Pollutant concentrations at Richmond Park SAC

Pollutant	ES / EAL ($\mu\text{g}/\text{m}^3$)	Back-ground ($\mu\text{g}/\text{m}^3$)	Process Contribution (PC) ($\mu\text{g}/\text{m}^3$)	PC as % of ES	Predicted Environmental Concentration (PEC) ($\mu\text{g}/\text{m}^3$)	PEC as % ES
Direct Impacts¹						
NO _x Annual	30	28.8	0.017	0.1	N/A	N/A
NO _x Daily Mean	75	34.0	0.55	0.7	N/A	N/A
HF Weekly Mean	0.5	3.0	0.0011	0.2	N/A	N/A
HF Daily Mean	5	3.5	0.0033	0.1	N/A	N/A
Deposition Impacts¹						
N Deposition (kg N/ha/yr)	10 - 20	28.4	0.015	0.1	N/A	N/A
Acidification (Keq/ha/yr)	0.36 – 1.009	2.0	0.001	0.3	N/A	N/A

(1) Direct impact units are $\mu\text{g}/\text{m}^3$ and deposition impact units are kg N/ha/yr or Keq/ha/yr.

5.4.3 Assessment of other conservation sites

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

For SACs SPAs, Ramsars and SSSIs we consider the contribution PC and the background levels in making an assessment of impact. In assessing these other sites under the Environment Act we look at the impact from the Facility alone in order to determine whether it would cause significant pollution. This is a proportionate approach, in line with the levels of protection offered by the conservation legislation to protect these other sites (which are generally more numerous than Natura 2000 or SSSIs) whilst ensuring that we do not restrict development.

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

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

Table 8. Pollutant concentrations at the highest impacted non-statutory site (Mitcham Common LWS)

Pollutant	ES / EAL (µg/m³)	Back-ground (µg/m³)	Process Contribution (PC) (µg/m³)	PC as % of ES	Predicted Environmental Concentration (PEC) (µg/m³)	PEC as % ES
Direct Impacts¹						
NO _x Annual	30	N/A	0.97	3.2	N/A	N/A
NO _x Daily Mean	75	N/A	8.4	10.5	N/A	N/A
HF Weekly Mean	0.5	N/A	0.02	3.8	N/A	N/A
HF Daily Mean	5	N/A	0.051	0.9	N/A	N/A
Deposition Impacts¹						
N Deposition (kg N/ha/yr)	10 - 20	N/A	0.189	8.8	N/A	109

Pollutant	ES / EAL ($\mu\text{g}/\text{m}^3$)	Back-ground ($\mu\text{g}/\text{m}^3$)	Process Contribution (PC) ($\mu\text{g}/\text{m}^3$)	PC as % of ES	Predicted Environmental Concentration (PEC) ($\mu\text{g}/\text{m}^3$)	PEC as % ES
Acidification (Keq/ha/yr)	0.357 – 1.794	N/A	0.83	8.3	29.25	293

(1) Direct impact units are $\mu\text{g}/\text{m}^3$ and deposition impact units are kg N/ha/yr or Keq/ha/yr.

The tables above show that the PCs are below the critical levels or loads. We are satisfied that the Facility will not cause significant pollution at the sites. The Applicant is required to prevent, minimise and control emissions using BAT, this is considered further in Section 6.

5.5 Impact of abnormal operations

Article 50(4)(c) of 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 emission limit value (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 per incineration line. 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 at all times. 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 $150 \text{ mg}/\text{m}^3$ (as a half hourly average) which is five times the limit in normal operation.

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

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

consideration of abnormal operations is limited to consideration of its impact on short term ESs.

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

- Dioxin emissions of 10 ng/m³ (99 x normal)
- Mercury emissions of 1,263 µg/m (25 x normal)
- NO_x emissions of 500 mg/m³ (1.25 x normal)
- Particulate emissions of 150 mg/m³ (4 x normal)
- SO₂ emissions of 450 mg/m³ (1.25 x normal)
- HCl emissions of 900 mg/m³ (14 x normal)
- PCBs emissions of 0.5 mg/m (99 x normal)
- Dioxin emissions of 10 ng/m (99 x normal)
- Antimony emissions of 172.5 µg/m (14 x normal)
- Arsenic emissions of 0.5 µg/m (14 x normal)
- Cadmium emissions of 0.18 µg/m (5 x normal)
- Chromium emissions of 0.18 µg/m (5 x normal)
- Chromium VI emissions of 0.5 µg/m (14 x normal)
- Copper emissions of 0.18 µg/m (5 x normal)
- Lead emissions of 0.5 µg/m (14 x normal)
- Manganese emissions of 0.5 µg/m (14 x normal)
- Nickel emissions of 0.5 µg/m (14 x normal)
- Vanadium emissions of 0.18 µg/m (5 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 ERF 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.

Table 9. Short term impacts from abnormal operation

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
NO ₂	200	99.79th %ile of 1-hour means	62.2	13.64	6.8	75.84	37.9
PM ₁₀	50	90.41st %ile of 24-hour means	23	2.85	5.70	25.85	51.7
SO ₂	266	99.9th ile of 15-min means	9.9	41.4	15.6	51.3	19.3
SO ₂	350	99.9th ile of 15-min means	7.4	33.3	9.51	40.7	11.6
SO ₂	125	99.18th %ile of 24-hour means	4.4	19.8	15.84	24.2	19.4
HCl	750	1-hr average	20.4	108	14.4	128.4	17.12

HF	160	1-hr average	6	2.4	1.5	8.40	5.3
	ng/m3		ng/m³	ng/m³	% of EAL	ng/m³	% of EAL
Hg	600	1-hr average	44	147.5	24.6	191.5	31.9
Hg	60	24 hour	22	3.1	5.1	25.1	41.4
Sb	150000	1-hr average	No background available	20.29	0.01	Same as PC	Same as PC
Cu	50	24 hour	16	9.2	18.3	25.2	50.0
Mn	1500000	1-hr average	34	105.84	0.01	139.84000	0.0093
PCBs	6000	1-hr average	0.24	58.8	0.98	59.04000	0.9840

Cr (II)(III)	20000	1-hr average	9	9.2	0.46	18.2	0.92
Cd	30	24 hour	0.34	5.2	17.33	5.54	18.5
Ni	700	1 hour	3.6	29.5	4.2	33.1	4.7

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

- Nitrogen dioxide
- PM₁₀
- HF
- Antimony
- Manganese
- Vanadium
- Nickel
- Chromium
- PCBs

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

- Sulphur dioxide
- HCl
- Mercury
- Copper
- Cadmium

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/m³ for the maximum period of abnormal operation, this would result in an increase of approximately 67.8% in the TDI reported in section 5.3.3. In these circumstances the TDI would be 0.0554 pg(WHO-TEQ/ kg-BW/day), which is 0.92% of the COT TDI. At this level, emissions of dioxins will still not pose a risk to human health.

6. Application of Best Available Techniques

6.1 Scope of Consideration

In this section, we explain how we have determined whether the Applicant's proposals are the Best Available Techniques for this Installation.

- The issue of BAT for the incineration technology was addressed during the original permit determination. This was reviewed during the statutory permit review in 2022. The considerations in this permit variation do not change the previous decision.
- A new activity, the temporary storage of hazardous waste at the waste transfer station was included in this variation. The Operator has demonstrated appropriate measures for this activity by:
 - Having waste acceptance and pre-acceptance operating techniques in place.
 - Utilising primary and secondary containment for liquids that is appropriately sized and constructed for the wastes that are being stored in them.
 - No treatment, repackaging or mixing of hazardous or clinical waste, prior to onward transport, will take place.
 - Storing the wastes inside a building, or undercover so that they are protected from the weather.
 - Spill kits will be located at strategic locations around the site.
- We then consider in particular control measures for the emissions which were not screened out as insignificant in the previous section on minimising the Facilities environmental impact. They are: Nitrogen dioxide (NO₂), Volatile organic compounds (VOCs), Cadmium (Cd), Arsenic (As), Manganese (Mn), Nickel (Ni) and Lead (Pb)
- We also have to consider the combustion efficiency and energy utilisation of the Facility, which are relevant considerations in the determination of BAT for the Facility, including the Global Warming Potential.
- Finally, the prevention and minimisation of Persistent Organic Pollutants (POPs) must be considered, as we explain below.

Chapter IV of the IED specifies a set of maximum ELV. Although these limits are designed to be stringent, and to provide a high level of environmental protection, they do not necessarily reflect what can be achieved by new plant. Article 14(3) of the IED says that BAT-C shall be the reference for setting the permit conditions,. The BAT-C were published on 03/12/2019 and set BAT AELs for various substances mainly as daily average values which are in many cases lower than the chapter IV limits.

Operational controls complement the ELV and should generally result in emissions below the maximum allowed; whilst the limits themselves provide headroom to allow for unavoidable process fluctuations. Actual emissions are therefore almost certain to be below emission limits in practice, because any Operator that sought to operate its installation continually at the maximum permitted limits would almost inevitably breach those limits regularly, simply by virtue of normal fluctuations in plant performance, resulting in enforcement action (including potentially prosecution, suspension or revocation) being taken. Assessments based on BAT AELs or Chapter IV limits are therefore “worst-case” scenarios.

We are satisfied that emissions at the permitted limits would ensure a high level of protection for human health and the environment in any event.

6.2 BAT and emissions control

The issue of BAT for flue gas treatment technology was addressed during the original permit determination. This was reviewed during the statutory permit review in 2022. The considerations in this permit variation do not change the previous decision.

6.3 BAT and global warming potential

This section summarises the assessment of greenhouse gas impacts which has been made in the determination of this Permit. Emissions of carbon dioxide (CO₂) and other greenhouse gases differ from those of other pollutants in that, except at gross levels, they have no localised environmental impact. Their impact is at a global level and in terms of climate change. Nonetheless, CO₂ is clearly a pollutant for IED purposes.

The principal greenhouse gas emitted is CO₂, but the plant also emits small amounts of N₂O arising from the operation of secondary NO_x abatement. N₂O has a global warming potential 310 times that of CO₂. The Applicant will therefore be required to optimise the performance of the secondary NO_x abatement system to ensure its GWP impact is minimised.

The major source of greenhouse gas emissions from the Facility is however CO₂ from the combustion of waste. There will also be CO₂ emissions from the burning of support fuels at start up, shut down and should it be necessary to maintain combustion temperatures. BAT for greenhouse gas emissions is to maximise energy recovery and efficiency.

The electricity that is generated by the Facility will displace emissions of CO₂ elsewhere in the UK, as virgin fossil fuels will not be burnt to create the same electricity.

The Facility is not subject to the Greenhouse Gas Emissions Trading Scheme Regulations 2012 therefore it is a requirement of IED to investigate how

emissions of greenhouse gases emitted from the Facility might be prevented or minimised.

Factors influencing GWP and CO₂ emissions from the Facility are:

On the debit side

- CO₂ emissions from the burning of the waste;
- CO₂ emissions from burning auxiliary or supplementary fuels;
- CO₂ emissions associated with electrical energy used;
- N₂O from the de-NO_x process.

On the credit side

- CO₂ saved from the export of electricity to the public supply by displacement of burning of virgin fuels;

The GWP of the plant will be dominated by the emissions of carbon dioxide that are released as a result of waste combustion. This will be constant for all options considered in the BAT assessment. Any differences in the GWP of the options in the BAT appraisal will therefore arise from small differences in energy recovery and in the amount of N₂O emitted.

The Applicant considered energy efficiency this is set out in section 4.3.7, BAT for the de-NO_x process in its BAT assessment was addressed during the original permit determination This was reviewed during the statutory permit review in 2022. The considerations in this permit variation do not change the previous decision.

Note: avoidance of methane which would be formed if the waste was landfilled has not been included in this assessment. If it were included due to its avoidance it would be included on the credit side. Ammonia has no direct GWP effect.

The findings of the greenhouse gas assessment are shown below. The Operator has demonstrated that the increase in throughput as a result of this variation will further displace energy produced by fossil fuels (natural gas fired CCGT) and further avoid methane emission from landfill. Therefore, there will be a reduction in the net global warming potential from this facility compared to its current permitted limits.

Table 10. Summary greenhouse gas assessment findings

Process	GWP (tonnes CO ₂ equivalent)			
	Current operation		Proposed operation	
Parameter	Released	Saving/Offset	Released	Saving/Offset
CO ₂ emissions derived from fossil fuels (a)	102,400		112,500	
N ₂ O from the process (ammonia) (b)	3,300		3,700	
Indirect CO ₂ emissions (imported electricity) (c)	160		160	
Direct CO ₂ emissions (auxiliary fuel) (d)	5,100		5,600	
Total released (e=a+b+c+d)	110,960		121,960	
Energy recovered (electricity) (f)		79,700		83,700
Energy recovered (heat) (g)		-		-
Total offset (h=f+g)		79,700		83,700
Net GWP (j=e-h)	31,260		38,260	

Taking all these factors into account, the Operator's assessment shows the Operators technologies at the increased throughput is best in terms of GWP.

The Environment Agency agrees with this assessment and that the chosen option is BAT for the Facility.

6.4 BAT and POPs

International action on Persistent Organic pollutants (POPs) is required under the UN's Stockholm Convention, which entered into force in 2004. The EU implemented the Convention through the POPs Regulation (2019/1021), which is directly applicable in UK law. We are required by national POPs Regulations (SI 2007 No 3106) to give effect to Article 6(3) of the EC POPs Regulation when determining applications for environmental permits.

However, it needs to be borne in mind that this application is for a particular type of installation, namely a waste incinerator. The Stockholm Convention distinguishes between intentionally-produced and unintentionally-produced POPs. Intentionally-produced POPs are those used deliberately (mainly in the past) in agriculture (primarily as pesticides) and industry. Those intentionally-produced POPs are not relevant where waste incineration is concerned, as in fact high-temperature incineration is one of the prescribed methods for destroying POPs.

The unintentionally-produced POPs addressed by the Convention are:

- dioxins and furans;

- HCB (hexachlorobenzene)
- PCBs (polychlorobiphenyls) and
- PeCB (pentachlorobenzene)

The UK's national implementation plan for the Stockholm Convention, published in 2007, makes explicit that the relevant controls for unintentionally-produced POPs, such as might be produced by waste incineration, are delivered through the requirements of the IED. That would include an examination of BAT, including potential alternative techniques, with a view to preventing or minimising harmful emissions. These have been applied as explained in this document, which explicitly addresses alternative techniques and BAT for the minimisation of emissions of dioxins.

Our legal obligation, under regulation 4(b) of the POPs Regulations, is, when considering an application for an environmental permit, to comply with article 6(3) of the POPs Regulation:

“Member States shall, when considering proposals to construct new facilities or to significantly modify existing facilities using processes that release chemicals listed in Annex III , give priority consideration to alternative processes, techniques or practices that have similar usefulness but which avoid the formation and release of substances listed in Annex III, without prejudice to Directive 2010/75/EU of the European Parliament and of the Council”

The 1998 Protocol to the Convention recommended that unintentionally produced POPs should be controlled by imposing emission limits (e.g. 0.1 ng/m³ for MWIs) and using BAT for incineration. UN Economic Commission for Europe (Executive Body for the Convention) (ECE-EB) produced BAT guidance for the parties to the Convention in 2009. This document considers various control techniques and concludes that primary measures involving management of feed material by reducing halogenated substances are not technically effective. This is not surprising because halogenated wastes still need to be disposed of and because POPs can be generated from relatively low concentrations of halogens. In summary, the successful control techniques for waste incinerators listed in the ECE-EB BAT are:

- maintaining furnace temperature of 850°C and a combustion gas residence time of at least 2 seconds
- rapid cooling of flue gases to avoid the *de novo* reformation temperature range of 250-450°C
- use of bag filters and the injection of activated carbon or coke to adsorb residual POPs components.

Using the methods listed above, the UN-ECE BAT document concludes that incinerators can achieve an emission concentration of 0.1 ng TEQ/m³.

We believe that the Permit ensures that the formation and release of POPs will be prevented or minimised. As we explain above, high-temperature incineration is one of the prescribed methods for destroying POPs. Permit

conditions are based on the use of BAT and Chapter IV of the IED and incorporate all the above requirements of the UN-ECE BAT guidance and deliver the requirements of the Stockholm Convention in relation to unintentionally produced POPs.

The release of **dioxins and furans** to air is required by the IED to be assessed against the International Toxic Equivalence (I-TEQ) limit of 0.1 ng/m³. Further development of the understanding of the harm caused by dioxins has resulted in the World Health Organisation (WHO) producing updated factors to calculate the WHO-TEQ value. Certain **PCBs** have structures which make them behave like dioxins (dioxin-like PCBs), and these also have toxic equivalence factors defined by the WHO to make them capable of being considered together with dioxins. The UK's independent health advisory committee, the Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) has adopted WHO-TEQ values for both dioxins and dioxin-like PCBs in their review of Tolerable Daily Intake (TDI) criteria. The Permit requires that, in addition to the requirements of the IED, the WHO-TEQ values for both dioxins and dioxin-like PCBs should be monitored for reporting purposes, to enable evaluation of exposure to dioxins and dioxin-like PCBs to be made using the revised TDI recommended by the COT. The release of dioxin-like PCBs and PAHs is expected to be low where measures have been taken to control dioxin releases. The Permit also requires monitoring of a range of PAHs and dioxin-like PCBs at the same frequency as dioxins are monitored. We have included a requirement to monitor and report against these WHO-TEQ values for dioxins and dioxin-like PCBs and the range of PAHs as listed in the Permit. We are confident that the measures taken to control the release of dioxins will also control the releases of dioxin-like PCBs and PAHs. Section 5.2.1 of this document details the assessment of emissions to air, which includes dioxins and concludes that there will be no adverse effect on human health from either normal or abnormal operation.

Hexachlorobenzene (HCB) is released into the atmosphere as an accidental product from the combustion of coal, waste incineration and certain metal processes. It has also been used as a fungicide, especially for seed treatment although this use has been banned in the UK since 1975. Natural fires and volcanoes may serve as natural sources. Releases of (HCB) are addressed by the European Environment Agency (EEA), which advises that:

"due to comparatively low levels in emissions from most (combustion) processes special measures for HCB control are usually not proposed. HCB emissions can be controlled generally like other chlorinated organic compounds in emissions, for instance dioxins/furans and PCBs: regulation of time of combustion, combustion temperature, temperature in cleaning devices, sorbents application for waste gases cleaning etc." [reference
http://www.eea.europa.eu/publications/EMEPCORINAIR4/sources_of_HCB.pdf]

Pentachlorobenzene (PeCB) is another of the POPs list to be considered under incineration. PeCB has been used as a fungicide or flame retardant, there is no data available however on production, recent or past, outside the UN-ECE region. PeCBs can be emitted from the same sources as for PCDD/F: waste incineration, thermal metallurgic processes and combustion plants providing energy. As discussed above, the control techniques described in the UN-ECE BAT guidance and included in the permit, are effective in controlling the emissions of all relevant POPs including PeCB.

There are no changes associated with this permit variation that would alter the decisions made previously on the control of POPs. The associated permitted control techniques have not changed a result of this variation and continue to remain appropriate for dioxin and furans control. We are confident that these controls are in line with the UN-ECE BAT guidance and will minimise the release of HCB, PCB and PeCB.

We are therefore satisfied that the substantive requirements of the Convention and the POPs Regulation have been addressed and complied with.

6.5 Other Emissions to the Environment

6.5.1 Emissions to water

There are no changes to the emissions to water, other than the correction of emission point locations on the site layout plan. Only uncontaminated surface water run-off from the waste transfer station and incinerator is permitted to be discharged via emission points W1 and W2. Based upon the information in the application we are satisfied that appropriate measures will be in place to prevent and /or minimise emissions to water.

6.5.2 Emissions to sewer

There are no changes to the emissions to sewer, other than the correction of emission point locations on the site layout plan and the incorporation of the already permitted emissions from the waste transfer station. Based upon the information in the application we are satisfied that appropriate measures will be in place to prevent and /or minimise emissions to sewer.

6.5.3 Fugitive emissions

The IED specifies that plants must be able to demonstrate that the plant is designed in such a way as to prevent the unauthorised and accidental release of polluting substances into soil, surface water and groundwater. In addition, storage requirements for waste and for contaminated water of Article 46(5) must be arranged.

There are no changes to fugitive emissions controls for the ERF plant, they are considered to be sufficient for the increased throughput.

For the existing Waste Transfer Station appropriate control measures will remain in place. Additional waste codes that may lead to fugitive emissions will be managed in the following manner:

- Hazardous liquid wastes will be stored on appropriately constructed bunds (secondary containment) with either 110% of the capacity of the container being stored on it or 25% of all of the containers capacity, whichever is larger. The bunds will be located under cover and so should not experience ingress of rain.

Based upon the information in the application we are satisfied that appropriate measures will be in place to prevent and /or minimise fugitive emissions.

6.5.4 Odour

Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent or where that is not practicable to minimise odour and to prevent pollution from odour as a result of the increased throughput at the ERF.

The control measures for odour at the EFW have not changed from the original decision, which consist of:

- Waste pre-acceptance and waste acceptance procedures
- A first in, first processed approach to the management of the wastes
- Contingency plan to stop wastes entering the site during periods of downtime, or when the site is at capacity

The new wastes to be accepted at the waste transfer station are similar to those already accepted, or will be in sealed bags/containers, which will be unloaded within the WTS building, therefore there should be no increase in risk of odour from the waste transfer station. We are satisfied the existing odour controls on at the WTS are sufficient to minimise and prevent odour.

6.5.5 Noise and vibration

The additional vehicle movements onsite will be the only change in noise and vibration associated with this permit variation. This is expected to be an increase in 1 delivery per hour of waste and 3 collections of IBA per day. Deliveries and collections are only undertaken during daytime hours.

Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent or where that is not practicable to minimise noise and vibration and to prevent pollution from noise and vibration outside the site.

6.6 Setting ELVs and other Permit conditions

6.6.1 Translating BAT into Permit conditions

Article 14(3) of IED states that BAT conclusions shall be the reference for permit conditions. Article 15(3) further requires that under normal operating conditions; emissions do not exceed the emission levels associated with the best available techniques as laid down in the decisions on BAT conclusions.

BAT conclusions for waste incineration or co-incineration were published on 12/11/2019

The use of BAT AELs and IED Chapter IV emission limits for air dispersion modelling sets the worst case scenario. If this shows emissions are insignificant then we have accepted that the Applicant's proposals are BAT, and that there is no justification to reduce ELVs below the BAT AELs and Chapter IV limits.

Below we consider whether, for those emission not screened out as insignificant, different conditions are required as a result of consideration of local or other factors, so that no significant pollution is caused (Article 11(c)) or to comply with environmental quality standards (Article 18).

(i) Local factors

We have considered the proximity of the Facility to the AQMA declared for NO₂ and PM in section 5.2.2 of this document.

(ii) National and European ESs

The previously set limit of 165mg/m³ daily average for NO₂ is sufficient to ensure the protection of the local environment and there are no additional National or European EQSs that indicated that IED limits are insufficient to protect the local environment. Refer to section 5.2 of this document.

(iii) Global Warming

CO₂ is an inevitable product of the combustion of waste. The amount of CO₂ emitted will be essentially determined by the quantity and characteristics of waste being incinerated, which are already subject to conditions in the Permit. It is therefore inappropriate to set an emission limit value for CO₂, which could do no more than recognise what is going to be emitted. The gas is not therefore targeted as a key pollutant under Annex II of IED, which lists the main polluting substances that are to be considered when setting emission limit values (ELVs) in Permits.

We have therefore considered setting equivalent parameters or technical measures for CO₂. However, provided energy is recovered efficiently (see section 4.3.7 above), there are no additional equivalent technical measures

(beyond those relating to the quantity and characteristics of the waste) that can be imposed that do not run counter to the primary purpose of the plant, which is the recovery of energy from waste. Controls in the form of restrictions on the volume and type of waste that can be accepted at the Facility and permit conditions relating to energy efficiency effectively apply equivalent technical measures to limit CO₂ emissions.

6.7 Monitoring

6.7.1 Monitoring during normal operations

No changes have been made as a result of this variation to the existing requirements for monitoring of emissions to air from the ERF, which are in accordance with the Environment Agency's Online Guidance for monitoring of stack emissions to air. The Operator is required to continually monitor emissions to air for the parameters listed in the permit and to the monitoring standards detailed.

No monitoring of emissions from the mobile shredder is required, which is in line with the Non-Road Mobile Machinery Regulations 2018.

6.7.2 Monitoring under abnormal operations arising from the failure of the installed CEMs

No changes have been made as a result of this variation to the existing requirements for monitoring of emissions to air from the ERF during abnormal operations.

6.7.3 Continuous emissions monitoring for dioxins and heavy metals

No changes have been made as a result of this variation to the existing requirements for monitoring of dioxins and heavy metals from the ERF

6.8 Reporting

No changes have been made as a result of this variation to the existing requirements for reporting of emissions to air from the ERF.

7 Other legal requirements

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

7.1 The EPR 2016 and related Directives

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

7.1.1 Schedules 1 and 7 to the EPR 2016 – IED Directive

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

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

- Article 5 of EIA Directive relates to the obligation on developers to supply the information set out in Annex IV of the Directive when making an application for development consent.
- Article 6(1) requires Member States to ensure that the authorities likely to be concerned by a development by reason of their specific environmental responsibilities are consulted on the Environmental Statement and the request for development consent.
- Article 6(2)-6(6) makes provision for public consultation on applications for development consent.
- Article 7 relates to projects with transboundary effects and consequential obligations to consult with affected Member States.

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

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

- The decision of Sutton London Borough Council to grant planning permission.
- The report and decision notice of the local planning authority accompanying the grant of planning permission.

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

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

7.1.2 Schedule 9 to the EPR 2016 – Waste Framework Directive

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

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

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

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

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

Article 23(1) requires the permit to specify:

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

These are all covered by permit conditions.

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

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

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

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

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

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

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

7.1.4 Directive 2003/35/EC – The Public Participation Directive

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

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

Our decision in this case has been reached following a programme of extended public consultation, both on the original application and later, separately, on the draft permit and a draft decision document. The way in which this has been done is set out in Section 2. A summary of the responses received to our consultations and our consideration of them is set out in Annex 3.

7.2 National primary legislation

7.2.1 **Environment Act 1995**

(i) Section 4 (Pursuit of Sustainable Development)

We are required to contribute towards achieving sustainable development, as considered appropriate by Ministers and set out in guidance issued to us. The

Secretary of State for Environment, Food and Rural Affairs has issued *The Environment Agency's Objectives and Contribution to Sustainable Development: Statutory Guidance (December 2002)*. This document:

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

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

For waste the guidance refers to ensuring waste is recovered or disposed of in ways which protect the environment and human health. The Environment Agency considers that it has pursued the objectives set out in the Government's guidance, where relevant, and that there are no additional conditions that should be included in this Permit to take account of the Section 4 duty.

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

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

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

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

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

(iv) Section 6(6) (Fisheries)

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

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

(v) Section 7 (General Environmental Duties)

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

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

(vi) Section 39 (Costs and Benefits)

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

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

(viii) Section 81 (National Air Quality Strategy)

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

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

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

7.2.2 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.

7.2.3 Legislative and Regulatory Reform Act 2006

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

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

7.2.4 Human Rights Act 1998

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

7.2.5 Countryside and Rights of Way Act 2000 (CROW 2000)

Section 85 of this Act imposes a duty on Environment Agency to have regard to the purpose of conserving and enhancing the natural beauty of the area of

outstanding natural beauty (AONB). There is no AONB which could be affected by the Facility.

7.2.6 Wildlife and Countryside Act 1981

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

We assessed the Application and concluded that the Facility will not damage the special features of any SSSI.

There are no SSSIs within 2km of this facility which is the relevant screening distance for SSS sites.

7.2.7 Natural Environment and Rural Communities Act 2006

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

Section 40(2A) states that in complying with the duty in section 40(1) and (1A) we must have particular regard to any relevant local nature recovery strategy and species protection strategy or protected sites strategy

We have, also, considered the general biodiversity objective when carrying out our permit application determination and, consider that no different or additional conditions are required in the permit.

7.2.8 Countryside Act 1968

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

7.2.9 National Parks and Access to the Countryside Act 1949

Section 11A and section 5(1) imposes a duty on the Environment Agency when exercising its functions in relation to land in a National Park, to have regard to the purposes of conserving and enhancing the natural beauty,

wildlife and cultural heritage of the areas, and of promoting opportunities for the understanding and enjoyment of National Parks by the public.

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

7.2.10 Environment Act 2021

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

7.3 National secondary legislation

7.3.1 Conservation of Habitats and Species Regulations 2017

We have assessed the Application in accordance with guidance agreed jointly with Natural England and concluded that there will be no likely significant effect on any European Site.

The habitat assessment is summarised in greater detail in section 5.4 of this document. A copy of the full Appendix 11 Assessment can be found on the public register.

7.3.2 Water Environment (Water Framework Directive) Regulations 2017 2003

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

As there are no changes to the emissions to water as a result of the variation, we are satisfied that granting this application with the conditions proposed would not cause the current status of the water body to deteriorate.

7.3.3 The Persistent Organic Pollutants Regulations 2007

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

7.4 Other relevant legal requirements

7.4.1 Duty to Involve

S23 of the Local Democracy, Economic Development and Construction Act 2009 require us where we consider it appropriate to take such steps as we consider appropriate to secure the involvement of interested persons in the exercise of our functions by providing them with information, consulting them or involving them in any other way. S24 requires us to have regard to any Secretary of State guidance as to how we should do that.

The way in which the Environment Agency has consulted with the public and other interested parties is set out in section 2 of this document. The way in which we have taken account of the representations we have received is set out in Annex 3. Our public consultation duties are also set out in the EP Regulations, and our statutory Public Participation Statement, which implement the requirements of the Public Participation Directive. In addition to meeting our consultation responsibilities, we have also taken account of our guidance in Environment Agency Guidance Note RGN6.

ANNEX 1A: APPLICATION OF CHAPTER IV OF THE INDUSTRIAL EMISSIONS DIRECTIVE

IED Article	Requirement	Delivered by
45(1)(a)	The permit shall include a list of all types of waste which may be treated using at least the types of waste set out in the European Waste List established by Decision 2000/532/EC, if possible, and containing information on the quantity of each type of waste, where appropriate.	Condition 2.3.4(a) and Tables S2.2, S2.3 & S2.4 in Schedule 2 of the Permit.
45(1)(b)	The permit shall include the total waste incinerating or co-incinerating capacity of the plant.	Condition 2.3.4(a) and Table S2.2 in Schedule 2 of the Permit.
45(1)(c)	The permit shall include the limit values for emissions into air and water.	Conditions 3.1.1 and 3.1.2 and Tables S3.1, S3.1(a), S3.2, S3.3 in Schedule 3 of the Permit.
45(1)(d)	The permit shall include the requirements for pH, temperature and flow of waste water discharges.	The permit does not allow the discharge of any process waste water
45(1)(e)	The permit shall include the sampling and measurement procedures and frequencies to be used to comply with the conditions set for emissions monitoring.	Conditions 3.6.1 to 3.6.4 and Tables S3.1, S3.1(a), S3.2 in Schedule 3 of the Permit.
45(1)(f)	The permit shall include the maximum permissible period of unavoidable stoppages, disturbances or failures of the purification devices or the measurement devices, during which the emissions into the air and the discharges of waste water may exceed the prescribed emission limit values.	Conditions 2.3.11, 2.3.12 and 2.3.13.
46(1)	Waste gases shall be discharged in a controlled way by means of a stack the height of which is calculated in such a way as to safeguard human health and the environment.	Condition 2.3.1(a) and Table S1.2 of Schedule 1 of the Permit.
46(2)	Emission into air shall not exceed the emission limit values set out in part 3 of Annex VI.	Conditions 3.1.1 and 3.1.2 and Tables S3.1, S3.1a.

IED Article	Requirement	Delivered by
46(3)	Relates to conditions for water discharges from the cleaning of exhaust gases.	There are no such discharges as condition 3.1.1 prohibits this.
46(4)	Relates to conditions for water discharges from the cleaning of exhaust gases.	There are no such discharges as condition 3.1.1 prohibits this.
46(5)	Prevention of unauthorised and accidental release of any polluting substances into soil, surface water or groundwater. Adequate storage capacity for contaminated rainwater run-off from the site or for contaminated water from spillage or fire-fighting.	The application explains the measures to be in place for achieving the directive requirements. The permit requires that these measures are used. Various permit conditions address this and when taken as a whole they ensure compliance with this requirement.
46(6)	Limits the maximum period of operation when an ELV is exceeded to 4 hours uninterrupted duration in any one instance, and with a maximum cumulative limit of 60 hours per year. Limits on dust (150 mg/m ³), CO and TOC not to be exceeded during this period.	Conditions 2.3.11, 2.3.12 and 2.3.13.
47	In the event of breakdown, reduce or close down operations as soon as practicable. Limits on dust (150 mg/m ³), CO and TOC not to be exceeded during this period.	Condition 2.3.11
48(1)	Monitoring of emissions is carried out in accordance with Parts 6 and 7 of Annex VI.	Conditions 3.6.1 to 3.6.4, 3.2.1, 3.2.2, tables S3.1, S3.1(a). Reference conditions are defined in Schedule 6 of the Permit.
48(2)	Installation and functioning of the automated measurement systems shall be subject to control and to annual surveillance tests as set out in point 1 of Part 6 of Annex VI.	Conditions 3.6.1, 3.6.3, table S3.1, S3.1(a), and S3.4

IED Article	Requirement	Delivered by
48(3)	The competent authority shall determine the location of sampling or measurement points to be used for monitoring of emissions.	Condition 3.6.1.
48(4)	All monitoring results shall be recorded, processed and presented in such a way as to enable the competent authority to verify compliance with the operating conditions and emission limit values which are included in the permit.	Conditions 4.1.1 and 4.1.2, and Tables S4.1 and S4.4
49	The emission limit values for air and water shall be regarded as being complied with if the conditions described in Part 8 of Annex VI are fulfilled.	Conditions 3.1.1, 3.1.2, 3.2.1, 3.2.2 and tables S3.1, S3.1(a), S3.2 & S3.3
50(1)	Slag and bottom ash to have Total Organic Carbon (TOC) < 3% or loss on ignition (LOI) < 5%.	Conditions 3.6.1 and Table S3.5
50(2)	Flue gas to be raised to a temperature of 850°C for two seconds, as measured at representative point of the combustion chamber.	Condition 2.3.9 and Table S3.4
50(3)	At least one auxiliary burner which must not be fed with fuels which can cause higher emissions than those resulting from the burning of gas oil liquefied gas or natural gas.	Condition 2.3.14
50(4)(a)	Automatic shut-down to prevent waste feed if at start up until the specified temperature has been reached.	Condition 2.3.9
50(4)(b)	Automatic shut-down to prevent waste feed if the combustion temperature is not maintained.	Condition 2.3.9
50(4)(c)	Automatic shut-down to prevent waste feed if the CEMs show that ELVs are exceeded due to disturbances or failure of waste cleaning devices.	Condition 2.3.9
50(5)	Any heat generated from the process shall be recovered as far as practicable.	(a) The plant will generate electricity (b) Operator to review the available heat recovery options every 4 years (Conditions 1.2. 1 to 1.2.3)

IED Article	Requirement	Delivered by
50(6)	Relates to the feeding of infectious clinical waste into the furnace.	No infectious clinical waste will be burnt
50(7)	Management of the Facility to be in the hands of a natural person who is competent to manage it.	Conditions 1.1.1 to 1.1.3, 1.1.5 and 2.3.1 of the Permit.
51(1)	Different conditions than those laid down in Article 50(1), (2) and (3) and as regards the temperature Article 50(4) may be authorised, provided the other requirements of this chapter are met.	No such conditions Have been allowed
51(2)	Changes in operating conditions do not cause more residues or residues with a higher content of organic polluting substances compared to those residues which could be expected under the conditions laid down in Articles 50(1), (2) and (3).	No such conditions Have been allowed
51(3)	Changes in operating conditions shall include emission limit values for CO and TOC set out in Part 3 of Annex VI.	No such conditions Have been allowed
52(1)	Take all necessary precautions concerning delivery and reception of Wastes, to prevent or minimise pollution.	Conditions 2.3.1, 2.3.4, 3.3, 3.4, 3.5 and 3.7
52(2)	Determine the mass of each category of wastes, if possible according to the EWC, prior to accepting the waste.	Condition 2.3.4(a) and Table S2.2 in Schedule 3 of the Permit.
53(1)	Residues to be minimised in their amount and harmfulness, and recycled where appropriate.	Conditions 1.4.1, 1.4.2 and 3.6.1 with Table S3.5
53(2)	Prevent dispersal of dry residues and dust during transport and storage.	conditions 1.4.1 2.3.1, 2.3.2 and 3.3.1.
53(3)	Test residues for their physical and chemical characteristics and polluting potential including heavy metal content (soluble fraction).	Condition 3.6.1 and Table S3.5
55(1)	Application, decision and permit to be publicly available.	All documents are accessible from the Environment Agency Public Register.
55(2)	An annual report on plant operation and monitoring for all plants burning more than 2 tonne/hour waste.	Condition 4.2.2 and 4.2.3.

ANNEX 1B: COMPLIANCE WITH BAT CONCLUSIONS

Taking into account BAT standards which have changed as a result of the variation.

BAT conclusion	Criteria	Delivered by
2	Determine gross electrical efficiency	Section 4.3.7 of this decision document. Permit table S3.4
20	Measures to increase energy efficiency and BAT AEEL	Measures described in the Application. Permit condition 2.3.1, table S1.2 Section 4.3.7 of this decision document.

ANNEX 2: Improvement Conditions

Existing improvement conditions are detailed in table S1.3 of the permit. No additional improvement conditions were added as a result of this variation. IC2 and IC6 have now been completed.

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.	Complete
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 A1& A2, identifying the fractions within the PM ₁₀ and PM _{2.5} 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.	Complete
IC3	The Operator shall submit a written report to the Environment Agency on the commissioning of the Facility. 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	Complete

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	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.	
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.	Complete
IC5	The Operator shall submit a written report to the Environment Agency describing the performance and optimisation of the Selective Non Catalytic Reduction (SNCR) system and combustion settings to minimise oxides of nitrogen (NO _x) emissions within the emission limit values described in this permit with the minimisation of nitrous oxide (N ₂ O) and ammonia (NH ₃) emissions. The report shall include an assessment of the level of NO _x , N ₂ O and NH ₃ emissions that can be achieved under optimum operating conditions. The report shall also provide details of the optimisation (including dosing rates) for the control of acid gases and dioxins.	Complete
IC6	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.	Complete
IC7	The Operator shall carry out monitoring of NO ₂ and NO to determine the primary proportion of NO ₂ in the emissions to air and to monitor the performance of SNCR on the flue gas. Emissions monitoring data shall be collected over a representative period of operation to be agreed in writing with the Environment Agency. A written report on the monitoring shall be made to the Environment Agency.	Complete
IC8	The Operator shall carry out an assessment of the impact of emissions to air of the following component metals subject to emission limit values, Manganese (Mn), Lead (Pb) and Nickel (Ni). A report on the	Complete

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<p>assessment shall be made to the Environment Agency.</p> <p>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.</p>	
IC9	<p>The Operator shall provide notification to the Environment Agency of reprogramming of the CEMs to the 10-minute average ELV for CO. Following acknowledgement receipt from the Environment Agency, the ELV and reference period for CO emission point reference locations A1 and A2 shall be as per Note (2) in Tables S3.1 and S3.1(a).</p> <p>The notification requirements of condition 2.4.2 shall be deemed to have been complied with on submission of the information above.</p>	Complete
IC10	<p>The operator shall perform a study to determine the extent to which the operation of the current systems in place at the plant to minimise NOx emissions can be further optimised such that emissions are reduced as far as possible below, 165 mg/Nm³ as a daily average, without significantly increasing emissions of other pollutants or having a significant negative effect on plant operation, reliability or bottom ash quality. The study shall be based on the results of trials carried out at the Facility and shall have regard to the recommendations for test conditions set out in Section 5.4.3 of report titled 'Establishing factors that influence NOx reduction at waste incineration plant to levels below the upper end of the BAT-AELs' (dated 14/01/2022), or other methodology agreed in writing with the Environment Agency. A written report of the study shall be submitted to the Environment Agency which shall include but not necessarily be limited to the following:</p> <ul style="list-style-type: none"> • A brief description of the currently installed measures at the Facility to minimise NOx emissions, including details of how the reagent dosing system responds to emissions monitoring data and historic data 	Complete

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	<p>which illustrates the current achievable level of daily NOx emissions.</p> <ul style="list-style-type: none"> • The results of trials conducted to further reduce daily average NOx emissions using currently installed measures, including: <ul style="list-style-type: none"> ○ a description of the parameters that were varied during the trial e.g. ammonia or urea feed rates, physical form of urea injected, air flows, and the range over which they were varied ○ the levels of NOx achieved and associated levels of ammonia and nitrous oxide emissions and reagent consumption ○ observed effects and predicted long-term impacts on plant operation, reliability and maintenance regime ○ any changes to the composition of the bottom ash and boiler ash and the implications of those changes for the ability to process and use the ash, as well as for the pollution potential of the ash both during processing and its subsequent use as a secondary aggregate ○ any other relevant cross-media effects <p>The report shall also include a description of the extent to which current systems in place at the plant to minimise NOx emissions can be optimised on a permanent basis, including justification and an implementation plan where relevant.</p>	
IC11	The operator shall submit a report to the Environment Agency on whether waste feed to the plant can be proven to have a low and stable mercury content. The report shall have regard to BAT 4 of the BAT conclusions, be based on historic mercury emissions monitoring data and have regard to the Environment Agency Mercury Monitoring	Complete

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
	Protocol.	
IC12	The operator shall submit a report to the Environment Agency on whether dioxin emissions to air are stable. The report shall have regard to BAT 4 of the BAT conclusions, be based on historic dioxin emissions monitoring data and have regard to the Environment Agency Dioxins Monitoring Protocol.	Complete

ANNEX 3: Consultation Responses

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 all consultation responses have been placed on the Environment Agency public register.

The Application was advertised on the Environment Agency website from 10 October 2022 to 23 December 2022 and in the London Gazette on 10 November 2022, the Croydon Advertiser on 11 November and the Sutton & Croydon Guardian on 10 November 2022.

The following statutory and non-statutory bodies were consulted:

- Local Authority – Sutton, Merton and Kingston Councils Departments of Environmental Health
- Local Authority – South London Waste Partnership (formed of Sutton, Croydon, Kingston and Merton Local Authorities)
- Director of Public Health & UKHSA (formerly PHE)
- Health and Safety Executive

Responses were received from these additional bodies:

- Greater London Authority – Mayor of London

1) Consultation Responses from Statutory and Non-Statutory Bodies

Response Received from The South London Waste Partnership	
Brief summary of issues raised:	Summary of action taken / how this has been covered
Due to the decrease in residual waste being sent to the incinerator from the four Boroughs there is already sufficient capacity at the incinerator to take additional waste from areas outside of the Boroughs of Merton, Kingston, Sutton and Croydon	<p>The capacity is primarily a matter for the Applicant. Our remit is to ensure the site operates in line with BAT and is not causing an environmental impact when incinerating waste, whether at full capacity or not.</p> <p>The proposed facility forms part of an integrated waste management strategy; any material arriving at the facility will be residual waste arising following upstream waste segregation, recovery and recycling initiatives. The shape and content of this strategy is a matter for the local authority. The incinerator is one element in that strategy, and the Permit will ensure that it can be operated without giving rise to significant pollution or harm to human health or the environment.</p>
On a regional level additional incineration capacity is not required	<p>The Environment Agency (EA) determines permit applications for energy from waste (EfW) plants under the Environmental Permitting Regulations (EPRs). The EA's assessment includes ensuring that the plant will use best available techniques to minimise emissions, and that it will not give rise to any significant pollution of the environment or harm to human health. The same approach applies to applications to vary existing EfW plant permits. Under the EPRs, the EA is not responsible for other matters such as deciding whether an EfW plant is the right solution for managing residual waste in that area, or whether it is too big for local needs, and it has no powers to refuse a new permit or variation application on these grounds. This also means that it is unable to take into account any comments from consultees on these subjects. In summary, for a given plant design and size, the EA will assess the application against the criteria required by the EPRs, and if the operator later wishes to vary their permit to increase the annual throughput, the EA has no justification to refuse the variation if the environmental impact remains acceptable and other relevant requirements are met.</p>
How the site will manage the additional throughput (excluding the	The small number of additional vehicles arriving onsite will be able to be accepted under existing arrangements, such as scheduled arrival times.

<p>actual incineration stage), especially the operation of the bunker</p>	<p>The tipping hall is designed to temporarily store higher quantities of waste than can be processed during normal operations, however the increase in throughput is unlikely to require additional waste storage in the tipping hall. The limiting factor is the ability to deposit the waste within the tipping hall. There are currently seven tipping bays, four of which are operational at any one time under normal operating conditions. We are satisfied that there is sufficient space for the additional 1 vehicle per hour to be able to deposit their waste within the tipping hall.</p> <p>There will be no increase in the bunker capacity, which remains at 4,194 tonnes. Under normal operating conditions this is usually filled with up to 2,500 tonnes of waste, meaning that there is a large amount of buffer capacity available. The crane itself is able to transfer higher tonnages per hour into the combustion chamber than the Operator has applied to process.</p> <p>Wastes generated by the combustion process (incinerator bottom ash and air pollution control residue) will increase with the increase in throughput. This will be managed through three additional collections per day.</p> <p>The Operator has undertaken testing of its air emissions abatement equipment at differing flue gas flowrates and for different waste compositions. This testing has shown that the emissions abatement system is capable of handling all operating scenarios across the firing diagram, and is therefore sufficiently sized for the proposed increase in waste throughput.</p>
<p>How the site will manage the waste arriving onsite if it is at full capacity, including the impacts offsite, such as waste lorries queueing</p>	<p>The waste pre-acceptance and acceptance procedures detail the actions that will be taken if the site is unable to accept waste or has limited capacity. This includes reducing the number of waste vehicles arriving onsite or suspending waste deliveries to the site. Vehicles arriving onsite when waste is unable to be accepted will be turned away. Vehicles arriving onsite are managed through scheduled arrival times.</p>
<p>Additional traffic causing offsite impacts of; congestion, air pollution and affecting residents health</p>	<p>These impacts may be assessed by the Local Authority as part of the planning application. We are only concerned with impacts arising from within the facility.</p>
<p>An increase in the throughput could increase the frequency of the</p>	<p>The operator has taken additional actions to minimise the potential for exceedance. See section 4.3.10</p>

exceedances of the limits for emissions to air from the facility	
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Response Received from Greater London Authority – Mayor of London	
Brief summary of issues raised:	Summary of action taken / how this has been covered
In conflict with London Plan – policy SI 1A	The London Plan details the strategic aims and plans for London. It is primarily focused on planning authorities, although it does mention that other legislation may apply to developments, such as the Environmental Permitting Regulations, of which the Environment Agency is the statutory regulatory authority. The London Plan is not a relevant document requiring consideration when determining this permit application, as it is not made or produced under a piece of legislation applicable to the determination of this permit by the Environment Agency. The relevant legislation is detailed in section 7 of this document.
The emissions to air risk assessment does not take into account the guideline limits in the London Environment Strategy	The Environment Agency guidance for assessing emissions to air requires that Operators assess their emissions in line with the statutory limits detailed in the Air Quality Standards Regulations 2010 Limit Values and Target Values, the UK Air Quality Strategy Objectives and the Environmental Assessment Levels. These do not include the guideline limits in the London Environment Strategy, which are not relevant to the Environment Agency's determination of this permit application.
The emissions to air risk assessment does not take into account the emerging national limits for PM2.5	Section 5.2.2 of this document details what assessments have been undertaken for emissions to air of PM _{2.5}
The increase in emissions does not align with the National Air Quality Strategy	The impacts from emissions to air from the facility are assessed against the UK Air Quality Strategy Objectives. The findings from the risk assessment are detailed in Section 5 of this decision document and confirm that the emissions to air from the facility meet the relevant UK Air Quality Strategy Objectives.
Request that additional evidence is provided to support the decision with regards emissions modelling of	Assessment of emissions to air including Chromium VI and Arsenic are detailed in Section 5 of this document. The Environment Agency is satisfied that these emissions are either insignificant or not likely to be significant.

Chromium VI and Arsenic	
Request that further assessment be undertaken with regards the acid deposition of 8.8% of the critical load at Mitcham Common	Assessment of emissions to air including acid deposition are detailed in Section 5.4 of this document. The Environment Agency is satisfied that acid deposition at Mitcham Common from the Facility is well below the critical load and that the Facility will not cause significant pollution at that site.
An inconsistency in approach to estimating the background concentrations of ammonia (3 year average) compared to PCBs (4 year average) was noted	These data sets come from different sources therefore different averaging periods are expected. We have analysed the relevant sources of background data and are satisfied that any observed differences in values attained will not affect the conclusions.
Data from 2013 – 2016 was used for the annual mean concentrations of PCDD (dioxins) and furans. More recent data should be used	The Applicant has presented the available data from the most representative Defra monitoring site, which ceased monitoring in 2017. We consider this to be appropriate, especially as the Applicant has used an average over four years. It is worth noting that their Human Health Risk Assessment Process Contributions were well within the insignificance thresholds and that these backgrounds were not necessary to be used in their assessment.
Worst case scenarios for emissions to air should be taken into account in the emissions to air risk assessment	The worst case scenarios for emissions to air are taken into account in a separate document entitled “Beddington ERF Permit Variation, Abnormal Emissions Assessment”, dated 16/12/2021, which was supplied with the permit application. The results from this assessment are detailed in Section 5 of this decision document and the Environment Agency is satisfied that the conclusions that have been drawn are acceptable.
The increase in CO2 emissions does not align with the UK aim of net zero by 2050, London to be net zero by 2030, the Governments aim to reduce carbon emissions by 78% by 2035 and the grid being net zero by 2035	Section 6.3 details the findings of the greenhouse gas assessment and the emission of greenhouse gases from this facility. The Environment Agency is satisfied that there will be a reduction in the net global warming potential from this facility compared to its current permitted limits. The Government’s current Waste Strategy (‘Our Waste, Our Resources: a Strategy for England’, December 2018 and Waste Management Plan for England 2021) do not exclude waste incineration with energy recovery as an acceptable waste management option. Incineration currently plays a significant role in waste management in the UK and the Government expects this to continue. Defra’s current view is that waste incineration is the best management option for waste that cannot

	be prevented, reused or recycled and that it plays an important role in diverting waste from landfill, reducing its environmental impact.
Additional incineration capacity is not required in this area	The Environment Agency (EA) determines permit applications for energy from waste (EfW) plants under the Environmental Permitting Regulations (EPRs). The EA's assessment includes ensuring that the plant will use best available techniques to minimise emissions, and that it will not give rise to any significant pollution of the environment or harm to human health. The same approach applies to applications to vary existing EfW plant permits. Under the EPRs, the EA is not responsible for other matters such as deciding whether an EfW plant is the right solution for managing residual waste in that area, or whether it is too big for local needs, and it has no powers to refuse a new permit or variation application on these grounds. This also means that it is unable to take into account any comments from consultees on these subjects. In summary, for a given plant design and size, the EA will assess the application against the criteria required by the EPRs, and if the operator later wishes to vary their permit to increase the annual throughput, the EA has no justification to refuse the variation if the environmental impact remains acceptable and other relevant requirements are met.
The application does not take into account the previous exceedances of the limits of emissions to air from the facility in this application, which could impact upon human health	The impact of abnormal operations is assessed in section 5.5 of this document. The emission concentrations used in that assessment are above the concentrations monitored during previous exceedances. The Environment Agency is 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 and that emissions do not pose a risk to human health.
Lack of progress supplying heat to Sutton District Energy Network, which is already being supplied heat by the landfill gas engines serving the closed landfill at Beddington	The Applicant previously assessed the possibility of supplying heat to the local area under application EPR/GP3305LN/A001. The conclusion was that opportunities are not currently viable. Section 4.3.7 of this decision document has further details on energy efficiency. Conditions 1.2.2 and 1.2.3 of the permit outlines the requirement to undertake a review of this every 4 years or if specific criteria change. The viability of the connection of the facility to local heating networks can be investigated during compliance work.
Lack of progress in developing Beddington Farmland Local Wildlife Site in line with the planning	This is relating to planning permission only and not relevant to the permit determination, it is a matter for the local planning authority. There are no requirements within the existing permit that Beddington Farmland Local Wildlife Site is restored and the Environment Agency does not have the

permission that was granted	power to legally impose such requirements..
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Response Received from London Borough of Merton	
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Brief summary of issues raised:	Summary of action taken / how this has been covered
Increase in vehicle movements to/from the site, leading to increased levels of air pollution	Our remit covers emissions from onsite traffic and whether the emissions could have a significant impact. In this case the Environment Agency is satisfied appropriate controls are in place, see sections 6.5.4 and 6.5.5 of this document.
Not in line with the ULEZ that is planned to be extended to cover this area in late 2023	Compliance with the ULEZ which relates to vehicle emissions is a matter for the operator and not something that the Environment Agency can control or enforce though the environmental permit.
The tonnage of waste has significantly increased from the original planning permission/permitted limits	The increase has been assessed during determination and the conclusions are outlined in sections 5 and 6 of this document.
On a regional level additional incineration capacity is not required	The Environment Agency (EA) determines permit applications for energy from waste (EfW) plants under the Environmental Permitting Regulations (EPRs). The EA's assessment includes ensuring that the plant will use best available techniques to minimise emissions, and that it will not give rise to any significant pollution of the environment or harm to human health. The same approach applies to applications to vary existing EfW plant permits. Under the EPRs, the EA is not responsible for other matters such as deciding whether an EfW plant is the right solution for managing residual waste in that area, or whether it is too big for local needs, and it has no powers to refuse a new permit or variation application on these grounds. This also means that it is unable to take into account any comments from consultees on these subjects. In summary, for a given plant design and size, the EA will assess the application against the criteria required by the EPRs, and if the operator later wishes to vary their permit to increase the annual throughput, the EA has no justification to refuse the variation if the environmental impact remains acceptable and other relevant requirements are met.
How the site will manage the additional throughput (excluding the actual incineration stage), especially	The small number of additional vehicles arriving onsite will be able to be accepted under existing arrangements, such as scheduled arrival times. The tipping hall is designed to temporarily store higher quantities of waste than can be processed

the operation of the bunker	<p>during normal operations, however the increase in throughput is unlikely to require additional waste storage in the tipping hall. The limiting factor is the ability to deposit the waste within the tipping hall. There are currently seven tipping bays, four of which are operational at any one time under normal operating conditions. We are satisfied that there is sufficient space for the additional 1 vehicle per hour to be able to deposit their waste within the tipping hall.</p> <p>There will be no increase in the bunker capacity, which remains at 4,194 tonnes. Under normal operating conditions this is usually filled with up to 2,500 tonnes of waste, meaning that there is a large amount of buffer capacity available. The crane itself is able to transfer higher tonnages per hour into the combustion chamber than the Operator has applied to process.</p> <p>Wastes generated by the combustion process (incinerator bottom ash and air pollution control residue) will increase with the increase in throughput. This will be managed through three additional collections per day.</p> <p>The Operator has undertaken testing of its air emissions abatement equipment at differing flue gas flowrates and for different waste compositions. This testing has shown that the emissions abatement system is capable of handling all operating scenarios across the firing diagram, and is therefore sufficiently sized for the proposed increase in waste throughput.</p>
How the site will manage the waste arriving onsite if it is at full capacity, including the impacts offsite, such as waste lorries queueing	The waste pre-acceptance and acceptance procedures detail the actions that will be taken if the site is unable to accept waste or has limited capacity. This includes reducing the number of waste vehicles arriving onsite or suspending waste deliveries to the site. Vehicles arriving onsite when waste is unable to be accepted will be turned away. Vehicles arriving onsite are managed through scheduled arrival times.
An increase in the throughput could increase the frequency of the exceedances of the limits for emissions to air from the facility	As a result of the increased throughput the operator has outlined additional measures to manage the risk of exceedances to the satisfaction of the Environment Agency, see section 4.3.10.

Response Received from Air Quality Team – London Borough of Merton	
Brief summary of issues raised:	Summary of action taken / how this has been covered
Emissions from traffic have not been	Our remit covers emissions from onsite traffic and whether the emissions could have a significant

considered in the emissions to air risk assessment and if possible should be	impact. In this case the Environment Agency is satisfied appropriate controls are in place, see sections 6.5.4 and 6.5.5 of this document.
An increase in the throughput could increase the frequency of the exceedances of the limits for emissions to air from the facility. Technologies or permit controls should be looked at to reduce this likelihood	As a result of the increased throughput the operator has outlined additional measures to manage the risk of exceedances to the satisfaction of the Environment Agency, see section 4.3.10.

Response Received from London Borough of Sutton	
Brief summary of issues raised:	Summary of action taken / how this has been covered
The limited scope of issues that will be considered in the consultation	The scope of issues that can be considered during permit determination are based upon the changes outlined in the permit variation and what we are statutorily required to assess to ensure that the impacts upon human health and the environment from the activities are minimised.
On a regional level additional incineration capacity is not required	The Environment Agency (EA) determines permit applications for energy from waste (EfW) plants under the Environmental Permitting Regulations (EPRs). The EA's assessment includes ensuring that the plant will use best available techniques to minimise emissions, and that it will not give rise to any significant pollution of the environment or harm to human health. The same approach applies to applications to vary existing EfW plant permits. Under the EPRs, the EA is not responsible for other matters such as deciding whether an EfW plant is the right solution for managing residual waste in that area, or whether it is too big for local needs, and it has no powers to refuse a new permit or variation application on these grounds. This also means that it is unable to take into account any comments from consultees on these subjects. In summary, for a given plant design and size, the EA will assess the application against the criteria required by the EPRs, and if the operator later wishes to vary their permit to increase the annual throughput, the EA has no justification to refuse the variation if the environmental impact remains acceptable and other relevant requirements are met.
An increase in the throughput could increase the frequency of the	As a result of the increased throughput the operator has outlined additional measures to manage the risk of exceedances to the satisfaction of the Environment Agency, see section 4.3.10 of this

exceedances of the limits for emissions to air from the facility	document.
How the site will manage the additional throughput (excluding the actual incineration stage), especially the operation of the bunker	<p>The small number of additional vehicles arriving onsite will be able to be accepted under existing arrangements, such as scheduled arrival times.</p> <p>The tipping hall is designed to temporarily store higher quantities of waste than can be processed during normal operations, however the increase in throughput is unlikely to require additional waste storage in the tipping hall. The limiting factor is the ability to deposit the waste within the tipping hall. There are currently seven tipping bays, four of which are operational at any one time under normal operating conditions. We are satisfied that there is sufficient space for the additional 1 vehicle per hour to be able to deposit their waste within the tipping hall.</p> <p>There will be no increase in the bunker capacity, which remains at 4,194 tonnes. Under normal operating conditions this is usually filled with up to 2,500 tonnes of waste, meaning that there is a large amount of buffer capacity available. The crane itself is able to transfer higher tonnages per hour into the combustion chamber than the Operator has applied to process.</p> <p>Wastes generated by the combustion process (incinerator bottom ash and air pollution control residue) will increase with the increase in throughput. This will be managed through three additional collections per day.</p> <p>The Operator has undertaken testing of its air emissions abatement equipment at differing flue gas flowrates and for different waste compositions. This testing has shown that the emissions abatement system is capable of handling all operating scenarios across the firing diagram, and is therefore sufficiently sized for the proposed increase in waste throughput.</p>
Technology should be used to detect cylinders, which have been identified as a cause of some of the emissions breaches	As a result of the increased throughput the operator has outlined additional measures to manage the risk of exceedances to the satisfaction of the Environment Agency, see section 4.3.10 of this document.
There is a need to consider odour and noise from vehicle movements offsite, as well as onsite	Our remit covers emissions from onsite traffic and whether the emissions could have a significant impact. In this case the Environment Agency is satisfied appropriate controls are in place, see sections 6.5.4 and 6.5.5 of this document.

Response Received from UKHSA (formerly PHE)	
Brief summary of issues raised:	Summary of action taken / how this has been covered
No concerns raised	No concerns raised assuming the permit holder shall take all appropriate measures to prevent or control pollution, in accordance with the relevant sector guidance, appropriate measures and BAT.

No response was received from the Health & Safety Executive

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

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

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

a) Representations from Local MP and Councillors

Response Received from Elliot Colburn MP	
Brief summary of issues raised:	Summary of action taken / how this has been covered
That the increase in emissions is in contravention of the UK Government aim to decarbonise the UK, specifically the Climate Change Act (2008) and the BEIS Net Zero Strategy (2021).	Section 6.3 of this document details emissions of greenhouse gases and global warming and Section 7 details the relevant legislation. The Environment Agency is satisfied that there will be a reduction in the net global warming potential from this facility compared to its current permitted limits.
Energy from waste does not feature in the British Energy Security Strategy (2022).	The Government's current Waste Strategy ('Our Waste, Our Resources: a Strategy for England', December 2018 and Waste Management Plan for England 2021) do not exclude waste incineration with energy recovery as an acceptable waste management option. Incineration currently plays a significant role in waste management in the UK and the Government expects this to continue. Defra's current view is that waste incineration is the best management option for waste that cannot be prevented, reused or recycled and that it plays an important role in diverting waste from landfill, reducing its environmental impact. The legislation relevant to this variation application is detailed in Section 7 of this document.

<p>The additional electricity generated by increasing the throughput would not outweigh the impacts on the local community (sensitive receptors).</p>	<p>The impact upon sensitive receptors has been assessed in this permit determination and is detailed in full throughout the decision document We have concluded that the proposals will not result in a significant impact.</p>
<p>Increasing the capacity will lead to an over-reliance on incineration and will encourage further plastic waste to be incinerated, instead of being reduced or recycled.</p>	<p>The capacity of the ERF is primarily a matter for the Applicant, designed to meet the waste disposal needs of the local authority. The proposed facility forms part of an integrated waste management strategy; any material arriving at the facility will be residual waste arising following upstream waste segregation, recovery and recycling initiatives. The shape and content of this strategy is a matter for the local authority. The ERF is one element in that strategy, and the Permit will ensure that it can be operated without giving rise to significant pollution or harm to human health. In any event Permit conditions will prohibit the burning of any separately collected or recovered waste streams, unless contaminated and recovery is not practicable. The obligation is on waste producers to apply the waste hierarchy and for local authorities to have their own waste strategy dealing with kerbside collections. Our role in this determination is to assess whether any residual waste that may be sent for incineration can be dealt with in an environmentally acceptable manner. In addition to this we have set permit condition 2.3.4 (c) that does not allow separately collected fractions to be incinerated unless they are unsuitable for recycling.</p>
<p>There is no need to increase regional (London) incineration capacity, as shown in the London Environment Strategy (2018). In addition, two new incinerators (Tilbury and Rivenhall) will be coming into operation in the near future, adding a further 1.6M tonnes per annum of incineration capacity.</p>	<p>The Environment Agency (EA) determines permit applications for energy from waste (EfW) plants under the Environmental Permitting Regulations (EPRs). The EA's assessment includes ensuring that the plant will use best available techniques to minimise emissions, and that it will not give rise to any significant pollution of the environment or harm to human health. The same approach applies to applications to vary existing EfW plant permits. Under the EPRs, the EA is not responsible for other matters such as deciding whether an EfW plant is the right solution for managing</p>

<p>There is no need to increase incineration capacity in England as a whole.</p>	<p>residual waste in that area, or whether it is too big for local needs, and it has no powers to refuse a new permit or variation application on these grounds. This also means that it is unable to take into account any comments from consultees on these subjects. In summary, for a given plant design and size, the EA will assess the application against the criteria required by the EPRs, and if the operator later wishes to vary their permit to increase the annual throughput, the EA has no justification to refuse the variation if the environmental impact remains acceptable and other relevant requirements are met.</p>
<p>The South London Waste Plan (2022) does not allow for the expansion of the Beddington Energy Recovery Facility.</p>	<p>The South London Waste Plan (2022) is applicable to planning decisions and strategies and not a document that is relevant to this permit determination.</p>
<p>The London Borough of Sutton Council, in which the incinerator is located and who originally granted planning permission, have opposed the expansion.</p>	<p>We have addressed the concerns raised by the London Borough of Sutton Council in Annex 3 of the decision document.</p>
<p>The National Planning Policy for Waste states that cumulative impacts should be considered as part of the determination, which is in contradiction to the in isolation approach that the Environment Agency has proposed to assess the application as.</p>	<p>The National Planning Policy for Waste is applicable to planning decisions and strategies and is not a document that is relevant to this permit determination. However, cumulative impacts for emissions to air are taken into account as background pollutant concentrations are used to calculate the predicted environmental concentrations (PEC), as detailed in Section 5 of this document.</p>
<p>The South London Waste Plan states that any intensification should be subject to Policy WP5 – Protecting and Enhancing Amenity.</p>	<p>The South London Waste Plan (2022) is applicable to planning decisions and strategies and is not a document that is relevant to this permit determination.</p>
<p>The original Environmental Permit and planning permission failed to consider future variations.</p>	<p>Each permit application determination is based only upon the activities that the Operator has applied to undertake and on its own merits.</p>

<p>Vehicle movements should be considered during permit determination, with Paragraph 102b of the National Planning Policy Framework covering the impacts of traffic during plan making. The expansion of the facility was not considered at the original plan making stage.</p>	<p>Our remit covers emissions from onsite traffic and whether the emissions could have a significant impact. In this case the Environment Agency is satisfied appropriate controls are in place, see sections 6.5.4 and 6.5.5 of this document.</p>
<p>Future intensification of the site should be considered during permit determination.</p>	<p>Each application has to be assessed on its own merits and we have to determine the application made to us. If the Operator wishes to change its operations in future then they will have to apply to do so.</p>
<p>New homes assisted living and a school have recently been constructed in the New Mill Quarter estate. These need to be taken into account during the permit determination.</p>	<p>The impact on all sensitive receptors, including ones constructed since the permit was originally issued, has been assessed during this permit determination, see section 5 in this document.</p>
<p>A new environmental permit should be required due to the abdication of responsibility associated with the failure to discharge a planning condition (restoration of Beddington Farmlands Local Wildlife Site).</p>	<p>This is relating to planning permission only and not relevant to the permit determination. There are no requirements within the existing permit that Beddington Farmland Local Wildlife Site is restored and the Environment Agency does not have the power to impose such requirements.</p>
<p>How the site will manage the additional throughput (excluding the actual incineration stage), especially the operation of the bunker.</p>	<p>The small number of additional vehicles arriving onsite will be able to be accepted under existing arrangements, such as scheduled arrival times. The tipping hall is designed to temporarily store higher quantities of waste than can be processed during normal operations, however the increase in throughput is unlikely to require additional waste storage in the tipping hall. The limiting factor is the ability to deposit the waste within the tipping hall. There are currently seven tipping bays, four of which are operational at any one time under normal operating conditions. We are</p>

	<p>satisfied that there is sufficient space for the additional 1 vehicle per hour to be able to deposit their waste within the tipping hall.</p> <p>There will be no increase in the bunker capacity, which remains at 4,194 tonnes. Under normal operating conditions this is usually filled with up to 2,500 tonnes of waste, meaning that there is a large amount of buffer capacity available. The crane itself is able to transfer higher tonnages per hour into the combustion chamber than the Operator has applied to process.</p> <p>Wastes generated by the combustion process (incinerator bottom ash and air pollution control residue) will increase with the increase in throughput. This will be managed through three additional collections per day.</p> <p>The Operator has undertaken testing of its air emissions abatement equipment at differing flue gas flowrates and for different waste compositions. This testing has shown that the emissions abatement system is capable of handling all operating scenarios across the firing diagram, and is therefore sufficiently sized for the proposed increase in waste throughput.</p>
<p>How the site will manage the waste arriving onsite if it is at full capacity, including the impacts offsite, such as waste lorries queueing.</p>	<p>The waste pre-acceptance and acceptance procedures detail the actions that will be taken if the site is unable to accept waste or has limited capacity. This includes reducing the number of waste vehicles arriving onsite or suspending waste deliveries to the site. Vehicles arriving onsite when waste is unable to be accepted will be turned away. Vehicles arriving onsite are managed through scheduled arrival times.</p>
<p>An increase in the throughput could increase the frequency of the exceedances of the limits for emissions to air from the facility.</p>	<p>As a result of the increased throughput the operator has outlined additional measures to manage the risk of exceedances to the satisfaction of the Environment Agency, see section 4.3.10 of this document.</p>
<p>Inconsistent reporting figures cast doubt on the assessments of the emissions from the site.</p>	<p>See section 5 for the assessment of emissions from this facility. 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</p>

	that the conclusions drawn in the reports were acceptable. The pollutant concentrations used within the air dispersion modelling are based on the BAT-AELs, which have higher concentrations than the facility emits under normal operations.
The lack of air quality standard for dioxins and furans means that it is not possible to determine the significance of the impacts from those pollutants.	Dioxins and furans assessment is covered in section 5.3.2 of this document. The Environment Agency is satisfied that emissions of dioxins and furans from the facility will not cause a significant impact.
There is no measured concentrations of background nutrient nitrogen deposition or acidification, instead APIS uses a combination of measured and modelled data to generate their pollution concentration maps.	APIS can be used to determine the background concentrations used in the air dispersion modelling. It utilises a mixture of measured and modelled data to generate expected background concentrations. This is satisfactory to the Environment Agency.
The data provided by the applicant showed that emissions of chromium VI are at 304% of the PC and 1224% of the AQAL, which can lead to health impacts.	Chromium VI is assessed in section 5 of this document. The Environment Agency is satisfied that emissions of chromium VI can be screened out as and will not have a significant impact.
The significance of odour emissions must be considered.	Odour emissions are considered in detail in Section 6.5 of this decision document. The Environment Agency is satisfied that odour emissions will not cause a significant impact.
The carbon accounting may be misleading, with Policy 2 of the National Planning Policy for Waste (2014) stating that waste authorities should “ensure that the planned provision of new capacity and its spatial distribution is based on robust analysis of best available data and	The National Planning Policy for Waste is a consideration for the local authority and not a relevant document for this permit determination.

<p>information, and an appraisal of options. Spurious precision should be avoided.”</p>	
<p>Lack of public, community and local governmental support for the expansion.</p>	<p>The level of support or opposition is not relevant under EPR we can only assess the environmental impact on communities or sensitive environmental receptors. The environmental impact is assessed as part of the determination process and has been reported upon in the main body of this document. The Environment Agency is satisfied that the facility will not have a significant impact on communities or sensitive environmental receptors.</p>
<p>Communities should have greater influence over processes such as this and should be able to hold regulators to account.</p>	<p>This is outside of our remit we can only consider the environmental impacts. How we consult and the responsibilities of the Environment Agency are covered in section 2.2 of the decision document.</p>
<p>Community engagement with this process should be improved, for example by holding multiple public information events or a public hearing.</p>	<p>An extended consultation was held, which is beyond the statutory requirements. Further details on consultation can be found in Section 2 of this document.</p>
<p>The varied permit should include the following conditions:</p> <ul style="list-style-type: none"> • Air pollution monitors should be installed in the locality and more regular monitoring should be undertaken • The Operator contributes to a road repair fund • The Operator plants and maintains flora to offset their emissions • Deliveries should be outside of peak hours and use certain routes 	<p>A number of the recommendations for conditions include aspects which are a matter for the local authority or are addressed within the permit operating techniques. The facility operates using Best Available techniques which are the relevant expected standards for this sector. Standard wording is used for the conditions in the permit, which cover all relevant matters for the purposes of the permit. We are satisfied that wording is appropriate in this case and that the permit controls all relevant matters. It would not be appropriate for the Environment Agency to include or impose the proposed conditions in the permit.</p>

<ul style="list-style-type: none"> • All fleet and onsite vehicles are electric vehicles • The Operator develop a public alert system for permit breaches • Wide spread soil sampling should be undertaken • Downtime of the monitoring systems should be minimised • The Operator should have magnetic sorting, pre-sorting and an AI camera conveyor belt system • The planning permission obligations must be fulfilled prior to variation of the permit • The activities onsite be free of permit breaches for a 12 month period prior to an increase in the throughput • The emissions from onsite vehicles are included in the monthly emissions reports • That the waste hierarchy be applied to the wastes received onsite 	
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Response Received from Cllr Anthony Fairclough	
Brief summary of issues raised:	Summary of action taken / how this has been covered
There is no need to increase regional incineration capacity.	The Environment Agency (EA) determines permit applications for energy from waste (EfW) plants under the Environmental Permitting Regulations (EPRs). The EA's

	assessment includes ensuring that the plant will use best available techniques to minimise emissions, and that it will not give rise to any significant pollution of the environment or harm to human health. The same approach applies to applications to vary existing EfW plant permits. Under the EPRs, the EA is not responsible for other matters such as deciding whether an EfW plant is the right solution for managing residual waste in that area, or whether it is too big for local needs, and it has no powers to refuse a new permit or variation application on these grounds. This also means that it is unable to take into account any comments from consultees on these subjects. In summary, for a given plant design and size, the EA will assess the application against the criteria required by the EPRs, and if the operator later wishes to vary their permit to increase the annual throughput, the EA has no justification to refuse the variation if the environmental impact remains acceptable and other relevant requirements are met.
Odour and noise from the facility are likely to have an impact on the surrounding area.	Further details on the impacts from odour and noise are detailed in section 6.5.4 and 6.5.5 of this decision document. The Environment Agency is satisfied that the facility will not cause significant odour and noise impacts on the surrounding area.
Operator competency with regards to repeated breaches of emission limits to air.	As a result of the increased throughput the operator has outlined additional measures to manage the risk of exceedances to the satisfaction of the Environment Agency, see section 4.3.10 of this document. We are satisfied that the Operator has taken appropriate actions to address the exceedances and prevent further breaches.

Response Received from Cllr Barry Lewis	
Brief summary of issues raised:	Summary of action taken / how this has been covered
The facility will be operating over the original design capacity, for which it was not designed.	The small number of additional vehicles arriving onsite will be able to be accepted under existing arrangements, such as scheduled arrival times.

	<p>The tipping hall is designed to temporarily store higher quantities of waste than can be processed during normal operations, however the increase in throughput is unlikely to require additional waste storage in the tipping hall. The limiting factor is the ability to deposit the waste within the tipping hall. There are currently seven tipping bays, four of which are operational at any one time under normal operating conditions. We are satisfied that there is sufficient space for the additional 1 vehicle per hour to be able to deposit their waste within the tipping hall.</p> <p>There will be no increase in the bunker capacity, which remains at 4,194 tonnes. Under normal operating conditions this is usually filled with up to 2,500 tonnes of waste, meaning that there is a large amount of buffer capacity available. The crane itself is able to transfer higher tonnages per hour into the combustion chamber than the Operator has applied to process.</p> <p>Wastes generated by the combustion process (incinerator bottom ash and air pollution control residue) will increase with the increase in throughput. This will be managed through three additional collections per day.</p> <p>The Operator has undertaken testing of its air emissions abatement equipment at differing flue gas flowrates and for different waste compositions. This testing has shown that the emissions abatement system is capable of handling all operating scenarios across the firing diagram, and is therefore sufficiently sized for the proposed increase in waste throughput.</p>
<p>An increase in the throughput could increase the frequency of the exceedances of the limits for emissions to air from the facility.</p>	<p>As a result of the increased throughput the operator has outlined additional measures to manage the risk of exceedances to the satisfaction of the Environment Agency, see section 4.3.10 of this document.</p>
<p>The impact upon the local residents and environment from the increase in throughput.</p>	<p>This document outlines the environmental risk associated with the proposals in the application. We have assessed the relevant environmental risk and we are satisfied that the proposals will not result in a significant impact on the environment or human health.</p>
<p>There is no need to increase regional incineration</p>	<p>The Environment Agency (EA) determines permit applications for energy from waste</p>

capacity.	(EfW) plants under the Environmental Permitting Regulations (EPRs). The EA's assessment includes ensuring that the plant will use best available techniques to minimise emissions, and that it will not give rise to any significant pollution of the environment or harm to human health. The same approach applies to applications to vary existing EfW plant permits. Under the EPRs, the EA is not responsible for other matters such as deciding whether an EfW plant is the right solution for managing residual waste in that area, or whether it is too big for local needs, and it has no powers to refuse a new permit or variation application on these grounds. This also means that it is unable to take into account any comments from consultees on these subjects. In summary, for a given plant design and size, the EA will assess the application against the criteria required by the EPRs, and if the operator later wishes to vary their permit to increase the annual throughput, the EA has no justification to refuse the variation if the environmental impact remains acceptable and other relevant requirements are met.
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Response Received from Carshalton & Wallington Labour Party	
Brief summary of issues raised:	Summary of action taken / how this has been covered
No monitoring of actual pollutant concentrations at ground level has been undertaken in order to prove modelled concentrations.	The model used by the applicant, ADMS, is based on established scientific principles, independently reviewed, and validated against a variety of monitoring studies, which evidences a minimum degree of confidence in the modelling results, which is why ground level monitoring of pollutants is not required to substantiate the conclusions. After submission, our air quality specialists team carry out sensitivity analysis of the data provided and conduct their own check modelling to ensure that a reasonable worst-case has been assumed before reaching conclusions.
There are already high nitrogen dioxide concentrations on the routes that the HGVs will	Our remit covers emissions from onsite traffic and whether the emissions could have a significant impact. In this case the Environment Agency is satisfied appropriate controls

take to the site.	are in place, see sections 6.5.4 and 6.5.5 of this document.
There will be increased wear and tear on the roads that the HGVs use to access the site.	This is outside of the remit of this permit determination.
A new housing development (New Mill Quarter estate) has recently been constructed. The HGVs will pose a safety risk and increase air pollution in the vicinity of this development, including on London Road.	These impacts are outside our remit but can be assessed by the Local Authority as part of the planning application.
The population in the local area has increased, meaning more people are exposed to the pollution from the site.	The impacts upon all local sensitive receptors are assessed during the permit determination. The Environment Agency is satisfied that the facility will not have a significant impact on local communities or sensitive environmental receptors.
Odour from the site and HGVs are impacting the health – both physical and mental, of local residents.	Impacts from odour is detailed in section 6.5.4 of this document. Odour complaints have been received; however, none have been substantiated as originating from the site. The Environment Agency is satisfied that odour from the facility will not have a significant impact on local residents.
There is a lack of updates to relevant local officials/general public when permit breaches occur.	Overall, the Operator has supplied the necessary information about emissions breaches and data required by the permit, in a timely manner to the Environment Agency. This information is available on the Public Register.
The emissions are not routinely monitored for dioxins, amongst other compounds.	Dioxins will be monitored bi-annually from 3 December 2023, which is in accordance with the requirements in the BAT Conclusions for incineration.
There is no benchmark for pollution concentrations in the local area, therefore the	The sources used for background concentrations of pollutants are detailed in Section 5 of this document and we are satisfied they are suitable to be used in the air dispersion

<p>impact from the additional emissions cannot be ascertained.</p>	<p>modelling.</p>
<p>Performance data on emissions has been provided late.</p>	<p>Overall, the Operator has supplied the necessary data as required by the reporting conditions outlined in the permit to the satisfaction of the Environment Agency.</p>
<p>There is no waste pre-sorting to prevent pressurised containers from entering the combustion chamber.</p>	<p>Pressurised containers have been attributed to being the root cause of a number of exceedances of emission limits. The Applicant has stated that they are working with waste suppliers to identify and remove bottles from the incoming waste stream. As a result of the increased throughput the operator has outlined additional measures to manage the risk of exceedances to the satisfaction of the Environment Agency. Further details can be found in Section 4.3.10 of this document.</p>
<p>How the site will manage the additional throughput in the bunker.</p>	<p>The small number of additional vehicles arriving onsite will be able to be accepted under existing arrangements, such as scheduled arrival times.</p> <p>The tipping hall is designed to temporarily store higher quantities of waste than can be processed during normal operations, however the increase in throughput is unlikely to require additional waste storage in the tipping hall. The limiting factor is the ability to deposit the waste within the tipping hall. There are currently seven tipping bays, four of which are operational at any one time under normal operating conditions. We are satisfied that there is sufficient space for the additional 1 vehicle per hour to be able to deposit their waste within the tipping hall.</p> <p>There will be no increase in the bunker capacity, which remains at 4,194 tonnes. Under normal operating conditions this is usually filled with up to 2,500 tonnes of waste, meaning that there is a large amount of buffer capacity available. The crane itself is able to transfer higher tonnages per hour into the combustion chamber than the Operator has applied to process.</p> <p>Wastes generated by the combustion process (incinerator bottom ash and air pollution control residue) will increase with the increase in throughput. This will be managed</p>

	<p>through three additional collections per day.</p> <p>The Operator has undertaken testing of its air emissions abatement equipment at differing flue gas flowrates and for different waste compositions. This testing has shown that the emissions abatement system is capable of handling all operating scenarios across the firing diagram, and is therefore sufficiently sized for the proposed increase in waste throughput.</p>
How the site will safely manage the additional number of vehicles coming onto site, especially if there is a backlog.	The waste pre-acceptance and acceptance procedures detail the actions that will be taken if the site is unable to accept waste or has limited capacity. This includes reducing the number of waste vehicles arriving onsite or suspending waste deliveries to the site. Vehicles arriving onsite when waste is unable to be accepted will be turned away. Vehicles arriving onsite are managed through scheduled arrival times.
Due to the Operator failing to fulfil their planning obligations the site may be returned to its original standing, which is an option available for the Local Authority to pursue if desired.	This is a consideration for the local planning authority.
The Beddington Farmlands Local Wildlife Site has not been restored, as per the original planning permission.	This is relating to planning permission only and not relevant to the permit determination. There are no requirements within the existing permit that Beddington Farmland Local Wildlife Site is restored and the Environment Agency does not have the power to legally impose such requirements.
The application for an additional fuel storage tank, instead of using electric vehicles onsite, shows that the application is not in alignment with the aim of net zero carbon.	The additional fuel storage tank will be storing Furnace Flame, which is used during start-up of the EFW and before waste can be burnt.
The additional incineration capacity is unlikely to aid increase recycling rates in the South London	It is argued that as the quantity of residual waste reduces over the lifetime of the Facility, the need to maximise efficiency by maintaining the ERF at full capacity will suppress

<p>Waste Partnership Boroughs and discourages recycling.</p>	<p>waste recovery and recycling initiatives, which are higher up the waste hierarchy. The capacity of the ERF is primarily a matter for the Applicant, designed to meet the waste disposal needs of the local authority. The proposed facility forms part of an integrated waste management strategy; any material arriving at the facility will be residual waste arising following upstream waste segregation, recovery and recycling initiatives. The shape and content of this strategy is a matter for the local authority. The ERF is one element in that strategy, and the Permit will ensure that it can be operated without giving rise to significant pollution or harm to human health. In any event Permit conditions will prohibit the burning of any separately collected or recovered waste streams, unless contaminated and recovery is not practicable. The obligation is on waste producers to apply the waste hierarchy and for local authorities to have their own waste strategy dealing with kerbside collections. Our role in this determination is to assess whether any residual waste that may be sent for incineration can be dealt with in an environmentally acceptable manner. In addition to this we have set permit condition 2.3.4 (c) that does not allow separately collected fractions to be incinerated unless they are unsuitable for recycling.</p>
<p>The additional waste travels longer distances, thereby increasing the associated emissions from vehicle movements compared to waste from local sources.</p>	<p>The sourcing of waste is not an issue controlled under the Environmental Permitting Regulations and is not considered as part of this permit application. It is a consideration of the local planning authority in accordance with its Local Waste Strategy/Plan.</p>
<p>An increase in the throughput could increase the frequency of the exceedances of the limits for emissions to air from the facility. This in turn would lead to more downtime and restarts of the incinerator, meaning more fuel would be needed on an annual basis.</p>	<p>Section 4.3.10 of this decision document covers the actions the Operator has taken to address exceedances of permitted emission limits to air. The throughput will not significantly change the way the site operates; therefore, the amount of auxiliary fuel used at start-up is unlikely to increase significantly.</p>

<p>The Operator states the need for the permit variation is to ensure the efficiency of the incinerator remains stable due to the expected decrease in calorific value of the input waste in the future.</p>	<p>The Operator has stated that the calorific value of waste is unlikely to change, that they have indicated no preference towards low calorific waste and that they have based their assessments on it remaining the same.</p>
<p>The CHP connection has not been made, as per the original business plan.</p>	<p>See section 4.3.7 of this decision document.</p>

Response Received from Merton Conservatives	
Brief summary of issues raised:	Summary of action taken / how this has been covered
<p>The emission limits for TOCs have been breached about 40 times in the past year.</p>	<p>As a result of the increased throughput the operator has outlined additional measures to manage the risk of exceedances to the satisfaction of the Environment Agency. See section 4.3.10 in this document, which covers breaches of emission limits.</p>
<p>Additional congestion from increased HGV movements.</p>	<p>We do not take into account the road congestion from vehicle movements that take place outside of the permit boundary. This is a consideration for the Local Authority.</p>
<p>Waste from outside the South London Waste Partnership Boroughs should be transferred to similar facilities in those locations.</p>	<p>The sourcing of waste is not an issue controlled under the Environmental Permitting Regulations and is not considered as part of this permit application. It is a consideration of the local planning authority in accordance with its Local Waste Strategy/Plan.</p>

Response Received from Conservative Group (London Borough of Sutton)	
Brief summary of issues raised:	Summary of action taken / how this has been covered
There will be an increase in nitrogen dioxide concentrations.	Section 5 of this document covers changes in emissions to air from this facility.
There will be an increase in HGV movements near a protected habitat (Beddington Farmlands Local Wildlife Site).	Onsite HGV movements are considered as part of assessments outlined in sections 5 (emissions to air) and 6.5.5 (noise) in this document.
The Operator has not fulfilled their planning obligations relating to the restoration of Beddington Farmlands Local Wildlife Site.	This is relating to planning permission only and not relevant to the permit determination. There are no requirements within the existing permit that Beddington Farmland Local Wildlife Site is restored and the Environment Agency does not have the power to legally impose such requirements.
The increased throughput will decrease the quality of air in the local area.	Section 5 of this document covers assessment of emissions to air from this facility. The Environment Agency is satisfied that the facility will not have a significant impact on the environment or on human health.
An increase in the throughput could increase the frequency of the exceedances of the limits for emissions to air from the facility.	As a result of the increased throughput the operator has outlined additional measures to manage the risk of exceedances to the satisfaction of the Environment Agency, see section 4.3.10 of this document.
The amount of waste sourced locally that requires incineration has reduced in recent years.	The sourcing of waste is not an issue controlled under the Environmental Permitting Regulations and is not considered as part of this permit application. It is a consideration of the local planning authority in accordance with its Local Waste Strategy/Plan.
The increase in throughput is in contradiction of the Department of Business, Energy and Industrial Strategy aims of a net zero economy,	The Government's current Waste Strategy ('Our Waste, Our Resources: a Strategy for England', December 2018 and Waste Management Plan for England 2021) do not exclude waste incineration with energy recovery as an acceptable waste management

Sutton Air Quality Action Plan, South London Waste Plan and the London Environment Strategy.	option. Incineration currently plays a significant role in waste management in the UK and the Government expects this to continue. Defra's current view is that waste incineration is the best management option for waste that cannot be prevented, reused or recycled and that it plays an important role in diverting waste from landfill, reducing its environmental impact.
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b) Representations from Community and Other Organisations

Representations were received from community and other organisations, a number of these issues are the same as those raised by the statutory bodies, non-statutory bodies, local MP and Councillors. Of the additional issues raised,

Response Received from United Kingdom Without Incineration Network	
Brief summary of issues raised:	Summary of action taken / how this has been covered
<p>The greenhouse gas assessment appears to be incorrect on the following points:</p> <ul style="list-style-type: none"> • Turbine availability being overestimated • Parasitic load being underestimated • Carbon content being underestimated • Biogenic carbon being overestimated • The energy offset is not calculated correctly • The displaced power assumption is not in line with guidance 	<p>The greenhouse gas assessment has been updated as follows:</p> <ul style="list-style-type: none"> • The total number of operational hours has been based on operational data from 2021/2022 for both scenarios. • The parasitic load (derived from operational data) has been updated to be the same for both scenarios. • The biogenic content has been updated to align with monitored data for both scenarios. No monitoring of the overall carbon content has been taken, but the same values have been used for both scenarios. • The energy offset has been updated to reflect the above changes and newly available data on UK power generation. • The displaced power consumption value the Operator has used is suitable in this context. <p>The changes proposed by the operator do not change the conclusions of the BAT assessment.</p>

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Response Received from Hackbridge and Beddington Corner Neighbourhood Development Group	
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Brief summary of issues raised:	Summary of action taken / how this has been covered
The increase in throughput is not in line with the Hackbridge & Beddington Corner Neighbourhood Plan 2017 – 2027.	This is a consideration for the local authority and outside the remit of the Environment Agency, see section 7 of this document.

Response Received from Heathdene Area Residents Group	
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Brief summary of issues raised:	Summary of action taken / how this has been covered
The waste transfer station permit should be kept separate to the incinerator permit.	Permit consolidation is a permitting mechanism allowed under the legislation to bring both permits into one document. It won't change how both sites are regulated as the waste transfer station activities will remain separate to the ERF activities. This is made clear in the permit through the separate activities within the table of activities, the separate lists of wastes and the separate operating techniques.
Hazardous and clinical waste should be transported directly to the final disposal/treatment site, instead of being temporarily stored at the waste transfer station.	Hazardous waste will be collected from smaller local sources into this central location prior to being transported in bulk to the hazardous waste treatment site. This is a standard approach to waste management.
Wastes not in line with the waste acceptance criteria for the waste transfer station should not	Only wastes in the list of wastes in tables S2.3 and S2.4 are permitted to be accepted at the waste transfer station. The Operator utilises waste pre-acceptance and waste

<p>be accepted at the site.</p>	<p>acceptance checks as well as rejection procedures to ensure that the wastes accepted onsite are in line with these lists of wastes.</p>
<p>It is unclear whether hazardous and/or clinical waste will be treated at the waste transfer station.</p>	<p>No treatment of hazardous or clinical waste is permitted to be undertaken at the waste transfer station.</p>
<p>Monitoring of the discharges to water should be undertaken, or a justification provided if no monitoring is to be undertaken.</p>	<p>The changes the Operator has applied for will not affect the discharges to water, therefore no change in monitoring arrangements is required.</p>
<p>Will wastes not normally accepted at the waste transfer station be accepted through the use of waste enquiry forms?</p>	<p>The only wastes that can be accepted at the waste transfer station are detailed in table S2.3 and S2.4. The acceptance of wastes through a waste enquiry form relates to wastes that are included in those tables, but which the Operator does not usually accept onsite.</p>
<p>Will the concentration of the following pollutants increase by 25%, in line with the increase in waste throughput (as per originally permitted throughput)?</p> <ul style="list-style-type: none"> ○ Oxides of nitrogen ○ Nitrogen dioxide ○ Nitrogen monoxide ○ Ammonia ○ Carbon monoxide ○ Acid gases ○ Dioxins ○ Manganese ○ Lead ○ Nickel 	<p>The impacts from emissions to air on human health and the environment are assessed as a total from the point source emissions onsite. The pollutant concentrations used within the air dispersion modelling are based on the BAT-AELs, which have higher concentrations than the facility emits under normal operations, therefore even though there will be an increase in the emissions we are satisfied that the proposals will not result in a significant impact on the environment or human health. Further details on emission concentrations can be found in section 5 of this document.</p>

○ Particulate matter	
Emissions from transport vehicles appear to have been omitted from the emissions to air risk assessment.	Our remit covers emissions from onsite traffic and whether the emissions could have a significant impact. In this case the Environment Agency is satisfied appropriate controls are in place, see sections 6.5.4 and 6.5.5 of this document.
The effects of climate change do not appear to have been considered, given the 25 year lifespan of the facility.	Section 6.3 of this document details the assessments made with regards global warming potential / climate change.
Can you ensure that wastes destined for the incinerator are not stored in the area (sorting tunnels) occupied by the waste transfer station due to the high risk of fire?	The risk of fire from the storage of non-hazardous waste at the waste transfer station is managed in line with the Operator's Fire Prevention Plan. No changes are being made to the storage of non-hazardous waste at the transfer station as a result of this variation.

Response Received from South West London Air Quality Action Group	
Brief summary of issues raised:	Summary of action taken / how this has been covered
The impact upon local air quality from the incinerator when permit breaches occur is noticeable on the network of air quality monitors in the area of South-West London.	See section 5, which details emissions to air from the facility, including the impact from abnormal operations in section 5.5. As a result of the increased throughput the operator has outlined additional measures to manage the risk of exceedances to the satisfaction of the Environment Agency. Section 4.3.10 goes into detail about previous exceedances of limits for emissions to air. We are satisfied that action has been taken to prevent re-occurrences of these breaches and that appropriate measures are in place to prevent future ones.

Representations were received from the Mitcham Cricket Green Community & Heritage, all of these issues are the same as those raised by the statutory bodies, non-statutory bodies, local MP and Councillors.

c) Representations from Individual Members of the Public

Nearly 500 responses were received from individual members of the public. Many of the issues raised were the same as those considered above. Only those issues additional to those already considered are listed below:

Brief summary of issues raised:	Summary of action taken / how this has been covered
The increase in number of emission points will increase the likelihood of pollution of the watercourse and groundwater.	There is no increase in the number of emission points to water or sewer. The Operator has applied to correct the locations of the emission points on the site plan and correct the description of the emission point sources.
Waste should not be diverted from landfill to be incinerated as the emissions to air are worse from an incinerator.	The Government's position on incineration is that it is the "current best practical option" in comparison to other methods such as landfill. The overall impact of landfill is seen as greater than incineration. The changes proposed by the Operator do not change the conclusions of the previous BAT assessment. Our role is to assess whether what has applied for can be done in an environmentally acceptable manner.
The location of the incinerator in an urban environment, with high population density is not suitable.	Decisions over land use are matters for the planning system. The location of the Facility is a relevant consideration for Environmental Permitting, but only in relation to its potential to have an adverse environmental impact on communities or sensitive environmental receptors. The environmental impact is assessed as part of the determination process and has been reported upon in the main body of this document.
No ambient air monitoring is being undertaken for the pollutants being emitted from the incinerator	The model used by the applicant, ADMS, is based on established scientific principles, independently reviewed, and validated against a variety of monitoring studies, which

stack.	evidences a minimum degree of confidence in the modelling results. The modelling is based on a worst case scenario. We have audited the modelling and we are satisfied it is suitable for assessing the impact of the Facility and that ambient air quality monitoring in order to validate the results of the modelling is not required.
Technology should be installed to remove batteries / heavy metals so they don't enter the combustion chamber.	The Permit does not allow waste batteries to be received for treatment within the EFW, they are only permitted for storage at the waste transfer station. Batteries are sometimes present in small quantities in household waste and so could be burned if received at the ERF under the municipal waste code. However, they are likely to be small in number and will not affect emissions significantly. Abatement systems will limit emissions of particulate phase metals and mercury. ELVs for metals apply as set out in table S3.1 of the Permit.
A 'Disaster Plan' should be put in place for this site.	The Operator has an accident management plan in place for this site.
Low sulphur fuel used to start-up the incinerator has been replaced with higher sulphur content 'Furnace Flame'. This will lead to higher emissions of sulphur dioxide.	The sulphur content specification for the start-up fuel has not changed and remains at <0.1% sulphur content. The Furnace Fuel is in line with this specification.
Fire detection and suppression technologies should be installed in the waste transfer station buildings.	An existing approved Fire Prevention Plan is in place, which outlines the measures we consider to be acceptable to manage the risk posed by the site.
The Operator's contingency plan should be updated to reflect the increase in pressurised cylinders entering the waste stream.	Permit breaches for emissions to air and management controls are detailed in section 4.3.10 of this document. As a result of the increased throughput the operator has outlined additional measures to manage the risk of exceedances to the satisfaction of the Environment Agency.

<p>How will the build-up of wastes onsite be managed?</p>	<p>The waste pre-acceptance and acceptance procedures detail the actions that will be taken if the site is unable to accept waste or has limited capacity. This includes reducing the number of waste vehicles arriving onsite or suspending waste deliveries to the site. Vehicles arriving onsite when waste is unable to be accepted will be turned away. Vehicles arriving onsite are managed through scheduled arrival times. Waste will continue to be processed until the backlog is cleared and waste can once again be accepted onsite.</p>
<p>Local Authorities supplying waste to the incinerator are not applying the waste hierarchy, therefore recyclable waste is being incinerated. This has been proven through the use of trackers being deposited into the recyclable waste that the Local Authorities are responsible for collecting.</p>	<p>The Operator is not permitted to incinerate source segregated recyclable materials, unless they are unsuitable for recycling. Both the Local Authority and Operator are responsible for applying the waste hierarchy to their waste management activities.</p>
<p>In the tipping hall piles of medical waste have been left untouched for days, which causes a risk to the staff onsite, how is this managed?</p>	<p>This issue was investigated and it was found that yellow bags were mistakenly given out to residents. The waste stored in incorrect yellow bags was actually EWC 18 01 04, which is healthcare waste – waste whose collection and disposal is not subject to special requirements in order to prevent infection (for example plaster casts, linen, disposable clothing, diapers), therefore there was no risk of contamination to operatives.</p>
<p>It is unacceptable that the Operator undertakes their own monitoring of their emissions to air.</p>	<p>This is considered acceptable because:</p> <ol style="list-style-type: none"> 1. There is now a wide variety of standards for monitoring, covering CEMs, periodic monitoring, and quality assurance. 2. We have MCERTS for CEMs and test labs. 3. We have EN 14181 for quality assurance of CEMs. 4. We require CEMs and test labs to be accredited to MCERTS and all the applicable standards. 5. We carry out audits of operators' provisions for monitoring and audit the monitoring results

	<p>6. We do check monitoring where it is considered appropriate.</p> <p>7. Furthermore, as well as auditing operators' provisions for monitoring, and how they apply the monitoring requirements of the permit, we also regularly audit test laboratories.</p>
The construction of the incinerator has delayed the completion of the Wandle Valley Regional Park, which should have been completed in 2015.	This is not relevant in this permit determination.
There is insufficient electrical generation capacity to meet the BAT requirement of 28.8% gross electrical generation efficiency.	The energy efficiency of the EfW is known as the R1 value. This is well above the required value of 0.66 as required by BATc, see section 4.3.7 of this document for a full description of the calculation.
There are relatively frequent venting incidents where the chimneys need to be bypassed due to overpressure in the turbine. When this happens, emissions are vented through the roof.	The steam turbine is a piece of high pressure equipment, which may require occasional venting during instances of excessive pressure, or during start-up/shutdown. The emissions are only water vapour.
There needs to be a national waste reduction strategy, which is written into legislation and enforced.	The Waste Hierarchy, which is legislated through The Waste (England and Wales) Regulations 2011, is a national waste management strategy designed to reduce the amount of waste produced and then ensure that waste is used in the most efficient manner. A waste hierarchy condition is included within the permit.
Black residue (dust) settles on property.	Section 5.2 demonstrates that PM10 emissions are considered insignificant relative to air quality standards. The dust abatement being utilised is very unlikely to result in visible dust. All BAT measures have been implemented at the energy waste plant to prevent and or minimise the impact of dust. No complaints have been received relating to dust from the site. We are satisfied that all appropriate measure are being implemented to

	manage dust emissions.
There is an odour of burning plastic downwind of the facility.	Odour is detailed in section 6.5.4 of this document; however, the Operator ensures that the odour from the EFW stack is minimised by maintaining operational minimum temperatures and residence times.
The risk of fire will increase as more waste is stored onsite.	Only the annual throughput processed at the facility is changing the total tonnage stored onsite at any one time associated with the ERF will not be changing. The risk of fire has not increased.
There appears to be a trend of increasing diagnosis of respiratory diseases in the area surrounding the facility since its construction.	See section 5.3 of this document. The Environment Agency is satisfied that the facility will not have a significant impact on the environment or on human health.
Mismanagement of the water levels in the wetland area in Beddington Farmland Local Wildlife Site has meant that the local bird population have suffered from being preyed upon by mammals.	This is not relevant to the permit determination.
Emissions from increased vehicle movements offsite haven't been taken into account in the risk assessment for emissions to air (air dispersion modelling).	The air quality assessment considered existing background pollution levels which includes existing emissions from traffic. Movement of traffic to and from the Facility is outside of our remit but will normally be an issue for the planning authority to consider. Vehicle movements within the Facility boundary are considered within the remit of the Environmental Permit. However, the emissions from this limited area will not affect the conclusions of the air quality impact assessment.
Ensuring a homogeneous mix within the bunker may be more difficult to achieve when the	The level at which the bunker is operated at will remain similar to that it is currently operated under. It is unlikely that the increase in throughput will significantly impact upon

throughput is higher.	the ability to mix within the bunker. In addition, the combustion chamber and air emissions abatement equipment can manage a range of waste compositions.
This is not in line with the climate emergency declared by Sutton Council.	We have assessed this in accordance with our statutory responsibilities and are satisfied that there will be no significant pollution of the environment or harm to human health.
The Operator's criminal record should be taken into account in the determination process, especially as the Warnings given to them by the Environment Agency are relevant to the changes they are applying to undertake.	We are satisfied that the Operator has sufficient competence to undertake the permitted activities detailed in the existing permits and the activities they have applied for in this permit variation. Section 4.3.10 of this document addresses the issue of exceedances of permitted limits and how the operator has responded to them.
Data shows that there has been an increase in the rate of infant mortality around the facility since it opened.	See section 5.3 of this document. The Environment Agency is satisfied that the facility will not have a significant impact on the environment or on human health.
The emissions to air from the incinerator are in breach of Article 2 of the Human Rights Act.	See section 7.2.3 of this decision document. The Environment Agency is satisfied that the facility will not have a significant impact on the environment or on human health.
How have the differences between the Gatwick weather modelling data and local topography been taken into account?	See section 5.2 of this document. The Environment Agency is satisfied that the data the Applicant has used is suitable in their assessments.

B) Advertising and Consultation on the Draft Decision

This section reports on the outcome of the public consultation on our draft decision carried out between 21 July 2023 and 15 September 2023.

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

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

a) Consultation Responses from Statutory and Non-Statutory Bodies

Response Received from UKHSA	
Brief summary of issues raised:	Summary of action taken / how this has been covered
The UKHSA were requested to review ONS infant mortality data provided as part of a consultation response	UKHSA reviewed the consultation response and associated ONS data and provided comment in line with Section 5.3.1 of this document. They also noted that given the small number of deaths being considered and the variability across the period 2000-2019, they did not consider it appropriate to compare the number of infant deaths in a single year data for 2019 with an average across the earlier period from 2000-2018 to draw any conclusions. UKHSA's risk assessment remains 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 will continue to review its advice in light of substantial new research on the health effects of incinerators which we understand to be under way and which will be published in peer-reviewed journals.

Response Received from London Fire Brigade	
Brief summary of issues raised:	Summary of action taken / how this has been covered
No concerns raised	N/A

Response Received from Greater London Authority – Mayor of London	
Brief summary of issues raised:	Summary of action taken / how this has been covered
Repeat issues raised – requested to revisit the decisions made on the previous issues raised.	Responses to the original consultation response letter are detailed in Annex 3 A. We remain satisfied with our consideration of those issues.
In conflict with London Plan – policy SI 1A	This is a planning policy and not within the remit of the Environment Agency. We have fully assessed the air quality impacts. The impacts from emissions to air are detailed in section 5 of this document.
The emissions to air risk assessment does not take into account the guideline limits in the London Environment Strategy	Our decisions have been made in line with the legislation detailed in the main body of this document. We are satisfied this variation will not undermine attempts to achieve the guideline limits for emissions to air detailed in the London Environment Strategy.

Response Received from London Borough of Merton	
Brief summary of issues raised:	Summary of action taken / how this has been covered
Additional HGVs will bring waste onto site. This will contravene the aims of the ULEZ by worsening air quality in the local area.	The potential impacts of the ULEZ, which aims to discourage the use of polluting vehicles, on the operation of the facility is a matter for the operator and not something that the Environment Agency can control or enforce through the environmental permit. We have assessed emissions to air from the facility, including the two key pollutants that the ULEZ targets – particulate matter and nitrogen dioxide. Section 5.2.1 of this document gives further details on the predicted pollutant concentrations and shows that neither pollutant will lead to breaches of the ES.
The impacts of this permit variation	The impacts from this application were assessed on both the changes applied for by the

have not been assessed as a whole, but only the increase has been assessed.	Operator and from the facility as a whole. This application was assessed in line with our guidance, as detailed in this decision document and we are satisfied that there will not be a significant impact from the varied facility.
The increase in throughput is not in line with the long term waste management strategy of recovery, re-use and recycling.	This is primarily outside the scope of this determination which relates to proposals for dealing with residual waste following upstream waste segregation, recovery and recycling initiatives. Recycling initiatives and local waste management strategy are a matter for the Local Authority. Conditions 2.3.5 and 2.3.6 restrict the acceptance of wastes that have been separately collected for reuse or recycling
The practical considerations of a 10% increase in volume of waste being processed has not adequately been addressed.	The volume of waste being stored on site is not being increased. Therefore, any subsequent risk does not change. Additionally, there are controls in place to limit the total amount of waste that can be present on site at any one time (for example, through the fire prevention plan) and there is sufficient processing capacity to ensure an adequate throughput is maintained to be able to comply with these controls. Considerations of an increase in throughput have been previously addressed in Annex 3 A.
Concerns over the ability of the Operator to meet the conditions of their permit with the additional throughput.	We are satisfied the Operator will be able to comply with the permit conditions at the increased throughput. After the comments on the 'minded to' consultation were received two incidents occurred onsite that led to the non-compliance with permit conditions. This is explained in further detail in section 4.1.5.

Response Received from London Borough of Sutton	
Brief summary of issues raised:	Summary of action taken / how this has been covered
Concerns that there is a lack of capacity within the bunker for the additional throughput.	Issue raised in original consultation; response is detailed in Annex 3 A.
Concerns of an increased risk of fire from the storage of the additional waste.	Issue raised in original consultation; response is detailed in Annex 3 A.

Concerns of the impact from additional vehicle movements and incorrect vehicle estimations used, especially when considering the planning permission restrictions on operational hours.	We consider the estimated 10% increase, which we believe is a reasonable and accurate estimate based on the information presented in the application, in vehicle movements will have a negligible additional impact on the overall vehicle movements on site. We are not aware of any current offsite impacts from vehicle movements on site; therefore, we consider the increase in vehicle movements will not lead to offsite impacts. Impacts from vehicle movements offsite may be assessed by the Local Authority as part of the planning application. We can only consider impacts arising from within the facility and offsite noise.
Concerns that the messaging about the separate activities and different waste streams accepted at the WTS and EfW have not been communicated clearly enough given that the permits are being consolidated.	There are separate waste acceptance tables within the permit for the two separate activities of waste incineration and waste transfer. The waste types that can be accepted under each activity are clearly distinguished. We are satisfied that the permit will be clear on which restrictions apply to which activities and that these restrictions will be understood by the operator and are clear and enforceable by the Agency.
It is unclear how the additional waste streams for the WTS will be managed alongside the existing permitted tonnage at the WTS.	There will be no additional throughput, or increased storage permitted at the waste transfer station. The Operator has waste acceptance procedures in place for accepting and managing wastes on site. This includes ensuring incompatible waste types are stored separately. Additional details of waste storage can be found in section 4.2.2 of this document.
On a regional level additional incineration capacity is not required.	This issue has been raised previously, reply to the original consultation response is detailed in Annex 3 A.
An increase in the throughput could increase the frequency of the exceedances of the limits for emissions to air from the facility.	This issue has been raised previously, reply to the original consultation response is detailed in Annex 3 A. After the comments on the 'minded to' consultation were received two incidents occurred onsite that led to the non-compliance with permit conditions. This is explained in further detail in section 4.1.5.

Response Received from The South London Waste Partnership

Brief summary of issues raised:	Summary of action taken / how this has been covered
Lack of detail on how the site will manage the additional throughput in the tipping hall and bunker. This includes the additional vehicle movements onto site.	We are satisfied that we have taken these concerns into account and that we have sufficient information to assess the impacts on all site activities from the additional throughput. Reply to the original consultation response is detailed in Annex 3 A.
Concerns about the current furnace capacity.	The operator has demonstrated to our satisfaction in their application that the furnace has the capacity to incinerate the additional waste. Our assessments have shown that this increase will have a negligible impact on human health and the environment.
Concerns that the Operator is unable to comply with current emission limits.	This issue has been raised previously, reply to the original consultation response is detailed in Annex 3 A. After the comments on the 'minded to' consultation were received two incidents occurred onsite that led to the non-compliance with permit conditions. This is explained in further detail in section 4.1.5.
On a regional level additional incineration capacity is not required.	This issue has been raised previously, reply to the original consultation response is detailed in Annex 3 A.
The Environment Agency should take account of Local Authority Waste Plans when varying a permit to increase the throughput.	Waste Plans are outside of the remit of this determination. In granting this permit we are satisfied that we have protected the environment and human health in line with the requirements of legislation relevant to our determination.

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

Response Received from Elliot Colburn MP	
Brief summary of issues raised:	Summary of action taken / how this has been covered
No new issues raised – the same letter submitted in response to the original consultation was resubmitted	Responses to the original letter are detailed in Annex 3 A.

for this consultation.	
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Response Received from Cllr Dave Tchil	
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Brief summary of issues raised:	Summary of action taken / how this has been covered
No new issues raised – the same wording had been submitted in the initial consultation by another respondent.	Responses to the issues raised are detailed in Annex 3 A.

Response Received from Merton Conservatives	
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Brief summary of issues raised:	Summary of action taken / how this has been covered
No new issues raised – issues on exceedances of permitted limits, waste import from other areas and traffic.	Responses to the issues raised are detailed in Annex 3 A. After the comments on the ‘minded to’ consultation were received two incidents occurred onsite that led to the non-compliance with permit conditions. This is explained in further detail in section 4.1.5.

Response Received from Cllr Anthony Fairclough / Merton Liberal Democrats	
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Brief summary of issues raised:	Summary of action taken / how this has been covered
The risk from odour is not sufficiently addressed in the decision document.	The risk from odour from the waste is not increasing as the waste is not being stored for a longer duration and the volume of waste stored on site is not increasing. Management of new waste types to be accepted at the waste transfer station are covered in section 6.5.4 of this document.
An Odour Management Plan should be supplied by the Operator.	It was determined that due to the low level of risk from odour, no odour management plan is required. A permit condition is in place providing that if the site is causing pollution due to odour, the Operator must supply and implement an odour management plan.
The risk from noise and vibration is not sufficiently addressed in the	We are satisfied that the additional vehicle movements, which will be the only changes in noise and vibration, will have a negligible impact. Further detail can be found in section 6.5.5

decision document.	of this document.
There is a lack of statistical evidence to demonstrate that the measures put in place to ensure the emissions to air are kept within the permitted limits are effective.	<p>Since the operator put the measures detailed in section 4.3.10 in place, the number of permit exceedances has significantly dropped. The operator regularly publishes their emissions monitoring reports, which can be found at https://www.beddingtonerf.info/emissions-archive.html. We consider the existing and ongoing statistical evidence to be sufficient and any failure to comply with permit limits is an enforceable breach.</p> <p>An onsite incident involving calibration of the CEMs lead to breaches of the emission limits for NOx. This is explained in further detail in section 4.1.5.</p>

Response Received from Cllr Shasha Khan	
Brief summary of issues raised:	Summary of action taken / how this has been covered
Issue relating to waste tonnages detailed in the planning permission appeal.	The Environment Agency is not aware of any restrictions on annual throughput within the planning permission, which is not an issue for our consideration. Our decision is based on the application that has been made to us.

Response Received from Merton Green Party	
Brief summary of issues raised:	Summary of action taken / how this has been covered
The increased tonnage will reduce recycling rates in the local area.	This issue has been raised previously, reply to the original consultation response is detailed in Annex 3 A.
The previous exceedances of emission limits have demonstrated that the Operator is not responsible enough to manage this facility.	As detailed above, the number of permit exceedances has significantly dropped. This is due to the actions the operator undertook to address the previous permit exceedances. We are satisfied the operator has sufficient measures in place to manage their emissions in compliance with the relevant limits. After the comments on the 'minded to' consultation were received two incidents occurred onsite that led to the non-compliance with permit conditions. This is explained in further detail in section 4.1.5.

c) Representations from Community and Other Organisations

Response Received from Stop the South London Incinerator	
Brief summary of issues raised:	Summary of action taken / how this has been covered
Increase in infant mortality on areas surrounding the incinerator after it began operating.	UKHSA reviewed statistics on infant mortality in the vicinity of the incinerator and noted that, given the small number of deaths being considered and the variability across the period 2000-2019, they did not consider it appropriate to compare the number of infant deaths in a single year data for 2019 with an average across the earlier period from 2000-2018 to draw any conclusions. UKHSA's risk assessment remains 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 will continue to review its advice in light of substantial new research on the health effects of incinerators which we understand to be underway, and which will be published in peer-reviewed journals. Further details can be found in section 5.3.1 of this document.

d) Representations from Individual Members of the Public

A total of 265 responses were received from individual members of the public. These raised many of the same issues as previously addressed. Only those issues additional to those already considered are listed below:

Brief summary of issues raised:	Summary of action taken / how this has been covered
The gross electrical efficiency of the plant is not in line with the values given in the BAT conclusions for waste incineration.	Within the BAT conclusions for waste incineration, BAT 20 gives the range for the expected gross electrical efficiency. As this is classed as existing plant, the gross electrical efficiency required is 20 – 35%. We are satisfied that the Operators gross electrical efficiency is within the required range.

Concerns that the emissions to air abatement system is not appropriate.	The abatement for emissions that the facility uses has been assessed and we are satisfied that it represents BAT. Emission limits are in place which comply with the BAT-AELs, further details on emissions can be found in section 5 of this decision document.
Concern regarding the Growth Duty permit condition	Refer to section 7.2.2 of this document titled 'Section 108 Deregulation Act 2015 – Growth duty'.