

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/CB3308TD

The Permit Variation Number is: EPR/CB3308TD/V002

The Applicant / Operator is: Britaniacrest Recycling Limited

The Installation is located at: Wealden Works 3Rs Facility, Former Wealden Brickworks, Langhurstwood Road, Horsham, West Sussex, RH12 4QD

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

We gave the application the reference number EPR/CB3308TD/V002. We refer to the application as "the **Application**" in this document in order to be consistent.

The number we have given to the permit variation is EPR/CB3308TD/V002. We refer to the permit variation as "the **Permit Variation**" in this document.

The Variation Application was duly made on 08/04/2021.

| | | |
|-----------------------------|---------------|---|
| Decision document: 16/11/22 | Page 1 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|---------------|---|

The Applicant is Britaniacrest Recycling Limited. We refer to Britaniacrest Recycling Limited as “the **Applicant**” in this document. Where we are talking about what would happen after the Permit is granted (if that is our final decision), we call Britaniacrest Recycling Limited “the **Operator**”.

Britaniacrest Recycling Limited’s proposed facility is located at Wealden Works 3Rs Facility, Former Wealden Brickworks, Langhurstwood Road, Horsham, West Sussex, RH12 4QD. We refer to this as “the **Installation**” in this document.

| | | |
|-----------------------------|---------------|---|
| Decision document: 16/11/22 | Page 2 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|---------------|---|

How this document is structured

- Glossary of acronyms
- Our proposed decision
- How we reached our decision
- The legal framework
- The Installation
 - Description of the Installation and general issues
 - The site and its protection
 - Operation of the Installation – general issues
- Minimising the installation's environmental impact
 - Assessment Methodology
 - Air Quality Assessment
 - Human health risk assessment
 - Impact on Habitats sites, SSSIs, non-statutory conservation sites etc.
 - Impact of abnormal operations
- Application of Best Available Techniques
 - Scope of Consideration
 - BAT and emissions control
 - BAT and global warming potential
 - BAT and POPs
 - Other Emissions to the Environment
 - Setting ELVs and other Permit conditions
 - Monitoring
 - Reporting
- Other legal requirements
 - The EPR 2016 and related Directives
 - National primary legislation
 - National secondary legislation
 - Other relevant legal requirements
- Annexes
 - Application of the Industrial Emissions Directive
 - Pre-Operational Conditions
 - Improvement Conditions
 - Consultation Responses

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 |
| BAT C | BAT conclusions |
| CEM | Continuous emissions monitor |
| CFD | Computerised fluid dynamics |
| CHP | Combined heat and power |
| COMEAP | Committee on the Medical Effects of Air Pollutants |
| CROW | Countryside and rights of way Act 2000 |
| CV | Calorific value |
| DAA | Directly associated activity – Additional activities necessary to be carried out to allow the principal activity to be carried out |
| EAL | Environmental assessment level |
| ELV | Emission limit value |
| EMS | Environmental Management System |
| EPR | Environmental Permitting (England and Wales) Regulations 2016 (SI 2016 No. 1154) as amended |
| 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 |
| HW | Hazardous waste |
| 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 |
| LOI | Loss on Ignition |

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|-----------------------------|---------------|---|
| Decision document: 16/11/22 | Page 4 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|---------------|---|

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| MSW | Municipal Solid Waste |
| MWI | Municipal waste incinerator |
| NOx | Oxides of nitrogen (NO plus NO ₂ expressed as NO ₂) |
| OTNOC | Other than normal operating conditions |
| PAH | Polycyclic aromatic hydrocarbons |
| PC | Process Contribution |
| PCB | Polychlorinated biphenyls |
| PEC | Predicted Environmental Concentration |
| 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 |
| SHPI(s) | Site(s) of High Public Interest |
| SNCR | Selective non-catalytic reduction |
| SPA(s) | Special Protection Area(s) |
| SSSI(s) | Site(s) of Special Scientific Interest |
| SWMA | Specified waste management activity |
| TDI | Tolerable daily intake |
| TEF | Toxic Equivalent Factors |
| TGN | Technical guidance note |
| TOC | Total Organic Carbon |
| UHV | Upper heating value –also termed gross calorific value |
| UKHSA | UK Health Security Agency |
| 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 |

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|-----------------------------|---------------|---|
| Decision document: 16/11/22 | Page 5 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|---------------|---|

1 Our proposed decision

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

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

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

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 was duly made on 08/04/2021. 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 RGS Note 6 for Determinations involving Sites of High Public Interest. We consider that this process satisfies, and frequently goes beyond the requirements of the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, which are directly incorporated into the IED, which applies to the Installation and the Application. We have also taken into account our

| | | |
|-----------------------------|---------------|---|
| Decision document: 16/11/22 | Page 6 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|---------------|---|

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 between 13/06/2021 and 02/08/2021, which contained all the information required by the IED, including telling people where and when they could see a copy of the Application. We also placed an advertisement in the West Sussex County Times. We also sent a briefing note confirming that the Application was available to comment on to key stakeholders.

We made a copy of the Application and all other documents relevant to our determination (see below) available to view on our Citizen Space page. Anyone wishing to see a hard copy of these documents could do so at Horsham library. Due to the COVID pandemic we were not able to carry out any face-to-face consultation such as a drop in event. However we carried out an extended consultation. This was originally going to run over a six week period, however due to early comments requesting a hard copy of the Application in the library which we fulfilled and comments indicating that several documents had not been added to the Citizenspace in error we extended the consultation period to eleven weeks to ensure that the public had a full six weeks with access to all relevant documentation.

Written comments relating to the Application were also accepted by the Environment Agency well beyond the formal consultation period.

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

- UK Health Security Agency (formerly Public Health England)
- Director of Public Health
- Health and Safety Executive
- Food Standards Agency
- Horsham District Council
- Historic England
- South Downs National Parks Authority

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

Further details along with a summary of consultation comments and our response to the representations we received can be found in Annex 4. We

| | | |
|-----------------------------|---------------|---|
| Decision document: 16/11/22 | Page 7 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|---------------|---|

have taken all relevant representations into consideration in reaching our determination.

Finally we have consulted on our draft decision from 16/05/2022 to 26/06/2022. A summary of the consultation responses and how we have taken into account all relevant representations is shown in Annex 4B.

To raise awareness of the ‘minded’ to consultation to interested parties we:

- sent a Tweet on 17 May 2022
- issued a press release on 16 May 2022
- emailed a briefing note to key stakeholder groups on 16 May 2022

We are satisfied that we took appropriate steps to inform people about the consultation. We have taken all relevant representations into consideration in reaching our determination.

2.3 Requests for Further Information

Although we were able to consider the Application duly made, we did in fact need more information in order to determine it and issued information notices on 23/08/2021 and 16/02/2022. A copy of each information notice, the response received from the Applicant and associated briefing notes were placed on our public register and on the Citizen Space page on which the original Application was advertised.

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 variation to the Permit, it will ensure that the operation of the Installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

| | | |
|-----------------------------|---------------|---|
| Decision document: 16/11/22 | Page 8 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|---------------|---|

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

4 The Installation

4.1 Description of the Installation and related issues

4.1.1 The permitted activities

The Energy Recovery Facility is an activity listed in Part 1 of Schedule 1 to the EPR and also an IED activity and therefore is subject to both sets of legislation:

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.

The materials recycling facility can be considered a Part A(1) activity or part of the incineration activity itself where the operating proposal is that it is solely in place to serve the on-site incineration activity. Some elements of the materials recycling facility relate to processing of waste which is not for input to the incineration activity but to be recovered off site. Therefore, a separate waste processing activity is included within the permit.

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.

The Waste Transfer Station, which is also on the site, remains a waste operation and is not part of the waste incineration definition because the transfer and bulking of waste is not associated with the incineration activity.

| | | |
|-----------------------------|---------------|---|
| Decision document: 16/11/22 | Page 9 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|---------------|---|

Together, the listed and directly associated activities comprise the Installation. The Waste Transfer Station or waste recycling activity are not part of the installation but together the installation and waste operations comprise a Regulated Facility.

4.1.2 The Site

The Site is located at the former Wealden Brickworks site off Langhurstwood Road, approximately 900 metres to the north west of Horsham and 1.3 km to the north east of the centre of Warnham. The site lies within the administrative areas of West Sussex County Council and Horsham District Council.

The National Grid reference for the site is TQ 17122 34331.

The Applicant submitted a plan which we consider is satisfactory, showing the site of the Installation 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 Installation does

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

Notwithstanding the fact that energy will be recovered from the process; the process is nevertheless 'incineration' because it is considered that its main purpose is the thermal treatment of waste.

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

| | | |
|-------------------------------|--|--|
| Waste throughput, Tonnes/line | 230,000 tonnes /annum | Throughput in tonnes/hour (tph) Minimum: 17.3 tph Average: 24 tph Maximum: 34.5 tph |
| Waste processed | Municipal Waste (MSW), Commercial Waste (CW) | |
| Number of lines | 1 | |
| Furnace technology | Grate | |
| Auxiliary Fuel | Gas Oil | |
| Acid gas abatement | Dry | Hydrated lime |
| NOx abatement | SNCR | Ammonia or urea: To be confirmed at commissioning |
| Reagent consumption | Auxiliary Fuel 200 te/annum Ammonia/Urea : 1,280 te/annum Lime/Other : 3,600 te/annum Activated carbon: 90 te/annum | |
| Decision document: 16/11/22 | Page 10 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| | Process water: 24,800 te/annum | |
| Flue gas recirculation | To be confirmed at the final design stage | |
| Dioxin abatement | Activated carbon | |
| Stack | TQ 17122 34331 | |
| | Height, 95 m | Diameter, 2.0 m |
| Flue gas | Flow, 48.4 Nm ³ /s | Velocity, 21.2 m/s |
| | Temperature 140°C | |
| Electricity generated | 24.4 MWe | 195,200 MWh |
| Electricity exported to the National Grid | 21.3 MWe | 170,400 MWh |
| Steam conditions | Temperature, 429°C | Pressure, 6370 kPa |
| Waste heat use | No CHP scheme in place from the outset. Primary and secondary air will be preheated using steam to increase plant efficiency. | |

4.1.4 Key Issues in the Determination

The key issue arising during this determination was air quality and noise and we therefore describe how we determined these issues in most detail in this document.

4.2 The site and its protection

4.2.1 Site setting, layout and history

The Site is accessed from a private shared estate road, which connects to the public highway of Langhurstwood Road. Langhurstwood Road links directly to the A264 approximately 750 m to the south.

The Site, as defined by the site boundary, comprises approximately 3.8 hectares (ha) of land within the former Warnham and Wealden Brickworks site, a 24.4 ha site. The site includes a large building formerly housing brick kilns, currently in use as a Waste Transfer Station/Materials Recycling Facility, surrounded by hardstanding and several smaller buildings.

The southern boundary of the Site is defined by the internal access road, beyond which lies the Weinerberger brickworks factory (also known as Warnham Brickworks). The London-Horsham railway line lies immediately to the west of the Site, beyond which there are mature tree belts and open countryside. The Warnham train station is located on the London-Horsham (via Dorking & Sutton) line approximately 300 m south of the Site.

The eastern boundary of the Site is defined by an internal access road, beyond which lies the Brookhurst Wood Mechanical and Biological Treatment (MBT) Facility, which is operated by Biffa under contract with West Sussex County Council. The MBT Facility commenced receiving waste in 2014 and covers approximately 5.6 ha of land. To the north of the MBT Facility lies an ecological habitat area, which has been established in accordance with Condition 8 of the planning permission for the MBT Facility.

Two ponds are located within dense scrub to the immediate north of the Site. The land to the immediate north and beyond the ponds is currently vacant and comprises several derelict former brickworks buildings.

Approximately 315m to the north of the Site boundary is located an Aggregate Treatment and Recycling Facility (ATRF). Further north and east of the ATRF is the recently active Brookhurst Wood Landfill Site, which covers an area of approximately 34 ha. The landfill had planning permission to receive waste until the end of 2016. However, a further planning application to extend the date for completion of restoration of the landfill until December 2023 has been approved.

The following habitats and conservation sites have been identified within the relevant screening thresholds:

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 12 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

Warnham Site of Special Scientific Interest (SSSI) 620 m north east of the site.

In addition to these designated sites there are 17 non-statutory sites recorded within 2 km of the site.

There will be no change to the existing permit boundary as a result of this variation application

4.2.2 Proposed site design: potentially polluting substances and prevention measures

The table below identifies the storage tanks and containment for the main raw materials and wastes produced on site by the operations.

| Waste | Expected Amount | Storage | Disposal/Recovery Route |
|------------------------------------|-----------------|--|--|
| Bottom Ash (including boiler ash) | 48,400 tpa | 690 m ³ ash room (flat floor) | Bottom ash will be sent to an offsite facility where metals will be extracted, and bottom ash will be sent off for re-use within aggregates. |
| Air Pollution Control Residues | 8,160 tpa | 400 m ³ APC storage silo | Disposal to landfill, following treatment, or recovery if feasible. |
| Oversized material (including PVC) | 600 | 36.8 m ³ container | Transfer off-site to a suitable disposal/recovery facility |
| Metals | 8,000 | 70 m ³ external covered bay | Sold to a third party for recovery/recycling. |
| Inert materials | 10,000 | 70 m ³ external covered bay | Transfer off site to a suitable disposal/recovery facility. |
| Wood | 2,000 | 70 m ³ external covered bay | Sold to a third party for recovery/recycling. |
| Sludge from process water pit | Variable | Process water pit | Tankered off site for disposal. |

The incoming waste material storage bunkers will be constructed of impervious concrete and will be and subject to routine visual checks when waste volumes in the bunker are low and during annual routine maintenance shutdowns.

All process areas will be located on hard standing.

All bunds provided for chemical and oil storage tanks will be manually inspected to ensure they remain empty.

Bunds will all be designed to contain at least 110% of the contents of the largest storage tank or 25% of the total tankage, whichever is the greater and will be resistant to the material which they are designed to contain. Any rainwater accumulated within the bunds will be tested for pH and visible solids and oil. Should the tests indicate that there was no contamination; the clean rainwater would be discharged to surface water via the existing outfall. In the event that the water is found to be contaminated the waters be tankered for off-site disposal.

Underground structures will be limited to:

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 13 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

- the lower part of the bunker;
- the lower part of the boiler;
- site drains;
- drainage sumps; and
- incoming clean water systems.

The ERF bunker will be subject to integrity checks during commissioning and prior to accepting waste. During commissioning the underground surface drains and foul drains will be subject to integrity testing and will be certified as sound prior to the ERF operations commencing. These drains will be subject to a testing and maintenance programme. The condition at that time will be confirmed by CCTV inspections and will subsequently determine the inspection frequency for further inspections.

The ERF is proposed to be built on land already covered by a site permitted under the Environmental Permitting Regulations. In the instance that the permit is at some point surrendered, the land would need to be returned to a satisfactory state based on the condition of the land prior to it being originally permitted. We have therefore not assessed any information on site condition at this moment in time as this is not relevant as a baseline. We have however, assessed the introduction of any new raw materials or wastes which could have a potential impact on the soil or groundwater to ensure that risk of contamination is prevented or where this is not possible, minimised.

Based on the measures included in the application we consider that the risk of pollution is low.

4.2.3 Closure and decommissioning

Having considered the information submitted in the Application, we are satisfied that the appropriate measures will be in place for the closure and decommissioning of the Installation. Pre-operational condition PO1 requires the Operator to have an Environmental Management System in place before the Installation is operational, and this will include a site closure plan.

At the definitive cessation of activities, the Operator has to satisfy us that the necessary measures have been taken so that the site ceases to pose a risk to soil or groundwater, taking into account both the baseline conditions and the site's current or approved future use. To do this, the Operator will apply to us for surrender of the permit, which we will not grant unless and until we are satisfied that these requirements have been met.

4.3 Operation of the Installation – general issues

4.3.1 Administrative issues

The Applicant is the sole Operator of the Installation.

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 14 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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

4.3.2 Management

The Applicant has stated in the Application that they will implement an Environmental Management System (EMS) that will be certified under ISO14001. A pre-operational condition (PO1) is included requiring the Operator to provide a summary of the EMS prior to commissioning of the plant and to make available for inspection all EMS documentation. The Environment Agency recognises that certification of the EMS cannot take place until the Installation is operational. An improvement condition (IC1) is included requiring the Operator to report progress towards gaining accreditation of its EMS.

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.

During the determination concerns were raised about whether the Applicant was a competent Operator. This was based on the performance of Britaniacrest Recycling Limited with reference to both the operation of their existing site, the permit for which is being variation and also to their business model.

We regulate the existing site and do not have any fundamental concerns that would lead us to decide the Applicant was not competent.

The existing Waste Transfer Station on site is a Specified Waste Management Activity and therefore Technical Competence in the form of WAMITAB is required. This was already in place for this activity prior to the permit variation and therefore is not being assessed again.

The S5.1 activity including both the incineration activity and the materials sorting and materials recovery facility (see section 4.1.1 for further description) is not listed as Specified Waste Management Activity within EPR and therefore Technical Competence in the form of a WAMITAB certificate is not required.

4.3.3 Site security

Having considered the information submitted in the Application, we are satisfied that appropriate infrastructure and procedures will be in place to ensure that the site remains secure.

4.3.4 Accident management

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 15 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

The Applicant has not submitted an 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. An Accident Management Plan will form part of the Environmental Management System and must be in place prior to commissioning as required by a pre-operational condition (PO1).

The Applicant submitted a Fire Prevention Plan. We requested additional information through a Schedule 5 notice dated 16/02/2022 including clarification on maximum length and width of waste piles and bunker cleaning proposals.

We are satisfied that the information contained in the FPP and the additional information provided to address the points above combined with the information required through pre-operational condition PO10 will be adequate to meet our FPP guidance. Full design details about the firewater provision and containment design were not available at the time of permit determination and therefore a pre-operational condition requires that details and plans of these, including confirmation of how they meet the standards set out in our FPP guidance, are submitted and approved prior to commissioning.

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 Installation in accordance with the documents set out in table S1.2 of the permit.

The documents describe the techniques that will be used for the operation of the Installation 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:

| Raw Material or Fuel | Specifications | Justification |
|-----------------------------|------------------------|---|
| Fuel 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 waste, coded by the

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 16 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

European Waste Catalogue (EWC) number, which the Applicant will accept in the waste streams entering the plant.

We requested additional information about a number of the waste codes proposed for input to the incineration process to ensure that they are suitable for incineration via a Schedule 5 notice dated 23/08/2021.

We had concerns that tyres were listed for incineration when these can be recycled. The Applicant confirmed that tyres are not in fact planned for incineration and therefore we removed the associated waste code from the proposed waste table associated with the incineration activity. Tyres are permitted to be accepted into the materials recycling or waste transfer station.

We had concerns that digestate was listed for incineration when this can be recycled. We did not consider that adequate information was provided in respect to handling and management of odour associated this waste type and therefore we have not included this waste type for acceptance in the permit.

We had concerns that several particularly dusty waste types were listed for input to the facility such as 10 01 01 and 10 01 15. We did not consider that adequate information was provided in respect to the handling and dust associated with these waste types and therefore we have not included this waste types for acceptance in the permit.

The application also included waste type 20 03 99. We do not include 99 codes unless these are required to cover a specific waste not covered elsewhere in the EWC list. The Applicant confirmed that this is not the case and agreed to removal of the code from the permit.

Asbestos will not be treated and will only be stored on site as part of the waste transfer station activity prior to onward transfer to another suitably licenced waste facility. We requested additional information on storage volumes in a Schedule 5 notice dated 16/02/22. In response the applicant confirmed that asbestos will be stored in a single skip on site with a maximum volume of 27m³.

We have specified the permitted waste types, descriptions and where appropriate quantities which can be accepted for incineration at the installation in Table S2.3.

We are satisfied that the Applicant can accept the wastes contained in Schedule 2 of the Permit because:

- (i) these wastes are categorised as municipal waste in the European Waste Catalogue or are non-hazardous wastes similar in character to municipal waste.
- (ii) the wastes are all categorised as non-hazardous in the European Waste Catalogue and are capable of being safely burnt at the installation.
- (iii) these wastes are likely to be within the design calorific value (CV) range for the plant.

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 17 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

- (iv) these wastes are unlikely to contain harmful components that cannot be safely processed at the Installation.

The incineration plant will take some municipal waste, which has not been source-segregated or separately collected or otherwise recovered, recycled or composted. Conditions 2.3.5 and 2.3.6 in the permit specify that separately collected fractions of waste can only be incinerated if:

- they are unsuitable for recovery by recycling; and
- incineration delivers the best environmental outcome in accordance with regulation 12 of the Waste (England and Wales) Regulations 2011.

We have limited the capacity of the Regulated Facility and therefore the incinerator to 230,000 tonnes per annum.

The nominal design point for the ERF is 11.5 MJ/kg however the range of CVs that will be accommodated is between 7 – 15 MJ/kg. Similarly, the design throughput of the ERF is 24 tonnes per hour (tph) although the facility will accommodate waste throughputs between 17.3 tph and 34.5 tph.

The Installation will be 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.

An existing waste transfer activity will remain in the permit and there will be no change to the level of risk associated with the activity. The materials recycling facility reflects the same waste codes or additional waste codes with the same level of risk. It excludes codes which could contain asbestos as they cannot be treated.

We requested additional information from the applicant about whether the waste materials were proposed to have additional capacity of waste throughput in addition to the incineration activity total tonnage. They confirmed that 230,000 would be the maximum input across all the activities and did not propose any additional total waste input to site.

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 Installation which are normal aspects of all EPR permit determinations. This issue is dealt with in this section.
2. The extent to which the Installation meets the requirements of Article 50(5) of the IED, which requires “*the heat generated* during the

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 18 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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 Installation are relevant considerations in the determination of BAT for the Installation, including the Global Warming Potential of the different options. This aspect is covered in the BAT assessment in section 6 of this Decision Document.
4. The extent to which the Installation meets the requirement of Article 14(5) of the Energy Efficiency Directive which requires new thermal electricity generation installations with a total thermal input exceeding 20 MW to carry out a cost-benefit assessment to "*assess the cost and benefits of providing for the operation of the installation as a high-efficiency cogeneration installation*".

Cogeneration means the simultaneous generation in one process of thermal energy and electrical or mechanical energy and is also known as combined heat and power (CHP)

High-efficiency cogeneration is cogeneration which achieves at least 10% savings in primary energy usage compared to the separate generation of heat and power – see Annex II of the Energy Efficiency Directive for detail on how to calculate this.

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 19 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

(ii) Use of energy within the Installation

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 Installation.

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

- the ERF will be designed and constructed to avoid uncontrolled air ingress;
- the boiler will be equipped with an economiser and superheaters to optimise thermal cycle efficiency without prejudicing boiler tube life;
- air pre heat is minimised by extracting secondary air from the highest and warmest point in the building, making use of natural warming of air;
- low grade heat will be extracted from the turbine and used to preheat combustion air in order to increase the combustion efficiency of the thermal cycle;
- the furnace section will be effectively insulated and lined to retain heat;
- boiler heat exchange surfaces will be cleaned on a regular basis to ensure efficient heat recovery
- optimisation of the ERF layout to avoid excessive transfer of materials; and
- a plant maintenance regime will be in place to maintain energy efficiency over time and reduce down time or outages.

The Application states that the specific energy consumption, a measure of total energy consumed per unit of waste processed, will be 107.83 kWh/tonne. The installation capacity is 230,000 tonnes per year and the total energy consumption is stated to be 3.1MWe. The calculation is based on an operation of 8,000 hours per year.

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 7 MJ/kg. The specific energy consumption in the Application is in line with that set out above.

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

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

Our 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.

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 20 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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).

No CHP scheme will be in place from the outset. 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.

The BREF says that 0.4 – 0.8 MWh of electricity can be generated per tonne of waste. Our technical guidance note SGN EPR S5.01, states that where electricity only is generated, 5-9 MW of electricity should be recoverable per 100,000 tonnes/annum of waste (which equates to 0.4 – 0.72 MWh/tonne of waste).

The Installation will generate electricity only and has been specified to maximise electrical output with little or no use of waste heat. The Application confirms 21.3 MW of electricity produced for an annual burn of 230,000 tonnes (excluding the parasitic load), which represents 9.3 MW per 100,000 tonnes/yr of waste burned (0.75 MWh/tonne of waste). The Installation is therefore at the top of the indicative BAT range.

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

The gross electrical efficiency was calculated as 31.8%.

The BAT AEEL for gross electrical efficiency is 25-35 for new plants.

The value calculated by the Applicant is in the upper half of the BAT range. In accordance with BAT 2 table S3.2 of the Permit requires the gross electrical efficiency to be measured by carrying out a performance test at full load.

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

Waste heat is used on site in the following ways:

- the boiler will be equipped with an economiser and superheaters to optimise thermal cycle efficiency without prejudicing boiler tube life;
- air pre-heat is minimised from extracting secondary air from the highest (which is also the warmest) point in the building, making use of natural warming of the air; and

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 21 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

- low grade heat will be extracted from the turbine and used to preheat combustion air in order to improve the efficiency of the thermal cycle.

The location of the Installation largely determines the extent to which waste heat can be utilised, and this is a matter for the planning authority. The Applicant carried out a feasibility study and provided a CHP-R assessment as part of their application, which showed there was potential to provide district heating to local businesses; suitable opportunities are being explored, though there are no firm commitments at this stage. There is provision within the design of the steam turbine to extract low-grade steam for a district heating scheme. Establishing a district heating network to supply local users would involve significant technical, financial and planning challenges such that this is not seen as a practicable proposition at present.

Our CHP-R guidance also states that opportunities to maximise the potential for heat recovery should be considered at the early planning stage, when sites are being identified for incineration facilities. In our role as a statutory consultee on the planning application, we ensured that the issue of energy utilisation was brought to the planning authority's attention. We have made comments about this to the planning authority in our role as a statutory consultee for the planning application.

We consider that, within the constraints of the location of the Installation explained above, the Installation will recover heat as far as practicable, and therefore that the requirements of Article 50(5) are met.

(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 installation is achieving a high level of energy recovery.

The applicant submitted an R1 assessment with the application which had incorrect input data so we requested this to be updated via a Schedule 5 notice dated 16/02/2022. The response and updated information was received on 17/03/2022.

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

$$R1 = (E_p - (E_f + E_i)) / (0.97 \times (E_w + E_f))$$

Where:

- E_p 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).
- E_f means annual energy input to the system from fuels contributing to the production of steam (GJ/yr).

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 22 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

- 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 Applicant has determined an R1 value of 0.88 based on the design data. This will need to be reassessed and verified based on the operational data of the plant once available.

The R1 factor can only be determined from operational data over a full year. At application stage it is only possible to make a provisional assessment. 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. 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) Choice of Cooling System

There are three main types of cooling systems commonly used at facilities generating energy from wastes. These are:

- once through sea or river water;
- evaporative cooling tower; and
- air cooled condenser.

The ERF will use the latter option. There are advantages and disadvantages in using each of these types of cooling system. The application confirms that the air-cooled system has been selected for the ERF for the following reasons:

- the site is not located in close proximity to an adequate supply of water;
- air cooled systems do not require the use of chemical treatment or biocides which evaporative systems do;

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 23 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

- there is no visible plume from air cooled systems; and
- there is no requirement for water input.

We accept that this choice of cooling system is BAT for this installation.

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

New thermal electricity generation installations with a total aggregated net thermal input of more than 20MW need to carry out a cost-benefit assessment (CBA) of opportunities for cogeneration (also known as combined heat and power) or supplying a district heating or cooling network when they apply for a new incineration activity.

The applicant submitted an Article 14 assessment with the application which was inadequate in several areas so we requested this to be updated via a Schedule 5 notice dated 16/02/2022. The response and updated information was received on 17/03/2022.

The applicant has carried out an assessment of the potential for operating the installation as a high-efficiency cogeneration installation and has considered heat loads within 15km of the proposed facility. They concluded the largest potential heat users are domestic comprising 92% of the total heat demand. The 'Land North of Horsham' is referred to in the application as a potential user. The search also identified a single large heat load recorded as 'unknown operator' just over 10km from the facility.

The operator has calculated that the Primary Energy Savings calculations are above 10% and that it is likely to be cost beneficial to operate in cogeneration mode if a user can be secured. At present the applicant confirms that a user has not been secured but that discussions have been held regarding the supply of heat from the facility to the proposed residential development and other potential users. Further investigation into this and reporting on progress relating to this is required as per section (vii) on permit conditions below.

(vii) Permit conditions concerning energy efficiency

Pre-operational condition PO2 requires the Operator to carry out a comprehensive review of the available heat recovery options prior to commissioning, in order to ensure that waste heat from the plant is recovered as far as possible.

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

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 24 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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 Installation and take action if at any stage the energy recovery efficiency is less than proposed.

There are no site-specific considerations that require the imposition of standards beyond indicative BAT, and so 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 5, including consumption of lime, activated carbon and urea / ammonia 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 Installation, 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. 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 Installation and does not apply to the waste being treated there. The principal waste streams the Installation 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. Table S3.3 specify limits for total organic carbon (TOC) of <3%. 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. The operator can demonstrate that LOI is a more appropriate alternative measure for monitoring of this parameter but this will be required to be agreed in writing with the Environment Agency as specified in permit table S3.4.

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

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 25 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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.

In order to ensure that the IBA residues are adequately characterised, pre-operational condition PO3 requires the Operator to provide a written plan for approval detailing the ash sampling protocols. Table S3.3 requires the Operator to carry out an ongoing programme of monitoring.

The Application states that metal fractions will be recovered from the bottom ash and sent for recycling. The Application also proposes that, where possible, bottom ash will be transported to a suitable recycling facility, from where it could be re-used in the construction industry as an aggregate.

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 Installation 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 Climate change adaptation

No climate change adaptation risk assessment is required at this stage as this is only required for new bespoke permit applications.

5. Minimising the Installation's 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.

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 26 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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 Installation on human health and the environment and what measures we are requiring to ensure a high level of protection.

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:

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 27 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

- 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.

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 28 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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

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

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

If, as a result of reviewing 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 the following documents:

- Environmental Statement, Chapter 7, Air Quality and Odour, dated February 2018
- Air Quality Assessment of Abnormal Operations, dated September 2020; and
- Human Health Risk Assessment, dated September 2020.

The assessment comprises:

- Dispersion modelling of emissions to air from the operation of the incinerator.
- A study of the impact of emissions on sensitive conservation sites.

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

The Applicant has assessed the Installation's potential emissions to air against the relevant air quality standards, and the potential impact upon local conservation sites and human health. These assessments predict the potential effects on local air quality from the Installation's stack emissions using the ADMS 5 dispersion model, which is a commonly used computer model for regulatory dispersion modelling. The model used 5 years of meteorological data collected at the weather station at Charlwood

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 29 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

approximately 9km north-east of the facility between 2011 and 2015. The impact of the terrain surrounding the site upon plume dispersion was considered in the dispersion modelling.

The BAT Conclusions for the Waste Incineration sector were published after the original air dispersion modelling was carried out and therefore an additional Appendix was submitted which considered the new BAT AELs. We also took this into account when assessing their impact assessment.

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)
- Second, they assumed that the Installation operates continuously at the relevant long-term or short-term ELVs, i.e., the maximum permitted emission rate.
- 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 Applicant has used the following public sources to establish background concentrations of pollutants for use in their air quality impact assessment:
 - Defra maps, which show estimated pollutant concentrations across the UK in 1 km grid squares;
 - Published results of local authority Review and Assessment studies of air quality and local monitoring; and
 - Results published by national monitoring networks.

We carry out sensitivity analysis on meteorological data as part of determination. As a result of the sensitivity assessment we concluded that

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 30 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

using a different set of metrological data would not have changed the conclusions of the air quality impact assessment.

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 impact assessment did not include Gaseous and vaporous organic substances, expressed as Total Organic Carbon (TOC) (usually expressed as benzene). We have conducted our own checks against the relevant Environmental Standard.

The impact assessment did not include ammonia (NH₃) emissions as a parameter for assessment against human health. We have conducted our own checks against an assumed ammonia slip of 10 mg/Nm³ (at 273K, 101kPa, 11% oxygen, dry).

The way in which the Applicant used dispersion models, its selection of input data, use of background data and the assumptions it made have been reviewed by the Environment Agency's 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 health impacts and impact on habitats and conservation sites.

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. Where the prediction is superseded by the updated Appendix taking the new BAT AELs into account we have used the updated figures.

The Applicant's modelling predicted peak ground level exposure to pollutants in ambient air and at discrete receptors. The tables below show the ground level concentrations.

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. These are the numbers shown in the tables below and so may be very slightly different to those shown in the Application. Any such minor discrepancies do not materially impact on our conclusions.

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 31 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

Assessment of Emissions to Air – non-metals

| Pollutant | EQS / EAL | | Back-ground | Process Contribution (PC) | | Predicted Environmental Concentration (PEC) | |
|-------------------|--------------------------|----|-------------|---------------------------|--------------------------|---|--------------------------|
| | $\mu\text{g}/\text{m}^3$ | | | $\mu\text{g}/\text{m}^3$ | $\mu\text{g}/\text{m}^3$ | % of EAL | $\mu\text{g}/\text{m}^3$ |
| NO ₂ | 40 | 1 | 11.9 | 0.3 | 0.75 | 12.2 | 30.5 |
| | 200 | 2 | 23.8 | 3.5 | 1.8 | 27.3 | 13.7 |
| PM ₁₀ | 40 | 1 | 24 | 0.02 | 0.05 | 24.0 | 60.1 |
| | 50 | 3 | 24 | 0.1 | 0.20 | 24.1 | 48.2 |
| PM _{2.5} | 25 | 1 | 11 | 0.02 | 0.08 | 11.02 | 44.1 |
| SO ₂ | 50 | 1 | 1.57 | 0.1 | 0.20 | 1.67 | 3.3 |
| | 266 | 4 | 3.14 | 2.9 | 1.1 | 6.04 | 2.3 |
| | 350 | 5 | 3.14 | 2.3 | 0.66 | 5.44 | 1.6 |
| | 125 | 6 | 3.14 | 0.7 | 0.6 | 3.84 | 3.1 |
| HCl | 750 | 7 | 0.39 | 0.8 | 0.1066667 | 1.2 | 0.16 |
| HF | 160 | 7 | 2.46 | 0.1 | 0.06 | 2.56 | 1.6 |
| CO | 10000 | 9 | 250 | 4.6 | 0.05 | 255 | 2.5 |
| PAH | 0.00025 | 1 | 2.30E-04 | 1.20E-05 | 4.80 | 0.000242 | 96.8 |
| NH ₃ | 180 | 1 | 1 | 0.04 | 0.02 | 1.04 | 0.58 |
| PCBs | 0.2 | 1 | 6.44E-05 | 2.39E-10 | 0.00 | 0.00006 | 0.03 |
| | 6 | 10 | 6.44E-05 | 2.39E-10 | 0.00 | 0.00006 | 0.0 |
| Dioxins | | | 2.67E-08 | 1.60E-10 | | 2.69E-08 | |

- 1 Annual Mean
- 2 99.79th %ile of 1-hour means
- 3 90.41st %ile of 24-hour means
- 4 99.9th ile of 15-min means
- 5 99.73rd %ile of 1-hour means
- 6 99.18th %ile of 24-hour means
- 7 1-hour average
- 8 Monthly average
- 9 Maximum daily running 8-hour mean
- 10 1-hour maximum

Assessment of Emissions to Air - metals

| Pollutant | EQS / EAL | | Back-ground | Process Contribution | | Predicted Environmental Concentration | |
|----------------------|--------------------------|---|-------------|--------------------------|--------------------------|---------------------------------------|--------------------------|
| | $\mu\text{g}/\text{m}^3$ | | | $\mu\text{g}/\text{m}^3$ | $\mu\text{g}/\text{m}^3$ | % of EAL | $\mu\text{g}/\text{m}^3$ |
| Cd | 0.005 | 1 | 0.00025 | 0.0001 | 2.0 | 0.00035 | 7.0 |
| Tl | | | | 0.0026 | | | 0.0026 |
| Hg | 0.25 | 1 | 0.00247 | 0.0001 | 0.04 | 0.00257 | 1.03 |
| | 7.5 | 2 | 0.00247 | 0.0026 | 0.03 | 0.00507 | 0.068 |
| Sb | 5 | 1 | | 0.0012 | 0.02 | 0.0012 | 0.02 |
| | 150 | 2 | | 0.0285 | 0.02 | 0.02850 | 0.019 |
| Pb | 0.25 | 1 | 0.01124 | 0.0012 | 0.48 | 0.01244 | 4.98 |
| Co | | | 0.00012 | 0.0385 | | 0.03862 | |
| Cu | 10 | 1 | 0.01553 | 0.0012 | 0.01 | 0.01673 | 0.167 |
| | 200 | 2 | 0.01533 | 0.0385 | 0.02 | 0.05383 | 0.027 |
| Mn | 0.15 | 1 | 0.00569 | 0.0012 | 0.80 | 0.00689 | 4.59 |
| | 1500 | 2 | 0.00569 | 0.0385 | 0.00 | 0.04419 | 0.0029 |
| V | 5 | 1 | 0.001 | 0.0012 | 0.02 | 0.0022 | 0.04 |
| | 1 | 3 | 0.001 | 0.0385 | 3.85 | 0.03950 | 3.95 |
| As | 0.006 | 1 | 0.00099 | 0.0012 | 20.00 | 0.00219 | 36.5 |
| Cr (II)(III) | 5 | 1 | 0.0043 | 0.0012 | 0.02 | 0.00550 | 0.110 |
| | 150 | 2 | 0.0043 | 0.0385 | 0.03 | 0.04280 | 0.0285 |
| Cr (VI) ⁴ | 0.0002 | 1 | | 5.99E-07 | 0.30 | | |
| Ni | 0.02 | 1 | 0.00088 | 0.0012 | 6.00 | 0.00208 | 10.4 |

- 1 Annual Mean
- 2 1-hr Maximum
- 3 24-hr Maximum
- 4 Arsenic EAL updated from $0.003\mu\text{g}/\text{m}^3$ to $0.006\mu\text{g}/\text{m}^3$ during permit determination.
- 5 Blank cell in table for background levels indicates no local monitoring data available.

(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:

- Nitrogen dioxide, PM10, PM2.5, sulphur dioxide, hydrogen chloride, hydrogen fluoride, carbon monoxide, PCBs, ammonia, mercury, antimony, lead, copper, chromium II and chromium III.

Although the Applicant did not present an impact assessment for assessment of ammonia which could be generated by ammonia slip against human health

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 33 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

standards they did include an assessment within the habitats risk assessment. We used the maximum modelled on the grid and compared with the ES for human health. We consider that emissions of ammonia would be insignificant compared to the ES for human health.

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

(ii) Emissions unlikely to give rise to significant pollution

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

- PAHs, cadmium, vanadium, arsenic and nickel.

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

All emissions either screen out as insignificant or where they do not screen out as insignificant are considered unlikely to give rise to significant pollution.

For these emissions, the Applicant has argued that the process contribution to the Predicted Environmental Concentration is negligible. 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.

We have also carefully considered whether additional measures are required above what would normally be considered BAT in order to prevent significant pollution. Consideration of additional measures to address the pollution risk from these substances is set out in section 5.2.2.

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

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 34 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

average of 200 $\mu\text{g}/\text{m}^3$. The model assumes a 70% NO_x to NO_2 conversion for the long term and 35% for the short term assessment in line with Environment Agency guidance on the use of air dispersion modelling.

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

(ii) Particulate matter PM_{10} and $\text{PM}_{2.5}$

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

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

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

- It assumes that the plant emits particulates continuously at the IED Annex VI limit for total dust, whereas actual emissions from similar plant are normally lower.
- It assumes all particulates emitted are below either 10 microns (PM_{10}) or 2.5 microns ($\text{PM}_{2.5}$), 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 PM_{10} is below 1% of the long term ES and below 10% of the short term ES and so can be screened out as insignificant. Therefore we consider the Applicant's proposals for preventing and minimising the emissions of particulates to be BAT for the Installation.

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

There is currently no emission limit prescribed nor any continuous emissions monitor for particulate matter specifically in the PM_{10} or $\text{PM}_{2.5}$ fraction. Whilst the Environment Agency is confident that current monitoring techniques will capture the fine particle fraction ($\text{PM}_{2.5}$) for inclusion in the measurement of

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 35 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

total particulate matter, an improvement condition (IC2) has been included that will require a full analysis of particle size distribution in the flue gas, and hence determine the ratio of fine to coarse particles. In the light of current knowledge and available data however the Environment Agency is satisfied that the health of the public would not be put at risk by such emissions, as explained in section 5.3.3.

(iii) Acid gases, 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 Installation.

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

The above tables show that for CO, 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 and so can be screened out as insignificant. Therefore we consider the Applicant's proposals for preventing and minimising the emissions of CO to be BAT for the Installation.

The Applicant did not model VOCs within their impact assessment so we carried out sensitivity checks used the ES for benzene. The daily EAL for benzene has recently changed to 30µg/m³ so we took this into account in our assessment. From our sensitivity check we concluded that VOCs are unlikely to give rise to significant pollution in that the predicted environmental concentration is less than 100%. For this emission, we have carefully scrutinised the Applicant's proposals to ensure that they are applying the Best Available Techniques to prevent and minimise emissions of VOCs. This is reported in section 6 of this document.

The above tables show that for 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 Installation.

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 36 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

The above tables show that for PAH 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 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, except for PAHs. Even so, from the table above, the emission is not expected to result in the ES being exceeded.

Although the Applicant did not present an impact assessment for assessment of ammonia which could be generated by ammonia slip against human health standards they did include an assessment within the habitats risk assessment. The ammonia emission level assessed was based on a release concentration of 10 mg/m³ as this level of emission is consistent with the operation of a well-controlled SNCR NO_x abatement system.

We used the maximum modelled on the grid and compared with the ES for human health. We consider that emissions of ammonia would be insignificant compared to the ES for human health.

Whilst all emissions cannot be screened out as insignificant, the Applicant's modelling shows that the installation is unlikely to result in a breach of the 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 Installation. 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.

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 37 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

There are three sets of BAT AELs for metal emissions:

- An emission limit value of 0.02 mg/m³ for mercury and its compounds (formerly WID group 1 metals).
- An aggregate emission limit value of 0.02 mg/m³ for cadmium and thallium and their compounds (formerly WID group 2 metals).
- An aggregate emission limit of 0.3 mg/m³ 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, antimony, lead, copper, chromium II and chromium III and chromium 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, vanadium, nickel and arsenic.

The installation 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)

No Air Quality Management Areas (AQMAs) have been declared within an area likely to be affected by emissions from the incinerator. The nearest AQMA is in Crawly, over 9km from the proposed installation.

5.3 Human health risk assessment

5.3.1 Our role in preventing harm to human health

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

i) **Applying Statutory Controls**

The plant will be regulated under EPR. 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).

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 38 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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 Installation on human health and the environment and any measures we are requiring to ensure a high level of protection.

iii) Expert Scientific Opinion

We take account of the views of national and international expert bodies. The gathering of evidence is a continuing process. Although gathering evidence is not our role we keep the available evidence under review. The following is a summary of some of the publications which we have considered (in no particular order).

An independent review of evidence on the health effects of municipal waste incinerators was published by **DEFRA** in 2004. It concluded that there was no convincing link between the emissions from MSW incinerators and adverse effects on public health in terms of cancer, respiratory disease or birth defects. On air quality effects, the report concluded “Waste incinerators contribute to local air pollution. This contribution, however, is usually a small proportion of existing background levels which is not detectable through environmental monitoring (for example, by comparing upwind and downwind levels of airborne pollutants or substances deposited to land). In some cases, waste incinerator facilities may make a more detectable contribution to air pollution. Because current MSW incinerators are located predominantly in urban areas, effects on air quality are likely to be so small as to be undetectable in practice.”

HPA (now PHE) in 2009 stated that “The Health Protection Agency has reviewed research undertaken to examine the suggested links between

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 39 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

emissions from municipal waste incinerators and effects on health. 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 2012 the UK Small Area Health Statistics Unit (SAHSU) at Imperial College was commissioned by Public Health England (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.

PHE 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, PHE have further stated that ‘PHE’s position remains that modern, well run and regulated municipal waste incinerators are not a significant risk to public health, and as such our advice to you [i.e. the Environment Agency] on incinerators is unchanged.’

The **Committee on Carcinogenicity of Chemicals in Food, Consumer Products and the Environment (CoC)** issued a statement in 2000 which said that “any potential risk of cancer due to residency (for periods in excess of 10 years) near to municipal solid waste incinerators was exceedingly low and probably not measurable by the most modern epidemiological techniques.” In 2009, CoC considered six further relevant epidemiological papers that had been published since the 2000 statement and concluded that

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| Decision document: 16/11/22 | Page 40 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

“there is no need to change the advice given in the previous statement in 2000 but that the situation should be kept under review”.

Republic of Ireland Health Research Board report stated that “It is hard to separate the influences of other sources of pollutants, and other causes of cancer and, as a result, the evidence for a link between cancer and proximity to an incinerator is not conclusive”.

The **Food Safety Authority of Ireland (FSAI) (2003)** investigated possible implications on health associated with food contamination from waste incineration and concluded: “In relation to the possible impact of introduction of waste incineration in Ireland, as part of a national waste management strategy, on this currently largely satisfactory situation, the FSAI considers that such incineration facilities, if properly managed, will not contribute to dioxin levels in the food supply to any significant extent. The risks to health and sustainable development presented by the continued dependency on landfill as a method of waste disposal far outweigh any possible effects on food safety and quality.”

Health Protection Scotland (2009) considered scientific studies on health effects associated with the incineration of waste particularly those published after the Defra review discussed earlier. The main conclusions of this report were: “(a) For waste incineration as a whole topic, the body of evidence for an association with (non-occupational) adverse health effects is both inconsistent and inconclusive. However, more recent work suggests, more strongly, that there may have been an association between emissions (particularly dioxins) in the past from industrial, clinical and municipal waste incinerators and some forms of cancer, before more stringent regulatory requirements were implemented. (b) For individual waste streams, the evidence for an association with (non-occupational) adverse health effects is inconclusive. (c) The magnitude of any past health effects on residential populations living near incinerators that did occur is likely to have been small. (d) Levels of airborne emissions from individual incinerators should be lower now than in the past, due to stricter legislative controls and improved technology. Hence, any risk to the health of a local population living near an incinerator, associated with its emissions, should also now be lower.”

The **US National Research Council Committee on Health Effects of Waste Incineration (NRC) (NRC 2000)** reviewed evidence as part of a wide ranging report. The Committee view of the published evidence was summarised in a key conclusion: “Few epidemiological studies have attempted to assess whether adverse health effects have actually occurred near individual incinerators, and most of them have been unable to detect any effects. The studies of which the committee is aware that did report finding health effects had shortcomings and failed to provide convincing evidence. That result is not surprising given the small populations typically available for study and the fact that such effects, if any, might occur only infrequently or take many years to appear. Also, factors such as emissions from other pollution sources and variations in human activity patterns often decrease the likelihood of determining a relationship between small contributions of

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 41 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

pollutants from incinerators and observed health effects. Lack of evidence of such relationships might mean that adverse health effects did not occur, but it could mean that such relationships might not be detectable using available methods and sources.”

The **British Society for Ecological Medicine (BSEM)** published a report in **2005** on the health effects associated with incineration and concluded that “Large studies have shown higher rates of adult and childhood cancer and also birth defects around municipal waste incinerators: the results are consistent with the associations being causal. A number of smaller epidemiological studies support this interpretation and suggest that the range of illnesses produced by incinerators may be much wider. Incinerator emissions are a major source of fine particulates, of toxic metals and of more than 200 organic chemicals, including known carcinogens, mutagens, and hormone disrupters. Emissions also contain other unidentified compounds whose potential for harm is as yet unknown, as was once the case with dioxins. Abatement equipment in modern incinerators merely transfers the toxic load, notably that of dioxins and heavy metals, from airborne emissions to the fly ash. This fly ash is light, readily windborne and mostly of low particle size. It represents a considerable and poorly understood health hazard.”

The BSEM report was reviewed by the HPA and they concluded that “Having considered the BSEM report the HPA maintains its position that contemporary and effectively managed and regulated waste incineration processes contribute little to the concentrations of monitored pollutants in ambient air and that the emissions from such plants have little effect on health.” The BSEM report was also commented on by the consultants who produced the Defra 2004 report referred to above. They said that “It fails to consider the significance of incineration as a source of the substances of concern. It does not consider the possible significance of the dose of pollutants that could result from incinerators. It does not fairly consider the adverse effects that could be associated with alternatives to incineration. It relies on inaccurate and outdated material. In view of these shortcomings, the report’s conclusions with regard to the health effects of incineration are not reliable.”

A **Greenpeace** review on incineration and human health concluded that a broad range of health effects have been associated with living near to incinerators as well as with working at these installations. Such effects include cancer (among both children and adults), adverse impacts on the respiratory system, heart disease, immune system effects, increased allergies and congenital abnormalities. Some studies, particularly those on cancer, relate to old rather than modern incinerators. However, modern incinerators operating in the last few years have also been associated with adverse health effects.”

The Health Protection Scotland report referred to above says that “the authors of the Greenpeace review do not explain the basis for their conclusion that there is an association between incineration and adverse effects in terms of criteria used to assess the strength of evidence. The weighting factors used to derive the assessment are not detailed. The objectivity of the conclusion cannot therefore be easily tested.”

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| Decision document: 16/11/22 | Page 42 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

From this published body of scientific opinion, we take the view stated by the HPA 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”. We therefore ensure that permits contain conditions which require the installation to be well-run and regulate the installation to ensure compliance with such permit conditions.

iv) Health Risk Models

Comparing the results of air dispersion modelling as part of the Environmental Impact assessment against European and national air quality standards effectively makes a health risk assessment for those pollutants for which a standard has been derived. These air quality standards have been developed primarily 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 I-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 therefore not usually necessary to model the human body intake.

Concern was raised about the potential human intake of mercury linked to fisheries. We usually consider that if there are no fisheries within 10km that there is no significant risk. In this instance there are several sites listed as 'fisheries'. Based on records from the Centre for Environment, Fisheries and

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| Decision document: 16/11/22 | Page 43 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

Aquaculture Science (CEFAS) and information available on line, we have concluded that these are catch and release fisheries and therefore we consider that the risk of metals getting into the food chain via this route is low. Specific consideration of accumulation of metals is not required in this case. We are satisfied that impacts from mercury will not be significant.

The Committee on the Medical Effects of Air Pollutants (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

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 44 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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

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 I-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.

The maximum contribution of the facility to the COT TDI is 3.3% for the Farmer East 2 child receptor and 2.2% for the Farmer East 2 adult receptor. This assumes as a worst-case that these receptors produce their own home reared and home-grown food at the location of maximum impact for the area and represents an extreme worst-case. This assumes that both arable and pasture land are available at this location. Therefore, it is considered that the predicted impacts for this receptor and for other farmer receptors represent a worst-case. For the residential receptors, the maximum contribution of the facility to the COT TDI is 0.1% for the Resident Station Road receptor. Therefore, the contribution of the facility to the intake of dioxins/furans and dioxin-like PCBs is low. We have conducted our own HHRA screening using the HHRAP, assuming exposure at the maximum point of impact and agree with the conclusions drawn in the assessment submitted with the Application.

| Receptor | adult | child |
|-----------------------------|--------------|--------------|
| Farmer East 2 | 0.045 | 0.065 |
| Residential Horsham 4 | 0.00039 | 0.0011 |
| Residential Station Road | 0.00075 | 0.0022 |
| Residential Warnham 1 and 2 | 0.00033 | 0.00095 |

Calculated maximum daily intake of dioxins by local receptors resulting from the operation of the proposed facility (pg I-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

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 45 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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 (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.

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 46 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

The HPA (now PHE) 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 PM₁₀ and PM_{2.5} with effects on health derived by COMEAP and goes on to say that if these coefficients are applied to small increases in concentrations produced, locally, by incinerators; the estimated effects on health are likely to be small. PHE 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."

PHE 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. PHE 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 Installation

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| Decision document: 16/11/22 | Page 47 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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 PHE 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 air quality impact assessment concluded that all Installation emissions screen out as insignificant except for PAH, cadmium, vanadium, arsenic and nickel; where the impact of emissions of PAH, cadmium, vanadium and arsenic nickel 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.

The Environment Agency has reviewed the methodology employed by the Applicant to carry out the health impact assessment and agreed that it was appropriate and sufficiently precautionary.

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

Public Health England and the Local Authority Director of Public Health were consulted on the Application and concluded that they had no significant concerns regarding the risk to the health of humans from the installation. The Food Standards Agency was also consulted during the permit determination process and it concluded that it is unlikely that there will be any unacceptable effects on the human food chain as a result of the operations at the Installation. Details of any responses provided by Public Health England, the Local Authority Director of Public Health and the FSA to the consultation on this Application can be found in Annex 4.

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.

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| Decision document: 16/11/22 | Page 48 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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

5.4.1 Sites Considered

There are no Habitats (i.e. Special Areas of Conservation, Special Protection Areas and Ramsar) sites within 10km of the proposed installation.

There is one Site of Special Scientific Interest located within 2km of the proposed installation:

- Warnham SSSI, 602m from the proposed installation.

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

- Brockhurst Wood & Gill & Morris's Wood LWS, 556m from the proposed installation.
- Warnham Mill Pond LWS, 1048m from the proposed installation.
- Brockhurst Wood & Gill & Morris's Wood LWS, 556m from the proposed installation.

There are also 14 sites of Ancient Woodland within 2km of the site, the closest of which are:

- Ancient Woodland (unknown name), 207m from proposed installation.
- Ancient Woodland (unknown name), 780m from proposed installation.
- Ancient Woodland (unknown name), 1301m from proposed installation.
- Ancient Woodland (unknown name), 1342m from proposed installation.

5.4.2 SSSI Assessment

Warnham SSSI is approximately 600m north-east of the site. It is designated for geological reasons and the Applicant has therefore concluded that it is not sensitive to air pollution and have not considered it further. We agree with these conclusions and approach.

5.4.3 Assessment of other conservation sites

The Application contains an assessment of the maximum grid process contributions compared with the critical levels and critical loads for the protection of ecosystems. These are presented in following table:

| Pollutant | ES ($\mu\text{g}/\text{m}^3$) | Process Contribution (PC) ($\mu\text{g}/\text{m}^3$) | PC as % of ES |
|-------------------------------|------------------------------------|--|---------------|
| Direct Impacts ² | | | |
| NO _x Annual | 30 | 0.80 | 3 |
| NO _x Daily Mean | 75 | 6.91 | 9 |

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 49 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

| Pollutant | ES ($\mu\text{g}/\text{m}^3$) | Process Contribution (PC) ($\mu\text{g}/\text{m}^3$) | PC as % of ES |
|---|------------------------------------|--|---------------|
| SO ₂ Annual | 10 ⁽¹⁾ | 0.20 | 1 |
| Ammonia | 1 ⁽²⁾ | 0.04 | 4 |
| HF Weekly Mean | 0.5 | 0.026 | 5 |
| HF Daily Mean | 5 | 0.034 | 1 |
| Deposition Impacts | | | |
| N Deposition (kg N/ha/yr) | 5 - 20 | 0.47 | 2 - 9 |
| Acidification (Keq/ha/yr) | 1.173 - 3.01 | 0.044 - 0.081 | 3 - 4 |
| <p>Note 1: Critical Level for SO₂ is 20 for higher plants or 10 for sensitive lichen communities & bryophytes and ecosystems where lichens & bryophytes are an important part of the ecosystem's integrity. In this case, the lowest value has been used.</p> <p>Note 2: * Critical Levels for NH₃ range between 1 and 3 $\mu\text{g}/\text{m}^3$. In this case, the lowest value has been used.</p> | | | |

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 other conservations site it can be concluded that a proposed installation will not cause significant pollution if the PC is less than 100% of the relevant Critical Level or Load.

The tables above show that the PCs are below the critical levels or loads. We are satisfied that the Installation 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

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 50 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

not (in any circumstances) exceed 4 hours uninterrupted continuous operation or the cumulative period of operation does not exceed 60 hours in a calendar year. This is a recognition that the emissions during transient states (e.g. start-up and shut-down) are higher than during steady-state operation, and the overall environmental impact of continued operation with a limited exceedance of an ELV may be less than that of a partial shut-down and re-start.

For incineration plant, IED sets backstop limits for particulates, CO and TOC which must continue to be met 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 mg/m³ (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. 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:

- NO_x emissions of 400 mg/m³
- Particulate emissions of 150 mg/m³ (5 x half hourly BAT AEL value)
- SO₂ emissions of 250 mg/m³ (1.25 x half hourly BAT AEL value)
- HCl emissions of 1000 mg/m³ (16 x normal half hourly BAT AEL value)
- Dioxin emissions of 10 ng/m³ (100 x IED limit)
- Metal emissions other than mercury are 5 times those of normal operation
- Mercury emissions are 5 times those of normal operation

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

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 51 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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

Assessment of Emissions to Air – Abnormal emissions

| Pollutant | EQS / EAL | | Back-ground | Process Contribution (PC) | | Predicted Environmental Concentration (PEC) | |
|------------------|--------------------------|---|-------------|---------------------------|--------------------------|---|--------------------------|
| | $\mu\text{g}/\text{m}^3$ | | | $\mu\text{g}/\text{m}^3$ | $\mu\text{g}/\text{m}^3$ | % of EAL | $\mu\text{g}/\text{m}^3$ |
| NO ₂ | 120 | 2 | 23.8 | 11.5 | 9.6 | 35.3 | 29.4 |
| PM ₁₀ | 50 | 3 | 24 | 0.2244 | 0.45 | 24.2244 | 48.4 |
| SO ₂ | 266 | 4 | 3.14 | 24 | 9.0 | 27.14 | 10.2 |
| | 350 | 5 | 3.14 | 18.8 | 5.37 | 21.94 | 6.3 |
| HCl | 750 | 6 | 0.39 | 128.3 | 17.106667 | 128.7 | 17.16 |
| HF | 160 | 6 | 2.46 | 1.3 | 0.8125 | 3.76 | 2.4 |
| Hg | 7.5 | 1 | 0.00247 | 0.0321 | 0.43 | 0.03457 | 0.461 |
| Sb | 150 | 1 | 0 | 0.3207 | 0.21 | 0.32070 | 0.214 |
| Cu | 200 | 1 | 0.01553 | 0.3207 | 0.16 | 0.33623 | 0.168 |
| Mn | 1500 | 1 | 0.00569 | 0.3207 | 0.02 | 0.32639 | 0.0218 |
| Cr (II)(III) | 150 | 1 | 0.0043 | 0.3207 | 0.21 | 0.32500 | 0.2167 |

- 1 1-hr Maximum
- 2 99.79th %ile of 1-hour means
- 3 90.41st %ile of 24-hour means
- 4 99.9th ile of 15-min means
- 5 99.73rd %ile of 1-hour means
- 6 1-hour average

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.

- NO₂, PM₁₀, SO₂, HF, Hg, Sb, Cu, Mn, Cr(II)(III)

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.

- HCl

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.

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 52 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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 by a factor of approximately 1.67 in the TDI reported in section 5.3.2. In these circumstances the TDI would be as set out in the table below. At this level, emissions of dioxins will still not pose a risk to human health.

The results showed that the predicted daily intake of dioxins, furans and dioxin like PCBs at all receptors, resulting from emissions from the proposed facility, were significantly below the recommended TDI levels.

The maximum contribution of the facility to the COT TDI from abnormal emissions is 5.5% for the Farmer East 2 child receptor and 3.75% for the Farmer East 2 adult receptor. This assumes as a worst-case that these receptors produce their own home reared and home-grown food at the location of maximum impact for the area and represents an extreme worst-case. This assumes that both arable and pasture land are available at this location. Therefore, it is considered that the predicted impacts for this receptor and for other farmer receptors represent a worst-case. For the residential receptors, the maximum contribution of the facility to the COT TDI is 0.19% for the Resident Station Road receptor child. Therefore, the contribution of the facility to the intake of dioxins/furans and dioxin-like PCBs is low. We have conducted our own HHRA screening using the HHRAP, assuming exposure at the maximum point of impact and agree with the conclusions drawn in the assessment submitted with the Application.

| Receptor | adult | child |
|-----------------------------|--------------|--------------|
| Farmer East 2 | 0.075 | 0.11 |
| Residential Horsham 4 | 0.00065 | 0.0018 |
| Residential Station Road | 0.0013 | 0.0037 |
| Residential Warnham 1 and 2 | 0.00055 | 0.0016 |

Calculated maximum daily intake of dioxins by local receptors resulting from abnormal operation of the proposed facility (pg I-TEQ/ kg-BW/day)

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 first issue we address is the fundamental choice of incineration technology. There are a number of alternatives, and the Applicant has explained why it has chosen one particular kind for this Installation.
- We then consider in particular control measures for the emissions which were not screened out as insignificant in the previous section on

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| Decision document: 16/11/22 | Page 53 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

minimising the installation's environmental impact (see section 5.2 for further detail).

- We also have to consider the combustion efficiency and energy utilisation of different design options for the Installation, which are relevant considerations in the determination of BAT for the Installation, including the Global Warming Potential of the different options.
- 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 emission limit values. 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 Conclusions shall be the reference for setting the permit conditions, so it may be possible and desirable to achieve emissions below the limits referenced in Chapter IV. The BAT conclusions were published on 03/12/2019.

Even if the Chapter IV limits are appropriate, operational controls complement the emission limits 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 who sought to operate its installation continually at the maximum permitted level would almost inevitably breach those limits regularly, simply by virtue of normal fluctuations in plant performance, resulting in enforcement action (including potentially prosecution) being taken. Assessments based on, say, Chapter IV limits are therefore "worst-case" scenarios.

Should the Installation, once in operation, emit at rates significantly below the limits included in the Permit, we will consider tightening ELVs appropriately. We are, however, satisfied that emissions at the permitted limits would ensure a high level of protection for human health and the environment in any event.

6.1.1 Consideration of Furnace Type

The prime function of the furnace is to achieve maximum combustion of the waste. Chapter IV of the IED requires that the plant (furnace in this context) should be designed to deliver its requirements. The main requirements of Chapter IV in relation to the choice of a furnace are compliance with air emission limits for CO and TOC and achieving a low TOC/LOI level in the bottom ash.

The BREF states that Municipal Waste can be incinerated in traveling grates, rotary kilns and fluidised bed technology. Fluidised bed technology requires MSW to be of a certain particle size range, which usually requires some degree of pre-treatment even when the waste is collected separately. The BREF describes other process such as gasification and pyrolysis. The BREF notes that some of the processes have encountered technical and economic

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 54 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

problems when scaled up to commercial, industrial sizes. Some are used on a commercial basis in Japan and are being tested in demonstration plants in Europe but still only have a small share of overall capacity.

Section 4.3 of the BREF provides a comparison of combustion and thermal treatment technologies, used in Europe and factors affecting their applicability and operational suitability for various waste types. There is also some information on the comparative costs. The table below has been extracted from the BREF tables. This table is also in line with the Guidance Note “The Incineration of Waste (EPR 5.01)). However, it should not be taken as an exhaustive list nor that all technologies listed have found equal application across Europe.

Overall, any of the furnace technologies listed below would be considered as BAT provided the Applicant has justified it in terms of:

- nature/physical state of the waste and its variability
- proposed plant throughput which may affect the number of incineration lines
- preference and experience of chosen technology including plant availability
- nature and quantity/quality of residues produced.
- emissions to air – usually NO_x as the furnace choice could have an effect on the amount of unabated NO_x produced
- energy consumption – whole plant, waste preparation, effect on GWP
- Need, if any, for further processing of residues to comply with TOC
- Costs

Summary comparison of thermal treatment technologies (reproduced from the Waste Incineration BREF)

| Technique | Key waste characteristics and suitability | Throughput per line | Advantages | Disadvantages / Limitations of use | Bottom Ash Quality | Cost |
|------------------------------|---|---|---|---|--------------------|--|
| Moving grate (air-cooled) | <ul style="list-style-type: none"> • Low to medium heat values (LCV 5 – 16.5 GJ/t) • Municipal and other heterogeneous solid wastes • Can accept a proportion of sewage sludge and/or medical waste with municipal waste • Applied at most modern MSW installations | <ul style="list-style-type: none"> • 1 to 50 t/h with most projects 5 to 30 t/h. • Most industrial applications not below 2.5 or 3 t/h. | <ul style="list-style-type: none"> • Widely proven at large scales. • Robust • Low maintenance cost • Long operational history • Can take heterogeneous wastes without special preparation | <ul style="list-style-type: none"> • Generally not suited to powders, liquids or materials that melt through the grate | TOC 0.5% to 3% | High capacity reduces specific cost per tonne of waste |
| Moving grate (liquid Cooled) | Same as air-cooled grates except: LCV 10 – 20 GJ/t | Same as air-cooled grates | As air-cooled grates but: <ul style="list-style-type: none"> • higher heat value waste is treatable • Better combustion control possible. | As air-cooled grates but: <ul style="list-style-type: none"> • risk of grate damage/leaks • higher complexity | TOC 0.5% to 3% | Slightly higher capital cost than air-cooled |
| Rotary Kiln | Can accept liquids and pastes as well as gases Solid feeds more limited than grate (due to refractory damage) often applied to hazardous Wastes | <16 t/h | <ul style="list-style-type: none"> • Very well proven • Broad range of wastes • Good burn out even of HW | Throughputs lower than grates | TOC <3 % | Higher specific cost due to reduced capacity |

| Technique | Key waste characteristics and suitability | Throughput per line | Advantages | Disadvantages / Limitations of use | Bottom Ash Quality | Cost |
|-----------------------------|---|---------------------|---|---|---|--|
| Fluid bed - bubbling | <ul style="list-style-type: none"> • Wide range of CV (5-25 MJ/kg) • Only finely divided consistent wastes. • Limited use for raw MSW • Often applied to sludges co fired with RDF, shredded MSW, sludges, poultry manure | Up to 25 t/h | <ul style="list-style-type: none"> • Good mixing • Fly ashes of good leaching quality | <ul style="list-style-type: none"> • Careful operation required to avoid clogging bed. • Higher fly ash quantities. | TOC <1% | <p>FGT cost may be lower.</p> <p>Costs of waste preparation</p> |
| Fluid bed - circulating | <ul style="list-style-type: none"> • Wide range of CV (6-25 MJ/kg) • Only finely divided consistent wastes. • Limited use for raw MSW • Often applied to sludges co-fired with RDF, coal, wood waste | Up to 70 t/h | <ul style="list-style-type: none"> • Good mixing • High steam parameters up to 500°C • Greater fuel flexibility than BFB • Fly ashes of good leaching quality | <ul style="list-style-type: none"> • Cyclone required to conserve bed material • Higher fly ash quantities | TOC <1% | <ul style="list-style-type: none"> • FGT cost may be lower. • Costs of waste preparation |
| Spreader - stoker combustor | <ul style="list-style-type: none"> • RDF and other particle feeds • Poultry manure • Wood wastes | No information | <ul style="list-style-type: none"> • Simple grate construction • Less sensitive to particle size than FB | Only for well defined mono-streams | No information | No information |
| Gasification - fixed bed | <ul style="list-style-type: none"> • Mixed plastic wastes • Other similar consistent streams • Gasification less widely used/proven than incineration | Up to 20 t/h | <ul style="list-style-type: none"> • Low leaching residue • Good burnout if oxygen blown • Syngas available • Reduced oxidation of recyclable metals | <ul style="list-style-type: none"> • Limited waste feed • Not full combustion • High skill level • Tar in raw gas • Less widely proven | <ul style="list-style-type: none"> • Low leaching bottom ash • Good burnout with oxygen | High operating/maintenance costs |

| Technique | Key waste characteristics and suitability | Throughput per line | Advantages | Disadvantages / Limitations of use | Bottom Ash Quality | Cost |
|-------------------------------|---|--|--|---|---|--|
| Gasification - entrained flow | <ul style="list-style-type: none"> Mixed plastic wastes Other similar consistent streams Not suited to untreated MSW Gasification less widely used/proven than incineration | Up to 10 t/h | <ul style="list-style-type: none"> Low leaching slag Reduced oxidation of recyclable metals | <ul style="list-style-type: none"> Limited waste feed Not full combustion High skill level Less widely proven | low leaching slag | <ul style="list-style-type: none"> High operation/maintenance costs High pre-treatment costs |
| Gasification - fluidised bed | <ul style="list-style-type: none"> Mixed plastic wastes Shredded MSW Shredder residues Sludges Metal rich wastes Other similar consistent streams Gasification less widely used/proven than incineration | 5 – 20 t/h | <ul style="list-style-type: none"> Can use low reactor temperatures e.g. for Al recovery Separation of main non combustibles Can be combined with ash melting Reduced oxidation of recyclable metals | <ul style="list-style-type: none"> Limited waste size (<30cm) Tar in raw gas Higher UHV raw gas Less widely proven | If combined with ash melting chamber ash is vitrified | Lower than other gasifiers |
| Pyrolysis | <ul style="list-style-type: none"> Pre-treated MSW High metal inert streams Shredder residues/plastics Pyrolysis is less widely used/proven than incineration | ~ 5 t/h (short drum) 5 – 10 t/h (medium drum) | <ul style="list-style-type: none"> No oxidation of metals No combustion energy for metals/inert In reactor acid neutralisation possible Syngas available | <ul style="list-style-type: none"> Limited wastes Process control and engineering critical High skill level Not widely proven Need market for syngas | <ul style="list-style-type: none"> Dependent on process temperature Residue produced requires further processing and sometimes combustion | High pre-treatment, operation and capital costs |

The Applicant has carried out a review of the following candidate furnace types:

- Moving Grate Furnace
- Fluidised Bed
- Gasification
- Pyrolysis

The Applicant has proposed to use a furnace technology comprising moving grate.

The Applicant has justified the selection of furnace technology as a well proven, reliable and effective technique for combustion of waste materials comprising or derived from MSW or commercial wastes. They confirm that demonstrable and well understood performance was a key objective in the selection of the chosen technology which is identified in the tables above as being considered BAT in the BREF or TGN for this type of waste feed.

The Applicant discounted gasification because, *'operationally, a homogeneous incoming waste stream with a high organic content is required to obtain consistent gas quality. Therefore, this technology is better suited to applications where the incoming waste material has been pre-treated'*. The BAT justification also stated that the gasification process would require energy input from supplementary combustion to achieve the temperature required for thermal treatment. We accept their justification.

The Applicant also concluded that gasification and pyrolysis systems are recognised as emerging techniques however, their availability and reliability are yet to be proven technologies within the UK at the scale proposed for this facility.

The Applicant discounted Fluidised Bed (FB) technology because it requires a homogenous feedstock and therefore would not be suited to all of the types of waste material proposed for the ERF. We accept this justification.

The Applicant proposes to use gasoil as support fuel for start-up, shut down and for the auxiliary burners. The Applicant has justified its choice of low sulphur gas oil as the support fuel on the basis that there is guaranteed availability compared to natural gas and due to the intermittent use of the fuel and we agree with that assessment. LPG was also considered but was concluded to increase fire risk on site and therefore discounted.

Boiler Design

In accordance with BAT 30 of the BAT C and our Technical Guidance Note, EPR 5.01, the Applicant has confirmed that the boiler design will include the following features to minimise the potential for reformation of dioxins within the de-novo synthesis range:

- ensuring that the steam/metal heat transfer surface temperature is a minimum where the exhaust gases are within the de-novo synthesis range;

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 59 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

- design of the boilers using CFD to ensure no pockets of stagnant or low velocity gas;
- boiler passes are progressively decreased in volume so that the gas velocity increases through the boiler; and
- design of boiler surfaces to prevent boundary layers of slow moving gas.

Any of the options listed in the BREF and summarised in the table above can be BAT. The Applicant has chosen a furnace technique that is listed in the BREF and we are satisfied that the Applicant has provided sufficient justification to show that their technique is BAT. This is not to say that the other techniques could not also be BAT, but that the Applicant has shown that their chosen technique is at least comparable with the other BAT options. We believe that, based on the information gathered by the BREF process, the chosen technology will achieve the requirements of Chapter IV of the IED for the air emission of TOC/CO and the TOC on bottom ash.

6.2 BAT and emissions control

The prime function of flue gas treatment is to reduce the concentration of pollutants in the exhaust gas as far as practicable. The techniques which are described as BAT individually are targeted to remove specific pollutants, but the BREF notes that there is benefit from considering the Flue Gas Cleaning System (FGC) system as a whole unit. Individual units often interact, providing a primary abatement for some pollutants and an additional effect on others.

The BREF lists the general factors requiring consideration when selecting flue-gas treatment (FGC) systems as:

- type of waste, its composition and variation
- type of combustion process, and its size
- flue-gas flow and temperature
- flue-gas content, including magnitude and rate of composition fluctuations
- target emission limit values
- restrictions on discharge of aqueous effluents
- plume visibility requirements
- land and space availability
- availability and cost of outlets for residues accumulated/recovered
- compatibility with any existing process components (existing plants)
- availability and cost of water and other reagents
- energy supply possibilities (e.g. supply of heat from condensing scrubbers)
- reduction of emissions by primary methods
- noise
- arrangement of different flue-gas cleaning devices if possible with decreasing flue-gas temperatures from boiler to stack

Taking these factors into account the Technical Guidance Note points to a range of technologies being BAT subject to circumstances of the Installation.

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| Decision document: 16/11/22 | Page 60 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

6.2.1 Particulate Matter

| Particulate matter | | | | |
|--|--|---|---|---|
| Technique | Advantages | Disadvantages | Optimisation | Defined as BAT in BREF or TGN for: |
| Bag / Fabric filters (BF) | Reliable abatement of particulate matter to below 5mg/m ³ | Max temp 250°C Higher energy use than ESP Sensitive to condensation and corrosion | Multiple compartments Bag burst detectors | Most plants |
| Wet scrubbing | May reduce acid gases simultaneously. | Not normally BAT. Liquid effluent produced | Require reheat to prevent visible plume and dew point problems. | Where scrubbing required for other pollutants |
| Ceramic filters | High temperature applications Smaller plant. | May “blind” more than fabric filters | | Small plant. High temperature gas cleaning required. |
| Electrostatic precipitators (ESP) | Low pressure gradient. Use with BF may reduce the energy consumption of the induced draft fan. | Not normally BAT by itself Risk of dioxin formation if used in 200-400°C range | | When used with other particulate abatement plant |

The Applicant proposes to use fabric filters for the abatement of particulate matter. Fabric filters provide reliable abatement of particulate matter to below 5 mg/m³ and are BAT for most installations. The Applicant proposes to use multiple compartment filters with burst bag detection to minimise the risk of increased particulate emissions in the event of bag rupture.

Emissions of particulate matter have been previously screened out as insignificant, and so the Environment Agency agrees that the Applicant’s proposed technique is BAT for the installation.

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| Decision document: 16/11/22 | Page 61 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

6.2.2 Oxides of Nitrogen

| Oxides of Nitrogen : Primary Measures | | | | |
|---|---|---|---------------------------------|---|
| Technique | Advantages | Disadvantages | Optimisation | Defined as BAT in BREF or TGN for: |
| Low NOx burners | Reduces NOx at source | | Start-up, supplementary firing. | Where auxiliary burners required. |
| Starved air systems | Reduce CO simultaneously. | | | Pyrolysis, Gasification systems. |
| Optimise primary and secondary air injection | | | | All plant. |
| Flue Gas Recirculation (FGR) | Reduces the consumption of reagents used for secondary NOx control. May increase overall energy recovery | Some applications experience corrosion problems. Can result in elevated CO and other products of incomplete combustion | | Justify if not used |

| Oxides of Nitrogen : Secondary Measures (BAT is to apply Primary Measures first) | | | | |
|---|--|---|--------------------------|---|
| Technique | Advantages | Disadvantages | Optimisation | Defined as BAT in BREF or TGN for: |
| Selective catalytic reduction (SCR) | NOx emissions 40-150mg/ m ³ Reduces CO, VOC, dioxins | Expensive. Re-heat required – reduces plant efficiency | | All plant |
| SCR by catalytic filter bags | 50-120 mg/m ³ | | | Applicable to new and existing plants with or without existing SNCR. Can be used with NH ₃ as slip catalyst with SNCR |
| Selective non-catalytic | NOx emissions 80 -180 mg/m ³ | Relies on an optimum | Port injection locations | All plant unless lower |
| Decision document: 16/11/22 | | Page 62 of 151 | | Variation Application Number EPR/CB3308TD/V002 |

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|------------------------------|---|--|--|--|
| reduction (SNCR) | Lower energy consumption than SCR Lower costs than SCR | temperature around 900 °C, and sufficient retention time for reduction May lead to Ammonia slip | | NO _x release required for local environmental protection. |
| Reagent Type: Ammonia | Likely to be BAT | More difficult to handle Lower nitrous oxide formation Narrower temperature window | | All plant |
| Reagent Type: Urea | Likely to be BAT | Higher N ₂ O emissions than ammonia, optimisation particularly important | | All plant |

The Applicant proposes to implement the following primary measures:

- Low NO_x burners – this technique reduces NO_x at source and is defined as BAT where auxiliary burners are required.
- Optimise primary and secondary air injection – this technique is BAT for all plant.

Flue gas recirculation reduces the consumption of reagents for secondary NO_x control and can increase overall energy recovery, although in some applications there can be corrosion problems. The Applicant has confirmed that the decision on including FGR will depend on the final design of the furnace and will be confirmed prior to start of commissioning.

There are three recognised techniques for secondary measures to reduce NO_x. These are Selective Catalytic Reduction (SCR), SCR by catalytic filter bags and Selective Non-Catalytic Reduction (SNCR) with or without catalytic filter bags. For each technique, there is a choice of urea or ammonia reagent.

SCR can reduce NO_x levels to below 50 mg/m³ and can be applied to all plant, it is generally more expensive than SNCR and requires reheating of the waste gas stream which reduces energy efficiency, periodic replacement of the catalysts also produces a hazardous waste. The use of SCR by catalytic filter bags can reduce emissions to 50 -120 mg/m³ with low investment costs. SNCR can typically reduce NO_x levels to between 80 and 180 mg/m³, it relies on an optimum temperature of around 900 °C and sufficient retention time for reduction. SNCR is more likely to have higher levels of ammonia slip. The technique can be applied to all plant unless lower NO_x releases are required for local environmental protection. Urea or ammonia can be used as the reagent with either technique, urea is somewhat easier to handle than

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| Decision document: 16/11/22 | Page 63 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

ammonia and has a wider operating temperature window but tends to result in higher emissions of N₂O. Both reagents are BAT, and the use of one over the other is not normally significant in environmental terms.

The Applicant proposes to use SNCR with ammonia / urea as the reagent.

Emissions of NO_x have previously been screened out as insignificant, and so the Environment Agency agrees that the Applicant's proposed technique is BAT for the installation.

The amount of urea / ammonia used for NO_x abatement will need to be optimised to maximise NO_x reduction and minimise NH₃ slip. Improvement condition IC5 requires the Operator to report to the Environment Agency on optimising the performance of the NO_x abatement system. The BAT AEL for ammonia has been set and the Operator is also required to monitor and report on N₂O emissions every 6 months.

6.2.3 Acid Gases, SO_x, HCl and HF

| Acid gases and halogens : Primary Measures | | | | |
|---|---|---|---------------------------------|---|
| Technique | Advantages | Disadvantages | Optimisation | Defined as BAT in BREF or TGN for: |
| Low sulphur fuel, (< 0.1%S gasoil or natural gas) | Reduces SO _x at source | | Start-up, supplementary firing. | Where auxiliary fuel required. |
| Management of waste streams | Disperses sources of acid gases (e.g., PVC) through feed. | Requires closer control of waste management | | All plant with heterogeneous waste feed |

| Acid gases and halogens: Secondary Measures (BAT is to apply Primary Measures first) | | | | |
|---|--|---|---------------------|---|
| Technique | Advantages | Disadvantages | Optimisation | Defined as BAT in BREF or TGN for: |
| Wet | High reaction rates Low solid residues production Reagent delivery may be optimised by concentration and flow rate | Large effluent disposal and water consumption if not fully treated for re-cycle Effluent treatment plant required May result in | | Used for wide range of waste types Can be used as polishing step after other techniques where emissions are high or variable |

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| Decision document: 16/11/22 | Page 64 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

| Acid gases and halogens: Secondary Measures (BAT is to apply Primary Measures first) | | | | |
|---|---|--|---|--|
| Technique | Advantages | Disadvantages | Optimisation | Defined as BAT in BREF or TGN for: |
| | | wet plume Energy required for effluent treatment and plume reheat | | |
| Dry | Low water use Higher reagent consumption to achieve emissions of other FGC techniques but may be reduced by recycling in plant Lower energy use Higher reliability Lowest visible plume potential | Higher solid residue production Reagent consumption controlled only by input rate | | All plant |
| Semi-dry (also described as semi-wet in the BREF) | Medium reaction rates Reagent delivery may be varied by concentration and input rate | Higher solid waste residues than wet but lower than dry system | | All plant |
| Direct injection into boiler | Reduced acid loading to subsequent cleaning stages. Reduced peak emissions and reduced reagent usage | | | Generally applicable to grate and rotary kiln plants. |
| Direction desulphurisation | Reduced boiler corrosion | Does not improve overall performance. Can affect bottom ash quality. Corrosion problems in flue gas cleaning system. | | Partial abatement upstream of other techniques in fluidised beds |
| Decision document: 16/11/22 | | Page 65 of 151 | Variation Application Number EPR/CB3308TD/V002 | |

| Acid gases and halogens: Secondary Measures (BAT is to apply Primary Measures first) | | | | |
|---|--|--|---------------------------|---|
| Technique | Advantages | Disadvantages | Optimisation | Defined as BAT in BREF or TGN for: |
| Reagent Type: Sodium Hydroxide | Highest removal rates Low solid waste production | Corrosive material ETP sludge for disposal | | HWIs |
| Reagent Type: Lime | Very good removal rates Low leaching solid residue Temperature of reaction well suited to use with bag filters | Corrosive material May give greater residue volume if no in-plant recycle | Wide range of uses | MWIs, CWIs |
| Reagent Type: Sodium Bicarbonate | Good removal rates Easiest to handle Dry recycle systems proven | Efficient temperature range may be at upper end for use with bag filters Leachable solid residues Bicarbonate more expensive | Not proven at large plant | CWIs |

The Applicant proposes to implement the following primary measures:

- Use of low sulphur fuels for start up and auxiliary burners – gas should be used if available, where fuel oil is used, this will be low sulphur (i.e. <0.1%), this will reduce SO_x at source. The Applicant has justified its choice of low sulphur gas oil as the support fuel on the basis that there is guaranteed availability compared to natural gas and due to the intermittent use of the fuel and we agree with that assessment. LPG was also considered but was concluded to increase fire risk on site and therefore discounted.
- Management of heterogeneous wastes – this will disperse problem wastes such as PVC by ensuring a homogeneous waste feed.

There are five recognised techniques for secondary measures to reduce acid gases, all of which can be BAT. These are wet, dry, semi-dry, boiler sorbent injection and direct desulphurisation. Wet scrubbing produces an effluent for treatment and disposal in compliance with Article 46(3) of IED. It will also require reheat of the exhaust to avoid a visible plume. Wet scrubbing is unlikely to be BAT except where there are high acid gas and metal

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| Decision document: 16/11/22 | Page 66 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

components in the exhaust gas as may be the case for some hazardous waste incinerators. In this case, the Applicant does not propose using wet scrubbing, and the Environment Agency agrees that wet scrubbing is not appropriate in this case. Direct desulphurisation is only applicable for fluidised bed furnaces and so is not applicable in this case.

Both dry and semi-dry methods rely on the dosing of powdered materials into the exhaust gas stream. Semi-dry systems (i.e. hydrated reagent) offer reduced material consumption through faster reaction rates, but reagent recycling in dry systems can offset this.

In both dry and semi-dry systems, the injected powdered reagent reacts with the acid gases and is removed from the gas stream by the bag filter system. The powdered materials are either lime or sodium bicarbonate. Both are effective at reducing acid gases, and dosing rates can be controlled from continuously monitoring acid gas emissions. The decision on which reagent to use is normally economic. Lime produces a lower leaching solid residue in the APC residues than sodium bicarbonate and the reaction temperature is well suited to bag filters, it tends to be lower cost, but it is a corrosive material and can generate a greater volume of solid waste residues than sodium bicarbonate. Both reagents are BAT, and the use of one over the other is not significant in environmental terms in this case.

Direct boiler injection is applicable for all plants and can improve overall performance of the acid gas abatement system as well as reducing reagent usage.

In this case, the Applicant proposed the dry injection of hydrated lime into the boiler post-combustion area for the reduction of acid gases. The Environment Agency is satisfied that this is BAT.

Periodic measurement of HF will be carried out at the ERF. Continuous measurement of HF is not proposed on the basis that the acid gas abatement system will operate to a design guarantee that the emission limit for HCl will not be exceeded.

6.2.4 Carbon monoxide and volatile organic compounds (VOCs)

The prevention and minimisation of emissions of carbon monoxide and volatile organic compounds is through the optimisation of combustion controls, where all measures will increase the oxidation of these species.

| Carbon monoxide and volatile organic compounds (VOCs) | | | | |
|--|--|----------------------|---|---|
| Technique | Advantages | Disadvantages | Optimisation | Defined as BAT in BREF or TGN for: |
| Optimise combustion control | All measures will increase oxidation of these species. | | Covered in section on furnace selection | All plants |

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| Decision document: 16/11/22 | Page 67 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

6.2.5 Dioxins and furans (and Other POPs)

| Dioxins and furans | | | | |
|---|--|---|--|---|
| Technique | Advantages | Disadvantages | Optimisation | Defined as BAT in BREF or TGN for: |
| Optimise combustion control | All measures will increase oxidation of these species. | | Covered in section on furnace selection | All plants |
| Avoid <i>de novo</i> synthesis | | | Covered in boiler design | All plant |
| Effective Particulate matter removal | | | Covered in section on particulate matter | All plant |
| Activated Carbon injection | Can be combined with acid gas absorber or fed separately. Metallic mercury is also absorbed. | Combined feed rate usually controlled by acid gas content. | | All plant. Separate feed normally BAT unless feed is constant and acid gas control also controls dioxin release. |
| Catalytic filter bags | High destruction efficiency | Does not remove mercury. Higher cost than non-catalytic filter bags | | |

The prevention and minimisation of emissions of dioxins and furans is achieved through:

- optimisation of combustion control including the maintenance of permit conditions on combustion temperature and residence time, which has been considered in 6.1.1 above;
- avoidance of *de novo* synthesis, which has been covered in the consideration of boiler design;
- the effective removal of particulate matter, which has been considered in 6.2.1 above;
- injection of activated carbon. This can be combined with the acid gas reagent or dosed separately. Where the feed is combined, the combined feed rate will be controlled by the acid gas concentration in the exhaust. Therefore, separate feed of activated carbon would normally be considered BAT unless the feed was relatively constant. Effective control of acid gas emissions also assists in the control of dioxin releases.

In this case the Applicant proposes separate feed and we are satisfied their proposals are BAT.

6.2.6 Metals

| Metals | | | | |
|--|---|---|--|---|
| Technique | Advantages | Disadvantages | Optimisation | Defined as BAT in BREF or TGN for: |
| Effective Particulate matter removal | | | Covered in section on particulate matter | All plant |
| Activated Carbon injection for mercury recovery | Can be combined with acid gas absorber or fed separately. Can be impregnated with bromine or sulphur to enhance reactivity, for use during peak emissions. | Combined feed rate usually controlled by acid gas content. | | All plant. Separate feed normally BAT unless feed is constant and acid gas control also controls dioxin release. |
| Fixed or moving bed adsorption | Mainly for mercury and other metals, as well as organic compounds | | | Limited applicability due to pressure drop |
| Boiler bromine injection | Injection during mercury peaks. Oxidation of mercury leading to improved removal in downstream removal method. | Consumption of aqueous bromine. Can lead to formation of polybrominated dioxins. Can damage bag filter. Effects can be limited use is restricted to dealing with peak emissions | | Not suitable for pyrolysis or gasification. Can deal with mercury peaks. |

The prevention and minimisation of metal emissions is achieved through the effective removal of particulate matter, and this has been considered in 6.2.1 above.

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| Decision document: 16/11/22 | Page 69 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

Unlike other metals however, mercury if present will be in the vapour phase. BAT for mercury removal is one or a combination of the techniques listed above. The Applicant has proposed dosing of activated carbon into the exhaust gas stream. This can be combined with the acid gas reagent or dosed separately. Where the feed is combined, the combined feed rate will be controlled by the acid gas concentration in the exhaust. Therefore, separate feed of activated carbon would normally be considered BAT unless the feed was relatively constant.

In this case the Applicant proposes separate feed and we are satisfied their proposals are BAT. Dosing of hydrated lime will be linked to emissions monitoring and activated carbon will be controlled at the optimum rate determined at commissioning.

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 installation 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 Installation will displace emissions of CO₂ elsewhere in the UK, as virgin fossil fuels will not be burnt to create the same electricity.

The Installation 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 installation might be prevented or minimised.

Factors influencing GWP and CO₂ emissions from the Installation 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.

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| Decision document: 16/11/22 | Page 70 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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 and BAT for the de-NO_x process in its BAT assessment. This is set out in sections 4.3.7 and Section 6 of this decision document.

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.

Taking all these factors into account, the Operator's assessment shows their preferred option is best in terms of GWP.

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

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. The Environment Agency is 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)

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| Decision document: 16/11/22 | Page 71 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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 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 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.

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 72 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

The release of **dioxins and furans** to air is required by the IED to be assessed against the I-TEQ (International Toxic Equivalence) 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 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 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]

entachlorobenzene (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

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 73 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

BAT guidance and included in the permit, are effective in controlling the emissions of all relevant POPs including PeCB.

We have assessed the control techniques proposed for dioxins by the Applicant and have concluded that they are appropriate for dioxin 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

During heavy rain fall, clean surface water run-off will be discharged to surface water via an interceptor.

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.

The proposed drainage strategy is provided in Appendix P of the Application. However, as the final design is not complete a preoperational condition specifies that a final drainage design should be submitted prior to commissioning under PO10. The final emission point to surface water will be included in the final drainage plan and will need to be agreed with the Environment Agency.

6.5.2 Emissions to sewer

There will be no discharge to sewer. The previous permit originally had a discharge listed for the welfare facilities on site. We requested additional information relating to this discharge in Schedule 5 notice dated 23/08/2021. The Applicant confirmed that there is a sealed septic tank on site and the effluent is tankered away and that there is no discharge to foul sewer from the welfare activities.

There will be no process discharges to sewer from the facility. In the event of a full boiler maintenance the ERF boilers will need to be emptied and the effluent would be tankered and either removed from site or re-used. Where possible, excess water will be used within the bottom ash quench system.

No treatment of effluent or discharge of process effluent is permitted at the facility.

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

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 74 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

storage requirements for waste and for contaminated water of Article 46(5) must be arranged.

Fugitive releases have been identified and assessed as part of the Environmental Risk Assessment (see Appendix D). The assessment indicates that the proposed measures for control of fugitive releases will prevent or minimise fugitive releases from the facility.

Good housekeeping practices will be in operation to ensure that any spillages of potentially dusty materials are cleared up at the earliest opportunity. Spill kits will be available for clean-up of all chemicals (i.e. boiler water treatment chemicals) and oils (i.e. fuel oil and maintenance oils) stored and used within the facility and will be located in proximity to the relevant storage areas and/or delivery points. Site procedures will detail those actions which should be followed in the event of a spillage.

The dust management plan (DMP) in Appendix S of the Application sets out the primary sources of dust from the facility and the proposed dust control measures under normal and abnormal operation.

Appendix D of the Application identifies litter release from the waste tipping hall, waste processing hall and from delivery vehicles as a potential risk. The assessment states that all waste will be transported to the facility in enclosed vehicles and that procedures will be developed to ensure all waste is removed from vehicles before leaving the site. In addition the Application states that the doors to the tipping hall and waste processing hall will remain closed at all times other than for access and where access is required, fast-acting roller shutters will minimise the duration that doors are open.

The incoming waste material storage bunkers will be constructed of concrete and will be impervious and subject to routine visual checks when waste volumes in the bunker are low and during annual routine maintenance shutdowns. All process areas will be located on hard standing. All bunds provided for chemical and oil storage tanks will be manually inspected to ensure they remain empty. Bunds will all be designed to contain at least 110% of the contents of the largest storage tank or 25% of the total tankage, whichever is the greater and will be resistant to the material which they are designed to contain. Any rainwater accumulated in bunds will be tested for pH and visible solids and oil. Should the tests indicate that there was no contamination, the clean rainwater would be discharged to surface water via an existing outfall as shown on Drawing 3 – Drainage Layout. In the event that the water is found to be contaminated the waters would be tankered for off-site disposal.

Underground structures will be limited to:

- the lower part of the bunker;
- the lower part of the boiler;
- site drains;

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 75 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

- drainage sumps; and
- incoming clean water systems.

The proposed drainage strategy is provided in Appendix R of the Application. The ERF bunker will be subject to integrity checks during commissioning and prior to accepting waste. During commissioning the underground surface drains and foul drains will be subject to integrity testing and will be certified as sound prior to the ERF operations commencing. These drains will be subsequent to a preventative maintenance and testing programme. The condition at that time will be confirmed by CCTV inspections and will subsequently determine the inspection frequency for further inspections.

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

The Applicant submitted an Odour Management Plan with their application. The odour management plan includes the following measures for minimising production and potential impacts from odour from the facility:

- Waste acceptance procedures will be in place for all incoming loads
- Acceptable waste will be delivered to the facility in covered vehicles or containers.
- Deliveries will be scheduled to reduce build-up of waste on site.
- Deliveries, handling and storage of waste will be undertaken in an enclosed environment.
- The access to and from the mechanical sorting hall and bunker for waste delivery will be via entrances fitted with fast-acting doors which will remain closed during non-delivery periods.
- Bunker waste will be rotated to allow the oldest waste to be prioritised for the combustion process.
- Full containers of waste will be stored for no longer than 72 hours with the majority being serviced in 24 hours.
- No putrescible materials will be managed or stored within the sorting and material recovery area.
- Non-conforming wastes identified during pre-acceptance checks will not be accepted on to the site and returned to source
- Non-conforming wastes identified after pre-acceptance checks will be quarantined and removed to an appropriate treatment or disposal facility.
- combustion air for the ERF will be drawn from within the building in order to maintain negative pressure to reduce the potential for odours from leaving the facility building.

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 76 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

In the case of shutdown, the amount of waste in storage will be minimised by stopping/diverting deliveries and/or having run down waste beforehand (if a planned shutdown). There will also be a filtering system in place which will discharge through the main stack. Management of unplanned shutdowns will be set out in relevant procedures within the EMS.

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.

6.5.5 Noise and vibration

The application contained a noise impact assessment (NIA) which identified local noise-sensitive receptors (NSR), potential sources of noise at the proposed installation and noise attenuation measures.

We did not consider the weather data presented was adequate in the original noise impact assessment submitted with the application. We also concluded that a number of sensitive receptors had been omitted in the assessment. We requested a revised noise impact assessment to be submitted via a Schedule 5 notice dated 28/09/2021. The Applicant submitted a revised noise impact assessment on 18/10/2021 and the associated modelling files on 20/10/2021. We considered that the issues raised through the Schedule 5 notice had been corrected and we based our assessment on the revised impact assessment, dated 15/10/2021.

While much of the plant will be located internally, the following externally located plant were identified as requiring consideration within the assessment:

- Air Cooled Condenser (ACC) plant, substation and transformer

BS4142:2014 assessment

The Applicant also considered the potential for noise impact due to HGV movements around the site associated with the delivery of waste.

The Applicant's assessment of the potential noise impact during operation of the installation was based on the modelling software package SoundPLAN, which is a commonly used computer model for regulatory noise modelling. The assessment considered operations during both the daytime and the night-time period.

The potential impact due to the operation of the installation has been determined in accordance with the methodology in British Standard BS4142:2014, 'Methods for rating and assessing industrial and commercial sound.' The significance of industrial/commercial sound depends on the difference between the rating level (which is the predicted sound output of the industrial/commercial premises, corrected to account for tonality, impulsivity, intermittency or other applicable sound characteristics) and the background

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 77 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

sound level. Typically, the greater the difference, the greater the magnitude of the impact.

A difference of around +10dB or more is likely to be an indication of a significant adverse impact, while a difference of around +5dB is likely to be an indication of an adverse impact. The lower the rating is, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. If the rating level does not exceed the background sound level, this is an indication of a low impact. BS4142:2014 requires that the assessment of potential impact takes into account the 'context' in which the sound occurs. This entails having a sufficient understanding of the situation to be rated and assessed, and placing the sound being assessed in context when making conclusions.

Modelling predictions were made at 7 noise sensitive receptors. The closest existing receptor, Langhurst Moat Cottage and Wealdon is located approximately 210m to the south-east of the proposed installation. The other closest residential properties are located approximately 330m to the north-east and south of the site. The closest receptors to the west and north-west of the site have also been considered. The land earmarked for the consented residential development on Land North of Horsham (North Horsham Scheme) is located approximately 450m south-east of the site. We considered these locations to be representative of the nearest NSRs.

The Applicant undertook environmental sound surveys at three locations close to the NSRs between the 8th and 16th September 2020 and then at one further additional location during the daytime on the 8th September 2020 and during the evening and night-time of the 15th to 16th of September 2020 in order to establish background sound levels. Meteorological data were taken from the weather station in Holbrook located approximately 1.2km to the south-west of the site. During the survey period wind speeds did not exceed 5 m/s and there were no recorded precipitation events. In general we considered that the data has been used in accordance with the BS4142 methodology.

The way in which the Applicant has used the noise model, the selection of input data, use of background data and the assumptions made have been reviewed by the Environment Agency's modelling specialists to establish the robustness of the Applicant's noise impact assessment. Our view is that the methodology used by the Applicant is acceptable.

The results of the Applicant's daytime (07:00 - 19:00 hours) assessment are shown in the table below. Although we did not obtain the same numerical outcomes during our checks, we did reach the same conclusions as the applicant as set out below.

| Receptor name | Measured background noise level (dB) | Modelled rating level (dB) | Rating minus background (dB) |
|----------------------|---|-----------------------------------|-------------------------------------|
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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 78 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

| Receptor name | Measured background noise level (dB) | Modelled rating level (dB) | Rating minus background (dB) |
|------------------------|---|-----------------------------------|-------------------------------------|
| Station Road | 40 | 37 | -3 |
| Andrews Farm | 40 | 30 | -10 |
| Cox Farm | 39 | 32 | -7 |
| Graylands Lodge | 43 | 38 | -5 |
| Haybarn Cottage | 43 | 39 | -4 |
| Langhurst Moat Cottage | 46 | 45 | -1 |
| North Horsham Scheme | 43 | 36 | -7 |

The results show that during the daytime the background level would not be exceeded at any of the noise sensitive receptors, with the predicted sound level at receptors ranging from 10db less than the background level to 1db less than background level. These predictions would indicate a low impact in accordance with BS4142.

The results of the Applicant's evening (19:00 - 23:00 hours) assessment are shown in the table below. Although we did not obtain the same numerical outcomes during our checks, we did reach the same conclusions as the applicant as set out below.

| Receptor name | Measured background noise level (dB) | Modelled rating level (dB) | Rating minus background (dB) |
|------------------------|---|-----------------------------------|-------------------------------------|
| Station Road | 39 | 35 | -4 |
| Andrews Farm | 39 | 30 | -9 |
| Cox Farm | 39 | 31 | -8 |
| Graylands Lodge | 42 | 38 | -4 |
| Haybarn Cottage | 42 | 34 | -8 |
| Langhurst Moat Cottage | 45 | 37 | -9 |
| North Horsham Scheme | 42 | 31 | -11 |

The results show that during the evening time the background level would not be exceeded at any of the noise sensitive receptors, with the predicted sound level at receptors ranging from 11 to 4db less than the background level. These predictions would indicate a low impact in accordance with BS4142.

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 79 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

The results of the Applicant's night-time (23:00 - 07:00 hours) assessment are shown in the table below.

| Receptor name | Measured background noise level (dB) | Modelled rating level (dB) | Rating minus background (dB) |
|------------------------|---|-----------------------------------|-------------------------------------|
| Station Road | 37 | 37 | 0 |
| Andrews Farm | 37 | 30 | -7 |
| Cox Farm | 33 | 32 | -1 |
| Graylands Lodge | 39 | 39 | 0 |
| Haybarn Cottage | 35 | 35 | 0 |
| Langhurst Moat Cottage | 42 | 38 | -4 |
| North Horsham Scheme | 35 | 32 | -3 |

The results show that during the night time the background level would not be exceeded at any of the noise sensitive receptors, with the predicted sound level at receptors ranging from 7db less than the background level to an equal level as the background level. These predictions would indicate a low impact in accordance with BS4142.

Having reviewed the Applicant's revised noise impact assessment and carried out our own checks and sensitivity analysis we consider that worst case Rating levels at noise sensitive receptors may be slightly higher than presented by the Applicant. We agree that a low impact is likely at the majority of the noise sensitive receptors (NSR) for day, evening and night periods, depending on context. The worst impacted NSR is Langhurst Moat Cottage where a below adverse impact is possible during daytime hours. This impact could be reduced to low when considering the predicted site emissions in the context of the existing sound climate. Therefore while we do not agree with the absolute numerical predictions presented by the Applicant we are in agreement with their conclusions.

Application of BAT

The Waste Incineration BAT Conclusions require that in order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to use one or a combination of the techniques below:

- Appropriate location of equipment and buildings
- Operational measures
- Low-noise equipment

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 80 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

- Noise Attenuation
- Noise-control equipment / infrastructure.

The Applicant has stated that all of the techniques will be used one way or another (subject to final design), the key measures being indicated below:

- all plant and/or processing activities located indoors where possible
- doors on Tipping Hall will be closed during tipping of waste
- all internal noise generating equipment will be fitted with acoustic enclosures
- tonal exhaust noise from the main stack minimised through fitting of silencer within the stack
- the use of an appropriate preventative maintenance program to ensure no deterioration of plant or equipment that would give rise to an increase in noise.
- low noise fans need to be selected with a maximum sound power level of 97 dB L_{WA} .
- acoustic screens will be installed around the perimeter of the ACCs.
- front end shovels moving waste within the waste sorting area will only operate during the daytime and vehicles will be fitted with white noise reversing alarms.
- HGV movements will be limited to 20mph.

We consider that the above measures represent BAT and broadly follow the noise control hierarchy outlined in our web guidance on Noise and vibration management: environmental permits.

We have specified a pre operational condition requiring that the applicant confirm the final sound level of the ACCs and demonstrate that it is no higher than the proposed level within the noise impact assessment. The final design of the proposed acoustic screens should also be submitted including justification of how these will ensure that noise from the ACCs is minimised at receptors.

Conclusion

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.

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 81 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

BAT conclusions for waste incineration or co-incineration were published on 03/12/2019.

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).

(ii) National and European ESs

There are no additional National or European EQSs that indicate that IED limits are insufficient to protect the local environment.

(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 destruction of waste. Controls in the form of restrictions on the volume and type of waste that can be accepted at the Installation and permit conditions relating to energy efficiency effectively apply equivalent technical measures to limit CO₂ emissions.

(iv) Commissioning

Before the plant can become fully operational it will be necessary for it to be commissioned. Before commissioning can commence the Operator is required by pre-operational condition PO4 to submit a commissioning plan to the Environment Agency for approval. Commissioning can only begin and be carried out in accordance with the approved proposals in the plan.

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 82 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

The Operator will also be required to submit a written report to the Environment Agency on the commissioning of the installation within 4 months of completion of commissioning, in accordance with Improvement Condition IC3. In the report they will be required to summarise the environmental performance of the plant as installed against the design parameters set out in their permit variation application. The report will also include a review of the performance of the facility against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions and confirm that the Environmental Management System (EMS) has been updated accordingly.

6.7 Monitoring

6.7.1 Monitoring during normal operations

We have decided that monitoring should be carried out for the parameters listed in Schedule 3 using the methods and to the frequencies specified in those tables. These monitoring requirements have been imposed in order to demonstrate compliance with emission limit values and to enable correction of measured concentration of substances to the appropriate reference conditions; to gather information about the performance of the SNCR system; to establish data on the release of dioxin-like PCBs and PAHs from the incineration process and to deliver the requirements of Chapter IV of IED for monitoring of residues and temperature in the combustion chamber.

For emissions to air, the methods for continuous and periodic monitoring are in accordance with the Environment Agency's Guidance M2 for monitoring of stack emissions to air.

Based on the information in the Application and the requirements set in the conditions of the permit we are satisfied that the Operator's techniques, personnel and equipment will have either MCERTS certification or MCERTS accreditation as appropriate.

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

The Operator has stated that they will provide back-up CEMS working in parallel to the operating CEMS. These will be switched into full operation immediately in the event that there is any failure in the regular monitoring equipment. The back-up CEMS measure the same parameters as the operating CEMS. In the unlikely event that the back-up CEMS also fail a condition in the permit requires that the abnormal operating conditions apply.

6.7.3 Continuous emissions monitoring for dioxins and heavy metals

The BAT conclusions specify either manual extractive monitoring or long term monitoring for dioxins. For mercury either continuous or long term monitoring is specified, manual extractive monitoring is specified for other metals.

| | | |
|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 83 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

For dioxins long term monitoring does not apply if emissions are stable, and for mercury long term monitoring can be used instead of continuous if the mercury content of the waste is low and stable.

Based on the waste types and control measures proposed in the Application we expect that emissions of dioxins will be stable and that the mercury content of the waste will be low and stable. We have therefore set manual extractive monitoring in the Permit. However the Permit requires the stable and low criteria to be demonstrated through Improvement conditions IC10 and IC11 and we can require long term monitoring for dioxins and continuous monitoring for mercury if required.

6.8 Reporting

We have specified the reporting requirements in Schedule 5 of the Permit either to meet the reporting requirements set out in the IED, or to ensure data is reported to enable timely review by the Environment Agency to ensure compliance with permit conditions and to monitor the efficiency of material use and energy recovery at the installation.

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 84 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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 Environmental Statement submitted with the planning application (which also formed part of the Environmental Permit Application).
- The decision of the Planning Inspectorate to grant planning permission on 27/02/2020.
- The decision notice of the Planning Inspectorate accompanying the grant of planning permission.
- The response of the Environment Agency to the local planning authority in its role as consultee to the planning process.

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 85 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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

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

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

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

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

Article 23(1) requires the permit to specify:

- 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.

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.

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| Decision document: 16/11/22 | Page 86 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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

Our draft decision in this case has been reached following a programme of extended public consultation, on the permit variation application. 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 4.

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*

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 87 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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 7 (Pursuit of Conservation Objectives)

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 area.

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.

(iv) 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.

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| Decision document: 16/11/22 | Page 88 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

(v) 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.

(viii) National Emissions Ceiling Regulations 2018

We have had regard to the National Air Pollution Control Programme 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 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.

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|-----------------------------|----------------|---|
| Decision document: 16/11/22 | Page 89 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

7.2.4 **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 Installation. The closest AONB is approximately 3km from the installation.

7.2.5 **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 Installation will not damage the special features of any SSSI.

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

Section 40 of this Act requires us to have regard, so far as is consistent with the proper exercise of our functions, to the purpose of conserving biodiversity. We have done so and consider that no different or additional conditions in the Permit are required.

7.2.7 **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.

7.2.8 **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.

There is no National Park which could be affected by the Installation.

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. There is no European Site within the screening distance

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| Decision document: 16/11/22 | Page 90 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

of 10km from the installation and therefore we can conclude that there will be no likely significant effect on any European Site.

7.3.2 Water Environment (Water Framework Directive) Regulations 2017

Consideration has been given to whether any additional requirements should be imposed in terms of the Environment Agency's duty under regulation 3 to secure compliance with the requirements of the Water Framework Directive, Groundwater directive and the EQS Directive through (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

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 4. Our public consultation duties are also set out in the EP Regulations, and our statutory Public Participation Statement, which implement the requirements of the Public Participation Directive. In addition to meeting our consultation responsibilities, we have also taken account of our guidance in Environment Agency Guidance Note RGS6 and the Environment Agency's Building Trust with Communities toolkit.

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| Decision document: 16/11/22 | Page 91 of 151 | Variation Application Number EPR/CB3308TD/V002 |
|-----------------------------|----------------|---|

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

| IED Article | Requirement | Delivered by |
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| 45(1)(a) | The permit shall include a list of all types of waste which may be treated using at least the types of waste set out in the European Waste List established by Decision 2000/532/EC, if possible, and containing information on the quantity of each type of waste, where appropriate. | Condition 2.3.4(a) and Table S2.3 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 S2.3 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 and S3.1(a) in Schedule 3 of the Permit. No process water discharged to water from the site. |
| 45(1)(d) | The permit shall include the requirements for pH, temperature and flow of wastewater discharges. | Not Applicable |
| 45(1)(e) | The permit shall include the sampling and measurement procedures and frequencies to be used to comply with the conditions set for emissions monitoring. | Conditions 3.6.1 to 3.6.4 and Tables S3.1 and S3.1(a) 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 wastewater may exceed the prescribed emission limit values. | Conditions 2.3.12 and 2.3.13. |
| 45(2)(a) | The permit shall include a list of the quantities of the different categories of hazardous waste which may be treated. | Not Applicable – hazardous waste not incinerated |
| 45(2)(b) | The permit shall include the minimum and maximum mass flows of those hazardous waste, their lowest and maximum calorific values and the maximum contents of polychlorinated biphenyls, pentachlorophenol, chlorine, fluorine, sulphur, heavy metals and other polluting substances. | Not Applicable – hazardous waste not incinerated |
| 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 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 | Conditions 3.1.1 and 3.1.2 and Tables |

Decision document: 16/11/22

Page 92 of 151

Variation Application Number
EPR/CB3308TD/V002

| IED Article | Requirement | Delivered by |
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| | Annex VI. | S3.1 and S3.1(a). |
| 46(2) | Emission into air shall not exceed the emission limit values set out in parts 4 or determined in accordance with part 4 of Annex VI. | Not applicable |
| 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 requirements. The permit requires that these measures are used. Various permit conditions address this and when taken as a whole they ensure compliance with this requirement. |
| 46(6) | Limits the maximum period of operation when an ELV is exceeded to 4 hours uninterrupted duration in any one instance, and with a maximum cumulative limit of 60 hours per year. Limits on dust (150 mg/m ³), CO and TOC not to be exceeded during this period. | Conditions 2.3.12 and 2.3.13 |
| 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 and 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, tables S3.1 and S3.1(a). |
| 48(3) | The competent authority shall determine the location of sampling or measurement points to be used for monitoring of emissions. | Conditions 3.6.1. Pre-operational condition PO7 |
| 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 4.1.1 and 4.1.2, and Tables S4.1 and S4.2 |

| IED Article | Requirement | Delivered by |
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| | conditions and emission limit values which are included in the permit. | |
| 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 and S3.1(a). |
| 50(1) | Slag and bottom ash to have Total Organic Carbon (TOC) < 3% or loss on ignition (LOI) < 5%. | Conditions 3.6.1 and Table S3.3 |
| 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, Pre-operational condition PO6 and Improvement condition IC4 and Table S3.2 |
| 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 and 2.3.13 |
| 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 prior to commissioning (Condition PO2) and then every 2 years (Conditions 1.2.1 to 1.2.3) |
| 50(6) | Relates to the feeding of infectious clinical waste into the furnace. | No infectious clinical waste will be burnt |
| 50(7) | Management of the Installation to be in the hands of a natural person who is competent to manage it. | Conditions 1.1.1 to 1.1.3 and 2.3.1 of the Permit. |
| 51(1) | Different conditions than those laid down in Article 50(1), (2) and (3) and, as regards the temperature Article 50(4) may be authorised, provided the other requirements of this chapter are 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 | No such conditions have been allowed |

| IED Article | Requirement | Delivered by |
|-------------|---|---|
| | which could be expected under the conditions laid down in Articles 50(1), (2) and (3). | |
| 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, 2.3.3, 3.3, 3.4, 3.5 and 3.7 |
| 52(2) | Determine the mass of each category of wastes, if possible according to the EWC, prior to accepting the waste. | Condition 2.3.4(a) and Table S2.3 in Schedule 3 of the Permit. |
| 52(3) | Prior to accepting hazardous waste, the operator shall collect available information about the waste for the purpose of compliance with the permit requirements specified in Article 45(2). | Not Applicable – hazardous waste not incinerated |
| 52(4) | Prior to accepting hazardous waste, the operator shall carry out the procedures set out in Article 52(4). | Not Applicable – hazardous waste not incinerated |
| 52(5) | Granting of exemptions from Article 52(2), (3) and (4). | Not Applicable |
| 53(1) | Residues to be minimised in their amount and harmfulness, and recycled where appropriate. | Conditions 1.4.1, 1.4.2 and 3.6.1 with Table S3.3 |
| 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 S3.3 and pre-operational condition PO3. |
| 55(1) | Application, decision and permit to be publicly available. | All documents are accessible from the Environment Agency Public Register. |
| 55(2) | An annual report on plant operation and monitoring for all plants burning more than 2 tonne/hour waste. | Condition 4.2.2 and 4.2.3. |

ANNEX 1B: COMPLIANCE WITH BAT CONCLUSIONS

| BAT conclusion | Criteria | Delivered by |
|-----------------------|---|--|
| 1 | Implement environmental management system | Condition 1.1 and Pre-operational condition PO1 |
| 2 | Determine gross electrical efficiency | Section 4.3.7 of this decision document. Permit table S3.2 |
| 3 | Monitor key process parameters | Condition 3.6.1 and table S3.2 |
| 4 | Monitoring emissions to air | Condition 3.6.1 and tables S3.1 and S3.1(a) |
| 5 | Monitoring emissions to air during OTNOC | Condition 1.1.1 and pre-operational condition PO1 |
| 6 | Monitoring emissions to water from flue gas treatment and/or bottom ash treatment | There are no such emissions from the installation |
| 7 | Monitor unburnt substances in slags and bottom ashes | Conditions 3.1.3 and 3.6.1, and table S3.3 |
| 8 | Analysis of hazardous waste | Not applicable for the energy recovery facility |
| 9 | Waste stream management techniques | The Application explains the measures that will be used. Permit condition 2.3.1, table S1.2. |
| 10 | Quality management system for bottom ash treatment plant | Not Applicable as no bottom ash treatment to be carried out on site. |
| 11 | Monitor waste deliveries as part of waste acceptance procedures | The Application explains the measures that will be used. Permit condition 2.3.1, table S1.2. |
| 12 | Reception, handling and storage of waste | Measures are described in the Application and FPP. Permit conditions 2.3.1 and 3.8, table S1.2 and pre operation condition PO10. |
| 13 | Storage and handling of clinical waste | Not applicable |
| 14 | Improve overall performance of plant including BAT-AELs for TOC or LOI | Techniques described in the Application. Permit condition 2.3.1, table S1.2, 3.1.3, 3.5.1 and table S3.3 |
| 15 | Procedures to adjust plant settings to control performance | Measures described in the Application condition 2.3.1 and table S1.2 |
| 16 | Procedures to minimise start-up and shut down | Measures described in the Application |

| BAT conclusion | Criteria | Delivered by |
|-----------------------|---|--|
| 17 | Appropriate design, operation and maintenance of FGC system | FGC measures described in Application. Operation and maintenance procedures will form part of the EMS |
| 18 | OTNOC management plan | Pre-operational condition PO1 |
| 19 | Use of heat recovery boiler | Described in the Application. Permit condition 2.3.1, table S1.2 |
| 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. |
| 21 | Measures to prevent or reduce diffuse emissions including odour | Measures described in the Application. Permit conditions 2.3.1, table S1.2, 3.4.1, 3.3.1 and 3.3.2. Sections 4.2.2, 6.5.3 and 6.5.4 of this decision document. |
| 22 | Handling of gaseous and liquid wastes | Not applicable. |
| 23 | Management system to prevent or reduce dust emissions from treatment of slags and ashes | Not Applicable as no treatment of slags and ashes proposed on site. |
| 24 | Techniques to prevent or reduce diffuse emissions to air from treatment of slags and ashes | Not Applicable as no treatment of slags and ashes proposed on site. |
| 25 | Minimisation of dust and metal emissions and compliance with BAT AEL | Section 5.2 of this decision document. Permit conditions 2.3.1, table S1.2, 3.4.1, 3.3.1, 3.3.2. 3.1.1 and 3.1.2 and table S3.1 |
| 26 | Techniques and BAT AEL for dust emissions from enclosed slags and ashes treatment | Not Applicable as no treatment of slags and ashes proposed on site. |
| 27 | Techniques to reduce emissions of HCl, HF and SO ₂ | Measures described in the Application. Permit condition 2.3.1 and table S1.2 Permit condition 2.3.1 and table S1.2 Section 5.2 of this decision document. |
| 28 | Techniques to reduce peak emissions of HCl, HF and SO ₂ , optimise reagent use and BAT AELs | Measures described in the Application. Permit conditions 2.3.1, table S1.2, 3.1.1 and 3.1.2 and table S3.1 |
| 29 | Techniques to reduce emissions of NO ₂ , N ₂ O, CO and NH ₃ and BAT AELs | Measures described in the Application. Section 5.2 of this decision document. Permit conditions 2.3.1, table S1.2, 3.1.1 and 3.1.2 and table S3.1 |

| BAT conclusion | Criteria | Delivered by |
|-----------------------|---|--|
| 30 | Reduce emissions or organic compounds including dioxins/furans and PCBs. BAT AELs | Measures described in the Application. Section 5.2 of this decision document. Permit conditions 2.3.1, table S1.2, 3.1.1 and 3.1.2 and table S3.1 |
| 31 | Reduce emissions of mercury. BAT AEL | Measures described in the Application. Section 5.2 of this decision document. Permit conditions 2.3.1, table S1.2, 2.3.1, table S1.2, 3.1.1 and 3.1.2 and table S3.1 |
| 32 | Segregate waste water streams to prevent contamination | Measures described in the Application Sections 4.2.2, 6.5.1 and 6.5.3 of this decision document. Permit conditions 2.3.1, table S1.2, 3.1.1, 3.1.2 and table S3.2 |
| 33 | Techniques to reduce water usage and prevent or reduce waste water | Measures described in the Application. Sections 4.2.2 and 4.3.8 of this decision document Permit conditions 1.3.1, 2.3.1, table S1.2 |
| 34 | Reduce emissions to water from FGC and/or from treatment or storage of bottom ashes. BAT AELs | Not applicable |
| 35 | Handle and treat bottom ashes separately from FGC residues | Permit condition 2.3.15 |
| 36 | Techniques for treatment of slags and bottom ashes | No treatment carried out on site |
| 37 | Techniques to prevent or reduce noise emissions. | Measures are described in the Application. Section 6.5.5 of this decision document. Permit conditions 2.3.1, table S1.2, 3.5.1, 3.5.2 |

ANNEX 2: Pre-Operational Conditions

Based on the information on the Application, we consider that we do need to impose pre-operational conditions. These conditions are set out below and referred to, where applicable, in the text of the decision document. We are using these conditions to require the Operator to confirm that the details and measures proposed in the Application have been adopted or implemented prior to the operation of the Installation.

| Table S1.4 Pre-operational measures for future development | | |
|---|--------------------------|--|
| Reference | Operation | Pre-operational measures |
| PO1 | Energy Recovery Facility | <p>Prior to the commencement of commissioning, the Operator shall send a summary of the site Environment Management System (EMS) to the Environment Agency and obtain the Environment Agency's written approval to the EMS summary.</p> <p>The summary shall include a copy of the full other than normal operating conditions (OTNOC) management plan which shall be prepared in accordance with BAT 18 of the BAT conclusions and include:</p> <ul style="list-style-type: none"> • a list of potential OTNOC situations that are considered to be abnormal operation under the definition in Schedule 6 of this permit. • a definition of start-up and shut-down conditions having regard to any Environment Agency guidance on start-up and shut-down. • any updates on the design of critical equipment to minimise OTNOC since the permit application <p>The Operator shall make available for inspection all documents and procedures which form part of the EMS. The EMS shall be developed in line with the requirements set out in Environment Agency web guide on developing a management system for environmental permits (found on www.gov.uk) and BAT 1 of the incineration BAT conclusions. The EMS shall include the approved OTNOC management plan.</p> <p>The documents and procedures set out in the EMS shall form the written management system referenced in condition 1.1.1 (a) of the permit.</p> |
| PO2 | Energy Recovery Facility | <p>Prior to the commencement of commissioning of the Energy Recovery Facility, the Operator shall send a report to the Environment Agency, and obtain the Environment Agency's written approval to it, which will contain a comprehensive review of the options available for utilising the heat generated, including operating as CHP or supplying district heating,</p> |
| Decision document: 16/11/22 | Page 99 of 151 | Variation Application Number EPR/CB3308TD/V002 |

| Table S1.4 Pre-operational measures for future development | | |
|---|--|--|
| Reference | Operation | Pre-operational measures |
| | | by the waste incineration process in order to ensure that it is recovered as far as practicable. The review shall detail any identified proposals for improving the recovery and utilisation of heat and shall provide a timetable for their implementation. |
| PO3 | Energy Recovery Facility | Prior to the commencement of commissioning of the Energy Recovery Facility, the Operator shall submit to the Environment Agency, and obtain the Environment Agency's written approval to it, a protocol for the sampling and testing of incinerator bottom ash for the purposes of assessing its hazard status. Sampling and testing shall be carried out in accordance with the protocol as approved. |
| PO4 | Energy Recovery Facility and Materials Recovery Facility | Prior to the commencement of commissioning of the Energy Recovery Facility, the Operator shall submit to the Environment Agency, and obtain the Environment Agency's written approval to it, a written commissioning plan, including timelines for completion, for approval by the Environment Agency. The commissioning plan shall include the expected emissions to the environment during the different stages of commissioning, the expected durations of commissioning activities and the actions to be taken to protect the environment and report to the Environment Agency in the event that actual emissions exceed expected emissions. Commissioning shall be carried out in accordance with the commissioning plan as approved. |
| PO5 | Energy Recovery Facility | <p>Prior to the commencement of commissioning of the Energy Recovery Facility, the Operator shall submit a written report to the Agency, and obtain the Environment Agency's written approval to it, detailing the waste acceptance procedure to be used at the site. The waste acceptance procedure shall include the process and systems by which wastes unsuitable for incineration at the site will be controlled.</p> <p>The procedure shall be implemented in accordance with the written approval from the Environment Agency.</p> |
| PO6 | Energy Recovery Facility | No later than one month after the final design of the Energy Recovery Facility furnace and combustion chamber, the operator shall submit a written report to the Environment Agency, and obtain the Environment Agency's written approval to it, of the details of the computational fluid dynamic (CFD) modelling. The report shall |
| Decision document: 16/11/22 | | Page 100 of 151 |
| | | Variation Application Number EPR/CB3308TD/V002 |

| Table S1.4 Pre-operational measures for future development | | |
|---|--------------------------|---|
| Reference | Operation | Pre-operational measures |
| | | explain how the furnace has been designed to comply with the residence time and temperature requirements as defined by Chapter IV and Annex VI of the IED whilst operating under normal load and the most unfavourable operating conditions (including minimum turn down and overload conditions), and that the design includes sufficient monitoring ports to support subsequent validation of these requirements during commissioning. |
| PO7 | Energy Recovery Facility | <p>At least three months before (or other date agreed in writing with the Environment Agency) the commencement of commissioning of the Energy Recovery Facility, the Operator shall submit a written report to the Environment Agency, and obtain the Environment Agency's written approval to it, specifying arrangements for continuous and periodic monitoring of emissions to air to comply with Environment Agency guidance notes M1, M2 and M20. The report shall include the following:</p> <ul style="list-style-type: none"> • Plant and equipment details, including accreditation to MCERTS • Methods and standards for sampling and analysis <p>Details of monitoring locations, access and working platforms</p> |
| PO8 | Energy Recovery Facility | At least 3 months before the commencement of commissioning of the Energy Recovery Facility (or other date agreed in writing with the Environment Agency) the Operator shall submit, for approval by the Environment Agency, a methodology (having regard to Technical Report P4-100/TR Part 2 Validation of Combustion Conditions) to verify the residence time, minimum temperature and oxygen content of the gases in the furnace whilst operating under normal load, minimum turn down and overload conditions. |
| PO9 | Energy Recovery Facility | At least 3 months before the commencement of commissioning of the Energy Recovery Facility (or other date agreed in writing with the Environment Agency) the Operator shall submit, for approval by the Environment Agency, an updated specification of the air cooled condensers (ACCs) to demonstrate that the combined power sound power level does not exceed 97 dB L _{WA} . The final design of the proposed acoustic screens should also be submitted including justification of how these will ensure that noise from the ACCs is |
| Decision document: 16/11/22 | Page 101 of 151 | Variation Application Number EPR/CB3308TD/V002 |

| Table S1.4 Pre-operational measures for future development | | |
|---|--|---|
| Reference | Operation | Pre-operational measures |
| | | minimised. |
| PO10 | Energy Recovery Facility and Materials Recovery Facility | <p>No later than one month after the final design of the site infrastructure (or other date agreed in writing with the Environment Agency) the Operator shall submit an updated Fire Prevention Plan which meets the relevant criteria set out within the Environment Agency's Fire Prevention Plan guidance. The following elements which were not finalised when the first version was submitted shall be addressed in detail:</p> <ul style="list-style-type: none"> • Provision of adequate firewater • Drainage, pollution control and firewater containment including a finalised drainage plan clearly marking emission point W1 • Identification of individual storage areas for the different waste types to be accepted on site. • Information on prevailing wind conditions. <p>The updated FPP shall be submitted to the Environment Agency for approval.</p> |

ANNEX 3: Improvement Conditions

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

| Table S1.3 Improvement programme requirements | | |
|--|---|--|
| Reference | Requirement | Date |
| IC1 | The Operator shall submit a written report to the Environment Agency on the implementation of its Environmental Management System (EMS) for the regulated facility and the progress made in the certification of the system by an external body or if appropriate submit a schedule by which the EMS will be certified. The report shall also include details of a review of the OTNOC management plan and any updates to the plan following the review. | Within 12 months of the completion of commissioning of the regulated facility |
| 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, identifying the fractions within the PM ₁₀ , and PM _{2.5} ranges. On receipt of written approval from the Environment Agency to the proposal and the timetable, the Operator shall carry out the tests and submit to the Environment Agency a report on the results. | Within 6 months of the completion of commissioning of the Energy Recovery Facility |
| IC3 | The Operator shall submit a written report to the Environment Agency on the commissioning of the Regulated 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 the performance of the facility against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions and confirm that the Environmental Management System (EMS) has been updated accordingly. | Within 4 months of the completion of commissioning of the Regulated Facility |
| IC4 | The operator shall notify the Environment Agency of the proposed date(s) that validation testing for the Energy Recovery Facility is planned for. | Notification at least 3 weeks prior to validation testing |
| | During commissioning of the Energy Recovery Facility the operator shall carry out validation testing to validate the residence time, minimum temperature and oxygen content of the gases in the furnace whilst operating under normal load and most unfavourable operating conditions. The validation shall be to the methodology as approved through pre-operational condition PO8. | Validation tests completed before the end of commissioning of the Energy Recovery Facility |
| | The operator shall submit a written report to the | Report submitted within |

| Table S1.3 Improvement programme requirements | | |
|--|--|---|
| Reference | Requirement | Date |
| | Environment Agency on the validation of residence time, oxygen and temperature whilst the Energy Recovery Facility is operating under normal load, minimum turn down and overload conditions. The report shall identify the process controls used to ensure residence time and temperature requirements are complied with during operation of the incineration plant | 2 months of the completion of commissioning of the Energy Recovery Facility |
| IC5 | The Operator shall submit a written report to the Environment Agency describing the performance and optimisation of: <ul style="list-style-type: none"> • The lime/sodium bicarbonate injection system for minimisation of acid gas emissions • The carbon injection system for minimisation of dioxin and heavy metal emissions. • The Selective Non Catalytic Reduction (SNCR) system and combustion settings to minimise oxides of nitrogen (NOx). The report shall include an initial assessment of the level of NOx, N₂O and NH₃ emissions that can be achieved under optimum operating conditions. | Within 4 months of the completion of commissioning of the Energy Recovery Facility |
| | The operator shall carry out a further assessment of the performance of the SNCR system and submit a written report to the Environment Agency on the feasibility of complying with an emission limit value (ELV) for NOx of 100 mg/Nm ³ as a daily average, including a description of any relevant cross-media effects identified. If an ELV for NOx of 100 mg/Nm ³ as a daily average is determined not to be feasible, the report shall propose an alternative ELV which would provide an equivalent level of NOx reduction on a long-term basis such as an annual mass emission limit or percentile-based ELV. | Within 12 months of the completion of commissioning of the Energy Recovery Facility |
| IC6 | The Operator shall carry out an assessment of the impact of emissions to air of the following component metals subject to emission limit values: <ul style="list-style-type: none"> • Cadmium, nickel, arsenic and vanadium A report on the assessment shall be made to the Environment Agency. Emissions monitoring data obtained during the first year of operation of the Energy Recovery Facility shall be used to compare the actual emissions with those assumed in the impact assessment submitted with the Application. An assessment shall be made of the impact of each metal against the relevant ES. In the event that the assessment shows that an environmental standard can be exceeded, the report shall include proposals for further investigative work. | 15 months from the completion of commissioning of the Energy Recovery Facility |
| IC7 | The Operator shall submit a written summary report | Initial calibration report |

| Table S1.3 Improvement programme requirements | | |
|--|---|--|
| Reference | Requirement | Date |
| | to the Environment Agency to confirm that the performance of Continuous Emission Monitors for parameters as specified in Table S3.1 and Table S3.1(a) complies with the requirements of BS EN 14181, specifically the requirements of QAL1, QAL2 and QAL3. The report shall include the results of calibration and verification testing, | to be submitted to the Agency within 3 months of completion of commissioning of the Energy Recovery Facility Full summary evidence compliance report to be submitted within 18 months of completion of commissioning of the Energy Recovery Facility. |
| IC8 | During commissioning of the Energy Recovery Facility, the operator shall carry out tests to demonstrate whether the furnace combustion air will ensure that negative pressure is achieved throughout the reception hall. The tests shall demonstrate whether air is pulled through the reception hall and bunker area and into the furnace with dead spots minimised. The operator shall also carry out tests of methods used to maintain negative pressure during shut-down periods to ensure that adequate extraction will be achieved. The operator shall submit a report to the Environment Agency, for approval, summarising the findings along with any proposed improvements if required | Within 3 months of completion of commissioning of the Energy Recovery Facility |
| IC9 | For the Energy Recovery Facility, the operator shall carry out a programme of dioxin and dioxin like PCB monitoring over a period and frequency agreed with the Environment Agency. The operator shall submit a report to the Environment Agency with an analysis of whether dioxin emissions can be considered to be stable. | Within 3 months of completion of commissioning of the Energy Recovery Facility or as agreed in writing with the Environment Agency |
| IC10 | From the Energy Recovery Facility, the operator shall carry out a programme of mercury monitoring over a period and frequency agreed with the Environment Agency. The operator shall submit a report to the Environment Agency with an analysis of whether the waste feed to the plant can be proven to have a low and stable mercury content. | Within 3 months of completion of commissioning of the Energy Recovery Facility or as agreed in writing with the Environment Agency |
| IC11 | The Operator shall submit a report to the Environment Agency for approval on start-up and shut-down conditions over the first 12 months of operation of the Energy Recovery Facility. The report shall identify any amendments to the start-up and shut-down definitions that were described in the application. | Within 15 months of completion of commissioning of the Energy Recovery Facility or as agreed in writing with the Environment Agency |

ANNEX 4: 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 13/05/2021 to 02/08/2021 and in the West Sussex County Times on 13/05/2021. A digital version of the Application could be viewed via the Environment Agency's Citizen Space page. Additionally, a hard copy of the Application was placed at Horsham Library.

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

- Health and Safety Executive
- UK Health Security Agency (formerly Public Health England)
- Director of Public Health
- Environmental Health – Horsham District Council
- Planning Department – Horsham District Council
- Food Standards Agency
- Historic England
- South Downs National Parks Authority

1) Consultation Responses from Statutory and Non-Statutory Bodies

We received responses from the following:

| Response Received from UK Health Security Agency (UKHSA) on 15/06/2021 | | |
|---|--|---|
| Note 1 | | |
| Brief summary of issues raised: | Summary of action taken / how this has been covered | |
| Confirmation that UKHSA commented on the planning application for the site. | No action required | |
| Statement that the air quality impact assessment is covered across a number of documents which made it difficult to interpret and a summary of the assessment should be provided. | A summary of the air quality impact assessment is included in the decision document in section 5.2 of this decision document. We consider that adequate information is available to conclude that exceedance of any AQS is unlikely. We agree with the conclusions of the air quality impact assessment that the regulated facility is unlikely to have a significant impact on human health. We are satisfied that the relevant pollution standards (ES) will not be exceeded due to emissions from the Installation. | |
| Decision document: 16/11/22 | Page 106 of 151 | Variation Application Number EPR/CB3308TD/V002 |

| | |
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| <p>Stated that waste sites have a high potential for accidents which can impact on communities.</p> <p>Stated that as the site will store asbestos containing materials, the applicant should plan how they will minimise the chance of asbestos being involved in an accident and how to minimise the impacts should a release of asbestos occur.</p> | <p>The Applicant has not submitted an 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. An Accident Management Plan will form part of the Environmental Management System and must be in place prior to commissioning as required by a pre-operational condition (PO1).</p> <p>Asbestos was already permitted for acceptance and storage under the existing permit so there is no change to this proposed under the permit variation.</p> |
| <p>Stated that waste sites have a high potential for fires which can impact on communities.</p> | <p>A Fire Prevention Plan will be in place to minimise the risk of fire and set out measures of how a fire would be extinguished if it occurred. We consider the measures proposed combined with the pre operational condition for finalisation of the FPP reflect BAT for the installation.</p> |
| <p>Note 1: Although consultation with UKHSA occurred and their comments considered by the Environment Agency, this summary of their comments and how we addressed them was not included in the Minded to decision document. We do not consider that that was a material omission that impacted on the effectiveness of the minded to consultation.</p> | |

Response Received from Director of Public Health on 21/06/2021

| Brief summary of issues raised: | Summary of action taken / how this has been covered |
|--|---|
| Advice that the recommendations from UK Health Security Agency are taken into account. | See response from UK Health Security Agency and the response to their comments. |

Response Received from Historic England on 08/06/2021

| Brief summary of issues raised: | Summary of action taken / how this has been covered |
|---------------------------------|---|
| No comments provided | No action required |

Responses Received from Horsham District Council on 05/08/2021 (Environmental Health) and 08/03/2022 (Planning Department) Note 1

| Brief summary of issues raised: | Summary of action taken / how this has been covered |
|--|---|
| Horsham District Council confirmed that it has no objections to the principle of the proposal. However, they also provided the following comments: | |
| Comments about the order and naming | The Application documents placed on |

Decision document: 16/11/22

Page 107 of 151

Variation Application Number
EPR/CB3308TD/V002

| | | |
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| of application documentation. | Citizen Space were named as submitted. We considered the naming and order of the documents adequate to enable us to determine the Application and to fulfil our requirements under the Public Participation Statement. | |
| Comments about the fact that no description was given for the model scenarios associated with the air quality impact assessment. | We consider that the model scenarios in the air quality impact assessment were adequately described. We audited the air quality impact assessment submitted with the Application and carried out sensitivity checks on the modelled scenarios and parameters used. We are satisfied that the relevant environmental standards (ES) for pollutants emitted from the facility will not be exceeded as a result of pollutants emitted from the Installation as set out in section 5.2 of this decision document. | |
| Statement that it should be ensured that the process conditions remain the same as modelled. | The permit links the proposed operating techniques through table S1.2. There are also a number of pre operational and improvement conditions included in the permit which require validation of proposed process conditions – see Annex 2 and Annex 3 of this document for details. | |
| Statement that it should be ensured that the composition of the waste to be incinerated is uniform. | The permit specifies which waste codes can be burnt in the incinerator. Waste acceptance criteria will be in place as part of the EMS which will specify the checks that will be carried out on incoming waste. Waste blending and mixing will be carried out in the waste bunker using an overhead crane. | |
| Questions about whether waste material will undergo regular tests for heavy metal content. | Waste acceptance criteria will be in place as part of the EMS which will specify the checks that will be carried out on incoming waste. Checks will be appropriate to the nature of the waste received. High heavy metal content is not anticipated in the wastes listed for input to the incinerator. | |
| Suggestion that where emissions to air do not screen out as insignificant that tighter limits for the pollutants should be set. | We are satisfied that the relevant environmental standards (ES) for pollutants emitted from the facility will not be exceeded as a result of pollutants emitted from the Installation as set out in section 5.2 of this decision document. We do not consider that tighter limits than the AELs need to be set for any of the pollutants. | |
| Suggestion that the proposed frequency | Improvement conditions IC10 and IC11 | |
| Decision document: 16/11/22 | Page 108 of 151 | Variation Application Number EPR/CB3308TD/V002 |

| | |
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| of monitoring for hydrogen fluoride, heavy metals and dioxins is not sufficient and should be more frequent. | require the operator to carry out a programme of dioxin and mercury monitoring over a period of frequency agreed with the Environment Agency. The operator shall submit a report to the Environment Agency with an analysis of whether emissions can be considered stable. Monitoring frequency will only be reduced if this can be demonstrated. Periodic measurement of HF will be carried out at the ERF. Continuous measurement of HF is not proposed on the basis that the acid gas abatement system will operate to a design guarantee that the emission limit for HCl will not be exceeded. |
| Concern about existing odour issues at the Biffa site nearby to the proposed facility and therefore limited confidence on the proposed control measures for odour. | We are satisfied that the proposed control measures will prevent any significant emissions of odour from the site. Section 6.5.4 has further details. |
| Comments about noise and dust impacts from construction. | Emissions produced by construction are not within our remit. |
| Reference to their recommendation for monitoring of dust during the construction phase. | Emissions produced by construction are not within our remit. |
| Note 1: We have reworded the 'responses received' section of this table to make it clear that we received and took into account responses from both the Planning and Environmental Health Departments of Horsham District Council. | |

| Response Received from South Downs National Park Authority on 28/05/2021 | |
|---|--|
| Brief summary of issues raised: | Summary of action taken / how this has been covered |
| No comments provided | No action required |

We did not receive responses from the Health and Safety Executive or the Food Standards Agency.

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.

| | | |
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| Decision document: 16/11/22 | Page 109 of 151 | Variation Application Number EPR/CB3308TD/V002 |
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a) Representations from Local MP and Parish Council

Representations were received from North Horsham Parish Council, who raised the following issues.

| Response Received from North Horsham Parish Council on 17/06/2021 | |
|--|--|
| Brief summary of issues raised: | Summary of action taken / how this has been covered |
| Concerns that no consideration has been given to turbulence created by aircraft impacting particulate emissions. | We are satisfied that turbulence caused by aircraft is unlikely to have a significant impact on particulate emissions from the site and therefore did not require the operator to consider this within their risk assessment. |
| Concerns over emissions from vehicular movements impacting on air quality. | The environmental risks from vehicle movements on site have been assessed in the air quality risk assessment and we consider the risk not to be significant. |
| Concern over vehicles generating odour. | We are satisfied that adequate control measures have been proposed to minimise emissions of odour from the operation of vehicles on the site. Section 6.5.4 has further details. |
| Concern over vehicles causing noise. | Only noise from traffic movements on the installation are within the remit of the Environmental Permitting Regulations. We audited the Applicant's final noise assessment. We are satisfied that the revised noise assessment was appropriate and that noise will not be a significant issue. Pre operational condition PO9 requires final confirmation of sound power levels of the air cooled condensers on site to ensure that the noise risk is in line with that assessed as part of the permit application. |
| Concern about vehicles causing a safety hazard and loss of amenity for residents. | Movement of vehicles outside of the installation is not within our remit. |
| Concern about vehicles using the site causing congestion. | Movement of vehicles outside of the installation is not within our remit. The location of the site is an issue relevant for the planning process. |
| Request for evidence to be provided that the National Planning Policy Framework is being adhered to. | Wider issues of policy are outside our remit. We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. |
| Confirmation that the Council also support the concerns raised by the No Incinerator 4 Horsham Community Group. | See section (b) below for details of this response and a summary of actions taken / how this has been covered. |

Representations were received from MP Jeremy Quinn, who raised the following issues.

| Response Received from MP Jeremy Quinn | | |
|---|---|---|
| We received a number of responses from MP Jeremy Quinn. The concerns raised are outlined below: | | |
| Brief summary of issues raised: | Summary of action taken / how this has been covered | |
| Concern whether documents relating to the Application would be available during the initial advertising and consultation period. | The consultation section of this decision document sets out how we publicised the application. We are satisfied we have fulfilled our obligations in this regard. See the consultation section of this decision document for more information. | |
| Concern that there were missing documents during the advertising of the Application. | We did not consider that any documents required for duly making of the Application were missing. | |
| Concern that the advertising period should be extended to allow adequate time for the public to view the Application documents. | We extended our advertising period from our legal obligation of 4 weeks to 11 weeks to ensure that the public and consultees had adequate time to access the Application documents. | |
| Concern about the amount of hazardous and non hazardous waste which will be going to the incinerator and its impact on residential streets. | No hazardous waste will be input to the incinerator. Movement of vehicles outside of the installation is not within our remit. | |
| Concern about the carbon emissions from the site and its impact on Net Zero. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. Our assessment of global warming potential is covered in sections 6.3 and 6.6 of this decision document. | |
| Concern about whether the energy generated will be available for the North Horsham development. | See section 4.3.7 for our assessment of CHP ready and Article 14 relating to energy efficiency. | |
| Concern about the potential impact on the local natural environment. | We have assessed the potential impact of the proposed operations on sites of conservation and are satisfied that the proposed installation would not cause significant pollution if the process contribution is less than 100% of the relevant Critical Level or Load. See section 5.4 for further detail. | |
| Concerns Regarding the Assessment of the Health Impacts of Municipal Waste Incinerators | The Applicant submitted a Human Health Risk Assessment (HHRA) that considered the impacts of dioxins and furans and dioxin like PCBs through the food chain. We audited the assessment and are satisfied that health impacts are likely to be insignificant compared to the tolerable daily intake (TDI). Further details are in section 5.3 of this decision | |
| Decision document: 16/11/22 | Page 111 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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b) Representations from Community and Other Organisations

Representations were received from No Incinerator 4 Horsham Community Group, UK Without Incineration Network and from the Countryside Charity, Sussex. A summary of their comments and any action taken or how this has been covered are set out below.

| | | |
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| Response Received from | | |
| No Incinerator 4 Horsham Community Group | | |
| We received a number of submissions from No Incinerator 4 Horsham Community Group which included attached supporting documents and reports. The main concerns identified are split into 6 sections in the document submitted by the group as follows: | | |
| Brief summary of issues raised: | Summary of action taken / how this has been covered | |
| General concerns | | |
| Concern about lack of public consultation by the Environment Agency. | The consultation section of this decision document sets out how we publicised the application. We are satisfied we have fulfilled our obligations in this regard. See the consultation section of this decision document for more information. | |
| Concern about Application documents being unavailable for review. | The consultation section of this decision document sets out how we publicised the application. Application documents required for duly making of the Application were available to view during the initial consultation. Where we received additional documents during the determination, we made these available via our Citizen Space page. All Application documents required for the determination of the variation are available during the 'Minded to' consultation. We are satisfied we have fulfilled our obligations in this regard. | |
| Concern about errors in referencing in the Application. | We did not consider that any errors in referencing within the Application impacted on the information available for determination of the variation. | |
| Management activities | | |
| Concern about whether the Applicant has the necessary experience to build and manage an incinerator. | We have assessed the applicant's competence. See section 4.3.2 for further details. | |
| Concern about no CHP provision. | See section 4.3.7 for our assessment of CHP ready and Article 14 relating to energy efficiency. | |
| Concern about the amount of electricity proposed for generation from the | We are satisfied that as much energy as practicable will be recovered from the | |
| Decision document: 16/11/22 | Page 112 of 151 | Variation Application Number EPR/CB3308TD/V002 |

| | | |
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| incinerator. | waste. Further details are in section 4.3.7 of this decision document. | |
| Concern about a lack of clarity of the tonnage of hazardous and non-hazardous waste tonnage proposed for input to the facility. | The only hazardous waste which will be accepted onto site is asbestos. No treatment or incineration of asbestos will be permitted on site. We requested additional information on the quantity of hazardous waste to be stored at the facility. Further information on this can be found in section 4.3.6 of this document. The maximum tonnage of waste to be accepted is specified in the waste tables in the permit. | |
| Concerns about information missing from the mass balance diagram. | We consider that the mass balance diagram with the other documentation in the Application gives us adequate information about the inputs to and outputs from the site. | |
| Concern about ash and hazardous residues being transported off site. | We consider that the ash and residues will be handled and disposed of appropriately. | |
| Operations | | |
| Concern about the content of the risk assessment. | We have assessed the environmental risk assessment submitted and are satisfied that it demonstrates that the facility will not pose a significant risk to human health or the environment. See section 5 of this decision document for further details. | |
| Concern about contradictions in numbers and missing numbers relating to functioning of the plant. | We were satisfied that we had sufficient information to determine the application and that any contradictions/missing numbers were not materially significant. | |
| Concern about lack of information on processes and techniques used to minimise risks to As Low As Reasonably Practicable (ALARP). | We have assessed the environmental risk assessment submitted and are satisfied that it demonstrates that the facility will not pose a significant risk to human health or the environment. See section 5 of this decision document for further details. | |
| Emissions and monitoring | | |
| Concern about lack of in-combination impact in the odour management plan. | We consider that the odour management plan sets out adequate measures to control odour so that it will not result in odour pollution outside of the installation boundary. Condition 3.4 of the permit enables us to request an updated Odour Management Plan if necessary. | |
| Concern about a lack of pest management plan. | A Pest Management Plan was submitted with the Application. We consider this includes appropriate techniques to | |
| Decision document: 16/11/22 | Page 113 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| | minimise the risk associated with pests. Condition 3.7 of the permit enables us to request an updated Pest Management Plan if necessary. | |
| Concern about the Construction Dust Assessment being out of date. | Emissions produced by construction are not within our remit. | |
| Impacts | | |
| Concern about conservation sites within 2km of the proposed facility. | We have assessed the potential impact of the proposed operations on sites of conservation and are satisfied that the proposed installation would not cause significant pollution if the PC is less than 100% of the relevant Critical Level or Load. See section 5.4 for further detail. | |
| Concern about lack of plans for protection of species. | We have considered impacts on sites of nature conservation and have concluded that the impacts are unlikely to result in significant pollution at the sites as set out in section 5.4 of this decision document. | |
| Concern about release of toxic pollutants from the proposed incinerator. | We are satisfied that the relevant environmental standards (ES) for pollutants emitted from the facility will not be exceeded as a result of pollutants emitted from the Installation. | |
| Concern about the background data used in the noise impact assessment. | We audited the Applicant's noise assessment and have carried out sensitivity checks. We required additional information relating to the background monitoring. We are satisfied that the revised noise assessment was appropriate | |
| Concern about release of carbon dioxide from the proposed incinerator. | Our assessment of global warming potential is covered in sections 6.3 and 6.6 of this decision document. | |
| Concern about breach of incinerator emission limits. | The operator would be required to report any exceedance of emission limits to us. They would be required to take actions to resolve any exceedances and outline these actions and timescales to the Environment Agency. In certain circumstances they would be required to shut the incinerator down if an exceedance occurred. | |
| Concern about the lack of a site closure plan. | A site closure plan will form part of the EMS that is subject to pre-operational condition PO1. Section 4.2.3 of this decision document has further details. | |
| Best available techniques | | |
| Concern because a catalytic bag filter | We are satisfied that we have assessed | |
| Decision document: 16/11/22 | Page 114 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| system has not been proposed. | BAT for abatement of pollution in an appropriate way. The way we have done this is set out in section 6 of this decision document. |
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| Response Received from | |
| The Countryside Charity, Sussex | |
| Brief summary of issues raised: | Summary of action taken / how this has been covered |
| General concerns | |
| Concern that the BAT Assessment was not made available during the advertising and consultation of the Application. | The document 'Appendix G – BAT Assessment' was made available during the advertising and consultation of the Application. |
| Concern that the proposal is not in line with the Environment Agency's plan 'EA2025 Creating a Better Place'. | We assess the environmental impacts of what is proposed in an activity that can be authorised under EPR. We use proportionate, risk based regulation to protect the environment. We are satisfied that the relevant environmental standards (ES) will not be exceeded and that the proposed control measures for emissions pollutants are appropriate. |
| Operations | |
| Concern that the facility would rely on HGVs. | We have to assess the environmental impact of what is proposed as part of an activity authorised under EPR and we are satisfied that there will not be significant pollution from the installation. |
| Emissions and monitoring | |
| Concern about the levels of emissions of nitrous oxides from the facility. | We are satisfied that the relevant environmental standards (ES) for pollutants emitted from the facility will not be exceeded as a result of pollutants emitted from the Installation. Improvement condition IC5 requires the operator to assess the performance and optimisation of the abatement plant for minimisation of nitrous oxides. |
| Concern about a lack of quantification of how much ozone would be created by the process. | We considered that the application considered adequate information on the GWP from the proposed operation. Our assessment of global warming potential (GWP) is covered in sections 6.3 and 6.6 of this decision document. |
| Concern about the findings of a case study by Zero Waste Europe from November 2018. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. We reviewed the case study |

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| Decision document: 16/11/22 | Page 115 of 151 | Variation Application Number EPR/CB3308TD/V002 |
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| | referred to and concluded that it did not change our view. | |
| Concern that emissions of greenhouse gases are not calculated and quantified for the lifetime of the facility. | Our assessment of GWP is covered in sections 6.3 and 6.6 of this decision document. | |
| Concerns that emissions from the facility could contribute to climate change and that impacts on climate change should be taken account in the Application. | Our assessment of GWP is covered in sections 6.3 and 6.6 of this decision document. | |
| Impacts | | |
| Concerns that deposition rates and concentrations of pollutants have been stated for the lifetime of the facility and what consequences they will have on people and the environment. | The long term Environmental Standards take into consideration potential long term impacts on human health and the environment. We are satisfied that the relevant pollution standards (ES) will not be exceeded due to emissions from the Installation. | |
| Concern that cumulative impact of pollutants has not been considered in the impact assessment. | The Applicant's health risk assessment included consideration of accumulation. The impact from dioxins/furans is described in more detail in section 5.3 of this decision document. We are satisfied that potential impacts will not be significant. | |
| Concern about how the dimensions of the incinerator were determined for the Human Health Impact Assessment. | We have audited the Human Health Risk Assessment submitted with the Application and are satisfied that appropriate parameters have been used for the assessment. | |
| Concern that a justification for PCDD/F emission levels assumed for the Human Health Impact Assessment is not given. | We have audited the Human Health Risk Assessment submitted with the Application and are satisfied that appropriate parameters have been used for the assessment. | |
| Concern that toxicity data for pollutants that would be emitted by the facility was not included in the Application. | Data relating to the pollutants emitted by incinerators of this type is widely available and the associated Environmental Standards where applicable are available on our website. | |
| Best available techniques | | |
| Concern that design of the furnace has not been finalised. | The design of the furnace will be finalised prior to commissioning. Pre-operational condition PO6 and Improvement condition IC4 require verification that the relevant conditions for adequate combustion of the waste is achieved by the facility. | |
| Concern whether the facility is capable of combusting the chemical complexity | We are satisfied that the proposed facility will be able to combust the wastes | |
| Decision document: 16/11/22 | Page 116 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| of the waste listed. | proposed for incineration and the relevant application documents are linked to the permit through operational techniques table S1.2. Condition 2.3.9 is included in the permit specifying the required waste combustion temperature in line with IED. Pre-operational condition PO6 and Improvement condition IC4 require verification that the relevant conditions for adequate combustion of the waste is achieved by the facility. |
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c) Representations from Individual Members of the Public

A total of 132 responses were received from members of the public. Their comments are summarised below. Many responses overlapped in terms of content therefore we have only included comments below that are not already addressed above in our response to queries from statutory consultees, local MPs, parish/town community councils and community groups/organisations.

| Brief summary of issues raised: | Summary of action taken / how this has been covered | |
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| Comments about air emissions and air risk assessment | | |
| Several reports, papers and articles were cited to support the claim that the incinerator would cause health impacts due to air emissions. | We considered the reports, papers and articles that were submitted. Our view is that the Installation will not have a significant impact on health. Section 5.3 sets out our understanding of UKHSA's view on modern incinerators which is in line with the conclusions of our assessment. | |
| Concern that the development at the Land North of Horsham is not included as a receptor. | The Applicant has reported maximum concentrations in the modelled grid, these represent 'worst case' predictions and do not necessarily represent public exposure. However, the predicted impacts have been shown to be not significant at the point of maximum impact and therefore at the Land North of Horsham proposed development site. As a result, making predictions at further discrete receptor locations is not required as these will be less than the reported maximums which are already considered to be permissible and not cause any significant air quality pollution issues. | |
| Concern that the meteorological data used in the air dispersion model was out of date. | We carried out sensitivity analysis on meteorological data as part of determination. As a result of the sensitivity assessment we concluded that using a different set of meteorological data would not have changed the conclusions of the air quality impact assessment. | |
| Concern that the meteorological data does not adequately reflect local conditions and may not take inversions or localised | We carry out sensitivity analysis on meteorological data as part of determination. As a result of the sensitivity assessment we concluded that using a different set of meteorological data would not have | |
| Decision document: 16/11/22 | Page 117 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| weather conditions including fog. | <p>changed the conclusions of the air quality impact assessment.</p> <p>The dispersion model used by the Applicant does not explicitly predict complex conditions relating to vertical profiling such as temperature inversion, complex terrain stagnation or fumigation. There are alternative dispersion models that can model these conditions. However, we have conducted a number of case studies investigating the likely dispersion impacts of such conditions, including the assessment of the initial Rookery Pit ERF application in 2011, and found that although these conditions could lead to increases in the long-term and short-term Process Contributions (PCs) the variability is within any modelling uncertainties. As a result the Applicant's conclusions would not be likely to change.</p> | |
| Concern that emissions might lead to exceedances of Air Quality Standards. | We are satisfied that the relevant pollution standards (ES) will not be exceeded due to emissions from the Installation. | |
| Concern about the methodology of the dioxin impact assessment. | We audited the Applicant's methodology and are satisfied that the method used was appropriate. | |
| Concern that ash residues could be released to atmosphere. | <p>Bag filters will minimise the emission of particles relating to APC residues to atmosphere.</p> <p>Fugitive emission of bottom and or APC residues will be minimised. The measures are set out in section 6.5.3 of this decision document.</p> | |
| Comment that periods of OTNOC could result in significantly higher levels of airborne dioxin emissions. | <p>The Permit allows emission limits to be exceeded for short periods during certain circumstances, known as abnormal operation. The reason we allow this is explained in section 5.5 of this decision document. We have assessed the impact from abnormal operation and we are satisfied that there will not be a significant impact, this is also explained in section 5.5.</p> <p>Pre operational condition PO1 requires a full OTNOC management plan to be prepared in accordance with BAT 18 of the BAT Conclusions which will form part of the Environmental Management System. The Operator will be required to identify potential OTNOC scenarios and any required monitoring in their management plan and will require our approval of scenarios before they can be classed as OTNOC.</p> | |
| Concern that the construction dust assessment is out of date. | Emissions produced by construction are not within our remit. | |
| Concern over increased emissions at start-up and shut-down and. | The combustion units will be fired on a support fuel (gas oil), to ensure that the temperature meets the required levels before waste is permitted to be fed for incineration. This support fuel is automatically fed if the temperature of the furnace falls below a permitted level. We do not consider the impact at start-up and | |
| Decision document: 16/11/22 | Page 118 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| | shut-down would be significant. |
| Concern that emissions to air of pollutants from the incinerator will impact human health. | We are satisfied that the relevant environmental standards (ES) for pollutants emitted from the facility will not be exceeded as a result of pollutants emitted from the Installation. |
| Concern over the impact on areas where background levels already exceed the Environmental Standards. | We have considered impacts at AQMAs and are satisfied that the impact will be insignificant for the relevant pollution at the AQMAs and that the contribution from the Installation will be negligible. Section 5.2.4(i) of this decision document has further details. We have also considered impacts on sites of nature conservation and have concluded that the impacts are unlikely to result in significant pollution at the sites as set out in section 5.4 of this decision document. |
| Concern over mercury impacts including accumulation. | The impacts of mercury were compared to the ES which is considered to be protective for human health impacts. The exception would be if a fish farm was nearby in which case a human health impact assessment to consider mercury intake via fish would be required. There are two carp fisheries within 10km of the Installation, however these are catch and release fisheries and therefore we consider that the risk of metals getting into the food chain via this route is low. Specific consideration of accumulation of metals is not required in this case. We are satisfied that impacts from mercury will not be significant. |
| Concern over accumulation of other pollutants. | Dioxins and furans can accumulate in the food chain. This is considered in section 5.3 of this decision document. The issue of accumulation is covered in section (a) above. Other pollutants are assessed against the ES and we are satisfied that the ES are protective of human health and that further assessment of accumulation is not required. Some of the key documents we have referenced in relation to our conclusions are as follows: United States Environmental Protection Agency – Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities. September 2005 www.epz.gov/osw Risk Assessment of Dioxin releases from Municipal Waste Incinerations, Her Majesty’s Inspectorate of Pollution. March 1996 |
| Concern about the lack of information about potential impacts on water from emissions to air including acid rain and reservoir pollution. | Acid rain can be caused by emissions of large amounts of acid gases. Historically large coal fired power stations without flue gas desulphurisation contributed to acid rain. The emission of acid gasses from the Installation will not be at a level that could cause acid rain or pollution of reservoirs. We consider the proposed control and mitigation measures to minimise emissions of acid gases from the installation |

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| | to be BAT. |
| Concern about impacts from dust including fine particulates. | We are satisfied that the relevant environmental standards (ES) will not be exceeded and that the proposed control measures for emissions of dust are appropriate. |
| Concern over impacts on air quality from additional lorries using nearby roads and the cumulative impact with existing traffic. | The planning authority determines whether the activity is an acceptable use of the land. It considers matters such as traffic, which do not form part of our Environmental Permit decision making process. We consider the concern about increased traffic is outside of the remit of the Environment Agency. |
| Concern expressed over the emission of benzene, phenols, methane and other hydrocarbons. | The impact of VOCs was assessed assuming it is all butadiene. Even when making this worst case assessment, impacts were screened out. Section 5.2 has further details. |
| Concern over the emissions of PCBs. | The Applicant considered PCBs in their impact assessment. The impact was shown to be insignificant. Further information is in section 5.2 of this decision document. |
| Concern expressed in relation to the UKWIN report about particulate pollution and regulation. | We did not agree with the claims made in this report. Our response to the UKWIN report can be found at the link below: http://www.esauk.org/download_file/view/256/204 |
| MSW incinerators are the dominant source of dioxin emissions to air. A 1997 HMIP report was cited. | Emissions of PCDD/F (dioxins and furans) are much lower from modern waste incinerators regulated under the IED. Modern plants make up a small proportion of total dioxin/furan emissions. |
| Concern over fugitive dust. | We are satisfied that the control measures will prevent significant emissions. Section 6.5.3 contains further details. |
| Concern that vehicle movements could lead to dust. | The Dust Management Plan submitted with the Application sets out measures to avoid dust on roadways including sweeping them and dampening them if required. |
| Concern over the cumulative, long-term impact from persistent organic pollutants. | The Applicant's health risk assessment included consideration of accumulation in the food chain. The impact from dioxins/furans is described in more detail in section 5.3 of this decision document. We are satisfied that potential impacts will not be significant. |
| Concern that decisions are made on available rather than complete information. | The Applicant is required to provide us with adequate information at the determination stage to demonstrate that the environmental impact associated with the facility would not be significant. Additional information is required to be submitted through pre operational conditions and improvement conditions and assessed by the Environment Agency. |
| Comments about other health impacts | |
| Several reports, papers and articles were cited to support the claim that the incinerator would cause health impacts. | We considered the reports, papers and articles that were submitted. Our view is that the Installation will not have a significant impact on health. Further details on in section 5.3 of this decision document. |
| Concern over impacts on children's quality of life schools | We have to assess the environmental impacts of what is proposed which is an activity that can be |

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| within the vicinity of the incinerator. | authorised under EPR. Wider issues of policy are outside our remit. We are satisfied that the relevant environmental standards (ES) will not be exceeded and that the proposed control measures for emissions pollutants are appropriate. |
| Reference to the legal case of Ella Adoo-Kissi. | We are satisfied that the relevant environmental standards (ES) will not be exceeded due to emissions from the Installation. |
| Concerns over impacts on health during construction. | Potential impacts during construction are not within our remit. |
| Concerns over impacts on health during decommissioning. | A site closure plan will form part of the EMS that is subject to pre-operational condition PO1. This will cover decommissioning. Section 4.2.3 of this decision document has further details. |
| Concern over impacts on health for those with respiratory illnesses. | The Application contained an air quality impact assessment. The impact assessment concluded that there would be no significant impacts on human health. We agree with these conclusions. The Environmental Standards are applicable to all sensitive receptors. |
| Concern about potential impacts from the presence of rodents and flies and lack of plans in place to manage them. | A Pest Management Plan was submitted with the Application. We consider this includes appropriate techniques to minimise the risk associated with pests. Condition 3.7 of the permit enables us to request an updated Pest Management Plan if necessary. |
| Concern that the toxins released from the burning of household rubbish are a danger to public health. | Our view is that the Installation will not have a significant impact on health. Section 5.3 sets out our understanding of UKHSA's view on modern incinerators which is in line with the conclusions of our assessment. |
| Statement that there is evidence showing increases in serious illnesses where these facilities have been installed near built up areas. | Our view is that the Installation will not have a significant impact on health. Section 5.3 sets out our understanding of UKHSA's view on modern incinerators which is in line with the conclusions of our assessment. |
| Comment that precautionary principle should be applied. | Section 5.3 of this decision document covers 'The Precautionary Principle'. The United Kingdom Interdepartmental Liaison Group on Risk Assessment (UK-ILGRA) state in their paper "The Precautionary Principle: Policy and Application" that the precautionary principle should be invoked when there is good reason to believe that harmful effects may occur and the level of scientific uncertainty about the consequences or likelihood of the risk is such that the best available scientific advice cannot assess the risk with sufficient confidence to inform decision making. The Health Protection Agency (as it was called then) stated in its response to the British Society for Ecological Medicine Report, "The Health Effects of Waste Incinerators that "as there is a body of scientific evidence strongly indicating that contemporary waste |

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| | management practices, including incineration, have at most a minor effect on human health and the environment, there are no grounds for adopting the 'precautionary principle' to restrict the introduction of new incinerators". As explained in section 5.3 UK Health Security Agency maintain their view on impacts from incineration. | |
| The incinerator could have an impact on mental health. | Our view as set out in this decision document (section 5.3) is that emissions from the Installation will not have a significant effect on health. | |
| Concern that in the future incineration could be found to be linked to health impacts. | If this was to occur, we would take appropriate action as required to prevent any Installation causing a significant impact. Permits are reviewed periodically. | |
| Concern expressed over the method used for the HHRA. | We audited the Applicant's methodology and are satisfied that the method used was appropriate. | |
| Concern that some people could be more sensitive than others to emissions. | The ES are set to protect populations as a whole and are derived on data based on differing population dynamics. | |
| Concern over the cancer risk estimate benchmark that was used in the HHRA. | In the HHRA the Applicant included the US-EPA cancer risk methodology. This is not used formally in the UK and we have not used this in our assessment. The way we have assessed health impacts is covered in section 5.3 of this decision document. | |
| Concern that scientific studies assessing the health risk of municipal waste incinerators indicate adverse health effects for example cancer. | Our view is that the Installation will not have a significant impact on health. Section 5.3 sets out our understanding of UKHSA's view on modern incinerators which is in line with the conclusions of our assessment. | |
| Concern that TDI has been reduced tenfold following disparity between limits set by the US and EU. | We checked the methodology and TDI used within the Applicant's health risk assessment and concluded that they are appropriate. The impact from dioxins/furans and the relevant TDI selection is described in more detail in section 5.3 of this decision document. | |
| Comments about noise impacts | | |
| Concern about impacts from noise and vibration from the operation. | We audited the Applicant's final noise assessment. We are satisfied that the revised noise assessment was appropriate, and that noise will not be a significant issue. See section 6.5.5 for further information. | |
| Concern over noise and vibration impacts from additional lorries and the cumulative impact with the lorries already using the road. | Only noise from traffic movements on the installation are within the remit of the Environmental Permitting Regulations. We audited the Applicant's final noise assessment. We are satisfied that the revised noise assessment was appropriate and that noise will not be a significant issue. | |
| Concern over increased noise from traffic as a result of disposal of waste produced by the incinerator. | Only noise from traffic movements on the installation are within the remit of the Environmental Permitting Regulations. We audited the Applicant's final noise assessment. We are satisfied that the revised noise assessment was appropriate and that noise will not be a significant issue. | |
| Concern that background monitoring may not be | We audited the Applicant's noise assessment. We required additional information including updated | |
| Decision document: 16/11/22 | Page 122 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| representative as dated from 2016. | background monitoring. We are satisfied that the revised noise assessment was appropriate. | |
| Concern over vibration impacts on houses. | We are satisfied that vibration will not be a significant issue. | |
| Comments about odour impacts | | |
| Concern over odour impacts for those that live near to the site including in-combination impacts with existing sites. | We are satisfied that the proposed control measures will prevent any significant emissions of odour from this site. Section 6.5.4 has further details. | |
| Concern over effectiveness of negative pressure in controlling odour in the reception hall. | The use of combustion air in the furnace to generate negative pressure in the reception hall is used in many incineration plants and generally works well to control odour. We are satisfied that there will not be a significant impact from odour. Improvement condition IC8 has also been set to check that it is working effectively. | |
| Concern that the meteorological data does not adequately reflect local conditions and may not take inversions or localised weather conditions. | We have assessed the use of the meteorological data used by the Applicant during the determination and are satisfied that it is representative. See section 5.2 for further information. | |
| Concern over odorous wastes being received. | Some wastes do have the potential to cause odour. However all waste will be delivered to the reception building which will be kept under negative pressure. | |
| Concern that the current waste operation has resulted in odour impacts. | The operator has submitted an Odour Management Plan which we consider contains adequate measures to control odour from the facility. There are no substantiated odour complaints known to the Environment Agency in relation to the existing site. | |
| Comments about impacts on wildlife | | |
| Concern about the impact of the proposed operations on wildlife sites and rivers. | As part of our assessment we considered the potential impacts on sites of conservation. See section 5.4 for our assessment. | |
| Concern about the impact of building of a new road on wildlife. | Potential impacts during construction of the road are not within our remit. | |
| Comments about other impacts | | |
| Concern over the visual impact of the stack. | Visual impact is not within our remit. | |
| Concern over the visual impact of a large building. | Visual impact is not within our remit. | |
| Concern about light pollution. | Pollution from light is primarily a concern for considering visual impacts and as such covered by the planning process. In any event light pollution is not likely to have a significant effect on health or the environment. | |
| General Comments about impacts | | |
| Concern about how the operations will fit within the Paris Climate Agreement. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. Wider issues of policy are outside our remit. | |
| Concern that green spaces are being reduced and that the | We have to assess the environmental impacts of what is proposed which is an activity that can be | |
| Decision document: 16/11/22 | Page 123 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| planet needs to be protected for the next generation. | authorised under EPR. Wider issues of policy are outside our remit. |
| Concern about impacts at many nearby receptors including any new housing developments. | We are satisfied that there will not be a significant impact from the Installation. Section 5 covers the risk assessment. The new housing development referenced Land North of Horsham was taken into account in both the noise and air quality impact assessment. |
| Concern over the impacts from the Installation combined with existing pollution. | Background levels of pollution were considered in the risk assessments where appropriate as discussed in this decision document. |
| Comments about BAT, emissions limits and control measures | |
| Concern over whether the incinerator will use BAT. | We are satisfied that we have assessed BAT in an appropriate way. The way we have done this is set out in section 6 of this decision document. |
| Concern about whether the abatement technology, used in order to clean the exhaust gases, is the best available. | We are satisfied that we have assessed BAT in an appropriate way including for abatement. The way we have done this is set out in section 6 of this decision document. |
| Comment that there is not adequate space to abate pollution through planting of vegetation. | We are satisfied that we have assessed BAT for abatement of pollution in an appropriate way. The way we have done this is set out in section 6 of this decision document. |
| Concern that the Fire Protection Plan states that the bunker is never to be emptied and cleaned. | Schedule 5 notice response dated 15/03/2022 confirmed that the waste at the bottom of the bunker (including corners near the base) will be dug out as far as practicable during planned outages and be subsequently processed once the plant restarts. |
| Concern was expressed over the level of information in the Fire Prevention Plan about hot loads. | We are satisfied that the Fire Prevention Plan contains adequate information about hot loads. The Fire Prevention Plan also contains provision for the plan to be reviewed and pre operational condition PO10 requires further update prior to commissioning of the installation. |
| Concern about where the fines which are produced by the shredding go and that these could be a fire risk or could cause airborne emissions or groundwater leachate. | A dust management plan will be in place. We have assessed this and consider that it contains adequate control measures to control dust. There will be no emissions to groundwater from the installation. |
| Concern expressed that the Applicant did not consider all forms of incineration technology. | We are satisfied that we have assessed BAT in an appropriate way. The way we have done this is set out in section 6 of this decision document. |
| Concern that the installation is oversized for the volume of waste generated in the local area. | We are satisfied that we have assessed BAT in an appropriate way. The way we have done this is set out in section 6 of this decision document. The local waste strategy is not something that we can take into account during the determination of an Environmental Permit. |
| Concern over whether the Installation will be able to keep | If standards change in the future we can review the permits of sites in the incineration sector to check |

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| up to date with changing technology. | whether any additional controls would be required. We have the regulatory powers necessary to vary the Permit if required. | |
| Comments about energy efficiency | | |
| Statement that the proposal does not meet the R1 criteria that it is required to meet in order to be defined as a Recovery operation. | An R1 assessment was submitted based on the design parameters. We have assessed this and agree with the operator's conclusions that based on the data currently available that the incinerator can be classified as a Recovery activity. The Applicant will be required to update and resubmit the assessment if the plant becomes operational to validate the data and conclusion. | |
| Concern that a demand for heat from either the industrial or resident population has not been established. | Section 4.3.7 sets out our assessment of CHP ready and Article 14 of the Energy Efficiency Directive. | |
| Concern over the amount of energy that will be recovered from the waste. | We are satisfied that as much energy as practicable will be recovered from the waste. Further details are in section 4.3.7 of this decision document. | |
| Query about whether the R1 calculation has been checked and what the correct threshold is. | Our view on the R1 calculation provided in the Application is set out in section 4.3.7 of this decision document. We requested additional information relating to the R1 and received an updated version on 17/03/22. | |
| Comments about pollution of water and land | | |
| Concern that there could be pollution of waterways or groundwater from water emissions. | There are no planned emissions to land or groundwater. The only discharge to surface water permitted is discharge of uncontaminated surface water. Pre operational condition PO10 is in place requiring the operator to submit a finalised drainage plan prior to commissioning including details of planned discharges, containment and interceptors. | |
| Concern about the impact of potential surface water run off in a south easterly direction to the lagoon/pond within Biffa's control under the Environmental Permit for the adjacent MBT/AD Facility. | The only discharge to surface water permitted is discharge of uncontaminated surface water. Pre operational condition PO10 is in place requiring the operator to submit a finalised drainage plan prior to commissioning including details of planned discharges. | |
| Concern that the Applicant does not cover impact on surface water or pollution prevention measures for waterways. | The only discharge to surface water permitted is discharge of uncontaminated surface water. Pre operational condition PO10 is in place requiring the operator to submit a finalised drainage plan prior to commissioning including details of planned discharges. | |
| Concern over elevated levels of substances identified as ground contaminants and the potential impacts from those substances. | We are satisfied that any ground contamination does not pose a pollution risk from operation of the Installation. The operator has set out the pollution prevention measures that will be put in place to prevent pollution of ground and groundwater. | |
| Concern that dioxins could contaminate ground and water. | The HHRA considered uptake of dioxins through the food chain including plants and water. The assessment showed no significant impact, we are therefore satisfied that ground and water will not be | |
| Decision document: 16/11/22 | Page 125 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| | significantly impacted. |
| Concern that emissions from the incinerator could impact on produce being grown in gardens, allotments and fields. | The Applicant's health risk assessment included consideration of accumulation in the food chain. The impact from dioxins/furans is described in more detail in section 5.3 of this decision document. We are satisfied that impacts will not be significant. |
| It is not clear where surface water will discharge to. | The only discharge to surface water permitted is discharge of uncontaminated surface water. The application states that surface water will be discharged via in interceptor. Pre operational condition PO10 is in place requiring the operator to submit a finalised drainage plan prior to commissioning including details of planned discharges. |
| Concern that a site closure plan has not been submitted. | A site closure plan will form part of the EMS that is subject to pre-operational condition PO1. Section 4.2.3 of this decision document has further details. |
| Concern over lack of plan for site decontamination post operation. | A site closure plan will form part of the EMS that is subject to pre-operational condition PO1. Section 4.2.3 of this decision document has further details. |
| Comments about monitoring | |
| Concern about who will monitor and regulate what is being burnt and any ongoing impact on public health and the environment. | The Environment Agency will be the regulator of the facility. The operator will be required to monitor what is being burnt and maintain records as part of their EMS. They will also be required to report this information to the Environment Agency. We consider that there is no significant risk posed by the installation and that the permit contains conditions to minimise impact on public health and the environment as set out in section 5.2 and 5.3 of this decision document. |
| Concern that Operator will carry out the monitoring. | The Operator's monitoring will have either MCERTS certification or MCERTS accreditation as appropriate. MCERTS is the Environment Agency's Monitoring Certification Scheme. If monitoring complies with MCERTS we can have confidence in the monitoring of emissions. In addition we will carry out audits of the Operator's monitoring. If we found problems with the monitoring we would take action to ensure this is rectified, and could do our own monitoring if required. |
| Concern that the sampling of flue gas and particulates are only snap shots in time. | A range of pollutants are required to be measured continuously and some sampled periodically. These frequencies are specified in guidance for this type of installation e.g. from IED and the BAT Conclusions. |
| Monitoring results should be publicly available. | The Permit requires that monitoring results are reported to the Environment Agency. We will make the reports available on our public register. |
| Monitoring of bio-accumulating heavy metals and dioxins should be carried out in the vicinity of the proposed incinerator. | Based on the HHRA submitted with the application and that we have audited, we do not consider that there is a requirement to monitor heavy metals and dioxins in the vicinity of the proposed incinerator. Monitoring of heavy metals and dioxins emitted by the incinerator would be required by the permit. |

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| Concern that the emissions could vary considerably depending on what's being burnt and consequently emissions could exceed safe limits. | The impact assessment submitted with the Application is based on the worst case emissions that would be generated by the waste being accepted for incineration. The permit will contain emission limit values against which the Environment Agency will monitor compliance. |
| There should be automated alarm systems. | There are a number of alarm systems proposed for the facility e.g. to monitor the temperature of the furnace, flue gas abatement systems and emissions levels of pollutants in flue gases. |
| Concern about emissions monitoring at start-up and shut-down. | The emission limits do not apply at start-up and shut-down and so emissions monitoring would not be required. However we are satisfied that emissions during these periods will not lead to significant pollution. |
| There should be continuous monitoring. | A range of pollutants will be monitored continuously. The monitoring requirements are specified within the BAT Conclusions. |
| Concern that monitoring will not be audited independently. | The Environment Agency will audit the operator's monitoring. The Environment Agency is independent. |
| Comments about waste | |
| Concern that the facility will accept hazardous waste materials for treatment. | No hazardous waste will be accepted for treatment at the facility. |
| Concern that the quantities of non-hazardous waste and hazardous waste proposed for incineration are not clear. | No hazardous waste is proposed for incineration. The permit specifies which waste codes can be burnt in the incinerator. Waste acceptance criteria will be in place as part of the EMS which will specify the checks that will be carried out on incoming waste. |
| Concern about the receipt of asbestos on site and impacts on health. | Asbestos would be required to be received, stored and handled in line with appropriate guidance. Asbestos will not be treated on site. |
| Concern that the stack should have filters to prevent asbestos expelled from the chimney. | Asbestos will not be burnt on site and therefore no emissions of asbestos should be emitted via the incinerator stack. Asbestos would be required to be stored and handled in line with appropriate guidance. |
| Concerns about acceptance of Refuse Derived Fuel with no common standard or specification. | The permit specifies which waste codes can be burnt in the incinerator. Waste acceptance criteria will be in place as part of the EMS which will specify the checks that will be carried out on incoming waste. |
| Concern that that not all RDF will be mechanically sorted, especially fluids. | RDF will be put directly into the incinerator without prior sorting. No liquids will be input to the incinerator as specified in table S2.3. |
| The facility will still require around 25% of waste product to be further treated off site or buried. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. Wider issues of policy are outside our remit. We consider that the proposed facility including the proposed waste handling is BAT as set out in section 6 of this document. |
| Concern that the process flow diagram does not reflect the location of the waste processing hall. | We are satisfied that the plans provided in support of the Application show the location of the proposed waste processing. |

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| Concern as to whether there will be sufficient capacity to store the waste to prevent a backlog of waste. | The waste bunker will have capacity for approximately 3.5 days' worth of waste, we are satisfied that this will be a sufficient storage capacity. The Applicant stated that waste will not be accepted if there is insufficient storage capacity available. | |
| Concern about storage time of waste in the bunker. | Bunker management techniques such as regular mixing and blending the waste with the crane are BAT and will be used to avoid long storage times. | |
| Concern that the planned residence time of RDF in the 'Waste Processing Hall' is not specified. | The Application specifies residence times that waste will be stored in the Waste Processing Hall and ERF Storage Bunker. | |
| Concern about how the gas and temperature in the bunker headspace will be monitored. | The bunker will be kept under negative pressure as set out in Section 6 of this documents. This will minimise the potential for build-up of gas. The Application sets out how the bunker will be managed to ensure that the waste is not stored for long periods of time minimising the potential for self-ignition of waste. A Fire Prevention Plan will be in place to minimise the risk of fire and set out measures of how a fire would be extinguished if it occurred. We consider the measures proposed combined with the pre operational condition for finalisation of the FPP reflect BAT for the installation. | |
| Concern about whether the bunker has an enclosed headspace or whether it is an open vessel in an occupied, sealed building. | Vehicles will tip into the bunker from the tipping hall so it will not have a fully enclosed headspace. See section 6.5.4 for further information on odour control associated with the operation. | |
| Concern about the contents and mix of the feedstock not being clear. | The permit specifies which waste codes can be burnt in the incinerator. Waste acceptance criteria will be in place as part of the EMS which will specify the checks that will be carried out on incoming waste. Waste blending and mixing will be carried out in the waste bunker using an overhead crane. | |
| Concern about potentially recyclable material being burnt. | The incineration plant will take some municipal waste, which has not been source-segregated or separately collected or otherwise recovered, recycled or composted. Conditions 2.3.5 and 2.3.6 in the permit specify that separately collected fractions of waste can only be incinerated if: <ul style="list-style-type: none"> • they are unsuitable for recovery by recycling; and • incineration delivers the best environmental outcome in accordance with regulation 12 of the Waste (England and Wales) Regulations 2011. | |
| Comments about residues | | |
| Concern over the potential for lorries carrying fly ash to be involved in accidents and release load. | Movement of traffic external to the installation is not within our remit. | |
| Concern over the production of hazardous waste. | APC residues will be hazardous waste but will be handled and disposed of appropriately. | |
| Decision document: 16/11/22 | Page 128 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| Concern that residues will contain persistent organic pollutants. | Incineration is a method of destroying persistent organic pollutants. The residues could contain a level of persistent organic pollutants (for example the APC residue will contain dioxins removed from the flu gas with activated carbon). However we are satisfied that the wastes will be handled and recovered or disposed of appropriately. Further details are in section 4.3.9 of this decision document. | |
| Comments about regulation | | |
| Statement that odour issues relating to existing site are reported regularly to the Environment Agency and action is not taken. | An odour management plan will be in place. We have assessed this and consider that it contains adequate control measures to control odour. We do not know of any substantiated odour complaints relating to the existing site in the past. | |
| Statement that the Environment Agency are investigating the link between heavy rainfall and emissions of odour and flies from the existing waste site. | The Environment Agency are not investigating a link between heavy rainfall and emissions at the existing waste site operated by Britaniacrest Recycling. | |
| Concern over whether the Environment Agency have sufficient knowledge and skills to regulate the site. | We are satisfied that the Environment Agency has the skills and experience to regulate the site. | |
| Concern over whether the Environment Agency have sufficient resources to deal with an incident. | A major incident is unlikely from this type of plant, however if one was to occur, we are satisfied we have sufficient resources to deal with an incident. | |
| Comment that permit conditions are sometimes breached. | The permit requires the Environment Agency to be notified of any breaches of permit conditions. In the instance of a breach the operator would be required to take action needed to rectify the breach, minimise the recurrence of a future breach and inform the Environment Agency of the actions they have taken to support this. The Environment Agency will carry out inspections of the site and audits against the conditions set out in the permit. | |
| Comments about the Applicant | | |
| Concern about whether the applicant has sufficient experience. | We have assessed the applicant's competence. See section 4.3.2 for further details. | |
| Concern about whether there have been adverse comments from local residents regarding existing sites run by the operator. | We have assessed both the competence of the operator (see section 4.3.2 of this decision document), and the environmental risk associated with the proposal (see section 5 of this decision document) and the best available techniques assessment (see section 6). We consider the proposal will not cause significant impact on the environment and appropriate techniques are proposed to minimise emissions from the site. | |
| Statement that the Applicant has been fined by Horsham District Council for litter being dropped from their lorries and that they have refused to | Waste will be delivered in enclosed delivery vehicles and tipped into the bunker within the reception building. We are satisfied that based on the proposed control measures set out in the Application that impacts from litter are unlikely to occur. | |
| Decision document: 16/11/22 | Page 129 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| provide litter picking teams resulting in high levels of litter. | See section 6.5.3 on fugitive emissions for further information. |
| Statement that odour issues relating to existing site are reported regularly to the Operator in relation to the existing waste site and no action ever appears to be taken. | An odour management plan will be in place. We have assessed this and consider that it contains adequate control measures to control odour. We do not know of any substantiated odour complaints relating to the existing site in the past. |
| Concern about the Applicant's business model. | The way in which we have assessed the competence of the operator is set out in section 4.3.2. |
| Concern as to whether employees will have sufficient experience/training. | Qualifications and experience and training requirements will all be required as part of the EMS. The Environment Agency will carry out inspections of the site and audits against the conditions set out in the permit. |
| The Applicant should be part of an approved competence scheme. | The EPR core guidance states 'that if an operator is carrying out a 'relevant waste operation' they must comply with an approved technical competence scheme'. An incineration activity is not a relevant waste operation. The Applicant is required to be technically competent for the waste operation carried out on site as set out in condition 1.1.5. |
| Comments about accidents | |
| Concern about impacts on health during malfunctions. | Unavoidable malfunction of abatement plant is classed as abnormal operation and is covered in the tables above as well as in section 5.5. The occurrence of malfunctions will be minimised by the Operator's preventative maintenance programme. If a malfunction did lead to a Permit breach then we would take appropriate enforcement action. |
| Concern over the risk of explosion. | Our view is that there is not a significant risk of explosion from incineration plants. |
| Concern over storage of flammable materials. | We are satisfied that materials will be stored appropriately. A Fire Prevention Plan is in place which is required to be revised to reflect final design under pre operational condition PO10. |
| Concern that the Application does not contain an OTNOC, management plan. | Pre operational condition PO1 requires a full OTNOC management plan to be prepared in accordance with BAT 18 of the BAT Conclusions which will form part of the Environmental Management System. |
| Concern that the FPP lacks information on fire walls, quarantine area and risk from other activities on site. | The FPP covers these issues and we are satisfied with the measures proposed. The FPP is required to be updated prior to commissioning to reflect the final design of the plant in line with pre operational condition PO10. |
| Comments about other issues | |
| Statement that information submitted as part of the application was out of date. | Application documents do not have to be dated from a specific period. We carry out sensitivity analysis (for example, on meteorological data) as part of determination and may request additional information. This could include confirming that older documents are still correct and valid. |

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| Concern that decisions are being made without the required consultation. | This permit variation application has been advertised and consulted on in accordance with our guidance. How we went about this is set out in section 2. |
| Concern about the timescales for public consultation. | This permit variation application has been advertised and consulted on in accordance with our guidance. Consultations periods for permit variations are defined in law and usually run for 20 working days (4 weeks). We extended the consultation on this variation to 6 weeks to allow people further time to submit comments. This consultation period was then subsequently extended further to 11 weeks. |
| Statement that the application was not advertised widely enough. | This permit variation application has been advertised and consulted on in accordance with our guidance. |
| Statement that the public were not updated regarding the consultation extension. | This permit variation application has been advertised and consulted on in accordance with our guidance. |
| Concern that a public engagement event was not held by the Environment Agency. | Due to the COVID pandemic we were not able to carry out any face-to-face consultation such as a drop in event. However we carried out an extended consultation over a six week period. The information relating to the Application was available on the Citizen Space consultation page and a hard copy was placed in Horsham Library. |
| Concern that the Applicant has not engaged with members of the public or updated their website. | As part of the permit application determination we do not require the Applicant to engage with members of the public or update their website in relation to the Application. |
| Concern that the Application documents on Citizen Space are poorly labelled, not arranged in a logical order, not dated and there is no search facility. | The Application documents were uploaded to our Citizen Space page with titles as submitted by the Applicant. We consider the documents are labelled and ordered adequately for us to carry out our duly making assessment and subsequent determination. We agree that a search facility would be a positive update to our systems and have passed this comment onto the relevant team. |
| Request for a hard copy of the application to be provided in the local library. | A hard copy of the Application was placed in Horsham Library. |
| Concern that there was no provision for those who are visually impaired to access the Application. | This permit variation application has been advertised and consulted on in accordance with our guidance. How we went about this is set out in section 2. |
| Concern that comments could not be sent by post during the consultation. | We followed our guidance and encouraged people to comment online through Citizen Space or to contact us using the email address provided. If any other problems were encountered we requested that those wishing to comment on the application contacted our Customer Contact Centre. |
| Comment that the information provided during the advertising and consultation did not make it clear that the Application was | This permit variation application is being treated as a Site of High Public Interest (SHPI). |

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| being treated as a Site of High Public Interest. | |
| Concern that the proposal is not in line with government policy to create a green economy. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. Wider issues of policy are outside our remit. |
| Concern over whether the Environment Agency have sufficient knowledge and skills to assess the permit application. | We are satisfied that the Environment Agency has the skills and experience to assess the Application. |
| Concern that the proposal does not align with government commitment to achieving 'net zero' greenhouse gas emissions by 2050. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. Wider issues of policy are outside our remit. |
| Concern that the proposal is not in line with the G7 meeting pledge. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. Wider issues of policy are outside our remit. |
| Concern about impacts on climate change. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. Wider issues of policy are outside our remit. |
| Concern that additional effort should go into creating biodegradable products. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. Wider issues of policy are outside our remit. |
| Concern that the options to reduce refuse, reuse, repair and recycle should be put into place ahead of incineration in accordance with the Waste Hierarchy in the Waste Framework Directive. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. Wider issues of policy are outside our remit. |
| Concern about the impact of aviation lights positioned on the stack. | Pollution from light is primarily a concern for considering visual impacts and as such covered by the planning process. In any event light pollution is not likely to have a significant effect on health or the environment. |
| Concern about increased traffic congestion resulting from the lorries associated with the operation. | Wider issues relating to transport are not within our remit. |
| Statement that the access road is too narrow. | Wider issues relating to transport including access are not within our remit. |
| Concern that the road network won't be able to cope with the increase in traffic. | Wider issues relating to transport are not within our remit. |
| Concern that there will be more HGV lorries being used by the installation. | Wider issues relating to transport are not within our remit. Measures to limit potential impacts from HGVs while on site, e.g. from dust or noise, are set out in the relevant management plans associated with the Application. We consider these measures appropriate to control emissions. |

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| Statement that there have been many accidents on the nearby A road. | Wider issues relating to transport are not within our remit. |
| Comment that no sustainable transport options have been considered as part of the proposal. | Wider issues relating to transport strategy are not within our remit. |
| Concern that electrically powered vehicles should be used on site wherever possible. | Electrically powered vehicles are not a technique listed within the latest guidance or BAT Conclusions for the sector. An EMS is required to be maintained on site which includes frequent review of site operations and continual improvement in performance throughout the life of a permit. |
| Concern that the planning application for the proposed incinerator was dealt with by one local authority and the housing development by another. | The planning application process is not within our remit. |
| Comment that the site selected by the applicant is not appropriate for the proposal due to the size constraints. | Consideration of the location of the proposal is a planning consideration and is not within our remit. |
| Concern about the use of the land around the site. | Consideration of the location of the proposal is a planning consideration and is not within our remit. |
| Concern over the accuracy of the Application documents. | Where we required any clarification we requested this from the Applicant. We are satisfied that the documents including any amendments and clarifications are accurate. The Permit requires the plant to be operated as described in the Application. |
| Concern for in-combination impacts with other industry which may apply for an Environmental Permit. | Background levels of pollutants are taken into account within the environmental risk assessment. |
| Concern over whether Incineration is the best way to deal with the waste. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR wider issues of waste policy are outside our remit. It is argued that Incineration is not an environmentally sustainable technology and therefore almost by definition cannot be considered to be the Best Available Technique (BAT). Mass burn incineration at this scale is considered BAT provided it meets the requirements (as set out in the BREF and BAT conclusions.) See section 6 of this decision document for more details. |
| Concern that incineration reduces recycling. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. Wider issues of waste policy are outside our remit. |
| Concern that incineration is a barrier to the circular economy. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. Wider issues of waste policy are outside our remit. |

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| Concern that the UK already faces incineration overcapacity. | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. Wider issues of waste policy are outside our remit. |
| Statement that if the proposal is not recovery, it should not be defined as a Recycling, Recovery and Renewable Energy development as this is misleading to the public. | The Applicant included an R1 assessment containing details relating to the proposed design of the plant and this indicated that the design of the plant could be considered a recovery operation. R1 status would need to be reapplied for during operation to validate the parameters used in the original R1 assessment in order for the plant to be categorised as a recovery operation. |
| Concern over litter. | Waste will be delivered in enclosed delivery vehicles and tipped into the bunker within the reception building. We are satisfied that based on the proposed control measures set out in the Application that impacts from litter are unlikely to occur. See section 6.5.3 on fugitive emissions for further information. |

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 16/05/2022 to 26/06/2022.

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.

1) Consultation Responses from Statutory and Non-Statutory Bodies

| Response Received from UK Health Security Agency (UKHSA) on 12/09/2022 | |
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| Brief summary of issues raised: | Summary of action taken / how this has been covered |
| UKHSA requested a point of clarification noted in relation to the AQMAU report which quotes the 10% insignificance criteria in relation to the Human Health Risk Assessment but note that they do not consider that it would alter the conclusions of the assessment. | We have passed this feedback to our Air Quality Modelling Assessment Unit. We agree that this does not alter the conclusions and will therefore discuss the wording further with UKHSA to assess if an amendment to our template is required. |

| Response Received from Director of Public Health on 15/09/2022 | |
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| Brief summary of issues raised: | Summary of action taken / how this has been covered |
| Advice that the recommendations from UK Health Security Agency are taken into account. | See response from UK Health Security Agency and the response to their comments. |

We did not receive responses from the Health and Safety Executive, Horsham Council or the Food Standards Agency.

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

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| Decision document: 16/11/22 | Page 135 of 151 | Variation Application Number EPR/CB3308TD/V002 |
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to take into account those issues, which fall within the scope of the Environmental Permitting Regulations.

a) Representations from Local MP, Councillors and Parish / Town Councils

Responses received from an MP, a Councillor and a Parish Council local raised the following points:

| Response Received from MP for Horsham | | |
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| We received a number of responses from the MP for Horsham. The concerns raised are outlined below: | | |
| Brief summary of issues raised: | Summary of action taken / how this has been covered | |
| Concern that no public meeting was held. | <p>We are satisfied that we took appropriate steps to inform people about the consultation. This included:</p> <ul style="list-style-type: none"> • Sending out newsletters to interested parties informing local politicians • A press release • Use of social media <p>Further detail is listed in section 2 of this decision document.</p> | |
| Concern about the description of waste tonnages in the permit and whether they are adequate | A maximum of 230,000 tonnes of waste can be accepted onto the installation. The primary activity is anticipated to be the incineration activity. Any waste accepted as part of the waste activity will be deducted from the total allowance at the site to be input to any activity. We are satisfied that the relevant conditions are clear and enforceable. | |
| Concern that the restriction of waste input to the incinerator in the Environmental Permit does not reflect that in the Planning permission. | <p>The Applicant is required to comply with both their planning permission and Environmental Permit so the more stringent requirements will apply in any case.</p> <p>The waste throughput permitted is based on the capacity of the site and the tonnage at which the environmental risk assessments were based which we agreed with the conclusions of that there we be no significant environmental impact. The planning conditions are more stringent in terms of waste input and therefore we are satisfied that the operator complying with them would have no impact on the conclusions of our assessment.</p> | |
| Concern about operator competence. | Section 4.3.2 of the decision document | |
| Decision document: 16/11/22 | Page 136 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| | sets out our assessment of the operator's competence and proposed environmental management system. We consider that the operator will have an appropriate EMS in place in order to manage the site in a way that will minimise any risks associated with the site. We consider that the operator has provided adequate information to demonstrate that they are competent. |
| Concern that water use at the installation may result in negative impacts on the area | <p>Mains water is used at the site and no abstraction takes place therefore there will be no direct environmental impact in relation to the water being obtained.</p> <p>Through the permitting process we assess whether an operator is efficient with resources and minimises emissions. The application sets out the following points in relation to water use:</p> <p>The ERF has been designed to minimise use of fresh water. The key use of fresh water is within the boiler water treatment plant supplying top-up water to the boilers and supply to the process water tank. Freshwater input to the process water tank will be minimised through the collection of process waste waters for re-use. The feedwater used to generate steam in the boiler/turbine water/steam cycle will be recycled condensate. The water system will be designed for minimal process water discharge. Process effluents will be collected in a wastewater pit for re-use within the ERF.</p> <p>We consider these measures are adequate to minimise water use on the installation. The operator will be required to report on water use and review environmental performance as part of their Environmental Management System.</p> |

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| Response Received from Councillor for Northgate and West Green, Crawley Borough Council on 18/06/2022 | | |
| Brief summary of issues raised: | Summary of action taken / how this has been covered | |
| Concerns about impacts on air quality | We are satisfied that the application contains measures to prevent or where that is not practicable minimise emissions to air and that no significant | |
| Decision document: 16/11/22 | Page 137 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| | impact on human health or the environment will occur. Our assessment is set out in section 5.2 of this decision document. |
| Concerns about emissions of dioxins | The Applicant's health risk assessment included consideration of dioxins. The impact from dioxins/furans is described in more detail in section 5.3 of this decision document. We are satisfied that potential impacts will not be significant. |
| Concerns about emissions of carbon dioxide | Our assessment of global warming potential is covered in sections 6.3 and 6.6 of this decision document. |
| Concern that an incinerator is not needed by the Local Authority | We have to assess the environmental impacts of what is proposed and whether this is an activity that can be authorised under EPR. |

Response Received from North Horsham Parish Council on 17/06/2022

| Brief summary of issues raised: | Summary of action taken / how this has been covered |
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| Confirmation that their original position as set out in Annex 4A(1) above remained unchanged | See above section Annex 4A(1) |

b) Representations from Community and Other Organisations

Representations were received from No Incinerator 4 Horsham Community Group, Network, Countryside Charity, Sussex and The Friends of Warnham Local Nature Reserve who raised the following issues. In some cases we have not repeated issues which have been included and responded to in Annex 4, Part A.

No Incinerator 4 Horsham Community Group

We received a number of submissions from No Incinerator 4 Horsham Community Group which included a number of attached supporting documents and reports.

| Brief summary of issues raised: | Summary of action taken / how this has been covered |
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| Comments about consultation | |
| Concern about lack of public consultation by the Environment Agency for the minded to decision including concern that a public event was not held | <p>We are satisfied that we took appropriate steps to inform people about the consultation; this included:</p> <ul style="list-style-type: none"> • Sending out newsletters to interested parties and informing local politicians • A press release • Use of social media <p>Further detail is in section 2 of this decision document.</p> |

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| <p>Concerns that some application documents are not available to the public including:</p> <ul style="list-style-type: none"> • No BAT summary • Section O • Appendix Q – Management System Certificates • Appendix R – Pest Management Plan • Appendices to Section F of the Site Condition Report | <p>The Best Available Techniques Assessment (Appendix G), Pest Management Plan (Appendix R), The Odour Management Plan and Management System Certificates were available on Citizenspace from the original advertising date of 13/05/2021.</p> <p>We acknowledge the Odour Management Plan was not referenced 'Appendix O' as referred to in the Application but the plan was available via Citizenspace.</p> <p>Appendices to Section F of the Site Condition Report were requested via schedule 5 information request and added to Citizenspace on 01/11/2021.</p> <p>We consider that the public had access to the appropriate documentation and that the consultation satisfied both the EPR and our guidance.</p> | |
| <p>Concerns that some hyperlinks in the application were not working.</p> | <p>Unfortunately a number of hyperlinks did not work following the documents received having been added to Citizenspace. The relevant documents and sections referred to in the hyperlinks were all available on Citizenspace to view by the public. We are satisfied that the public had access to the relevant information.</p> | |
| <p>Concern that the variation application references section 2.4 as covering choice of fuel and associated emissions, but it covers only choice of fuel.</p> | <p>Section 4 of the Application supporting document contains information about emissions. We agree that the reference to section 2.4 in the document is incorrect to reference emissions as well as choice of fuel but consider that the application overall contained adequate information and that the error in the reference was not material to the determination.</p> | |
| <p>Concern that there is no site closure plan.</p> | <p>A site closure plan will form part of the EMS that is subject to pre-operational condition PO1. Section 4.2.3 of this decision document has further details.</p> | |
| <p>Concern that the Air Quality and Noise Reports produced by Air Quality Modelling and Assessment Unit (AQMAU) were not made available with the draft permit and draft decision document consultation.</p> <p>Concerns that the Freedom of</p> | <p>The decision document sets out the findings of our assessments on air quality and noise which the AQMAU reports fed into. For both air quality and noise assessments we agreed with the operator's conclusions that there is unlikely to be a significant impact and therefore the figures represented in the</p> | |
| <p>Decision document: 16/11/22</p> | <p>Page 139 of 151</p> | <p>Variation Application Number EPR/CB3308TD/V002</p> |

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| <p>Information Request for the reports was not fulfilled in time.</p> | <p>decision document come from the permit application documents which were available on Citizenspace. We set out details of how we carried out in the assessments within the decision document. We do not consider significantly different information was available in the AQMAU reports or that it was necessary to include those assessments as part of the draft decision consultation. The draft decision document provided sufficient information for people to understand and comment on our assessment.</p> <p>The Freedom of Information request was separate to the consultation exercise. In any event, we accepted consultation responses well after the official deadline and considered these within our determination.</p> | |
| <p>Concern that the Environment Agency has not presented their modelling results with the same detail as those of the applicant so they can't be reviewed.</p> | <p>Section 5 of the decision document sets out how we assessed the Applicant's air quality impact assessments. We consider this adequately explains our position. We are satisfied that the proposal is unlikely to result in a significant impact on air quality and we agreed with the operator's conclusions.</p> | |
| <p>Concern that the UK Health Security Agency (UKHSA) was not consulted.</p> | <p>UKHSA was consulted on the Application and their comments taken into account. See Annex 4A(1) for their comments. These were not previously included in the 'minded to' decision document in error but have been added.</p> <p>UKHSA was also consulted on the 'minded to' decision draft documents and the response is included in Annex 4B(1).</p> | |
| <p>Concern that the HSE was not consulted.</p> | <p>The HSE was consulted and did not provide a response. We have updated Annex 4A(1) and 4B(1) to specify which organisations did not respond to the consultations.</p> | |
| <p>Concern that Horsham District Council has not responded.</p> | <p>Horsham District Council were consulted and did provide a response. We have updated Annex 4A(1) to clarify that the first response was received from the Environmental Health Department and that the second Response was received from the Planning Department.</p> | |
| <p>Concern that there is little written/recorded advice/guidance from the UKHSA to the EA regarding the assessment of health impacts of</p> | <p>Within our decision document we summarise the key conclusions that we have drawn from relevant advice and guidance provided by the UKHSA. We</p> | |
| <p>Decision document: 16/11/22</p> | <p>Page 140 of 151</p> | <p>Variation Application Number EPR/CB3308TD/V002</p> |

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| municipal waste incinerators | work closely with the UKHSA so that we can update this if the position relating to incineration changes. | |
| Concerns that documents and figures relied on by the UKHSA and EA are outdated. | UKHSA are experts on assessing potential impacts on public health. Our understanding is that the UKHSA review its advice as new validated research is published. We consider that the text relating to the potential health effects is up to date and in line with the UKHSA's position on air quality and incineration. We continue to work closely with them to ensure that any change in their position would be reflected in our assessment processes. | |
| Comments about impacts on health | | |
| Concern about the potential for release of toxic pollutants from the incinerator | Section 5 of the decision document sets out how we assessed the Applicant's air quality impact assessments. We are satisfied that the proposal is unlikely to result in a significant impact on air quality. | |
| Concerns about the methods and figures used for the assessment of dioxins | We audited the Applicant's methodology and are satisfied that the method and figures used were appropriate. | |
| Concern that the COT tolerable level is not sufficiently precautionary for the assessment of new incinerator permit applications. | We audited the Applicant's methodology and are satisfied that the method and figures used were appropriate. We are satisfied that the dioxin TDI is sufficiently protective. The UKHSA has reviewed the application and draft decision documents and have not raised concerns about the TDI used. | |
| Concern that the dioxin TDI does not "include a margin of safety". | | |
| Concern that there have been high levels of dioxin contamination from UK incinerators and the EA has not commissioned further analysis. | Accumulation of dioxins and furans in the food chain is considered in section 5.3 of this decision document. The issue of accumulation is covered in section 4A above. Other pollutants are assessed against the Environmental Standards (ES) and we are satisfied that the ES are protective of human health. We do not consider that modern incinerators pose a significant risk of contamination to the environment. | |
| Concern that there is new evidence on the harmful effects of air pollution and impacts from incinerators. | UKHSA are experts on assessing potential impacts on public health. Our understanding is that the UKHSA review its advice as new validated research on the health effects of incinerators. We consider that the text relating to the potential health effects is up to date and in line with the UKHSA's position on air quality and incineration. We continue to work closely with them to ensure that any | |
| Decision document: 16/11/22 | Page 141 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| | change in their position would be reflected in our assessment processes. We are not aware of any new evidence that would affect our assessment. | |
| Concern that there are no safe levels of exposure to air pollutants such as Oxides of Nitrogen (NOx) and fine particulate matter | We use Environmental Assessment Levels (EALs) which were set based on input from experts on air quality and available information on potential health impacts. We review the EALs we use to ensure that the most up to date standards are used in within impact assessments. | |
| Concern that EALs are too high and that WHO standards should be used instead. | | |
| Concern that there are limitations of modelling used for decision making on potential impacts on health. | The software models used for predicting potential impacts are used widely and in our view are conservative enough in nature that we consider them reliable for use in assessing potential environmental impacts. We require the operator to validate a number of assumptions which are made in cases where permit applications are submitted significantly in advance of commissioning and for some operational aspects of incinerators. Commissioning cannot begin before some validation work has been carried out at final design. | |
| Concern that the period allowed for abnormal operations is too long and should be reduced. | The allowances set out for abnormal operation are in line with those specified in the Industrial Emissions Directive. The defined abnormal operating period is limited to a timescale that abnormal operations are likely to be corrected without significant impact. We consider that human health can be adequately protected during the restricted period for abnormal operation set out in the permit. | |
| Comments about efficiency | | |
| Concern that is not clear how efficiency would be calculated without compositional analysis to determine the calorific value of the waste feedstock. | There are a number of standardised methods for calculating efficiency which the operator is required to follow in order to demonstrate the efficiency of the plant. | |
| Concern about the quality of the CHP Ready assessment | We consider the documents submitted with the Application allowed us to assess the provision of CHP Ready requirements. See section 4.3.7 for our assessment of CHP ready provision. | |
| Concern that the mass balance diagram is not clear, does not contain the correct figures or all the relevant outputs. | We consider the documents submitted with the Application were sufficiently clear and contained enough information to allow us to assess the mass balance adequately for the determination. | |
| Concern that the primary MWh are incorrect and should be either slightly | A revised figure to the suggested value would mean a very small difference in the overall value and would therefore not | |
| Decision document: 16/11/22 | Page 142 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| higher or lower. | significantly alter our decision and therefore we have not revisited this calculation. | |
| Comments about waste | | |
| Concern that the permit would allow a higher throughput of waste per annum than the planning application | The Applicant is required to comply with both their planning permission and Environmental Permit so the more stringent requirements will apply in any case. The waste throughput permitted is based on the capacity of the site and the tonnage at which the environmental risk assessments were based which we agreed with the conclusions of that there we be no significant environmental impact. The planning conditions are more stringent in terms of waste input and therefore we are satisfied that the operator complying with them would have no impact on the conclusions of our assessment. | |
| Concern about whether the plant is going to burn only refuse derived fuel (RDF). | The plant will not burn only RDF and can also burn appropriate processed municipal waste. | |
| Concern about waste types for acceptance for incineration, in particular end of life tyres and digestate. | These are not permitted for incineration and are not included in the waste list allowed for incineration. Digestate is not permitted to be accepted on site for any activity. End of life tyres may be accepted to the recycling facility but not incinerated. | |
| Concern that the throughput of the incinerator is not reflected in the permit and that if based on 24 tonnes per hour there would be a maximum capacity of 192,000 tonnes. | The Application states that the design throughput of the facility is 24 tonnes per hour (tph) although the facility will accommodate waste throughputs between 17.3 tph and 34.5 tph. This information is specified in section 4.1.3 of this document. | |
| The pre app stated that the activity on site was not pre treatment for incineration which contradicts the application. | The pre app reference was to a listed activity in EPR schedule 1 Section 5.4, Part A1(a)(iii) which is where waste is pre treated prior to input to an incineration activity. We do not consider this activity falls within this description. See Regulatory Guidance Note 2 for further detail on interpretation of this schedule RGN 2: Understanding the meaning of regulated facility - GOV.UK (www.gov.uk) . Not meeting this activity definition does not preclude waste from being processed and input to the incineration activity under a different activity reference or classification which is the case in this permit where it is | |
| Decision document: 16/11/22 | Page 143 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| | physically treated for recovery under a waste activity. | |
| Concern about discrepancies in numbers for raw materials and wastes | We are satisfied that any minor discrepancies in numbers do not impact on our overall assessment of risk or our decision. | |
| Comments about accidents | | |
| Concern about the quality of the Fire Prevention Plan | PO10 requires further update prior to commissioning of the installation. We are satisfied that the Fire Prevention Plan contains adequate information for variation issue. A number of elements will be subject to confirmation at the final design stage and will be assessed by the Environment Agency against our guidance. | |
| Concern about a lorry accident at a roundabout involving a lorry operated by the Applicant. | Assessment on impact on the highway network outside of the regulated facility boundary is not within our remit. | |
| Concern that a Hazard Identification Study (HAZID) has not been undertaken and whether one will be. | A specified HAZID format study is not required to be submitted as part of an Environmental Permit application. However, the permit application states the following which will be linked to the permit through the operating techniques: <i>'As part of the design process the proposals will be subject to detailed HAZOP/HAZID with a view to designing out safety, health and environmental risks.'</i> | |
| Concern that adequate firewater would be available in the event of a fire. | The Fire Prevention Plan is required to cover adequate firewater provision. We acknowledge that some elements of design will be finalised at a later stage. A pre operational condition requires the operator to submit final details demonstrating the availability of adequate firewater. The operator will be required to submit this to us for our approval prior to commissioning. | |
| Concern that adequate containment would be available in the event of a fire. | The Fire Prevention Plan is required to cover adequate firewater containment provision. We acknowledge that some elements of design will be finalised at a later stage. A pre operational condition requires the operator to submit final details demonstrating the adequate provision of containment for firewater. The operator will be required to submit this to us for our approval prior to commissioning. | |
| Comments about best available techniques (BAT) | | |
| Concern that selective catalytic | The Applicant's BAT assessment is | |
| Decision document: 16/11/22 | Page 144 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| reduction (SCR) has not been proposed | summarised in section 6.2.2 and concluded that selective non catalytic reduction (SNCR) rather than SCR is BAT for the plant. We are satisfied that SNCR is BAT. | |
| Concern about whether the proposed abatement for acid gases is adequate. | The Applicant's BAT assessment is summarised in section 6.2.2 and we consider their selection of abatement to be BAT. | |
| Concern about whether the proposed abatement for dioxins/furans is adequate including why catalytic bag filters have not been proposed. | The Applicant's BAT assessment is summarised in section 6.2.2 and we consider their selection of abatement to be BAT. BAT 30 specifies that a combination of techniques can be applied and does not stipulate that every technique is required for the proposal to be considered BAT. | |
| Comments about odour | | |
| Concern about no in combination assessment for odour management | We are satisfied that the proposed control measures will prevent any significant emissions of odour from the site either alone or in combination. Section 6.5.4 has further details. The odour management plan is required to be frequently reviewed by the operator and updated if required. | |
| Comments about noise | | |
| Concern that noise may not be monitored post-commissioning | <p>We audited the Applicant's final noise assessment. We are satisfied that the revised noise assessment was appropriate, and that noise will not be a significant issue. See section 6.5.5 for further information. We have provision within the permit to request an updated noise impact assessment if required during the lifetime of the permit.</p> <p>We consider that the noise control measures specified in the Application combined with pre operational condition PO9 will be adequate to minimise the potential for impacts from noise. The Noise Management Plan sets out that the Applicant will carry out post-commissioning noise monitoring.</p> | |
| Comments about habitats | | |
| Concern about surrounding ecological sensitive habitats and species | We do not consider that there will be a significant impact on surrounding habitats or species. See section 5.4 for our assessment of the potential impact on habitats. | |
| Comments about drainage | | |
| Concern about the Drainage Strategy | The only discharge to surface water permitted is discharge of uncontaminated | |
| Decision document: 16/11/22 | Page 145 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| | surface water. Pre operational condition PO10 is in place requiring the operator to submit a finalised drainage plan prior to commissioning including details of planned discharges. | |
| Management activities | | |
| Concerns that WAMITAB is not up to date | The new incineration activity does not require a WAMITAB certificate as it is not a 'Specified Waste Activity' in accordance with the Environmental Permitting Regulations. There is a permit condition requiring that the Applicant has a current WAMITAB certificate for the waste operation on site and this will be checked as part of compliance audits. | |
| Concern about who the operator of the site will be and if they will be the sole operator. | We have assessed the applicant's competence. See section 4.3.2 for further details. We consider that the operator has provided adequate evidence to show that they will be competent and the sole operator of the regulated facility. | |
| Operations | | |
| Concern about whether the risk associated with the existing waste management activity on site will change. | The original permit allowed waste transfer and treatment. These activities have been split to ensure that asbestos wastes are listed for transfer only. Section 4.3.6 has been updated to reflect that the waste codes associated with the waste transfer activity have not changed as part of this variation but that they have for the waste treatment activity. We consider that the environmental risk associated with the waste activities on site has not changed. | |
| Concern about lorries being driven too fast on the highway. | Assessment on impact on the highway network outside of the regulated facility boundary is not within our remit. | |
| Concern about lorries dropping litter. | Waste will be delivered in enclosed delivery vehicles and tipped into the bunker within the reception building. We are satisfied that based on the proposed control measures set out in the Application that impacts from litter are unlikely to occur. See section 6.5.3 on fugitive emissions for further information. | |
| Concern about whether the management procedures referred to in the variation application will be put in place by the Applicant. | We incorporate commitments made in the Application through table S1.2 in the permit. In addition, compliance checks against the operator's Environmental Management System will be carried out | |
| Decision document: 16/11/22 | Page 146 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| | during Environment Agency regulation. | |
| Comments about other issues | | |
| Concern that not all permit conditions have changed even though the introductory note states that they have all changed | The variation and consolidation has updated the permit from our historic permit template to our modern permit template and also has introduced the incineration specific conditions which are set out in a different template with more stringent permit conditions. The majority of conditions have different wording and therefore we describe the consolidation as updating all permit conditions. | |
| Concern that the planning contradicts the permit | The Applicant is required to comply with both their planning permission and Environmental Permit so the more stringent requirements will apply in any case. | |
| Concern about the lack of a site closure plan | A site closure plan will form part of the EMS that is subject to pre-operational condition PO1. Section 4.2.3 of this decision document has further details. | |
| Concern that more recent quotes from Defra, European Parliament and the World Health Organisations have not been taken into account | We take account of the views of national and international expert bodies. The gathering of evidence is a continuing process. Although gathering evidence is not our role we keep the available evidence under review. Our current view based on evidence reviewed to date is that modern incinerators can be permitted if they demonstrate that they will have no significant environmental impact and meet best available techniques. | |
| Concern that the EA and potentially planning authorities are relying on assumptions. | Modelling based predictions are widely used methods for predicting potential impacts from industrial processes. A number of measures within the permit require modelled predictions to be validated during commissioning and operation. We work closely with a number of organisations to ensure that we carry out robust assessments of potential impacts and set permit conditions which provide a high level of environmental protection. | |
| Concern that UKHSA statements on incineration do not communicate the government declared Air Quality Health Emergency | We have to assess the environmental impacts of what is proposed and whether an activity can be authorised under EPR. We assess potential impacts on air quality and do not consider that the proposal would have a significant impact on air quality or human health. | |
| Concern that the incinerator bottom ash | The volume of anticipated incinerator | |
| Decision document: 16/11/22 | Page 147 of 151 | Variation Application Number EPR/CB3308TD/V002 |

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| produced will be 10 time the expected volume. | bottom ash is correctly listed in several locations in the permit Application such as section 5 in the 'variation supporting document'. We acknowledge that there is a typo in section 2.5.5 where an additional zero has been added at the end of the number. We do not consider this has an impact on our decision. The permit includes reporting requirements for volumes of bottom ash produced. |
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| Responses Received from | |
| The Countryside Charity, Sussex on 25/06/2022 | |
| Brief summary of issues raised: | Summary of action taken / how this has been covered |
| Concerns about impacts on health | |
| Concern that the receptors considered may not have included schools and the proposed North of Horsham development | We audited the Applicant's choice of sensitive receptors within the Air Quality impact assessment and consider they were appropriate. The proposed North of Horsham Development was included and other receptors in locations considered worst case for predicted impacts and therefore protective of any schools based in the area. |
| Emissions and monitoring | |
| Concern about whether the Environment Agency will monitor and sample emissions from the incinerator throughout its operational life and whether the results will be released for public scrutiny | The Operator's monitoring will have either MCERTS certification or MCERTS accreditation as appropriate. MCERTS is the Environment Agency's Monitoring Certification Scheme. If monitoring complies with MCERTS we can have confidence in the monitoring of emissions. In addition we will carry out audits of the Operator's monitoring. If we found problems with the monitoring we would take action to ensure this is rectified, and could do our own monitoring at any time if we considered this was appropriate. |
| General concerns | |
| Concern that the decision document is dependent on modelling-based predictions and scientific opinion. | Modelling based predictions are widely used methods for predicting potential impacts from industrial processes. A number of measures within the permit require modelled predictions to be validated during commissioning and operation. We work closely with a number of organisations to ensure that we carry out robust assessments of potential |

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| Decision document: 16/11/22 | Page 148 of 151 | Variation Application Number EPR/CB3308TD/V002 |
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| | impacts and set permit conditions which provide a high level of environmental protection. |
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Response Received from The Friends of Warnham Nature Local Reserve on 26/06/2022

| Brief summary of issues raised: | Summary of action taken / how this has been covered |
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| Concerns that odour will impact on the Local Nature Reserve | We do not think that odour will have a significant impact on the Local Nature Reserve. We consider that the proposed odour control measures for the site are adequate. |
| Concerns that drainage and contaminants will impact on the Local Nature Reserve | The only discharge to surface water permitted is discharge of uncontaminated surface water. Pre operational condition PO10 is in place requiring the operator to submit a finalised drainage plan prior to commissioning including details of planned discharges. We will need to approve a final drainage plan prior to operation being permitted on the site. |
| Concern that no advertising or consultation was carried out by the Environment Agency at the minded to stage | We are satisfied that we took appropriate steps to inform people about the consultation; this included: <ul style="list-style-type: none"> • Sending out newsletters to interested parties informing local politicians • A press release • Use of social media <p>Further detail is in section 2 of this decision document.</p> |

c) Representations from Individual Members of the Public

A total of 44 of responses were received from individual members of the public. Many of the issues raised were the same as those considered above. Only those issues additional to those already considered are listed below:

| Brief summary of issues raised: | Summary of action taken / how this has been covered |
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| Comments about impacts on air quality | |
| Concern that water vapour from the incinerator could result in a cloud forming above the area. | We do not consider this will be a significant issue from this type of plant and that adequate dispersion will occur to prevent a cloud of water vapour forming above the area. |
| Comments about impacts on health | |
| Concern that POPs will accumulate in the vicinity of incinerators and enter the food chain including | The Applicant's health risk assessment included consideration of accumulation in the food chain. The impact from dioxins/furans is described in more detail in section 5.3 of this decision document. We are satisfied |

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| Decision document: 16/11/22 | Page 149 of 151 | Variation Application Number EPR/CB3308TD/V002 |
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| reference and inclusion of a number of reports on the topic | that potential impacts will not be significant. We reviewed the reports submitted and concluded that they did not change our view. |
| Comments about waste | |
| Concern about the movement of asbestos on site and impacts on health | Asbestos would be required to be received, stored and handled in line with appropriate guidance. Asbestos will not be treated on site. |
| Comments about other issues | |
| Concern about the timescales for public consultation on the minded to decision | This permit variation application has been advertised and consulted on in accordance with our guidance. Consultations periods for permit variations usually run for 20 working days (4 weeks). We extended the initial consultation on this variation application to 6 weeks to allow people further time to submit comments. This consultation period was then subsequently extended further to 11 weeks. We consulted on the 'minded to' decision for 6 weeks. We accepted and took into account consultation responses received well past the end of the consultation period for both sets of consultation. We are satisfied that the public had more than adequate opportunities and time to comment. |
| Concern as to how the consultation on the draft decision was communicated including that the environment agency did not hold a public drop-in session. | We have a discretion as to how to consult and we are satisfied that we took appropriate steps to inform people about the consultation; this included: <ul style="list-style-type: none"> • Sending out newsletters to interested parties informing local politicians • A press release • Use of social media Further detail is in section 2 of this decision document. |
| Concern that incineration will remove focus of Local Authorities from recycling | The obligation is on waste producers is 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. |
| Concern that an Accident Management Plan has not been submitted | The Applicant has not submitted an 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. An Accident Management Plan will form part of the Environmental Management System and must be in place prior to commissioning as required by a pre-operational condition (PO1). |
| Concern that the proposal is not in line with the government's 'levelling up' policy | We have to assess the environmental impacts of what is proposed which is an activity that can be authorised under EPR. |

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| <p>Concern that some elements of design have not been finalised</p> | <p>We have specified pre operational conditions and improvement conditions which require the operator to finalise some elements of design of the site prior to commissioning. These are elements where we have agreed a general principal or standard but that we have accepted may not be finalised at the permitting stage. The responses to these conditions will be assessed by the Environment Agency. We are satisfied that we have enough information to determine that the proposals are acceptable.</p> |
| <p>Statement that Scotland are announcing a moratorium on new incinerator building</p> | <p>We have a duty to determine the application based on whether it is environmentally acceptable or not.</p> |