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

Consultation on our decision document recording our decision-making process

The Permit Number is: EPR/WP3234DY/A001

The Installation is located at:
Rookery Pit Energy Recovery Facility
Rookery South
Stewartby
Bedfordshire

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. 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/WP3234DY/A001. We refer to the application as "the **Application**" in this document in order to be consistent.

The number we propose to give to the permit is EPR/WP3234DY. We refer to the proposed permit as "the **Permit**" in this document.

The Application was duly made on 15/02/17.

The Applicant is Covanta Energy Limited. We refer to Covanta Energy Limited as "the **Applicant**" in this document. Where we are talking about what would happen after the Permit is granted, we call Covanta Energy Limited "the **Operator**".

Covanta Energy Limited's proposed facility is located at Rookery South, Stewartby, Bedfordshire. We refer to this as "the **Installation**" in this document.

How this document is structured

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Glossary of acronyms used in this document

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

AAD	Ambient Air Directive (2008/50/EC)
APC	Air Pollution Control
AQS	Air Quality Strategy
BAT	Best Available Technique(s)
BAT-AEL	BAT Associated Emission Level
BREF	BAT Reference Note
CEM	Continuous emissions monitor
CFD	Computerised fluid dynamics
CHP	Combined heat and power
COMEAP	Committee on the Medical Effects of Air Pollutants
COT	Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment
CROW	Countryside and rights of way Act 2000
CV	Calorific value
CW	Clinical waste
CWI	Clinical waste incinerator
DAA	Directly associated activity – Additional activities necessary to be carried out to allow the principal activity to be carried out
DCO	Development Consent Order
DD	Decision document
EAL	Environmental assessment level
EIAD	Environmental Impact Assessment Directive (85/337/EEC)
ELV	Emission limit value
EMAS	EU Eco Management and Audit Scheme
EMS	Environmental Management System
EPR	Environmental Permitting (England and Wales) Regulations 2016 (SI 2016 No.1154)
ES	Environmental standard
EWC	European waste catalogue
FPP	Fire Protection Plan
FSA	Food Standards Agency
GWP	Global Warming Potential

HHRAP	Human Health Risk Assessment Protocol
HPA	Health Protection Agency (now PHE – Public Health England)
HRA	Human Rights Act 1998
HW	Hazardous waste
HWI	Hazardous waste incinerator
IBA	Incinerator Bottom Ash
IED	Industrial Emissions Directive (2010/75/EU)
IPPCD	Integrated Pollution Prevention and Control Directive (2008/1/EC) – now superseded by IED
I-TEF	Toxic Equivalent Factors set out in Annex VI Part 2 of IED
I-TEQ	Toxic Equivalent Quotient calculated using I-TEF
LCPD	Large Combustion Plant Directive (2001/80/EC) – now superseded by IED
LCV	Lower calorific value – also termed net calorific value
LfD	Landfill Directive (1999/31/EC)
LADPH	Local Authority Director(s) of Public Health
LOI	Loss on Ignition
LLRS	Low level restoration scheme
MBT	Mechanical biological treatment
MSW	Municipal Solid Waste
MWI	Municipal waste incinerator
NOx	Oxides of nitrogen (NO plus NO_2 expressed as NO_2)
Opra	Operator Performance Risk Appraisal
PAH	Polycyclic aromatic hydrocarbons
PC	Process Contribution
PCB	Polychlorinated biphenyls
PEC	Predicted Environmental Concentration
PHE	Public Health England
POP(s)	Persistent organic pollutant(s)
PPS	Public participation statement
PR	Public register
PXDD	Poly-halogenated di-benzo-p-dioxins
PXB	Poly-halogenated biphenyls
PXDF	Poly-halogenated di-benzo furans

RDF	Refuse derived fuel
RGS	Regulatory Guidance Series
SAC	Special Area of Conservation
SED	Solvent Emissions Directive (1999/13/EC) – now superseded by IED
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)
SS	Sewage sludge
SSSI(s)	Site(s) of Special Scientific Interest
SWMA	Specified waste management activity
TDI	Tolerable daily intake
TEF	Toxic Equivalent Factors
TGN	Technical guidance note
TOC	Total Organic Carbon
UHV	Upper heating value –also termed gross calorific value
UN_ECE	United Nations Environmental Commission for Europe
US EPA	United States Environmental Protection Agency
WFD	Waste Framework Directive (2008/98/EC)
WHO	World Health Organisation
WID	Waste Incineration Directive (2000/76/EC) – now superseded by IED

1 Our decision

We have decided to grant the 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 15/02/17. 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 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 obligations under the Local Democracy, Economic Development and Construction Act 2009 (particularly Section 23). This requires us, where we consider it appropriate, to take such steps as we consider appropriate to secure the involvement of representatives of interested persons in the exercise of our functions, by providing them with information, consulting them or involving them in any other way. In this case, our consultation already satisfies the Act's requirements.

We advertised the Application by a notice placed on our website, which contained all the information required by the IED, including telling people where and when they could see a copy of the Application and providing details of how they could comment on the Application. We also placed an advertisement in the Bedfordshire on Sunday newspaper on 06/03/17. The Application documents were also available to view and comment on through our website.

We made a copy of the Application and all other documents relevant to our determination (see below) available to view on our Public Register at Brampton Office, Bromholme Lane, Brampton, Huntingdon, Cambridgeshire, PE28 4NE. Anyone wishing to see these documents could do so and arrange for copies to be made.

Additionally a copy of the Application was placed at Bedford Central Library.

The Application documents were made available to the following bodies, which includes those with whom we have "Working Together Agreements":

- Central Bedfordshire Unitary Authority
- Bedford Unitary Authority
- National Infrastructure Planning
- Food Standards Agency
- Health & Safety Executive
- Local Fire Service
- Director of Public Health - Central Bedfordshire Unitary Authority
- Director of Public Health - Bedford Unitary Authority
- Public Health England

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.

We undertook extended public consultation. The consultation period was extended from 20 working days to 30 working days and written comments were received beyond the formal consultation period. Further details along

with a summary of consultation comments and our response to the representations we received can be found in Annex 4. We took all relevant representations into consideration in reaching our determination.

2.3 Requests for Further Information

Although we were able to consider the Application duly made, we did in fact need more information in order to determine it, and issued information notices on 13/04/17 and 16/06/17 and requests for information on 21/07/17 and 06/09/17. A copy of each information notice, the requests for information and the responses were placed on our public register. Additional information was also received from the Applicant on 11/08/17. We made a copy of this information available to the public in the same way as the responses to our information notices. We received information from the Applicant which was clarification of some minor issues raised during the consultation on the draft decision on 22/12/17 and enabled us to finalise our decision. This response was placed on our public register.

2.4 Consultation on our Draft Decision

We consulted on our draft decision from 11/09/17 until 07/11/17. Whilst the consultation closed on 07/11/17, we accepted (and considered) any representations received after this date, and up to permit issue. People who commented on the Application were contacted to inform them of the consultation and we held a drop-in session on 20/10/17. A summary of the consultation responses and how we have taken into account all relevant representations is shown in Annex 4, Part B.

3 The legal framework

The Permit is granted under Regulation 13 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 the Permit will ensure that the operation of the Installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

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

4 The Installation

4.1 Description of the Installation and related issues

4.1.1 The permitted activities

The Installation is subject to the EPR because it carries out an activity listed in Part 1 of Schedule 1 to the EPR:

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

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

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

Therefore the following activities, which would normally be categorised as "directly associated activities" for EPR purposes, are therefore included in the listed activity description.

- Emissions control plant
- Storage and treatment of residues
- Waste water handling

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, handling uncontaminated site surface water. These activities comprise one installation, because the incineration plant and the steam turbine are successive steps in an integrated activity.

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

4.1.2 The Site

The site is located at Rookery Pit, Stewartby, Bedfordshire. The area beyond the Site is predominantly rural in nature.
Rookery Pit is an area of approximately 200 hectares comprising two former clay pits (referred to as Rookery North and Rookery South) associated with the former Stewartby Brickworks.

The site is bounded to the east and west by two railway lines. The A507 is approximately 2.9 km to the south, and the A421 is approximately 1.8 km to the north-west. To the immediate south of the site is a line of trees and South Pillinge Farm at 350 m away is the closest residential receptor. To the immediate west is the Marston Vale Millennium Country Park. Approximately 0.5 km to the north-west is Stewartby Lake. Ampthill Park, a nationally important historic park, is located approximately 2.1 km to the south-east. To the north of the site, and just beyond Green Lane, are the former brickworks buildings. Approximately 1.1 km north is the settlement of Stewartby and Marston Moretaine is approximately 1km to the west. Other neighbouring residential areas include Houghton Conquest.

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 <u>What the Installation does</u>

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 never the less 'incineration' because it is considered that its main purpose is the thermal treatment of waste.

The Installation will receive waste transported in refuse collection vehicles and bulk transfer vehicles. The waste will be delivered into the tipping hall where it will be tipped into a bunker. Gantry crane grabs will be used to homogenise the waste tipped into the storage pit and remove any unsuitable or non-combustible items. The grabs will transfer waste to one of the three feed hoppers which feed the three moving grate furnaces where the waste is burned.

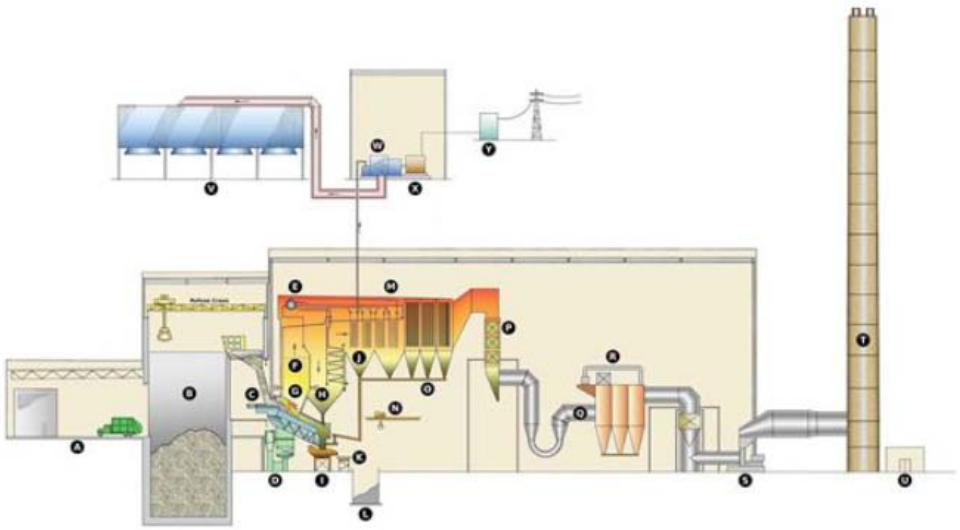
Combustion will be controlled by feeding primary air through the grate and secondary air will be injected above the waste. The furnaces will be designed to ensure that the combustion gases are maintained, after the last injection of combustion air, to at least 850 ^{o}C for at least two seconds. (This is a requirement of chapter IV of IED).

Emissions to air will be minimised by cleaning the waste combustion gases as follows:

- Oxides of Nitrogen (NOx) using Selective Non-Catalytic Reduction (SNCR)
- Acid Gas Abatement using Lime Injection
- Dioxins using activated Carbon Injection
- Particulate matter using bag filters

Hot gases from the incineration of waste will pass through a series of heat exchangers and superheaters and finally through an economiser. The first stage of the economiser will be used to preheat feedwater before it is supplied to the boiler (in order to increase boiler efficiency). The design of the boilers, following a computerised fluid dynamics (CFD) assessment, will ensure that the flue gas temperature is quickly reduced through the critical temperature range to minimise the risk of dioxin reformation. The steam generated in the boilers will be fed to a steam turbine which will generate electricity. Water for steam generation will be sourced from the mains and treated in a demineralisation plant prior to use in the boilers. Steam will be condensed in an air cooled condenser and recycled to the boiler as part of a closed loop water system

The Installation will generate electricity at a rate of 65 MWe with 60 MWe supplied to the grid.



Key			
A	Tipping Floor	N	Crane
B	Refuse Pit	O	Economiser Ash
C	Feed Ram	P	Flue Gas Treatment Economiser

D	Forced Draft	Q	Flue Gas Treatment
E	Steam Drum	R	Flue Gas Treatment
F	Boiler	S	Induced Draft Fan
G	Grate	T	Stack
H	Secondary Air Nozzles	U	Emission Monitoring Equipment
I	Ash Discharger	V	Air Cooled Condenser
J	Super Heater	W	Turbine
K	Residue Conveyors	X	Generator
L	Ash Bunker	Y	Transformer
M	Boiler House		

The key features of the Installation can be summarised in the table below, based on 7,800 hours operation per year.

Waste throughput, Tonnes/line	585,000 tonnes per year (total)	Three lines each with capacity of 25 tonnes per hour
Waste processed	MSW, CW	
Number of lines	3	
Furnace technology	Grate	
Auxiliary Fuel	Gas Oil	
Acid gas abatement	Dry	Lime
NOx abatement	SNCR	Ammonia
Reagent consumption	Auxiliary Fuel 550 t/year Ammonia : 4,700 t/year Lime/Other : 9,000 t/year Activated carbon: 300 t/year Process water: 93,600 t/year of towns water	
Dioxin abatement	Activated carbon	
Stack details	Grid references 501248, 241050 (Flue 1) 501246, 241049 (Flue 2) 501246, 241048 (Flue 3)	
	Height 105 m	Diameter 1.8 m
Flue gas	Flow 43.1 Nm^3/s	Velocity 20.9 m/s
	Temperature 137 °C	
Electricity generated	65 MWe	507,000 MWh (based on 7,800 hours operation per year
Electricity exported	60 MWe	468,000 MWh (based on 7,800 hours operation per year
Electricity used onsite	5 MWe	
Steam conditions	Temperature, 440 °C	Pressure, 75 bar

4.1.4 Key Issues in the Determination

The key issues arising during this determination were the assessment of impacts from emissions to air (on people and ecological receptors) and the assessment of Best Available Techniques 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

Site Setting
The site comprises of 11 hectares (out of the 200 hectares of pit area) of disused land. It is located at Rookery South Clay Pit in Marston Vale. The site is approximately 700 m southwest of Stewartby, Bedfordshire. The western boundary of the site borders a working railway line while the eastern boundary borders the lake in Rookery North pit.

Site History
Clay extraction began in 1960 in Rookery North (activities started at the north of the site and progressed south). Extractions in Rookery South began in 1970s and lasted until 1986. Anecdotal accounts and historical aerial photographs between 1971 and 1997 suggest that the Rookery North pit was partially backfilled, Environment Agency records show that the pit was licensed as a 'co-disposal landfill'. The Rookery North Pit is outside the Installation area.

4.2.2 Proposed site design: potentially polluting substances and prevention measures

The following measures were described in the Application:

- All process areas will be surfaced with concrete or tarmac hardstanding
- Bulk tanks will be bunded
- Lime and activated carbon will be stored in silos
- The entire site will be contained within a bund
- The IBA area will have an impermeable base with a sealed drainage system
- The IBA area (sealed drainage system) will drain to a lagoon. The lagoon will have no outlet to surface water or sewer. Water from the lagoon will be re-used for dust suppression purposes (within the ash treatment plant only). Any excess water from the lagoon will be removed from site by tanker.
- Silt will be removed from the lagoon using a gully sucker and sent for off-site disposal.
- The IBA lagoon will be clay lined with an impermeable HDPE liner and a geotextile layer.

Under Article 22(2) of the IED the Applicant is required to provide a baseline report containing at least the information set out in paragraphs (a) and (b) of the Article before starting operation.

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

The baseline report is an important reference document in the assessment of contamination that might arise during the operational lifetime of the installation and at cessation of activities at the installation

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, as referred to in sections 2.11 and 2.12 of the Application. 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 accounts 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 will be the sole Operator of the Installation.

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 so as to comply with the conditions included in the Permit.

We are satisfied that the Applicant's submitted Opra profile is accurate.

The Opra score will be used as the basis for subsistence and other charging, in accordance with our Charging Scheme. Opra is the Environment Agency's

method of ensuring application and subsistence fees are appropriate and proportionate for the level of regulation required.

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 other companies within the Covanta group, with plants in other parts of the world.

We asked the Applicant for information on formal or informal enforcement action over the last few years for plants in the USA operated by companies within the wider Covanta group. We also contacted the USEPA and state environmental departments in the USA.
Given the number and size of plants the information provided does not show any fundamental concerns over competence in the wider Covanta structure that would lead us to decide the Applicant was not competent. The Covanta Structure also appears to have procedures in place to learn lessons which means the experience of these incidents should be available to the Applicant and so that should reduce the risk of similar incidents in the UK.

The regulatory regime in the USA is not the same in the UK. Even so the lack of significant enforcement action and penalties suggests that any enforcement action was not for major events.

The Applicant for this Installation is a different legal entity to those permitted in the USA. Based on the information submitted in the Application we are satisfied that the Applicant will be able to comply with the Permit.

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

The Applicant has not submitted a specific Accident Management Plan, but has carried out risk assessments (including accidents) as part of the Environmental Risk Assessment that was submitted with 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 have approved this plan and incorporated this within operating techniques table S1.2 meaning that the site has to follow such requirements.
We are satisfied that appropriate measures will be in place to prevent fires and to minimise the impact from a fire if it was to occur.

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 following documents contained in the Application:

Description	Parts Included	Notes
The Application	• The response to question 3 of application form B3 • Supporting information document – sections 1.4, 2.2.2, 2.2.3, 2.3, 2.4.2, 2.4.3, 2.4.4, 2.4.5, 2.5, 2.6.4, 2.6.5, 2.8, 2.9	Received 15/02/17
Response to Schedule 5 Notice dated 13/04/17	• Response to questions 5, 7, 9, 29, 31, 32 and 33. • Noise mitigation measures set out in the Acoustic Design Report Revision A	Received 19/05/17
Response to Schedule 5 Notice dated 16/06/17	• Response to questions3, 5, 11, 12, 17, 18 and 23	Received 06/07/17

Response to Schedule 5 Notice dated 16/06/17	Dust management plan	Received 06/07/17 and as updated in response to pre-operational condition PO10 – which requires written approval prior to completion
Additional information	Fire Prevention Plan	26/07/17 and as updated in response to pre-operational condition PO9 - which requires written approval prior to completion
Additional information	Response to questions 3, 4 and 6	26/07/17
Additional information. Clarification of issues raised during the consultation on the draft decision.	Response to question 2	22/12/17 Information about the IBA lagoon liner

The details set out above 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
Gas Oil	< 0.1% sulphur content	As required by Sulphur Content of Liquid Fuels Regulations.

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

We are satisfied that the Applicant can accept the wastes contained in Table S2.2 of the Permit because:

(i) the 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 combusted at the installation.
(iii) the wastes are likely to fall within the design calorific value (CV) range for the plant;
(iv) the wastes are unlikely to contain harmful components that cannot be safely processed at the Installation.

The incineration plant will take a mixture of Municipal Solid Waste (MSW) and commercial, industrial and trade waste. Some of the waste types that the Applicant requested appeared to be for recyclable material, such as 15 01 01 - Card. The Applicant confirmed that these wastes would only be received if they were contaminated and not suitable for recycling. The Permit restricts separately collected fractions to those which prove to be unsuitable for recovery:

Condition 2.3.4 c (within the permit) states : Waste shall only be accepted if it having been separately collected for recycling, it is subsequently unsuitable for recovery by recycling.

We have limited the capacity of the Installation to 585,000 tonnes per year. This is based on the installation operating for 7,800 hours per year at a nominal capacity of 25 tonnes per hour on each of the 3 lines. Although the risk assessments were based on continual operation of 8,700 hours per year the Applicant confirmed that they would not incinerate more than 585,000 tonnes per year.

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.

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

(ii) Use of energy within the Installation

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:

- high efficiency motors
- high standards of cladding and insulation
- The boilers will be equipped with economisers and super-heaters to optimise thermal cycle efficiency
- Unnecessary steam and hot water releases will be controlled to avoid the loss of boiler water treatment chemicals and heat contained within the steam and water.
- Low grade heat will be extracted from the turbine and used to preheat combustion air and condensate.
- Boiler heat exchange surfaces will be cleaned on a regular basis to ensure efficient heat recovery.

The Application shows that the specific energy consumption, a measure of total energy consumed per unit of waste processed, will be ~70 kWh/tonne. The installation capacity is 585,000 tonnes per year.

Data from the BREF for Municipal Waste Incinerators shows that the range of specific energy consumptions is as in the table below.

MSWI plant size range (t/yr)	**Process energy demand (kWh/t waste input)**
Up to 150,000	300 – 700
150,000 – 250,000	150 – 500
More than 250,000	60 – 200

The BREF says that it is BAT to reduce the average installation electrical demand to generally below 150 kWh/tonne of waste with an LCV of 10.4 MJ/kg. The LCV in this case is expected to be 9.3 MJ/kg. The Installation is therefore at the top of the BAT range for energy usage.

(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 at an Energy from Waste (EfW) installation is to use CHP in circumstances where there are technically and economically viable opportunities for the supply of heat from the outset.

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

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

The BREF says that where a plant generates electricity only, it is BAT to recover 0.4 – 0.65 MWh/ tonne of waste (based on LCV of 10.4 MJ/kg) for raw waste inputs. 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 of waste per annum (which equates to a range of 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 Installation will generate 65 MW of electricity from 585,000 tonnes of waste, which represents 11.1 MW per 100,000 tonnes/year of waste burned (0.87 MWh/tonne of waste). The Installation is therefore at the top end of the indicative BAT range.

Compliance with Article 14(5) of the Energy Efficiency Directive and CHP ready

The Applicant carried out a search of opportunities to supply heat within 15 km of the Installation. This included reviewing the National Comprehensive Assessment, National Heat Mapping, satellite imagery and a desktop search.

There are residential developments in the area. However the developments are already under construction and so the inclusion of a heat network to these properties is not likely to be available.
The Applicant identified head loads (demand for heat) within 15 km of the Installation. None were in excess of 5 MWth. The heat loads identified are shown in the heat plan document in the Application, the table is shown below.

Table 5.5 – Potential heat consumers						
Ref	Development	Postcode	Direct distance from ERF (km)	Annual heat demand (kWh)	Average heat demand (kW)	Peak heat demand (kW)
1	Stewartby Former Brickworks[1]	MK43 9LZ	1.6	44,239	5	14
2	Coronation Business Park	MK43 9PR	3.6	89,220	10	27
3	Wilstead Industrial Park	MK45 3PD	5.2	184,056	21	60
4	Marsh Leys Business Park	MK43 9AA	4.8	31,750	4	10
5	Woburn Road Industrial Estate	MK42 7SB	5.8	644,646	74	211
6	Interchange Retail Park	MK42 7AZ	6.5	153,375	18	46
7	Progress Park	MK42 9XE	6.5	660,285	76	198
8	G.Park	MK42 0PE	9.5	1,471,509	169	482
9	Cardington Sheds	MK42 0TF	9.0	48,238	6	16
10	Cranfield University[2]	MK43 0AL	7.4	0	0	0
11	Prologis Park Marston Gate	MK43 0YL	5.8	1,048,865	120	344
12	Millbrook Proving Ground	MK45 2JQ	2.1	844,275	97	277
13	Center Parcs Woburn Forest[3]	MK45 2HZ	3.5	25,000,000	685	3,237
14	Ampthill Industrial Estate	MK45 2FN	4.4	58,685	7	19
15	Flitwick Industrial Estate	MK45 5JR	6.2	1,706,972	196	559
16	Lockheed Martin	MK45 2HD	2.5	5,879,280	675	1,926
17	Four Winds Industrial Park	MK45 3QT	6.0	6,024	0.1	0.3
			Total	**37,871,419**	**2,163**	**7,426**
			Total (accounting for consumer diversity)	**37,871,419**	**2,163**	**5,941**

[1]Brickworks ceased operations in 2008. Redevelopment of the area is planned which may yield additional heat demand.
[2]CHP engine installed in 2010 therefore no heat demand anticipated.
[3]Approximate annual heat use stated in Coventa CHP Development Strategy Appendix 5. Since the development was constructed after the CHP Development Strategy was issued, it is unlikely that, as primarily distributed residential and leisure facilities, it will suitable for inclusion in a heat network.

The Applicant stated that there are physical restraints such as rivers, roads and railways that make heat supply not feasible. The rows highlighted in blue were considered further. The Applicant carried out a cost benefit assessment, in which the Net Present Value (NPV) was calculated, for setting up a heat network to supply heat to those demands. If the NPV is positive (i.e. any number more than zero) it means that the investors will make a rate of return that makes the scheme commercially viable. A negative NPV means that the project will not be commercially viable. The Applicant's assessment showed a net present value of -10.7 which demonstrates that operating as a high-efficiency cogeneration installation will not be financially viable.

We asked the Applicant about future heat loads. Two were identified where planning consent has already been granted. These were a residential development in Stewartby and Stewartby park employment site. However even when these are combined with the Applicant's identified heat load, a primary energy saving of 10% is unlikely to be achieved. Pre-operational condition PO2 requires the Operator to look again at opportunities for CHP in case opportunities arise between this permitting decision and the plant beginning to operate. We agree with the Applicant's assessment and will not require the installation to operate as a high-efficiency cogeneration installation.

The Applicant stated that the Installation would be CHP ready and submitted a CHP ready assessment based on our guidance. The assessment showed that the Installation would be capable of supplying heat to the above identified scheme, should it become viable in the future.

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. There is provision within the design of the steam turbine to extract low-grade steam should an opportunity arise.

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.

(v) Choice of Steam Turbine

The proposed steam conditions are 440^{o}C and 75 Bar. These are at the higher end of the range seen for similar plants, which will maximise energy recovery.

(vi) Choice of Cooling System

An Air Cooled Condenser (ACC) will be used to condense the steam output from the turbine with return of the condensate to the boiler. The Applicant justified this choice as follows:

The two main alternatives to an ACC are a water cooled condenser (WCC) or an evaporative condenser (EC). All are considered in Sector Guidance Note EPR 5.01 as potential BAT options. The WCC uses a recirculating water supply to condense the steam and the EC uses water which is evaporated directly from the condenser surface and lost to the atmosphere to provide the required cooling.
The main advantage of both of these water based systems is that they provide improved cooling and are not susceptible to condenser efficiency fluctuation with changing air temperature. Air cooled condensers operating in high summer air temperatures can result in insufficient condensing power and subsequently reduce the efficiency of the generating turbine. Water cooled condensing system generate less noise in comparison to the noise generated by the fans in an air cooled condenser system.
However, water cooled condensers require significant volumes of make-up water. The absence of a local river of sufficient size would require the use of main town water supply. Chemical additives are also required. Waste water is generated which requires disposal. In addition, during winter months there is a risk of freezing and maintenance costs are high due to the wet nature of the technology. Evaporative condensers have significant potential for the release of water vapour plumes.

The ACC has been designed with enough additional capacity to maintain turbine efficiency during the summer. The noise generated by the ACC has been considered in the noise assessment and there will be no significant impacts.

It is considered that the additional potable water use and the potential for visible plumes mean that water based condensers do not represent BAT for the Rookery South ERF.

We agree with the Applicant's assessment.

(viii) 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 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 under condition 4.2.1. 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, APC residues and recovered metals.

The first objective is to avoid producing waste at all. Waste production will be avoided by achieving a high degree of burnout of the ash in the furnace, which results in a material that is both reduced in volume and in chemical reactivity. Condition 3.1.5 and associated Table S3.4 specify limits for total organic carbon (TOC) of <3% in bottom ash. Compliance with this limit will demonstrate that good combustion control and waste burnout is being achieved in the furnaces and waste generation is being avoided where practicable.

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

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.
The Applicant stated that it may be possible to send APC residues to an effluent treatment contractor, to be used to neutralise acids and similar materials. If this option is not practicable then it will be sent to a landfill for disposal as a hazardous waste.

In order to ensure that the IBA and APC residues are adequately characterised, pre-operational condition PO3 requires the Operator to provide a written plan for approval detailing the ash sampling protocols. Table S3.4 requires the Operator to carry out an ongoing programme of monitoring.

The Application states that metal fractions will be recovered from the bottom ash by the use of a magnetic separator and eddy current separator and sent for recycling. The bottom ash will be treated at the Installation, which will include further metals removal, and then sent off-site for use as aggregate in the construction industry.

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.

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.

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).

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 that 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 considered **Insignificant** if:

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

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

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

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

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

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

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

For those pollutants which do not screen out as insignificant, we determine whether exceedences of the relevant ES are likely. This is done through detailed audit and review of the Applicant's air dispersion modelling taking background concentrations and modelling uncertainties into account. Where an exceedance of an AAD limit value is identified, we may require the Applicant to go beyond what would normally be considered BAT for the 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 Annex 4 of the Application. The assessment comprises:

- Dispersion modelling of emissions to air from the operation of the incinerator.
- A study of the impact of emissions on nearby 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 5.1 dispersion model, which is a commonly used computer model for regulatory dispersion modelling. The model used 5 years of meteorological data collected from the weather stations at Cranfield airport, Bedford airport and Luton airport for the years 2011 and 2015. These weather stations are 5.5 km, 19 km and 23 km from the Installation respectively. Cranfield airport is the closest to the Installation but the weather data was only 43% complete, so it was supplemented by data from the other two weather stations. The impact of the terrain surrounding the site upon plume dispersion was considered in the dispersion modelling.

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

- First, they assumed that the ELVs in the Permit would be the maximum permitted by Article 46(2) and Annex VI of the IED. These substances are:
    - Oxides of nitrogen (NO_x), expressed as NO_2
    - Total dust
    - Carbon monoxide (CO)
    - Sulphur dioxide (SO_2)
    - Hydrogen chloride (HCl)
    - Hydrogen fluoride (HF)
    - Metals (Cadmium, Thallium, Mercury, Antimony, Arsenic, Lead, Chromium, Cobalt, Copper, Manganese, Nickel and Vanadium).
    - Polychlorinated dibenzo-para-dioxins and polychlorinated dibenzo furans (referred to as dioxins and furans)
    - Gaseous and vaporous organic substances, expressed as Total Organic Carbon (TOC)
- 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 ammonia (NH_3), 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 from emissions data on the Environment Agency's public register, they are considered further in section 5.2.5.

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

The Applicant used background pollutant concentrations from a variety of data sources: Defra modelled background maps; rural heavy metals and polycyclic aromatics networks, acid gas and aerosol network and toxic organic micro pollutants network. Our view is that the background data used by the applicant is likely to be reasonably conservative.

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 for pollutants that did not screen out as insignificant.

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 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 are not likely to change.

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

5.2.1 Assessment of Air Dispersion Modelling Outputs

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

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

Whilst we have used the Applicant's modelling predictions in the table below, we have made our own simple verification calculation of the percentage process contribution and predicted environmental concentration. These are the numbers shown in the tables below and so may be very slightly different

to those shown in the Application due to rounding of decimal points. Any such minor discrepancies do not materially impact on our conclusions.

Pollutant	EQS / EAL		Back-ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
	µg/m³		µg/m³	µg/m³	% of EAL	µg/m³	% of EAL
NO_2	40	1	23.55	0.87	2.18	24.4	61.1
	200	2	47.1	15.58	7.8	-	-
PM_{10}	40	1	19.8	0.06	0.15		
	50	3	39.6	0.22	0.44		
$PM_{2.5}$	25	1	13.64	0.06	0.24		
SO_2	266	4	8.52	24.97	9.4		
	350	5	8.52	21.99	6.28		
	125	6	8.52	2.9	2.3		
HCl	750	7	1.42	20.88	2.784		
HF	16	8	2.35	0.01	0.06		
	160	7	4.7	1.39	0.86875		
CO	10000	9	664	15.9	0.16		
TOC (as 1,3-butadiene)	2.25	1	0.22	0.06	2.67	0.280	12.44
PAH	0.00025	1	0.0011193	$6.50x10^{-07}$	0.26		
NH_3	180	1	2.87	0.06	0.03		
	2500	10	5.74	3.48	0.14		
PCBs	0.2	1	0.119	0.00003	0.02		
	6	10	0.239	0.0017	0.03		
Dioxins			$3.3x10^{-8}$	$6.20x10^{-10}$		$3.36x10^{-8}$	

TOC as 1,3 butadiene
PAH as benzo[a]pyrene

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

Pollutant	EQS / EAL		Back-ground	Process Contribution		Predicted Environmental Concentration	
	µg/m³		µg/m³	µg/m³	% of EAL	µg/m³	% of EAL
Cd	0.005	1	0.00012	0.00015	3.0	0.00027	5.4
Tl				0.00015			
Hg	0.25	1	0.00088	0.00031	0.12		
	7.5	2	0.00176	0.0174	0.23		
Sb	5	1	0.0018	0.0031	0.06		
	150	2	0.00236	0.174	0.12		
Pb	0.25	1	0.00566	0.0031	1.24	0.00876	3.50
Co			0.00007	0.0031			
Cu	10	1	0.00394	0.0031	0.03		
	200	2	0.00788	0.174	0.09		
Mn	0.15	1	0.00316	0.0031	2.07	0.00626	4.17
	1500	2	0.00632	0.174	0.01	-	-
V	5	1	0.00121	0.0031	0.06	-	-
	1	3	0.00242	0.174	17.40	0.17642	17.64
As	0.003	1	0.00062	0.0031	103.33	0.00372	124.0
Cr (II)(III)	5	1	0.00139	0.0031	0.06		
	150	2	0.00278	0.174	0.12		
Cr (VI)	0.0002	1	0.00028	0.0031	1550.00	0.00338	1690.0
Ni	0.02	1	0.00088	0.0031	15.50	0.00398	19.9

1 Annual Mean
2 1-hr Maximum
3 24-hr Maximum

(i) Screening out emissions which are insignificant

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

- PM10, PM2.5, SO_2, HCl, HF, CO, PAH, NH_3, PCBs, Hg, Sb, Cu and Cr(II)(III).

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.

- NO_2, TOC (VOCs), Cd, Pb, Mn, V, Cr, Ni

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

(iii) Emissions requiring further assessment

Finally from the tables above the following emissions of As and Cr (VI) require further assessment. Section 5.2.3 considers these pollutants in more detail.

5.2.2 Consideration of key pollutants

(i) Nitrogen dioxide (NO_2)

The impact on air quality from NO_2 emissions has been assessed against the ES of 40 $\mu g/m^3$ as a long term annual average and a short term hourly average of 200 $\mu g/m^3$. 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 maximum long term PC at a receptor is greater than 1% of the ES and therefore cannot be screened out as insignificant. Even so, from the tables above, the emission is not expected to result in the ES being exceeded.

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

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

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 $PM_{2.5}$ for the $PM_{2.5}$ assessment.

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

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

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

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

There is currently no emission limit prescribed nor any continuous emissions monitor for particulate matter specifically in the PM_{10} or $PM_{2.5}$ fraction. Whilst the Environment Agency is confident that current monitoring techniques will capture the fine particle fraction ($PM_{2.5}$) for inclusion in the measurement of total particulate matter, an improvement condition (IC2) 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, SO_2, 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 with the monthly ES interpreted as representing a long term ES.

There is no long term EAL for SO_2 for the protection of human health. Protection of ecological receptors from SO_2 for which there is a long term ES is considered in section 5.4.

Emissions of SO_2 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 NH_3

The above tables show that for CO 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.

The above tables show that for VOC emissions, the peak long term PC is greater than 1% of the ES. The Applicant has used the ES for 1,3 butadiene for their assessment of the impact of VOC. This is based on 1,3 butadiene having the lowest ES of organic species likely to be present in VOC (other than PAH, PCBs, dioxins and furans). So in reality the impact is likely to be insignificant. In addition the PEC is well below the ES.

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

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

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

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

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

(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 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.

Annex VI of IED sets three limits for metal emissions:

- An emission limit value of 0.05 mg/m^3 for mercury and its compounds (formerly WID group 1 metals).
- An aggregate emission limit value of 0.05 mg/m^3 for cadmium and thallium and their compounds (formerly WID group 2 metals).
- An aggregate emission limit of 0.5 mg/m^3 for antimony, arsenic, lead, chromium, cobalt, copper, manganese, nickel and vanadium and their compounds (formerly WID group 3 metals).

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

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

- Hg, Sb, Cu, Cr(II)(III)

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

- Cd, Pb, Mn, V and Ni

This left emissions of As and Cr(VI) requiring further assessment.

Where Annex VI of the IED sets an aggregate limit, the Applicant's assessment assumes that each metal is emitted individually at the relevant aggregate emission limit value (except for Cd where it was assumed to be half of the group ELV for Cd and Tl). This is a something which can never actually occur in practice as it would inevitably result in a breach of the limit, and so represents a very much worst case scenario.

For metals As and Cr (VI) the Applicant Used representative emissions data from other municipal waste incinerators using our guidance note "Guidance to Applicants on Impact Assessment for Group 3 Metals Stack Releases – version 4".

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

- *Cr(VI)*

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

- *As*

We agree with the Applicant's conclusions. 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)

Two Air Quality Management Areas (AQMAs) are within 10 km of the Installation, both have been declared for NO_2. These are Ampthill AQMA and Bedford Town Centre AQMA.

From the Applicants model, the process contribution at all points within each of the AQMAs is predicted to be below 1% of the ES and can be considered insignificant. Therefore even though the background is already above the ES, the contribution from the Installation is negligible. This approach is in accordance with Defra's IED EPR Guidance on Part A installations.

5.3 Human health risk assessment

5.3.1 Our role in preventing harm to human health

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

i) Applying Statutory Controls

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

The main conditions in an EfW permit are based on the requirements of the IED. Specific conditions have been introduced to specifically ensure compliance with the requirements of Chapter IV. The aim of the IED is to prevent or, where that is not practicable, to reduce emissions to air, water and land and prevent the generation of waste, in order to achieve a high level of protection of the environment taken as a whole. IED achieves this aim by

setting operational conditions, technical requirements and emission limit values to meet the requirements set out in Articles 11 and 18 of the IED. These requirements include the application of BAT, which may in some circumstances dictate tighter emission limits and controls than those set out in 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."

The European Integrated Pollution Prevention and Control Bureau stated in the Reference Document on the Best Available Techniques for Waste Incineration August 2006 "European health impact assessment studies, on the basis of current evidence and modern emission performance, suggest that the local impacts of incinerator emissions to air are either negligible or not detectable."

HPA (now PHE) in 2009 states that "The Health Protection Agency has reviewed research undertaken to examine the suggested links between 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 January 2012 PHE confirmed they would be undertaking a study to look for

evidence of any link between municipal waste incinerators and health outcomes including low birth weight, still births and infant deaths. Their current position that modern, well run municipal waste incinerators are not a significant risk to public health remains valid. The study will extend the evidence base and provide the public with further information

Policy Advice from Government also points out that the minimal risk from modern incinerators. Paragraph 22 (Chapter 5) of WS2007 says that "research carried out to date has revealed no credible evidence of adverse health outcomes for those living near incinerators." It points out that "the relevant health effects, mainly cancers, have long incubation times. But the research that is available shows an absence of symptoms relating to exposures twenty or more years ago when emissions from incinerators were much greater than is now the case." **Paragraph 30 of PPS10** explains that "modern, appropriately located, well run and well regulated waste management facilities should pose little risk to public health."

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 "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 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."

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 million millionths (10-12) of a gram).

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

COMEAP developed a methodology based on the results of time series epidemiological studies which allows calculation of the public health impact of exposure to the classical air pollutants (NO_2, SO_2 and particulates) in terms of the numbers of "deaths brought forward" and the "number of hospital admissions for respiratory disease brought forward or additional". 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, SO_2 and particulates cannot be screened out as insignificant in the Environmental Impact assessment, there are high ambient background levels of these pollutants and we are advised that its use was appropriate by our public health consultees.

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

v) Consultations

As part of our normal procedures for the determination of a permit application, we consult with Local Authorities, Local Authority Directors of Public Health, FSA and 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.

Receptor	Intake as % of TDI	
	Adult	Child
Point of maximum impact (agricultural receptor)	0.76	1.06

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

intake predicted by the modelling as shown in the table above is substantially below this figure.

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

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

5.3.3 Particulates smaller than 2.5 microns

The Operator will be required to monitor particulate emissions using the method set out in Table S3.1 of Schedule 3 of the Permit. This method requires that the filter efficiency must be at least 99.5 % on a test aerosol with a mean particle diameter of 0.3 µm, at the maximum flow rate anticipated. The filter efficiency for larger particles will be at least as high as this. This means that particulate monitoring data effectively captures everything above 0.3 µm and much of what is smaller. It is not expected that particles smaller than 0.3 µm will contribute significantly to the mass release rate / concentration of particulates because of their very small mass, even if present. This means that emissions monitoring data can be relied upon to measure the true mass emission rate of particulates.

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

The HPA (now 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 PM_{10} and $PM_{2.5}$ with effects on health derived by COMEAP and goes on to say that if these coefficients are applied to small increases in concentrations produced, locally, by incinerators; the estimated effects on health are likely to be small. 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 $\mu g/m^3$ would result in an increase in life expectancy of 20 days for people born in 2008." However, "The Committee stresses the need for careful interpretation of these metrics to avoid incorrect inferences being drawn – they are valid representations of population aggregate or average effects, but they can be misleading when interpreted as reflecting the experience of individuals."

PHE also point out that in 2007 incinerators contributed 0.02% to ambient ground level PM_{10} levels compared with 18% for road traffic and 22% for industry in general. 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 PM_{10}. It goes on to say that PM_{10} includes and exceeds $PM_{2.5}$ which in turn includes and exceeds $PM_{0.1}$.

This is consistent with the assessment of this application which shows emissions of PM_{10} to air to be insignificant.

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

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 assessment of the impact has indicated that emissions screen out as insignificant or where the impact of emissions of has not screened out as insignificant, the assessment still shows that the predicted environmental concentrations are well within Environmental Standards.

The Environment Agency has reviewed the methodology employed by the Applicant to carry out the health impact assessment. Our screening check calculations of dioxins, furans and dioxin-like PCB intakes, indicate that the PC is likely to be less than 1% of the of the COT TDI and is therefore insignificant.

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 (PHE) and the Local Authority Director of Public Health were consulted on the Application. PHE concluded that they had no significant concerns regarding the risk to the health of humans from the installation, the Local Authority Director of Public Health did not provide comments. The Food Standards Agency was also consulted during the permit determination process but did not provide comments. Details of the responses provided to the consultation on this Application can be found in Annex 2.

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

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

5.4.1 Sites Considered

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

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

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

- Rookery Clay Pit
- Lidlington Pit

- Coronation Pit
- Stewartby Lake
- Millbrook Pillinge Pit

These are classed as local wildlife (LWS) also known as county wildlife sites (CWS).

5.4.2 Assessment of other conservation sites

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

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

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

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

The assessment showed 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 Installation will be located within the boundary of Rookery Clay Pit LWS. The maximum predicted impact is within this LWS and the PCs are still well below (<20%) the critical level or loads even when looking at the maximum impacts. The impacts at any other ecological sites will therefore be lower.

We received many public comments expressing concern over impacts at the Forest Centre. Although this is not a designated ecological site (of the type described in section 5.4.1 above), Millbrook Pillinge Pit sits within the Forest Centre and so in assessing impacts at Millbrook Pillinge Pit LWS we are satisfied that there will not be a significant impact on the Forest Centre.

The Applicant is required to prevent, minimise and control emissions using BAT, this is considered further in Section 6.

5.4.3 Assessment of other habitats and Species

As part of our assessment we check on protected sites, habitats and species which have the potential to be impacted by the activity being proposed. This is done using our own internal screening tools to generate a list of sites and species. We also had a large number of consultation responses expressing concern over impacts on nearby sites and species.

According to our records, section 41 NERC BAP habitats which are not overlain by LWS site designations are further away from the Installation than the LWS designations themselves and are similar in nature to the LWSs. Therefore as there is no significant pollution at the designated LWSs, we are confident that there will be no significant pollution at these other habitats which are located at a further distance and therefore considered to experience lesser impacts than those which have been determined as acceptable.

The list of species we identified did not match those listed in the public consultation; our list is of those species and habitats that could be directly impacted by emissions from the Installation. However, where these species have been encountered by members of the public we believe that the nearby local wildlife sites and wider protected habitats are likely to be the main areas frequented by such species even though the species are not recorded as being integral to them. These sites and habitats are protected during our determination (see section 5.4.2 above) as part of our general duties to protect the wider environment and to not allow any significant pollution, and as such we believe that protecting these supporting habitats will inherently protect the associated species noted within the public consultation.

There were many public comments received about light and noise impacts on nearby ecological sites and species. Light is primarily a planning issue and a concern for visual impacts. In any event light is not likely to have a significant impact. The Infrastructure Planning Commission's decision and statement of reasons document states that 'the impact of lighting is not a matter which should attract significant weight in our decision as to whether to make the proposed DCO.'

Noise levels are not likely to have a significant effect on species. The main type of noise impact to consider for species like birds is sudden loud noises which are unlikely from this Installation.

5.5 Impact of abnormal operations

Article 50(4)(c) of IED requires that waste incineration and co-incineration plants shall operate an automatic system to prevent waste feed whenever any of the continuous emission monitors show that an emission limit value (ELV) is exceeded due to disturbances or failures of the purification devices. Notwithstanding this, Article 46(6) allows for the continued incineration and co-incineration of waste under such conditions provided that this period does not (in any circumstances) exceed 4 hours uninterrupted continuous operation or the cumulative period of operation does not exceed 60 hours in a calendar year. 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/m^3 (as a half hourly average) which is five times the limit in normal operation.

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

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

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

- Dioxin emissions of 10 ng/m^3 (100 x normal ELV)
- NO_x emissions of 550 mg/m^3 (1.4x normal ELV)
- Particulate emissions of 150 mg/m^3 (5 x normal ELV)
- Mercury emissions of 0.75 mg/m^3 (15 x normal ELV)
- Cadmium emissions of 0.375 mg/m^3 (15 x ½ the group ELV)

- Other metal emissions are 15 times expected emissions
- SO_2 emissions of 450 mg/m^3 (2.3x normal)
- HCl emissions of 900 mg/m^3 (22.5 x normal)

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

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

Pollutant	**EQS / EAL**		**Process Contribution (PC)**	
	µg/m^3		**µg/m^3**	**% of EAL**
NO_2	200	2	10.7	5.4
PM_{10}	50	3	1.1	2.2
	125	6	6.5	5.2
	266	4	14	5.3
SO_2	350	5	12.4	3.5
HCl	750	1	52.2	7.0
HF	160	1	7.8	4.9
Hg	7.5	1	0.26	3.5
Sb	150	1	0.06	0.04
Cu	200	1	0.15	0.1
Mn	1500	1	0.31	0.02
V	1	1	0.03	3.0
Cr (II)(III)	150	1	0.042	0.03

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

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

We have not assessed the impact of abnormal operations against long term ESs for the reasons set out above. Except that if dioxin emissions were at 10 ng/m^3 for the maximum period of abnormal operation, this would result in an increase of approximately 70% in the TDI reported in section 5.3.3. In these circumstances the TDI would be 0.036 pg(I-TEQ/ kg-BW/day), which is 1.8 % of the COT TDI. At this level, emissions of dioxins will still not pose a risk to human health.

5.6 Other Emissions

The Applicant assessed the risk from fugitive dust impacts from the IBA storage and treatment area. The Applicant referred to Institute of Air Quality Management (IAQM) guidance on the assessment of dust from construction and demolition sites. The guidance states that an assessment will be normally be required if there are human receptors within 350 m of the boundary. There is also IAQM guidance for minerals working which states that dust impacts for sand and gravel sites are uncommon beyond 250 m and 400 m for hard rock quarries. It also states that PM10 have the potential to persist beyond 400 m but with minimal significance. The Applicant claimed that the IBA activity has a lower potential to cause dust than the activities covered in the IAQM guidance. The closest receptor is Pillinge farm which is ~350 m from the Installation boundary and ~ 400 m from the IBA area and so there will not be a significant impact on human health.

We agree with the Applicant's assessment that the risk is low. In addition the Applicant proposes control measures to minimise dust emissions including those set out in their dust management plan. Further details are in section 6.5.3 of this decision document.

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 minimising the installation's environmental impact. They are: oxides of nitrogen, VOCs and some metals.

- 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. However BAT Conclusions and a revised BREF for Incineration have not yet been published, so the existing BREF and Chapter IV of the IED remain relevant.

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 Waste Incineration BREF elaborates the furnace selection criteria as:

- the use of a furnace (including secondary combustion chamber) dimensions that are large enough to provide for an effective combination of gas residence time and temperature such that combustion reactions may approach completion and result in low and stable CO and TOC emissions to air and low TOC in residues.
- use of a combination of furnace design, operation and waste throughput rate that provides sufficient agitation and residence time of the waste in the furnace at sufficiently high temperatures.
- The use of furnace design that, as far as possible, physically retain the waste within the combustion chamber (e.g. grate bar spacing) to allow its complete combustion.

The BREF also provides a comparison of combustion and thermal treatment technologies and factors affecting their applicability and operational suitability used in EU and for all types of wastes. 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 NOx as the furnace choice could have an effect on the amount of unabated NOx 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)	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	1 to 50 t/h with most projects 5 to 30 t/h. Most industrial applications not below 2.5 or 3 t/h.	Widely proven at large scales. Robust Low maintenance cost Long operational history Can take heterogeneous wastes without special Preparation	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: higher heat value waste is treatable better combustion control possible.	As air-cooled grates but: risk of grate damage/ leaks higher complexity	TOC 0.5 % to 3 %	Slightly higher capital cost than air-cooled

Technique	Key waste characteristics and suitability	Throughput per line	Advantages	Disadvantages / Limitations of use	Bottom Ash Quality	Cost
Rotary Kiln	Can accept liquids and pastes solid feeds more limited than grate (owing to refractory damage) often applied to hazardous Wastes	<10 t/h	Very well proven with broad range of wastes and good burn out even of HW	Throughputs lower than grates	TOC <3 %	Higher specific cost due to reduced capacity
Fluid bed - bubbling	Only finely divided consistent wastes. Limited use for raw MSW often applied to sludges	1 to 10 t/h	Good mixing Fly ashes of good leaching quality	Careful operation required to avoid clogging bed. Higher fly ash quantities.	TOC <3 %	FGT cost may be lower. Costs of waste preparation
Fluid bed - circulating	Only finely divided consistent wastes. Limited use for raw MSW, often applied to sludges / RDF.	1 to 20 t/h most used above 10 t/h	Greater fuel flexibility than BFB Fly ashes of good leaching quality	Cyclone required to conserve bed material Higher fly ash quantities	TOC <3 %	FGT cost may be lower. Costs of preparation.
Oscillating furnace	MSW / heterogeneous wastes	1 – 10 t/h	Robust Low maintenance Long history	-higher thermal loss than with grate furnace - LCV under 15 GJ/t	TOC 0.5 – 3 %	Similar to other technologies

			Low NOX level Low LOI of bottom ash			

Technique	**Key waste characteristics and suitability**	**Throughput per line**	**Advantages**	**Disadvantages / Limitations of use**	**Bottom Ash Quality**	**Cost**
Pulsed hearth	Only higher CV waste (LCV >20 GJ/t) □mainly used for clinical wastes	<7 t/h	can deal with liquids and powders	bed agitation may be lower	Dependent on waste type	Higher specific cost due to reduced capacity
Stepped and static hearths	Only higher CV waste (LCV >20 GJ/t) Mainly used for clinical wastes	No information	Can deal with liquids and powders	Bed agitation may be lower	Dependent on waste type	Higher specific cost due to reduced capacity
Spreader - stoker combustor	- RDF and other particle feeds - poultry manure - wood wastes	No information	- simple grate construction - less sensitive to particle size than FB	only for well defined mono-streams	No information	No information
Gasification - fixed bed	- mixed plastic wastes - other similar consistent streams - gasification less widely used/proven than incineration	1 to 20 t/h	-low leaching residue -good burnout if oxygen blown - syngas available - Reduced oxidation of recyclable metals	- limited waste feed - not full combustion - high skill level - tar in raw gas - less widely proven	-Low leaching bottom ash -good burnout with oxygen	High operation/ maintenance costs

Technique	Key waste characteristics and suitability	Throughput per line	Advantages	Disadvantages / Limitations of use	Bottom Ash Quality	Cost
Gasification - entrained flow	- mixed plastic wastes - other similar consistent streams - not suited to untreated MSW - gasification less widely used/proven than incineration	To 10 t/h	- low leaching slag - reduced oxidation of recyclable metals	- limited waste feed - not full combustion - high skill level - less widely proven	low leaching slag	High operation/ maintenance costs pre-treatment costs high
Gasification - fluid bed	- mixed plastic wastes - shredded MSW - shredder residues - sludges - metal rich wastes - other similar consistent streams - less widely used/proven than incineration	5 – 20 t/h	-temperatures e.g. for Al recovery - separation of non-combustibles -can be combined with ash melting - reduced oxidation of recyclable metals	-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	- 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)	- no oxidation of metals - no combustion energy for metals/inert - in reactor acid neutralisation possible - syngas available	- limited wastes - process control and engineering critical - high skill required - not widely proven - need market for syngas	- dependent on process temperature - residue produced requires further processing e.g. combustion	High pre-treatment, operation and capital costs

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

- Moving Grate Furnace
- Fixed Hearth
- Pulsed Hearth
- Rotary Kiln
- Oscillating Kiln
- Pyrolysis / Gasification
- Fluidised Bed

The Applicant's assessment is summarised below.

Moving Grate Furnaces
Designed to handle large volumes of waste.
Fixed Hearth
These are not considered suitable for large volumes of waste. They are best suited to low volumes of consistent waste.
Pulsed Hearth
Pulsed hearth technology has been used for municipal waste in the past, as well as other solid wastes. However, there have been difficulties in achieving reliable and effective burnout of waste with the IED criteria difficult to achieve.
Rotary Kiln
Rotary Kilns have achieved good results with clinical waste, but they have not been used in the UK for municipal waste. The energy conversion efficiency of a rotary kiln is lower than that of a moving grate due to the large areas of refractory lined combustion chamber.
Oscillating Kiln
An oscillating kiln is used for municipal waste at two sites in England and a number of sites in France. The energy conversion efficiency is lower than that of a moving grate for the same reasons as for a rotary kiln. In addition, the capacity per unit is limited to 8 tonnes per hour and for this application it would need at least 9 furnaces to achieve the design throughput.
Pyrolysis/Gasification
Pyrolysis and gasification systems are in development for the disposal of municipal waste. Pyrolysis and gasification systems that generate a syngas and burn it in an engine or turbine and can theoretically have higher efficiency. However the losses associated with making the syngas and the additional electricity consumption of the site mean that the overall efficiency is no higher than for a combustion facility and is generally lower.
Systems are modular and are only available for small-scale facilities. The Rookery South ERF would require at least 11 modules in order to achieve the required capacity. This would significantly increase the capital cost of the facility, meaning that it is not viable.
Fluidised Bed
Designed for the relatively homogeneous waste. MSW would need to be pre-treated before feeding to the fluidised bed. While fluidised bed combustion can lead to slightly lower NOx generation, the injection of ammonia or urea is still required to achieve the IED emission limits.

The Applicant concluded that fixed hearth, pulsed hearth, rotary/oscillating kiln and pyrolysis/gasification are not suitable. Moving grate and fluidised bed were considered in more detail. The Applicant's assessment is summarised below:

- Primary NOx emissions are slightly lower with fluidised bed. This means that less ammonia would be required to meet emission limits.
- The global warming potential will be lower for moving grate because fluidised bed has a higher energy demand.
- Fluidised bed will use less ammonia than moving grate, but fluidised bed will require sand to create the fluidised bed.
- Moving grate has 10-15 % lower costs. However Fluidised bed would have higher maintenance costs.
- Moving grate can cope with variable waste composition.

The Applicant has proposed to use a furnace technology comprising of a moving grate which is identified in the tables above as being considered BAT in the BREF or TGN for this type of waste feed.

The Applicant proposes to use gasoil as support fuel for start-up, shut down and for the auxiliary burners. The choice of support fuel is based on the cost of installing a high pressure gas main and the hazards associated with LPG storage.

Boiler Design

In accordance with 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;
- design of the boilers using CFD to ensure no pockets of stagnant or low velocity gas;
- Slow rates of combustion gas cooling will be avoided via boiler design to ensure the residence time is minimised in the critical cooling section and avoid slow rates of combustion gas cooling to minimise the potential for de-novo formation of dioxins and furans.
- The gas residence time in the critical temperature range will be minimised by ensuring high gas velocities exist in these sections. The residence time and temperature profile (between 450^{o}C and 200^{o}C) of flue gas will be considered during the detailed design phase to ensure that dioxin formation is minimised throughout the process.
- Minimising the volume in the critical cooling sections will ensure high gas velocities.

- 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 FGT 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 (FGT) systems as:

- type of waste, its composition and variation
- type of combustion process, and its size
- flue-gas flow and temperature
- flue-gas content, size and rate of fluctuations in composition
- 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
- release of noise.

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

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	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	May “blind” more than fabric filters		Small plant. High

	Smaller plant.			temperature gas cleaning required.
Electrostatic precipitators	Low pressure gradient. Use with BF may reduce the energy consumption of the induced draft fan.	Not normally BAT.		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/m^3 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.

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.		All plant unless impractical in design (needs to be demonstrated)

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 < 70mg/ m^3 Reduces CO, VOC, dioxins	Expensive. Re-heat required – reduces plant efficiency		All plant
Selective non-catalytic reduction (SNCR)	NOx emissions typically 150 - 180mg/m^3	Relies on an optimum temperature around 900 °C, and sufficient retention time for reduction May lead to Ammonia slip	Port injection location	All plant unless lower NOx release required for local environmental protection.
Reagent Type: Ammonia	Likely to be BAT Lower nitrous oxide formation	More difficult to handle Narrower temperature window		All plant

Reagent Type: Urea	Likely to be BAT			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 – this technique reduces the consumption of reagents for secondary NOx control and can increase overall energy recovery, although in some applications there can be corrosion problems. The Applicant stated that some suppliers of the furnace have designed their combustion systems to operate with FGR and these suppliers can gain benefits of reduced NOx generation from the use of FGR. Other suppliers have focussed on reducing NOx generation through the control of primary and secondary air and the furnace design, and these suppliers gain little if any benefit from the use of FGR. The Applicant stated that the decision of whether to use FGR would be made at the design stage. We are satisfied with this because both methods can be BAT.

There are two recognised techniques for secondary measures to reduce NO_x. These are Selective Catalytic Reduction (SCR) and Selective Non-Catalytic Reduction (SNCR). For each technique, there is a choice of urea or ammonia reagent.

SCR can reduce NO_x levels to below 70 mg/m^3 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. SNCR can typically reduce NO_x levels to between 150 and 180 mg/m^3, it relies on an optimum temperature of around 900 ^oC 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 ammonia and has a wider operating temperature window, but tends to result in higher emissions of N_2O. Either reagent is BAT, and the use of one over the other is not normally significant in environmental terms.

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

Emissions of NO_x cannot be screened out as insignificant. Therefore the Applicant carried out a cost / benefit study of the alternative techniques. The cost per tonne of NO_x abated over the projected life of the plant has been

calculated and compared with the environmental impact as shown in the table below.

	Cost of NO_x removal £/tonne	PC (long term)	PEC (long term)
SCR	3,241	0.30	23.85
SNCR	1,305	0.81	24.42

Based on the figures above the Applicant considers that the additional cost of SCR over SNCR is not justified by the reduction in environmental impact. Thus SCR is not BAT in this case, and SNCR is BAT for the Installation. The Applicant has justified the use of ammonia as the reagent on the basis of:

- Urea is easier to handle than ammonia. The handling and storage of ammonia can introduce an additional risk.
- Ammonia tends to generate lower nitrous oxide levels than urea. Nitrous oxide is a potent greenhouse gas.
- Ammonia emissions (or 'slip') can occur with both reagents, although good control will reduce the risk of this issue.
- The Sector Guidance on Waste Incineration considers all options as suitable for NOx abatement. It is proposed to use aqueous ammonia for the SNCR system, because the climate change impacts of urea outweigh the handling and storage issues associated with ammonia solution. These issues can be overcome by good design of the ammonia tanks and pipework and the use of suitable procedures for the delivery of ammonia.

The Environment Agency agrees with this assessment.

The amount of urea / ammonia used for NO_x abatement will need to be optimised to maximise NO_x reduction and minimise NH_3 slip. Improvement condition IC5 requires the Operator to report to the Environment Agency on optimising the performance of the NO_x abatement system. The Operator is also required to monitor and report on NH_3 and N_2O 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 SOx at source		Start-up, supplementary firing.	Where auxiliary fuel required.
Management	Disperses	Requires closer		All plant with

of waste streams	sources of acid gases (e.g. PVC) through feed.	control of waste management		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 wet plume Energy required for effluent treatment and plume reheat		Plants with high acid gas and metal components in exhaust gas – HWIs
Dry	Low water use Reagent consumption may be reduced by recycling in plant Lower energy use Higher reliability	Higher solid residue production Reagent consumption controlled only by input rate		All plant
Semi-dry	Medium reaction rates Reagent delivery may be varied by	Higher solid waste residues		All plant

	concentration and input rate			
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 the choice of gasoil as discussed in section 6.1.1
- Management of heterogeneous wastes – this will disperse problem wastes such as PVC by ensuring a homogeneous waste feed.

There are three recognised techniques for secondary measures to reduce acid gases. These are wet, dry and semi-dry. 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

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.

The Applicant has therefore considered dry and semi-dry methods of secondary measures for acid gas abatement. Either can be BAT for this type of facility.

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. Either reagent is BAT, and the use of one over the other is not significant in environmental terms in this case.

In this case, the Applicant proposes to a dry system using hydrated lime. The Environment Agency is satisfied that this is BAT

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

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 *de novo* 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.	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.

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			Covered in section on	All plant

matter removal			particulate matter	
Activated Carbon injection for mercury recovery	Can be combined with acid gas absorber or fed separately.	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.

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.

Unlike other metals however, mercury if present will be in the vapour phase. BAT for mercury removal is also 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.

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 (CO_2) 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, CO_2 is clearly a pollutant for IED purposes.

The principal greenhouse gas emitted is CO_2, but the plant also emits small amounts of N_2O arising from the operation of secondary NO_x abatement. N_2O has a global warming potential 310 times that of CO_2. 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 CO_2 from the combustion of waste. There will also be CO_2 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 CO_2 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 CO_2 emissions from the Installation are:
On the debit side

- CO_2 emissions from the burning of the waste;
- CO_2 emissions from burning auxiliary or supplementary fuels;
- CO_2 emissions associated with electrical energy used;
- N_2O from the de-NOx process.

On the credit side

- CO_2 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 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 N_2O emitted.

The Applicant considered energy efficiency and compared SCR to SNCR in its BAT assessment. This is set out in sections 4.3.7, 6.1.1 and 6.2.2 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 (850/2004), 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)

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 significantly to modify existing facilities using processes that release chemicals listed in Annex III, without prejudice to Council Directive 1996/61/EC, 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."

The 1998 Protocol to the Convention recommended that unintentionally produced should be controlled by imposing emission limits (e.g. 0.1 ng/m^3 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/m^3.

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.

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/m^3. 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]

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

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

Surface water from roadways and areas of hardstanding will be collected in drains. Oil / water interceptors will be used and there will be an isolating penstock valve installed on the discharge pipe. The water will then be discharged via an interceptor channel into an attenuation pond.

Surface water from the roofs will be collected in a rainwater storage tank for use within the IBA Quench System. Excess water can overflow by use of an outlet valve system to drain controlled quantities of water through an interceptor into the attenuation pond.

The attenuation pond will drain into the Rookery Low Level Restoration Scheme (LLRS). The LLRS is a pond serving the drainage for the wider

Rookery Pit development area. The LLRS will ultimately drain into Stewartby Lake.

The discharge from the interceptors will be tested periodically to verify that it is not contaminated. The drainage system, interceptor and penstock valve will be subject to a planned maintenance regime.
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.

There will be no discharge of contaminated water. Water from process areas including wash-down water and boiler blow down will be collected in a dirty water tank and used for quenching bottom ash.

6.5.2 Emissions to sewer

There will be no emissions to sewer.

6.5.3 Fugitive emissions

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

- The ammonia and gas oil tanks will be within bunds
- Chemical storage will be in a bunded area
- All process area will be on hardstanding with no direct drains to surface water
- The IBA area will be on an impermeable surface with a sealed drainage system to a lagoon. The water will be re-used for dust suppression.
- There will be provision to remove water from site from the lagoon and transfer for off-site disposal using a tanker, if required, during periods of high rainfall.
- APC residues will be stored in a silo and will be removed from site in enclosed tankers. During the tanker filling operation, displaced air will vent back to the silo and any releases to atmosphere would pass through a fabric filter.
- The risk of dust from IBA storage and treatment will be controlled through a dust management plan. The key parts of that plan are:
    - IBA quenched in water
    - Transferred to a maturation building by covered conveyor
    - Stored in an enclosed building
    - Transferred to a processing area also within the building
    - Use of water suppression to prevent the material becoming dusty.
    - Treated IBA (IBAA) will be stored in an enclosed area or will be removed from site rather than stored on site.

- o Perimeter dust monitoring will be carried out and further actions taken if trigger levels are exceeded

Based upon the information in the application we are satisfied that appropriate measures will be in place to prevent and /or minimise fugitive emissions. We have set pre-operational condition PO10 for the dust management plan to be updated after the detailed design stage of the plant. The Applicant stated that the IBAA, if stored on site, would be in a fully or partially enclosed area. We have specified in PO10 that the IBAA enclose must be in a fully enclosed building. We have defined 'fully enclosed building' in the permit to ensure that adequate containment is used. The storage area will be ~ 400 m from the nearest housing. However the plant is located within a local wildlife site (Rookery Clay Pits) as such containment is required in order to minimise emissions of dust.

6.5.4 Odour

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

Waste storage areas will be designed such that there is air flow into the building, with air from the waste reception and bunker areas being utilised as combustion air within the incinerator. This will generate negative pressure in the building and prevent any odorous air escaping. Fuel reception and storage areas will utilise a dust suppression system; this is a sprinkler type system, which will emit a very fine spray to suppress dust, if necessary.
The main access doors to the reception area that will used for the waste delivery vehicles will be kept closed (except during vehicles coming in and leaving) to maintain odour control during delivery times. The waste incineration plant will have 3 lines, this will ensure that the waste storage areas will continuously be maintained at a negative pressure, even during shutdown of a single line. Waste in the bunker will be mixed and bunker management to prevent anaerobic conditions.

We have set pre-operational condition (PO8) so that the air flows through the building are checked at the commissioning stage.

6.5.5 Noise and vibration

The following measures were proposed to minimise noise impacts:

- The air cooled condenser (ACC) will be located to the north of the installation and so will be screened from the nearest receptors by the main building
- An ACC with a reduced noise level was chosen.
- High performance acoustic louvres will be used to minimise sound breakout from the building.
- The turbine hall will be built from masonry to minimise noise breakout.

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.

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

The table below shows how the predicted rating level compares to the background levels at the receptors near to the Installation. Impacts at receptors further away will be lower. Impacts during the daytime and evening will be below the current background level.

	Rating level compared to background (dB A)		
	Daytime	Evening	Night-time
South Pillinge Farm	-4	-5	+1

We audited the Applicant's assessment. We agreed with the conclusion that adverse or significant adverse impacts are unlikely at nearby receptors. This was provided the Installation is constructed to the design and mitigation measures as proposed in the Application. The proposed measures are incorporated into the permit as operating techniques in table S1.2 of the Permit. We have also set improvement condition (IC8) so that the noise assessment is repeated once the plant is operating and to propose further measures if required.

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.

At the time of writing of this document, no BAT conclusions have been published for waste incineration or co-incineration.

The use of 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 Chapter IV limits in these circumstances.

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

(i) Local factors

We have considered the following information as set out in the sections above:

- The location of human receptors
- The location of ecological receptors and wildlife

Permit conditions will ensure that the Installation is unlikely to have a significant effect on any local receptor.

(ii) National and European ESs

Emission limits have been set that will ensure the Installation is unlikely to contribute to an exceedance of these standards.

(iii) Global Warming

CO_2 is an inevitable product of the combustion of waste. The amount of CO_2 emitted will be essentially determined by the quantity and characteristics of waste being incinerated, which are already subject to conditions in the Permit. It is therefore inappropriate to set an emission limit value for CO_2, which could do no more than recognise what is going to be emitted. The gas is not therefore targeted as a key pollutant under Annex II of IED, which lists the main polluting substances that are to be considered when setting emission limit values (ELVs) in Permits.

We have therefore considered setting equivalent parameters or technical measures for CO_2. 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 CO_2 emissions.

(iv) Commissioning

Pre-operational condition PO4 has been set that requires a commissioning plan to be submitted to us. The plan will include measures to ensure environmental protection during commissioning.

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 condition 2.3.10 of the permit requires that the abnormal operating conditions apply.

6.7.3 Continuous emissions monitoring for dioxins and heavy metals

Chapter IV of IED specifies manual extractive sampling for heavy metals and dioxin monitoring. However, Article 48(5) of the IED enables The Commission to act through delegated, authority to set the date from which continuous measurements of the air emission limit values for heavy metals, dioxins and furans shall be carried out, as soon as appropriate measurement techniques are available within the Community. No such decision has yet been made by the Commission.

The Environment Agency has reviewed the applicability of continuous sampling and monitoring techniques to the installation.

Recent advances in mercury monitoring techniques have allowed standards to be developed for continuous mercury monitoring, including both vapour-phase and particulate mercury. There is a standard which can apply to CEMs which measure mercury (EN 15267-3) and standards to certify CEMs for mercury, which are EN 15267-1 and EN 15267-3. Furthermore, there is an MCERTS-certified CEM which has been used in trials in the UK and which has been verified on-site using many parallel reference tests as specified using the steps outlined in EN 14181.

In the case of dioxins, equipment is available for taking a sample for an extended period (several weeks), but the sample must then be analysed in the conventional way. A CEN committee has agreed Technical Specifications (EN TS 1948-5) for continuous sampling of dioxins. This specification will lead to a CEN standard following a validation exercise which is currently underway. According to IED Article 48(5), "As soon as appropriate measurement techniques are available within the Union, the Commission shall, by means of delegated acts in accordance with Article 76 and subject to the conditions laid down in Articles 77 and 78, set the date from which continuous measurements of emissions into the air of heavy metals and dioxins and furans are to be carried out. This is yet to happen. However, our extant 'dioxin enforcement policy' recommends continuous sampling of dioxins where multiple emission exceedances occur and no clear root cause can be identified. Therefore should continuous sampling be required at a later date during the operation of the installation, then sampling and analysis shall comply with the requirements of EN TS 1948.

For either continuous monitoring of mercury or continuous sampling of dioxins to be used for regulatory purposes, an emission limit value would need to be devised which is applicable to continuous monitoring. Such limits for mercury and dioxins have not been set by the European Commission. Use of a manual sample train is the only technique which fulfils the requirements of the IED. At the present time, it is considered that in view of the predicted low levels of mercury and dioxin emission it is not justifiable to require the Operator to install additionally continuous monitoring or sampling devices for these substances.

In accordance with its legal requirement to do so, the Environment Agency reviews the development of new methods and standards and their performance in industrial applications. In particular the Environment Agency considers continuous sampling systems for dioxins to have promise as a potential means of improving process control and obtaining more accurate mass emission estimates.

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.

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 National Infrastructure Planning to grant planning permission on 15/07/11.
- The Panel's Decision and Statement of Reasons for grant of planning permission.

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

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

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

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

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

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

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

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

Article 23(1) requires the permit to specify:

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

These are all covered by permit conditions.

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

We consider that the intended method of waste treatment is acceptable from the point of view of environmental protection so Article 23(3) does not apply. Energy efficiency is dealt with elsewhere in this document but we consider the conditions of the permit ensure that the recovery of energy take place with a high level of energy efficiency in accordance with Article 23(4).

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

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 decision in this case has been reached following a programme of public consultation, on the original 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 2.

7.2 National primary legislation

7.2.1 **Environment Act 1995**

(i) Section 4 (Pursuit of Sustainable Development)

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

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

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

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

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

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

We have a duty to the extent we consider it desirable generally to promote the conservation and enhancement of the natural beauty and amenity of inland and coastal waters and the land associated with such waters, and the conservation of flora and fauna which are dependent on an aquatic environment. We consider that no additional or different conditions are appropriate for this Permit.

(iv) Section 6(6) (Fisheries)

We have a duty to maintain, improve and develop fisheries of salmon, trout, eels, lampreys, smelt and freshwater fish. We consider that no additional or different conditions are appropriate for this Permit.

(v) Section 7 (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.

(vi) Section 39 (Costs and Benefits)

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

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

(vii) 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.

(viii) Section 81 (National Air Quality Strategy)

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

7.2.2 **Human Rights Act 1998**

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

7.2.3 **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.

7.2.4 **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. There are no SSSIs within 2 km of the Installation.

7.2.5 **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.

7.2.6 **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.

7.3 National secondary legislation

7.3.1 **The Conservation of Habitats and Species Regulations 2017 (SI 2017/1012)**

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

The habitat assessment is summarised in greater detail in section 5.4 of this document. There are no European sites within 10 km of the Installation.

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 2. 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.

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

IED Article	Requirement	Delivered by
45(1)(a)	The permit shall include a list of all types of waste which may be treated using at least the types of waste set out in the European Waste List established by Decision 2000/532/EC, if possible, and containing information on the quantity of each type of waste, where appropriate.	Condition 2.3.4(a) and Table S2.2 in Schedule 2 of the Permit.
45(1)(b)	The permit shall include the total waste incinerating or co-incinerating capacity of the plant.	Condition 2.3.4(a) and Table S2.2 in Schedule 2 of the Permit.
45(1)(c)	The permit shall include the limit values for emissions into air and water.	Conditions 3.1.1 and 3.1.2 and Tables S3.1 and S3.1(a) in Schedule 3 of the Permit.
45(1)(d)	The permit shall include the requirements for pH, temperature and flow of waste water discharges.	Not Applicable
45(1)(e)	The permit shall include the sampling and measurement procedures and frequencies to be used to comply with the conditions set for emissions monitoring.	Conditions 3.5.1 to 3.5.5 and Tables S3.1, S3.1(a), S3.3 and S3.4 in Schedule 3 of the Permit.
45(1)(f)	The permit shall include the maximum permissible period of unavoidable stoppages, disturbances or failures of the purification devices or the measurement devices, during which the emissions into the air and the discharges of waste water may exceed the prescribed emission limit values.	Conditions 2.3.10 and 2.3.11.
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
45(2)(b)	The permit shall include the minimum and maximum mass flows of those hazardous waste, their lowest and maximum calorific values and the maximum contents of polychlorinated biphenyls, pentachlorophenol, chlorine, fluorine, sulphur, heavy metals and other polluting substances.	Not Applicable
46(1)	Waste gases shall be discharged in a controlled way by means of a stack the height of which is calculated in such a way as to safeguard human health and the environment.	Condition 2.3.1(a) and Table S1.2 of Schedule 1 of the Permit.
46(2)	Emission into air shall not exceed the emission limit values set out in part of Annex VI.	Conditions 3.1.1 and 3.1.2 and Tables S3.1 and S3.1a.
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	Conditions 3.1.1 and 3.1.2 and Tables S3.1 and S3.1a.

IED Article	Requirement	Delivered by
	Annex VI.	
46(3)	Relates to conditions for water discharges from the cleaning of exhaust gases.	There are no such discharges as condition 3.1.1 prohibits this.
46(4)	Relates to conditions for water discharges from the cleaning of exhaust gases.	There are no such discharges as condition 3.1.1 prohibits this.
46(5)	Prevention of unauthorised and accidental release of any polluting substances into soil, surface water or groundwater. Adequate storage capacity for contaminated rainwater run-off from the site or for contaminated water from spillage or fire-fighting.	The application explains the measures to be in place for achieving the directive requirements
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/m3), CO and TOC not to be exceeded during this period.	Conditions 2.3.10 and 2.3.11
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.	Conditions 2.3.10 and 2.3.11
48(1)	Monitoring of emissions is carried out in accordance with Parts 6 and 7 of Annex VI.	Conditions 3.5.1 to 3.5.5. 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.	Condition 3.5.3, and tables S3.1, S3.1(a), and S3.3.
48(3)	The competent authority shall determine the location of sampling or measurement points to be used for monitoring of emissions.	Conditions 3.5.3 and 3.5.4
48(4)	All monitoring results shall be recorded, processed and presented in such a way as to enable the competent authority to verify compliance with the operating conditions and emission limit values which are included in the permit.	Conditions 4.1.1 and 4.1.2, and Tables S4.1 and S4.4
49	The emission limit values for air and water shall be regarded as being complied with if the conditions described in Part 8 of Annex VI are fulfilled.	Conditions 3.1.1 and 3.1.2 and 3.5.5
50(1)	Slag and bottom ash to have Total Organic Carbon (TOC) < 3% or loss on ignition (LOI) < 5%.	Conditions 3.5.1 and Table S3.4
50(2)	Flue gas to be raised to a temperature of 850ºC for two seconds, as measured at representative point of the combustion chamber.	Condition 2.3.7, Pre-operational condition PO5 and Improvement condition IC4and Table

IED Article	Requirement	Delivered by
		S3.3
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 2.3.8
50(4)(a)	Automatic shut to prevent waste feed if at start up until the specified temperature has been reached.	Condition 2.3.7
50(4)(b)	Automatic shut to prevent waste feed if the combustion temperature is not maintained.	Condition 2.3.7
50(4)(c)	Automatic shut to prevent waste feed if the CEMs show that ELVs are exceeded due to disturbances or failure of waste cleaning devices.	Condition 2.3.7
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 me.	No such conditions Have been allowed
51(2)	Changes in operating conditions do not cause more residues or residues with a higher content of organic polluting substances compared to those residues which could be expected under the conditions laid down in Articles 50(1), (2) and (3).	No such conditions Have been allowed
51(3)	Changes in operating conditions shall include emission limit values 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, 3.2, 3.3, 3.4 and 3.6.
52(2)	Determine the mass of each category of wastes, if possible according to the EWC, prior to accepting the waste.	Condition 2.3.3(a) and Table S2.2 in Schedule 3 of the Permit.
52(3)	Prior to accepting hazardous waste, the operator shall collect available information about the waste for the purpose of	Not Applicable

IED Article	Requirement	Delivered by
	compliance with the permit requirements specified in Article 45(2).	
52(4)	Prior to accepting hazardous waste, the operator shall carry out the procedures set out in Article 52(4).	Not Applicable
52(5)	Granting of exemptions from Article 52(2), (3) and (4).	Not Applicable
53(1)	Residues to be minimised in their amount and harmfulness, and recycled where appropriate.	Conditions 1.4.1, 1.4.2 and 3.5.1 with Table S3.4
53(2)	Prevent dispersal of dry residues and dust during transport and storage.	Conditions 1.4.1 2.3.1, 2.3.2 and 3.2.1.
53(3)	Test residues for their physical and chemical characteristics and polluting potential including heavy metal content (soluble fraction).	Condition 3.5.1 and Table S3.4 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 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.

Reference	Pre-operational measures
PO1	Prior to the commencement of commissioning, the Operator shall send a summary of the site Environment Management System (EMS) to the Environment Agency and make available for inspection all documents and procedures which form part of the EMS. The EMS shall be developed in line with the requirements set out in Environment Agency web guide on developing a management system for environmental permits (www.gov.uk). The documents and procedures set out in the EMS shall form the written management system referenced in condition 1.1.1 (a) of the permit.
PO2	Prior to the commencement of commissioning, the Operator shall send a report to the Environment Agency which will contain a comprehensive review of the options available for utilising the heat generated, including operating as CHP or supplying district heating, 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	Prior to the commencement of commissioning, the Operator shall submit to the Environment Agency for approval 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. The protocol shall be in line with Environment Agency guidance M4 (Guidelines for Ash Sampling and Analysis).
PO4	Prior to the commencement of commissioning, the Operator shall provide a written commissioning plan, including timelines for completion, for approval by the Environment Agency and obtain the Environment Agency's written approval to it. 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	After completion of furnace design and at least three calendar months before commencement of commissioning; the operator shall submit a written report to the Environment Agency of the details of the computational fluid dynamic (CFD) modelling. The report shall demonstrate whether the design combustion conditions comply with the residence time and temperature requirements as defined by Chapter IV and Annex VI of the Industrial Emissions Directive.
PO6	The Operator shall submit the written protocol referenced in condition 3.2.4 for the monitoring of soil and groundwater for approval by the Environment Agency. The protocol shall demonstrate how the Operator will meet the requirements of Articles 14(1)(b), 14(1)(e) and 16(2) of the Industrial Emissions Directive. The procedure shall be implemented in accordance with the written approval from the Environment Agency.
PO7	At least three months before the commencement of commissioning, the Operator shall submit a written report to the Environment Agency specifying arrangements for continuous and periodic monitoring of emissions to air to comply with Environment Agency guidance notes M1 and M2. The report shall include the following: • Plant and equipment details, including accreditation to MCERTS • Methods and standards for sampling and analysis • Details of monitoring locations, access and working platforms
PO8	During commissioning, the operator shall carry out tests to demonstrate whether the furnace combustion air will provide the required air flows to 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 into the furnace with dead spots minimised. The operator shall submit a report to the Environment Agency for approval, and obtain the Environment Agency's written approval to it, summarising the findings along with any proposed improvements if required.
PO9	The operator shall confirm if any changes are required to the fire prevention plan after the detailed design stage of the installation. The operator shall submit a revised version of the plan that was submitted with the application (if required) to the Environment Agency for approval. The revised plan shall include details of the fire water supply and confirm that it complies with fire service requirements regarding the flow and pressure. The plan shall be in line with current Environment Agency guidance on fire prevention plans.
PO10	If it is proposed to undertake on-site processing of IBA, the operator shall submit an updated dust management plan, after detailed design stage of the IBA facility, to the Environment Agency and obtain written approval from the Environment Agency. The plan shall include the location of suppression system nozzles and dust monitoring equipment and the frequency of monitoring. The plan shall also include details of the IBAA storage building to demonstrate that storage will be in a fully enclosed building.
PO11	Prior to the commencement of commissioning, the Operator shall submit a written report to the Agency detailing the waste acceptance procedures 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 identified and dealt with. The procedures shall be implemented in accordance with the written approval from the Agency.

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.

Reference	Improvement measure	Completion date
IC1	The Operator shall submit a written report to the Environment Agency on the implementation of its Environmental Management System (EMS) and the progress made in the certification of the system by an external body or if appropriate submit a schedule by which the EMS will be certified.	Within 12 months of the completion of commissioning.
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 points A1, A2 and A3, 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.	Written proposal to be submitted before completion of commissioning. Report of results to be submitted within 4 months of the completion of commissioning.
IC3	The Operator shall submit a written report to the Environment Agency on the commissioning of the installation. The report shall summarise the environmental performance of the plant as installed against the design parameters set out in the Application. The report shall also include a review of the performance of the facility against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions and confirm that the Environmental Management System (EMS) has been updated accordingly.	Within 4 months of the completion of commissioning.
IC4	The Operator shall carry out checks to verify the residence time, minimum temperature and oxygen content of the exhaust gases in the furnace whilst operating under the anticipated most unfavourable operating conditions. The results shall be submitted in writing to the Environment Agency and include a comparison with the CFD modelling submitted with PO5.	Within 4 months of the completion of commissioning.
IC5	The Operator shall submit a written report to the Environment Agency describing the performance and optimisation of: • The Selective Non Catalytic Reduction (SNCR) system and combustion settings to minimise oxides of nitrogen (NOx).The report	Within 6 months of the completion of commissioning.

	shall include an assessment of the level of NOx, N_2O and NH_3 emissions that can be achieved under optimum operating conditions. • The lime injection system for minimisation of acid gas emissions • The carbon injection system for minimisation of dioxin and heavy metal emissions.	
IC6	The Operator shall carry out an assessment of the impact of emissions to air (in order to validate the assessment provided in the application) of the following component metals subject to emission limit values: • As and Cr A report on the assessment shall be made to the Environment Agency. Emissions monitoring data obtained during the first year of operation shall be used to compare the actual emissions with those assumed in the impact assessment submitted with the Application. An assessment shall be made of the impact of each metal against the relevant environment standard (ES). The report shall include proposals for further investigative work if required.	13 months from the completion of commissioning
IC7	The Operator shall submit a written summary report to the Environment Agency to confirm the results of calibration and verification testing for the performance of Continuous Emission Monitors for parameters as specified in Table S3.1 and Table S3.1(a). Testing shall confirm compliance with the requirements of BS EN 14181, specifically the requirements of QAL1, QAL2 and QAL3.	Initial calibration report to be submitted to the Agency within 3 months of completion of commissioning. Full summary evidence compliance report to be submitted within 12 months of completion of commissioning.
IC8	The Operator shall undertake a noise assessment during normal operations in accordance with the procedures given in BS4142: 2014 (Rating industrial noise affecting mixed residential and industrial areas) in order to verify the assessment provided within the application. The assessment shall include, but not be limited to: • A review of the noise sources from the facility. Where any noise sources are identified as exhibiting tonal contributions, they shall be quantified by means of frequency analysis. • A review of noise mitigation measures A report shall be provided to the Environment Agency detailing the findings of the assessment and a review of whether any improvements are required together with proposals for their implementation.	Within 4 months of the completion of commissioning.

ANNEX 4: Consultation Reponses

A) Advertising and Consultation on the Application

The Application has been advertised and consulted upon in accordance with the Environment Agency's Public Participation Statement. The way in which this has been carried out along with the results of our consultation and how we have taken consultation responses into account in reaching our 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 03/03/17 to 18/04/17 and in the Bedfordshire on Sunday newspaper on 05/03/17. The Application was made available to view on the Environment Agency Website and at the Environment Public Register at our Brampton office in Huntingdon. Additionally a copy of the Application was placed at Bedford Central Library.

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

- Central Bedfordshire Unitary Authority
- Bedford Unitary Authority
- National Infrastructure Planning
- Food Standards Agency
- Health & Safety Executive
- Local Fire Service
- Director of Public Health - Central Bedfordshire Unitary Authority
- Director of Public Health - Bedford Unitary Authority
- Public Health England

1) Consultation Responses from Statutory and Non-Statutory Bodies

Response Received from Bedford Borough Council	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Working hours should be restricted to control noise impacts during construction.	We cannot consider any impacts from construction activities through Environmental Permitting. Environmental Permitting considers impacts from the Installation once operating. Noise control during construction is under the remit of the local council.
In the Greenhouse gas assessment, in the summary it is estimated that the facility will release approximately 320,000 tonnes of CO_2 equivalent per year. However the individual figures that make up this total equate to 176,000 tonnes per year of CO_2 equivalent.	The Applicant confirmed that this was a typing mistake in the summary section and that the correct figure was 176,000 tonnes per year. This did not affect the conclusion of the assessment.

Response Received from Central Bedfordshire Council	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Requested a public meeting about the Application	We consider that we took appropriate steps to inform people about the Application and how they could comment on it. This is covered in section 2.2 of this decision document. We will hold a drop in session on our draft decision.
Concerns over traffic including damage to roads and air quality.	Traffic emissions do not form part of the Environmental Permitting decision process except to the extent that they could affect the prevailing background levels. The Applicant's assessment showed that emissions of PAHs from the installation would be insignificant. Therefore any small changes in background levels would not affect the conclusions of the assessment.

Response Received from Bedfordshire Fire & Rescue Service	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
There will be a provision for hydrants fed from a tank supply at a pressure of 1 bar. This differs from our requirement for firefighting water.	We passed these comments onto the Applicant. The Applicant stated that discussions were taking place with the fire service and that the water supply will satisfy the fire service requirements. Pre-operational condition (PO9) will ensure that this happens.

Response Received from Public Health England	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Recommend that the permit contains conditions to ensure that emissions of the following do not impact on health: • sulphur dioxide, volatile organic compounds, particulate matter, and particularly nitrogen dioxide as the site is located in close proximity to air quality management areas for nitrogen dioxide • Odour and fugitive particulate emissions to air from waste handling Based solely on the information contained in the application provided, no significant concerns regarding risk to health of the local population from this proposed facility providing that the applicant takes all appropriate measures to prevent or control pollution, in accordance with the relevant sector technical guidance or industry best practice.	Emission limits have been set for sulphur dioxide, volatile organic compounds, particulate matter, and nitrogen dioxide in line with chapter IV of the IED. The impact of nitrogen dioxide at AQMAs will be insignificant. Permit conditions will control odour and fugitive emissions. A dust management plan (to control dust from the IBA facility) also forms part of the permit controls through conditions 3.2.1, 2.3.1 and table S1.2. We consulted with the local authority, the Food Standards Agency and the Director of Public Health. Any comments received are included in elsewhere in this Annex.

Recommend that the Environment Agency also consult the following • the local authority; • the Food Standards Agency • the Director of Public Health	

Response Received from Cranfield Airport	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Objection made against the application until an Aviation Impact Assessment has been undertaken and is confirmed as acceptable to the airport.	We are responsible for regulating emissions from the installation and we do not consider the emissions will affect the airport. The airport have not raised any issues specifically within our remit. We understand the issue of stack height was considered at the planning stage where permission was given for 105 m stack. A 105 m stack is proposed in this permit Application.

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. In this case planning permission has already been granted.

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

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

Representations were received from the Member of Parliament for Bedford and Kempston Constituency, local councillors, Harrold Parish Council, Wixams Parish Council, Houghton Conquest Parish Council, Ampthill Town Council, Stewartby and Kempston Hardwick Parish Council, Flitwick Town Council, joint response from 18 council/town councils, Millbrook Parish Meeting, Brogborough Parish Council. In addition a joint response was received form the following town and parish councils:
Ampthill, Aspley Guise, Brogborough, Cranfield, Flitwick, Houghton Conquest, Hulcote and Salford, Husborne Crawley, Kempston, Lidlington, Marston Moretaine, Millbrook, Ridgmont, Stewartby, Wilstead, Woburn, Woburn Sands, Wootton. The following issues were raised.

Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Comments about air emissions and air risk assessment	
There will be an impact from emissions up to 15 km away.	The Applicant provided dispersion modelling that predicted the impact at nearby receptors as well as the impact at the location of maximum predicted ground level concentration. We are satisfied that these assessments have concluded acceptable impacts, and that the impacts further away will be lower still. Section 5 of this decision document has further details.
The weather data used for the modelling is not appropriate more recent background information should have been used. Temperature inversions are common in the area. This will result in higher pollution levels.	The Environment Agency's modelling specialists audited the dispersion modelling. The audit included checking the background pollution levels and the weather data used by the Applicant including using our own weather data from Bedford. The dispersion model used by the Applicant does not explicitly predict complex conditions relating to vertical profiling such as 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 are not likely to change.
The prevailing wind will direct emissions towards Millbrook.	The weather data used in the dispersion modelling has ensured that wind direction has been taken into account in assessing impacts offsite.

Concern over PAH impacts where the ES is already exceeded. Traffic emissions will make this worse.	Traffic emissions do not form part of the Environmental Permitting decision process except to the extent that they could affect the prevailing background levels. The Applicant's assessment predicts that emissions of PAHs from the installation will be insignificant. Any small changes in background levels would not affect the conclusions of the assessment due to the level of insignificance which has been demonstrated.
On site vehicle emissions will impact on air quality.	Vehicle movements within the Installation boundary are considered within the remit of the Environmental Permit. However the emissions from this limited area are highly unlikely to be significant and will not affect the conclusions of the air quality impact assessment.
The air dispersion modelling is out of date. Other houses including new houses should have been considered. Receptors at nearby areas higher than the stack (such as Greensand Ridge) should have been considered.	The dispersion modelling considered nearby receptors including the closest housing. 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 PCs and PECs are predicted to be either insignificant or not significant enough to risk exceeding the environmental standards for air. 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. Terrain was taken into account in the Applicant's model (and therefore has been taken into account in modelling the location of highest impact) for which we are satisfied that impacts are acceptable. Other locations (which are predicted to experience lesser impacts than the "highest impact location" are therefore considered to be within acceptable impact levels.
Concern over the impact from Chromium (VI) and whether it will be controlled and monitored adequately. The proposal to reassess after 15 months operation is not good enough.	The assessment of impacts from chromium VI is discussed in detail in section 5.2.3, and we are satisfied that emissions will be insignificant. This is based on a study of residue analysis from other incinerators. There is nothing in this Application to indicate emissions of chromium VI from this Installation will be significantly different from those used for the study. The improvement condition (IC 6) is required to confirm this assessment with real monitoring data and we consider that 12 months data is required to do this hence 15 months is a reasonable time period to

	submit a report. This is consistent with our regulation of other similar Installations.
Concern over the impacts from smoke.	There will not be emissions of smoke from the Installation. Smoke is made up of high concentrations of particulates. Particulate emissions will be controlled to low levels by the bag filter system.
Concern over emissions of lead.	The impact from emissions of lead was considered in the Applicant's dispersion modelling. Impacts will not be significant even if the emission of the 9 metals that make up the 0.5 mg/m^3 was entirely lead therefore we have considered a conservative scenario and concluded acceptable impacts.
Concern over emissions of oxides of nitrogen.	Emissions were assessed assuming continual emissions at the ELV and were shown to be not significant. Section 5.2 has further details.
Concern over emissions of sulphur dioxide.	Emissions were assessed assuming continual emissions at the ELV and were shown to be insignificant. Section 5.2 has further details.
Emissions per unit energy will be higher than from coal power stations.	We have not compared emissions to coal combustion in our assessment of this Application. The Applicant has not applied to operate a power station, the Application is for an incineration plant with the primary purpose of waste disposal whereas a power station's primary purpose is to generate energy. Our assessment of BAT is set out in section 6 of this decision document.
Emissions from traffic movements should be considered in a cumulative impact assessment.	The air quality assessment considered existing background pollution levels which includes emissions from traffic. Movement of traffic to and from the Installation is a relevant consideration for the grant of planning permission, but does not form part of the Environmental Permit decision making process. Our consideration is whether the emissions from traffic could affect the prevailing pollutant background levels which could be a consideration where there are established high background concentrations contributing to poor air quality. In this case the small increase in pollutants from traffic would not affect the background levels to the point where it would affect the conclusions of the air quality assessment. Vehicle movements within the Installation boundary are considered within the remit of the Environmental Permit. However the emissions from this limited area are highly unlikely to be significant and will not affect the conclusions of the air quality impact assessment.

Comments about health impacts	
Concern over impacts on farmland, soil and allotments. Pillinge Farm is 250 m away. Concern over the impacts from dioxin emissions.	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 document.
Concern over air quality and health impacts from the plant on houses, schools, nearby college and other receptors.	We are satisfied that the Installation will not have a significant impact on health. This is covered in detail in section 5.3 of this decision document.
Concern over the impacts on health from particulates including small particles (PM2.5 and below).	We are satisfied that the Installation will not have a significant impact on health due to particulates. Impacts from particulates are covered in detail in sections 5.2 and 5.3.3.
A report by the British Society for Ecological Medicine (BSEM) titled 'The Health Effects of Waste Incinerators' was cited claiming that incineration plants harm health.	Public Health England (PHE) has reviewed this report. PHE did not agree with the findings of the report and maintained their position statement on health effects of incineration plants. PHE are a statutory consultee for this Application and have provided a response covered earlier within this section. Section 5.3 of this decision document has further details
There will be an increase in health issues, including cancer and asthma that will impact on the National Health Service (NHS).	We do not consider that there will be a significant impact on health in the area. We have consulted with PHE as part of our determination of this application.
A permit should not be issued until the results of the new health study by Public Health England is published.	The Environment Agency takes advice from PHE on the health implications of incinerators generally and specifically on each application for a permit. In January 2012 they confirmed they would be undertaking a study to look for evidence of any link between municipal waste incinerators and health outcomes including low birth weight, still births and infant deaths. The results of the health study have not been released yet. However the first part of the study showing the levels of pollutants in the air around incineration plants due to emissions from the incinerator has been published. The report shows that the levels are low. Their current position that modern, well run municipal waste incinerators are not a significant risk to public health remains valid. The study has been undertaken to extend the evidence base and provide the public with further information; as such it does not justify a delay in our decision

	making on permit applications.
The proposed plant is putting profit ahead of the health of local people.	We are satisfied that the installation will not have a significant effect on health. The Applicant will be required to comply with the conditions of the Permit. Any profit made (or not made) by the Applicant will not be a factor in how we assess whether they have complied with the Permit.
Comments about noise impacts	
The noise assessment is out of date. Background levels and receptors will have changed.	We requested further information from the Applicant. The Applicant stated that there had been no developments in the area that would have led to changes to the previous noise measurements from 2008 / 2009. The Applicant also provided updated noise monitoring carried out in 2017. The 2017 data showed little change from to 2008 / 2009 data. We audited the noise assessment which included checking nearby receptors. We are satisfied that appropriate receptors have been considered.
Concern over noise impacts during construction.	Impacts from noise during the construction phase are not considered as part of the environmental permitting decision. This subject is assessed and controlled through planning permission. The remit of the Environmental Permit is to look at the impacts from noise during plant operation; for which we have assessed as part of our determination.
Concern over noise from vehicle movements.	Only Vehicle movements within the Installation can be considered through environmental permitting. Vehicle movements outside of Installations are covered within the remit of the planning permission. The Applicant's noise assessment included on-site vehicle movements and we are satisfied that there will not be a significant impact.
Concern over impacts at nearby wildlife sites including birds and protected species.	We are satisfied that there will not be a significant impact on ecological sites or species. Section 5.4 of this decision document has further details.
Perimeter noise monitoring should be required.	We have assessed noise from the Installation and are satisfied that it will not be significant. Permit conditions 3.4.1 and 3.4.2 will ensure that noise is controlled and will allow us to take further action should it be required.
The noise assessment assumes that doors are closed. However the number of vehicle movements means that the delivery door	The Applicant explained the reason for assuming the doors are closed. They conducted a calculation in order to

will be open for significant periods.	demonstrate that these will not have a significant contribution compared to the other sources. We have conducted our own sensitivity checks to open doors and we agree with Applicant.
The noise assessment shows that local authority limits will not be met.	Although the planning permission does contain limits on noise, we are responsible for regulating noise from operation of the installation. We have assessed noise as set out in section 6.5.5 of this decision document and are satisfied that there will not be a significant impact and that permit conditions will ensure that this is the case.
The noise assessment mentions various modifications to reduce noise impacts. Are these changes in compliance with the planning permission?	The measures that the applicant proposed are incorporated into the Permit as operating techniques in table S1.2. Whether the plant is in compliance with planning permission is a matter for the Operator and planning authority and not something that is considered by the Environment Agency. The Applicant will need to ensure they comply with the requirements of both regimes.
Concern over early morning noise impacts.	The noise assessment considered impacts during the morning time period.
Concern over noise on access road where vehicles will be accelerating and slowing down. A tonal penalty should have been used to account for this.	The road from Green Lane to the site is not part of the Installation and so vehicle movements on this road are outside our remit for control within the Environmental Permit. Although not required for our purposes, the Applicant's noise assessment did include vehicle movements along this road. In our audit we were satisfied that there would not be a significant impact and that adding a tonal penalty would not change this conclusion.
CRTN was used for assessing traffic in the planning application. This does not work well for assessing vehicle noise.	CRTN is used to model vehicle movements on road networks which is not part of this Application. On-site vehicle movements were considered in the Applicant's BS 4142 assessment.
Has noise from steam purging being assessed?	Steam purging is usually only carried out during construction/commissioning to clear debris that may have accumulated in pipework. A dedicated pipework and a silencer will be used. Measures to control impacts will form part of the Operator's commissioning plan as required by pre-operational condition (PO4). Planning permission also restricts steam purging to between 9am and 5pm on Mondays to Saturdays.
Has low frequency noise from fans been	The Applicant's assessment included

assessed?	frequency spectral data.
Noise has been averaged out. Five minute periods should be used for night time noise.	The comments appears to refer to measurement of background noise levels. We do not agree with this comment and consider that 5 minute periods would not provide more representative data.
Comments about impacts at ecological sites	
Concern over the effect of emissions on nearby Heritage Park	We have assessed the impact on nearby ecological sites and are satisfied that there will not be a significant impact. Section 5.4 of this decision document has further details.
Concern over impacts on Marston Vale and other nature sites.	Section 5.4 contains details of the impact assessment at ecological sites.
Concern over impacts at SACs, SPAs and SSSIs.	There are no SACs, SPAs or SSSIs within the screening distances that we have agreed with Natural England. Further details are in section 5.4 of this decision document.
Concern that pollution will end up in open water and animal habitats resulting in an impact on local wildlife, fish and birds for many miles around and including Wilstead and Wixams.	Emissions to air will not affect ecological sites or species. Section 5.3 of this decision document has further details. There are no emissions to water other than uncontaminated rainwater run-off. Measures will be in place to prevent pollution in the event of spillages. Further details are in section 4.2.2 of this decision document.
Concern over the impacts on nearby wildlife due to air, light, noise and odour	We are satisfied that there will not be a significant impact on species in the nearby area. Sections 5.4.2 and 5.4.3 have further details.
Concern over impacts on ecological areas including LNRs, CWSs, county parks and Community forests.	We are satisfied emissions will not cause any significant impacts on ecological sites. The assessment of impacts at local ecological sites is summarised 5.4.
Comments about impacts on water courses	
Dust including IBA could be washed from roofs and into the drainage system thereby contaminating Stewartby Lake and other water bodies.	Table S3.2 of the permit only allows the discharge of uncontaminated site surface water. Dust emissions from the stack will be insignificant and accumulation on building roofs via this route will not occur. IBA storage and processing and IBAA storage will be in enclosed buildings. The Operator will also have a dust management plan. Further details are in section 6.5.3 of this decision document.
Concern over emissions of waste water into local waterways, Stewartby lake could become polluted and affect drinking water.	The only emissions will be of uncontaminated surface water (rainwater) run-off to an attenuation pond and then to the nearby restoration scheme pond (LLRS). The LLRS is part of the wider Rookery Pit development site drainage system and is not part of the Installation. The LLRS will overflow to Stewartby Lake.

	The Permit requires that the emission from the attenuation pound is free from visible oil and grease and requires this to be monitored. We are satisfied that there is unlikely to be an impact on any watercourses.
There are contradictions in the Application as to how surface water drainage will be handled.	We requested clarification on this aspect. The schedule 5 response received on 19/05/17 addresses this. Section 6.5.1 of this decision document has further details.
Drainage diagram (fig 2) shows discharge from the Low Level Restoration Scheme (LLRS) attenuation pond into Stewartby Lake. Should this be to Stewartby North rather than Stewartby Lake?	The Application documents states that it is Stewartby Lake.
Comments about other impacts	
The plant will increase carbon emissions and have a high global warming impact.	The way we have considered global warming as part of the BAT assessment is discussed in section 6.3.
Concern that polluted water will contaminate the groundwater.	Measures will be in place to prevent this occurring, such as controls on uncontaminated surface water discharge, and bunding and surfacing requirements. Section 4.2.2 has further details.
The population has expanded since the planning application was assessed. This includes new areas of housing, schools and a sixth form college. There could be further housing in future.	We are satisfied that our assessments for the Environmental Permit have considered appropriate current receptors. If new housing was proposed in the future nearer to the site they would require planning permission and the incinerator should be taken into account in assessing those proposals. However, we have the ability to review the permit and vary the conditions if required.
Concern over odour impacts during plant failure and shut-down periods.	The plant will have three lines which means periods when all three lines are down will be very infrequent. The Applicant stated that this could occur once every 5 to 7 years. Keeping one or two lines operational means that negative pressure can be maintained whilst one or two lines are taken off-line for maintenance. There will also be provision to divert waste deliveries to alternative locations in the event of extended shut-down periods and to use an odour control misting system. Odour condition 3.3.2 will require the implementation of an odour management plan if deemed necessary by the Environment Agency.

Waste will be from variable sources with variable composition which will cause variable emissions.	We are satisfied that the waste types proposed by the Applicant are suitable for the proposed plant. The emission limits in the permit will have to be complied with at all times.
Concern that there could be pollution in the event of flooding.	Measures were proposed to prevent pollution in the event of flooding. Site levels and finished floor levels are set in excess of 1.5m above the 1 in 100 year storm event, and include allowance for climate change adaptation. The Applicant stated that further measures will be proposed after the detailed design stage such as closing openings, system safety shutoffs and locating storage areas where it is not likely to be flooded.
Concern over flies and other insects.	Pests are not usually an issue at incineration plants because the waste is only stored for a short period of time. The Applicant confirmed that bunker management would be used to mix the waste and that storage time would be 4-5 days which we consider is appropriate. Conditions 3.6.1 and 3.6.2 will provide controls.
Increasing amounts of gas oil will be required over time as improved recycling reduces the calorific value of the waste feed.	The plant is designed to cope with waste with a range of calorific values and throughputs. The use of large amounts of gas oil is unlikely as this would be un-economical.
The risk assessment in the Application is not robust or detailed enough.	We are satisfied that the risk assessments were sufficient for us to assess the impacts from the Installation. The risk assessments are summarised in this decision document.
Concern over litter.	Waste will be delivered in enclosed delivery vehicles and tipped into the bunker within the reception building. We are satisfied that impacts from litter are unlikely to occur.
Concern over odour impacts on people and wildlife.	Measures to prevent odour emissions are set out in section 6.5.4 of this decision document. We are satisfied that odour impacts are unlikely to occur and Permit conditions will control this.
Concern over light impacts on people and wildlife.	Pollution from light is primarily a concern for considering visual impacts and as such covered by the planning process. It was not considered to be a significant issue in the planning decision. In any event light pollution is not likely to have a significant effect on health or the environment.

Comments about the Applicant	
Concern about the performance of Covanta at other sites in the USA and Canada with breeches of emission standards such as dioxins. Reports of fires at other Covanta incineration plants.	We asked the Applicant for information on formal or informal enforcement action over the last few years for plants in the USA operated by companies within the wider Covanta group. We also contacted the USEPA and state environmental departments in the USA. Given the number and size of plants the information provided does not show any fundamental concerns over competence in the wider Covanta structure that would lead us to decide the Applicant was not competent. The Covanta structure also appears to have procedures in place to learn lessons which means the experience of these incidents should be available to the Applicant and so that should reduce the risk of similar incidents in the UK. The regulatory regime in the USA is not the same in the UK. Even so the lack of significant enforcement action and penalties suggests that any enforcement action was not for major events. The Applicant for this Installation is a different legal entity to those permitted in the USA. Based on the information submitted in the Application we are satisfied that the Applicant will be able to comply with the Permit.
The Management system should have ISO 14001 from the beginning.	The Applicant will be required to have a management system that meets the requirements of our guidance before they can start to operate the plant, as required by pre-operational condition PO 1. It is not mandatory to have the management system certified to ISO 140001, but the Applicant has stated that they will do this. It is not possible to have the management system certified before the Installation starts to operate. Certification can only be done once the management system is in place and is being used.
Comments about the location	
Concern over the location and how it was chosen. It was claimed that Covanta have previously stated that the location has enough space around it to prevent impacts. This was challenged. Lack of heat use shows that the location is	The location of the installation is primarily a planning consideration. Location is only a relevant consideration for Environmental Permitting in assessing potential to have an adverse environmental impact on communities or sensitive environmental receptors. The environmental impact has been assessed

not suitable.	as part of this determination process and has been reported upon in the main body of this document. Heat use is addressed in section 4.3.7.
Comments about monitoring	
The impacts from VOCs are high so more frequent monitoring should be carried out.	The Applicant's dispersion modelling predicted a PC for VOCs of 2.75% of the ES. The assessment assumed a very much worst case in which all of the VOC was 1,3-butadiene, in reality the real impacts would be likely to be much lower. VOCs will be monitored continuously as total organic carbon. Continuous monitoring is the most frequent monitoring that can be carried out.
Concern that the most hazardous particulate substances are not continuously monitored.	Particulates will be monitored continuously. The emission limit in the permit is for all particulate matter including metals and other substances that could be present in the particulate phase.
The public should have access to monitoring results.	Monitoring results will be available on the public register and so will be accessible to the public.
Ambient air monitors should be set up around the plant, the plant can then be shut-down should issues occur.	Ambient air monitoring around operating incinerators is not a reliable method of establishing the impact. Our preferred approach is to use air dispersion modelling to predict the impact based on the highest allowed emissions (emission limit values). We have audited the modelling and we are satisfied that it is suitable for assessing the impact from the Installation. The Permit requires monitoring to be carried out to ensure that the mission limits values that were used in the modelling are met.
Monitoring should be carried out by an independent body.	The Operator's monitoring will have either MCERTS certification or MCERTS accreditation as appropriate. This still applies when carried out by external assessors. 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 find problems with the monitoring we will take action to put this right.
Comments about energy recovery	
Concern that the amount energy recovery will be low.	Our assessment of energy recovery is covered in section 4.3.7 of this decision document. We are satisfied that energy recovery will be BAT.
New housing and the STEM college should have been considered for heat supply.	The Applicant stated that the costs of retrofitting heating infrastructure to existing buildings would be prohibitive. In addition

	the annual heat demand of the college was estimated to be only 0.06 MW. The Applicant identified future developments at Stewartby Park residential and Stewartby park employment site. However even when these are combined with the Applicant's identified heat load, a primary energy saving of 10% is unlikely to be achieved and as such we agreed that these future developments did not need to be included in the CHP cost benefit analysis. Further details are in section 4.3.7 of this decision document.
Comments about BAT control measures	
Only imported energy should have been considered for the SNCR / SCR BAT assessment. SCR should be BAT for abatement of oxides of nitrogen.	We have considered abatement methods proposed within this application, together with their justification for implementation and are satisfied that the Applicant is employing BAT for control of NOx emissions. If energy from the incineration plant is used for NOx abatement then this will result in less electricity available for export and increase the net global warming impact of the Installation. Further details are in section 6 of this decision document.
The NO_2 exceedance at Ampthill should be taken into account in the BAT assessment.	Impacts at the AQMAs will be insignificant and so will not change the conclusion of the BAT assessment. Further details on the BAT assessment are in section 6 of this decision document.
The Applicant is proposing the use of old technology. Alternatives that are better for the environment should be used such as gasification, pyrolysis or anaerobic digestion.	It is argued that Incineration is not an environmentally sustainable technology and therefore cannot be considered to be the Best Available Technique (BAT). The Environment Agency is aware that a number of proposals are coming forward for other ways of dealing with waste streams such as pyrolysis and mechanical / biological treatment. At this time however, mass burn incineration at this scale can still be considered BAT, subject to the appropriate assessments being made. Anaerobic digestion is most suitable for high moisture content biodegradable wastes such as food and agricultural wastes, and can be applied where there is separate collection of these waste streams. Anaerobic digestion is not however appropriate for mixed municipal waste. Some technologies such as plasma arc gasification are currently considered not to meet the definition of 'availability' due to

	their very limited application worldwide. It is important to draw a distinction between Sustainability Appraisal and Best Practicable Environmental Option (BPEO) and BAT. Sustainability Appraisal forms part of the decision making process which should be applied so as to shape planning strategies that support the Government's planning objectives for waste management. Thus Sustainability Appraisal is an important part of plan formation and planning decisions are made by reference to planning policies. BPEO forms a similar function in Wales. BAT assessment is a technical appraisal that the proposed technique is the best available for the protection of the environment as a whole.
The BAT assessment did not consider other forms of electricity generation.	The Application is for a waste incineration plant whose primary purpose is the disposal of waste. We have assessed BAT for that type of plant.
Covanta will not confirm the filter efficiency because the design is not yet finalised.	The Applicant has proposed a multi compartment fabric filter to abate particulate matter. This type of filter is very efficient at removing particles. Further details are in section 6.2.1 of this decision document.
Covanta previously made a statement that it is not possible to run a plant without some filter failures.	The Applicant has proposed a multi compartment bag filter. This allows individual bags to be isolated in case of an individual failure. Bag filter failure in which ELVs are exceeded would be abnormal operation. Periods of abnormal operation are limited by permit conditions. The performance of the filter is continuously monitored, and should any trends detect that performance is deteriorating, the Operator can isolate individual bags from other bag filters and arrange for cleaning or replacement in order to resume normal good performance.
Comments about regulation	
The plant should be shut down if emission limits are exceeded.	Permit conditions require waste feed to stop if emission limit are exceeded. Short periods where ELVs are exceeded are allowed to avoid un-necessary start-up and shut-down (abnormal operation). Abnormal operation is limited by permit conditions. Section 5.5 of this decision document has further details of abnormal operation. If ELVs are exceeded we will take action in line with our enforcement and sanctions statement.
Concern that the Environment Agency will only carry out 1 or 2 visits per year.	We will regulate the site carrying out a continual assessment of plant operations

	and its environmental performance. This will be achieved in the following ways; The operator must monitor emissions and report the results to us. We will regularly inspect the Installations, review monitoring techniques and assess monitoring results to measure the performance of the plant. We will carry out on-site audits of operator monitoring at least once a year; The operator must inform us within 24 hours of any breach of the emissions limits, followed by a fuller report of the size of the release, its impact and how they propose to avoid this happening in the future; The operators' monitoring results are placed on the public registers; Depending on the seriousness of any breach, we will take appropriate enforcement action and/or prosecute.
Comments about accident risk	
Concern over accidental discharge from the lagoon.	The water flow diagram in the Application shows that the IBA lagoon does not have an outlet to any surface water. It will be constructed to be impermeable.
Comments about residues	
Concern over ash spillages from transport.	APC residues will be transported from site in sealed tankers. Treated bottom ash will be transported off-site in covered vehicles. A Wheel wash will be used to clean vehicles. Any waste transportation is subject to duty of care regulations.
Concern over impacts from ash, including toxic ash, being stored outside. Toxic fly ash should be handled in sealed containers.	Fly ash combined with APC residues will be classed as hazardous waste and will be stored in sealed silos. Bottom ash (IBA) is generally non-hazardous waste, it will be tested to confirm this. Pre-operational condition PO3 requires an ash sampling protocol to be agreed. IBA and treated IBA (IBAA) will be stored in an enclosed building. Section 6.5.3 has further details.
A statement about IBA being inert was challenged.	IBA is normally classified as non-hazardous waste but can be classed as hazardous waste depending on its composition. Further details are in section 4.3.9 of this decision document.
IBA will have the same composition as fly ash and so should be classed as hazardous waste.	IBA is the residue that is left after combustion of the waste. Fly ash is finer material that is transported into the boiler. APC resides are collected on the bag filter and will contain some unreacted lime. Fly

	ash will be combined with the APC residues and will be classed as hazardous waste. IBA will have a different composition to the fly ash/APC residues, mainly due to not containing lime.
More details are required on the proposed monitoring of the IBA plant, such as location of monitors and frequency of monitoring.	IBA storage, processing and IBAA store will be carried out in an enclosed building and the material will be kept damp using water sprays. These are the primary measures to control dust. The Applicant also proposed using sticky discs on the Installation boundary to check dust levels. A trigger level of 2% effective coverage per day was proposed. Emissions above the trigger level would trigger additional measures to be used. We are satisfied that the control measures proposed by the Applicant will ensure that dust emissions beyond the Installation boundary are unlikely. We consider that the dust monitoring is an additional control on top of the primary measures and that the details can be confirmed in a pre-operational condition. We have set Pre-op (P10) to confirm frequency and location of monitors.
How is dewatering of the IBA lagoon achieved and where does the waste go?	Water from the lagoon will be used for dust suppression and the IBA quench. If there is excess water it will be transported off-site using a tanker and sent for off-site disposal. Sediment will be removed if required using a gully sucker.
Fly ash should be removed by the vehicles that deliver the waste to reduce vehicle movements.	Fly ash will be combined with APC residues and will be classed as hazardous waste. It will be transported off-site in sealed tankers to prevent any emissions. It would not be practicable to use these tankers to deliver waste to the Installation. In addition using the waste delivery vehicles to remove the fly ash/APC residues would provide less containment than using the sealed tankers.
Comments about the consultation	
Request to extend the consultation period.	Our usual consultation period is 20 working days. For this Application we extended the consultation period to 30 working days. We consider that this was an appropriate period of time to allow people to comment on the Application. This was borne out by the large number of responses that we received.
Request that local views are seriously considered. Local people and bodies are against the proposed plant.	We have considered all of the consultation responses that we received. We have examined the points raised in detail in order to be sure that local interests and concerns

	have been taken into account. Annex 4 of this decision document shows how they have been considered.
Concern over the lack of consultation by the Environment Agency. A public meeting or drop-in session was requested.	The way in which we consulted is described in section 2 of this decision document. We consider we took appropriate steps to inform people of the Application and how they could provide comments.
A second consultation on any additional information, prior to consultation on a draft decision, was requested.	Additional information received was placed on public register. We are consulting on our draft decision. The purpose of the consultation on a draft decision is so that people can see how we have come to our draft decision (including additional information received) and provide comments on it if they wish.
Other issues	
Concern that commercial wastes will be burned as well as household waste.	The Application stated that the wastes will consist of mixed Municipal Solid Waste (MSW) and commercial, industrial and trade waste. We are satisfied that the waste types proposed by the Applicant are suitable for combustion in a moving grate incineration plant and that the Installation will be able to comply with the Permit conditions (including emission limit values) whilst burning these wastes. Section 4.3.6 has further details.
The list of proposed wastes includes recyclable materials. The incinerator will result in reduced recycling. Incineration does not comply with the waste hierarchy.	The permit does not allow wastes that have been separately collected for recycling to be burned, unless they are subsequently found to be unsuitable for recovery by recycling. Condition 2.3.4 of the permit secures this position. We requested further information from the Applicant on some wastes types that appeared to be recyclable materials. The Applicant confirmed that these materials would be contaminated materials not suitable for recycling such as contaminated packaging. The National Planning Policy for Waste recognises that adequate provision must be made for waste disposal. The waste hierarchy still includes disposal where no other option is appropriate.
Concern over the impact on global warming and how this will affect the UK Carbon Budget.	Global warming is considered in section 6.3 of this decision document.
The claim of production of green electricity for local area was disputed.	The Installation will generate electricity from burning of waste. The electricity will be supplied to the National Grid.
The Application is speculative in several places stating that aspects will be confirmed after the detailed design stage.	We are satisfied that we have sufficient information to make a decision on the Application and to enable the public to

The public should be consulted again after the detailed design stage.	comment on it. Some of the finer detail can only be determined at the detailed design. We have set pre-operational conditions so that the fire prevention plan and dust management plans are updated if required after the detailed design but we do not expect the main principles to change. If any significant changes were proposed then we would require the Permit to be varied and we would consult on this as appropriate. Pre-operational conditions will be assessed by the Environment Agency. The site cannot commence operations until all pre-operational conditions have completed satisfactorily.
The Application describes that excess waste water will be removed from site by tanker. Is this possible during periods of high rainfall? If this is needed during the middle of the night impacts from transport could occur.	Water collected in the lagoon will be re-used on site but removed by tanker if there is excess water such as when the incineration plant is shut-down or periods of high rainfall. The Applicant stated that the lagoon would be sized for a 1 in 100 rainfall event meaning that a contingency will be built into the design We can see no reason why it should not be possible to remove water from the lagoon if required. Vehicle movements to do this are likely to be infrequent and unlikely to cause as significant impact.
Concern that the Application describes methods for segregating hazardous waste. Hazardous waste should not be received.	The Applicant will have pre-acceptance procedures to ensure that only those wastes that the plant is permitted to receive will be received. Waste acceptance procedures will then be used to check waste as received. It is BAT to have procedures to deal with unacceptable wastes (such as hazardous wastes) should they be received.
Changes in the local area since planning was granted should be discussed with the National Infrastructure Commission.	We have assessed the Application in the context of the current locality. We consulted with the local authority and the National Infrastructure Commission (now part of the Planning Inspectorate).

b) <u>Representations from Community and Other Organisations</u>

Representations were received from Liberal Democrat Group, Labour Group, Bedfordshire Against the Covanta Incinerator, Marston Moreteyne Action Group (MMAG), Woburn Golf Club, Woburn Sands and District Society, Marston Park Residents Association, Bedford and Kempston Labour Party, Bedfordshire Climate Change Forum, Ampthill and District Preservation Society, Kimberley STEM College, Cambridge Friends of the Earth, Bedford

Estates, Bedfordshire Against Covanta Incinerator, UK Without Incineration Network, Bedfordshire Campaign to Protect Rural England (Bedfordshire), and Wooton Academy Trust.

They key issues raised are shown below. Where an issue has already been covered above it is not necessarily repeated below.

Brief summary of issues raised:	Summary of action taken / how this has been covered
Comments about air emissions and air risk assessment	
Concern over emissions of acid gases.	The Installation will emit sulphur in the form of sulphur dioxide and also HCl and HF. The impact of sulphur dioxide and other acid gas emissions was shown to be insignificant. Section 5.2 of this decision document provides more details
Concern over heavy metal impacts.	We are satisfied that there will not be a significant impact from the emission of metals. Section 5.2 of this decision document provides more details
Concern that the air quality impact assessment was carried out by a commercial company rather than an independent body.	It is typical for an applicant to employ a specialist consultant to carry out dispersion modelling on their behalf, to ensure that modelling is carried out appropriately. We audited the Applicant's modelling and we are satisfied with the conclusions.
The Applicant did not explain what the abnormal operation emission levels were based on.	It was stated that the assessment was based on performance of similar plants. Our view is that the figures used by the Applicant were reasonable and consistent with those used for other similar plants that are regulated by the Environment Agency.
A 120 m tall wind turbine 250 m away will affect dispersion.	A wind turbine could potentially alter plume dispersion. However the turbine is not likely to have a significant effect on dispersion in this case. It's only in the north westerly and south easterly wind directions that the turbine wake may have some effects resulting in far higher modelling uncertainties. Maximum modelling predictions are made north east of the stack due to predominant south westerly winds, therefore the wind turbine will not affect the conclusions.
The dispersion modelling contour plots are not detailed enough.	The Application contained contour plots that show the impact of certain pollutants in the nearby area. In addition the report contains tables showing the impacts at receptors near to the Installation as well as a map showing the location of those receptors. We are satisfied that we had sufficient information to assess the Applicants' dispersion modelling.

The abnormal operation impact assessment did not consider complete bag filter failure to look at impacts for the shut-down period.	The abnormal operation impact assessment considered the impacts from particulate emissions at 150 mg/m^3 for the short time period allowed for under abnormal operation. Any emission above this would be a Permit breech and we would take appropriate enforcement action under our enforcement and sanctions statement. The Applicant has proposed a multi compartment bag filter, this allows individual bags to be isolated in case of an individual failure. Complete failure of the filters is therefore highly unlikely.
Dispersion modelling shows NOx impacts of 15.5µg/m^3 but does not show where this would be located.	Dispersion modelling shows that short term PC for NO_2 would be 15.58µg/m^3. This is predicted at the location of maximum predicted ground level concentration. The Applicant did not identify the location of the maximum. We did not require the Applicant to identify the location given that the short Term impacts are considered to be insignificant with the PC being <10% of the Environmental Standard.
Marston Vale has serious problems with NOx and particulate pollution.	Background pollution levels have been taken into account in the impact assessment. Impacts at nearby AQMAs have been predicted to be insignificant.
Comments about health impacts	
Concern about effects on human health (including long term health) from dioxins, metals and other substances through air, food, soil and water.	We are satisfied that emissions will not have a significant effect on health. Section 5.3 of this decision document has further details.
Studies show link between incinerators and cancer. A Friends of the Earth November 2006 press release was quoted as well as a report by the French institute for public health surveillance	The French report was based on incinerators operating between 1972 and 1990 and predates the HPA's (Now PHE) report on health effects from municipal waste incinerators. PHE's position is "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. This view is based on detailed assessments of the effects of air pollutants on health and on the fact that modern and well managed municipal waste incinerators make only a very small contribution to local concentrations of air pollutants." PHE is not aware of any evidence that requires a change in their position statement. PHE also stated on 25/05/17 that they are not aware of any evidence that requires a change in their position statement this is after the date the paper was published. Our view is that there will not be a significant

	effect on health. This is in line with Public Health England's position statement as discussed in section 5.3 of this decision document.
Concern over impacts on food. Local farming will be affected due to concern over safety of local meat.	The HHRA included impacts from dioxin intake from locally grown food. The HHRA is based on very conservative criteria and impacts were shown to be insignificant. Further details are in section 5.3 of this decision document.
Comments about noise impacts	
Concern over noise impacts on the local area	We are satisfied that there will not be a significant impact from noise. Section 6.5.5 of this decision document has further details.
Concern over noise from traffic including HGV movements	On site vehicle movements were included in the Applicant's noise assessment. Off-site movements form part of the consideration for the planning process.
Comments about impacts at ecological sites	
Concern over impact on protected species. It was claimed that there are many protected species in the area including red listed birds, Bats, invertebrates, moths. Light and noise will affect species. Concern over impact on other species. Devices to scare birds away have already being installed	We are satisfied that there will not be a significant impact on species in the nearby area. Sections 5.4.2 and 5.4.3 of this decision document have further details. Light is primarily a planning issue and a concern for visual impacts. In any event light is not likely to have a significant impact. The Infrastructure Planning Commission's decision and statement of reasons document states that 'the impact of lighting is not a matter which should attract significant weight in our decision as to whether to make the proposed DCO.' Our view is that the expected noise levels are not likely to have a significant effect on species. The main type of noise impact to consider for species like birds is sudden loud noises which are unlikely from this Installation. We are satisfied that operation of the Installation will not have any significant impacts on birds.
Concern over impacts on Rookery Pit North and South, both of which are county wildlife sites.	Section 5.4 of this decision document has details of the assessment of impact at these sites.
The incinerator will affect the Millennium Forest Project and Forest Centre.	Section 5.4 of this decision document contains details of the impact assessment at LWSs including at Millbrook Pillinge LWS site that sits within the Forest Centre. We are satisfied that there will not be a significant impact.
The Environment Agency has a duty to protect wildlife under the Wildlife and Countryside Act (1981).	The way this legislation has been considered is in section 7.2.4 of this decision document.

Emissions to water will pollute the Ouse System which is linked to habitat sites.	The only emissions permitted for emission to water will be of uncontaminated surface water run-off to an attenuation pond and then to the nearby restoration scheme pond, and so there will not be an impact on any connected river systems. An interceptor will be employed and the permit requires that the discharge contains no visible oil or grease.
Comments about other impacts	
Concern that people should not have further pollution.	The air quality assessment considered existing background pollution levels. The conclusion of the assessment was that there would not be a significant effect on air quality or health from the Installation when combined with background levels. Section 5 of this decision document has more details.
Concern over impacts at future housing developments.	The Applicant's dispersion modelling showed the maximum concentrations in the modelled grid, so these represent 'worst case' predictions. Therefore making predictions at further discrete receptor locations is not required as these will be lower than the area of maximum concentration. We therefore consider that no significant impacts will result Noise impacts were considered at the closest receptor. Any housing built closer than this could potentially be subject to higher noise levels. Housing would have to go through the planning process which should take account of the proposed incinerator and in addition if required we could very the permit conditions to further control noise.
Comments about the Applicant	
Covanta have previously altered monitoring records. Covanta will not be able to comply with the permit to ensure the environment is protected.	We have no knowledge of Covanta altering records and there were insufficient details provided to investigate further. We are satisfied that the Applicant will be able to comply with the Permit. Further details are in section 4.3.2 of this decision document.
Veolia (the company that will supply the waste) do not have a good record.	The Applicant is Covanta Energy Limited. The Permit does not state where the waste should be sourced from but it does limit waste to certain types. We are satisfied that the plant is capable of taking these waste types as detailed in the Permit.
Comments about monitoring	
Concern that the Environment Agency will only carry out limited monitoring.	The Environment Agency used to carry out check-monitoring when there were relatively few standards for monitoring. Check monitoring is no longer as important because: • There is now a wide variety of standards for monitoring, covering CEMs, periodic monitoring, and

	quality assurance. • We have MCERTS for CEMs and test labs. • We have EN 14181 for quality assurance of CEMs. • We require CEMs and test labs to be accredited to MCERTS and all the applicable standards. • We carry out audits of operators' provisions for monitoring. However, we still do check monitoring where it is considered appropriate. Furthermore, as well as auditing operators' provisions for monitoring, and how they apply the monitoring requirements of the permit, we also regularly audit test laboratories.
Comments about energy recovery	
Poor energy recovery due to lack of CHP. The heat plan is not good enough to be Good Quality CHP.	We are satisfied that as much energy as practicable will be recovered from the waste. The assessment of energy efficiency is considered in more detail in section 4.3.7 of this decision document.
Energy recovery is not BAT due to low steam cycle temperature.	The energy recovery is in line with BAT levels as set out in section 4.3.7. The proposed steam conditions of 440^{o}C and 75 Bar are relatively high.
Comments about BAT control measures	
The stack is not high enough. Surrounding land is higher.	We audited the Applicant's dispersion modelling and we are satisfied that the stack will provide sufficient dispersion to avoid any significant impacts. Surrounding land is higher than the Installation. The Environmental Statement describes that Rookery Pit will be in filled in so that it is 10 m below the level of the land in the near vicinity of the Installation. Our assessment of the dispersion modelling shows that the base of the stack will be 15 to 20 m lower than the receptors. The difference in elevation has been accounted for in the Applicant's dispersion modelling using their terrain file. The Applicant proposes a 105 m high stack. This height is at the top of the range of stack height that we would expect for a plant of this size. It will be ~ 95 m above the surrounding land and at least 85 m above the height of receptors.

The combustion temperature will not be high enough to destroy dioxins, particularly for chlorinated organic compounds.	The combustion chamber will be > 850°C for 2 seconds after the last injection of combustion air. This is a requirement of IED (for incineration plants) to ensure complete destruction of organics such as dioxins. IED does specify a higher temperature (1100 °C) for hazardous waste with >1% halogenated materials, but this Installation will not incinerate such wastes and therefore 850°C for 2 seconds is the appropriate standard.
Comments about regulation	
The permit should have strict limits and conditions.	We are satisfied that the Permit conditions and limits will provide a high level of protection for the Environment.
Concern about what will happen if limits are not met.	If any Permit condition or limit is not met we will take action under our enforcement and sanctions statement.
Any permit should be a capable of review if required due to changing standards.	We carry out periodic reviews of permits. We can and will vary permits where required.
The plant could suffer from failures as it ages during its 40 year lifetime.	The Operator will have an EMS in place. The EMS will include a preventative maintenance programme to prevent failure of key equipment.
Comments about accident risk	
Concern that an accident could impact on nearby houses through impacts on the air or water.	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 to limit and control accidents. 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 EMS will also include a preventative maintenance scheme to reduce the chance of equipment failure.
A lime spillage at the Runcorn plant resulted in people being admitted to hospital.	There were two spillages at the Runcorn plant, but the lime did not leave the site and there were no environmental impacts from the spillages. We are satisfied that there is not a significant risk to the environment from lime spillages form this Installation.
Concern over the risk of a fire and the impacts that this would cause. The FPP is described as being subject to final design. The firewater provision will not meet guidance requirement of 2000 l/min for 3 hours. Process water will be used for firefighting.	The Applicant submitted a fire prevention plan (FPP). We are satisfied that the Installation will be able to control fire risk. However we recognise that some of the finer detail (such as the exact location of hydrants for example) may change after the detailed design stage. We have set pre-operational condition PO9 for the Operator to submit a revised FPP after the detailed design stage. Fire water provisions will not meet the measures set out in our guidance. However the Applicant

	proposed alternative measures. The Applicant confirmed that process water will not be used to fight fires and this confirmation is incorporated into the Permit through table S1.2.
Firewater run-off could cause pollution.	There will be provision to contain fire water on site as set out in the fire prevention plan. The water used for fire-fighting will be sampled and analysed to identify whether it is suitable to be used as process water or if treatment/disposal of the water is required. If the firewater is considered to be contaminated, the water will be pumped out and transferred off-site to a suitably licensed waste management facility.
The FPP shows that the waste storage area is close to the site boundary and brook.	The FPP identifies a quarantine area that is located ~ 35m from the Installation boundary but is inside the reception building. The location of this area does not give rise to any concerns.
Comments about residues	
Concern was expressed about how residues will disposed of.	Recovery or disposal is discussed in section 4.3.9 of this decision document
Concern that ash will be stored outdoors in 10 m high piles, loading using a shovel, part open building and that that wind will blow ash into the local area. No details of dust and odour control measures were provided.	All ash storage will be in an enclosed building and so dust emissions are not likely. Section 6.5.3 has further details. IBA can have an odour similar to wet concrete or plaster at some sites. This could be an issue if receptors were very close to the storage area. At this Installation odour is unlikely to be an issue given distance of receptors to the IBA area.
Concern over the proposal to bury ash on-site. It is not clear how ash will be disposed of.	This is not proposed. IBA will be treated on-site and then sent off-site for recovery. APC residues will be sent off-site for disposal at a licensed facility.
Comments about the consultation	
An open day was requested to raise awareness of the Application.	We are satisfied that we took appropriate steps to inform people about the application and the consultation. This is discussed in section 2 of this decision document. An 'open day' at the plant once operational would be a matter for the Operator to consider.
Concerns expressed about the lack of democratic accountability in the wider process of this incinerator coming to Rookery Pit.	We do not decide on the location of an Installation, this is mainly a planning consideration. Location is only a relevant consideration for Environmental Permitting in assessing potential to have an adverse environmental impact on communities or sensitive

	environmental receptors. The environmental impact is assessed as part of the determination process and has been reported upon in the main body of this decision document.
There has been a lack of communication from Covanta.	This is a matter for the Applicant. However we consider that we have taken the appropriate steps to inform people about the application and on how they can comment on it.
The application documents on the Environment Agency consultation webpage were not clearly named. For example Annexes were not named as Annexes. Some of the documents were scientific and difficult for some to comment on.	The documents were not labelled with Annex numbers. However the documents were named according to their contents (such as the noise assessment) and all of the Application documents were present on the website. The language used in the documents is a matter for the Applicant however by their very nature they need to address technical issues. In this decision document we have tried to explain our decision as accurately, comprehensively and plainly as possible.
Other issues	
The Applicant is proposing outdated technology.	The technology proposed by the Applicant is listed in the BREF as a BAT option. We are satisfied that the Applicant's proposals are BAT, this is discussed in more detail in section 6 of this decision document.
Government policies have changed since the planning permission was granted.	We have taken all relevant legislation into account in making our decision. We are not aware of any government policies that would change our decision. Any changes relating to the planning decision are a matter for the planning authority.
National Permitting should visit the site.	The Environment Agency is aware of the local area and we have enough information to make our decision on this Application.
Concerns were raised about the accuracy of the figures used in the global warming assessment.	We have enough information to assess global warming for the Installation. The way we have assessed it is covered in section 6.3 of this decision document.
Residual waste is not defined in the Development Consent Order (DCO) meaning that non residual wastes could be burned.	The DCO limits the plant to burning only residual waste. Residual waste is waste remaining after measures to remove material suitable for recycling had taken place. It is a well understood term. The permit does not allow wastes that have been separately collected for recycling to be burned, unless they are subsequently found to be unsuitable for recovery by recycling. We requested further information from the Applicant on some wastes types that appeared to be recyclable materials. The Applicant confirmed that these materials

	would be contaminated materials not suitable for recycling such as contaminated packaging. Waste acceptance procedures will ensure that the correct wastes are received.
Businesses do not recycle waste properly so the incinerator waste feed will contain recyclable waste.	We cannot control other businesses through this Permit. Other factors influence this such as landfill tax, other legislation and government policy.
How will unsuitable or non-permitted waste be identified? Who will carry out the checks and what training will they have?	The Operator will have pre-acceptance and acceptance procedures that comply with our guidance. These checks will be to make sure that delivered waste is of the type that the plant is designed for. Inspections will also take place of deliveries. The Application describes inspections as being carried out by plant operatives. Training requirements will be set out in the EMS.
Concern that it will become a hazardous waste incinerator in the future.	The Permit does not allow hazardous waste to be burned. The Operator would have to apply for a substantial variation to their permit (which would be subject to consultation as per this application) if they wanted to burn hazardous waste in the future.
Concern that waste from hospitals will be burned.	The Application proposes to take waste under waste code 18 01 04. This is classed as wastes whose collection and disposal is not subject to special requirements in order to prevent infection (for example dressings, plaster casts, linen, disposable clothing, diapers). We are satisfied that this waste is suitable for burning in the Installation.
The CO_2 offset figure used in the global warming assessment is not correct, can it be verified. Government documents show the figure will reduce considerably over time. Biogenic carbon is ignored.	Any changes in the way the offset is considered would be the same for each option and so does not affect the conclusions of the BAT assessment. Further details are in section, 6.3 of this decision document.
Greenhouse gases from the acid abatement plant have not been included in the global warming assessment.	The acid abatement plant will not give rise to emissions of greenhouse gases. The way we have considered global warming is covered in section 6.2.3 of this decision document.
The statement in the Application that the area is not on an aquifer is incorrect.	Our information is that the Installation will be located on an unproductive aquifer, a secondary A aquifer and secondary (undifferentiated) aquifer. We are satisfied that measures will be in place to prevent emissions to groundwater.

c) Representations from Individual Members of the Public

Over 1950 responses were received from individual members of the public plus another 127 responses from members of the public submitted by the Bedford Forum. They key issues raised are shown below. Where an issue has already been covered above it is not necessarily repeated below.

Brief summary of issues raised:	Summary of action taken / how this has been covered
Comments about air emissions and air risk assessment	
Concern over impacts on nearby villages, hospitals, college, schools, footpaths and other nearby receptors.	We are satisfied that there will not be a significant impact on any nearby receptors. This is discussed in more detail in section 5 of this document.
Concern that the prevailing wind is towards Stewartby.	Weather conditions, including wind direction, was taken into account in the Applicant's air dispersion modelling.
Concern that the Cd level in this area is already at 113% of the limit	This comments appears to be about the concentration in soils as background levels in the air are well below the ES. We are satisfied that the site condition report has established the baseline for ground conditions at the Installation and that the proposed measures will prevent ground pollution from operation of the Installation. The emission of metals to air including Cd has been considered in section 5 of this decision document where emission to air have been compared to the ES. The ESs are protective of human health. We are satisfied that there will not be a significant impact on health or on soils.
More specific data on background air pollution levels should have been obtained. The data used by the Applicant is out of date. Landfill gas engines nearby will affect background levels.	Our audit of the air dispersion modelling included checking whether the Applicant's background data was appropriate. This included checking on the landfill gas engines. Our conclusion was that the background levels are not likely to be higher than those used by the Applicant.
Concern over the impact from Arsenic emissions.	Emissions of Arsenic have been assessed as not significant. Section 5.2.3 has further details.
Concern over the impact from the emission of volatile organic compounds (VOCs).	The Applicant's dispersion modelling predicted a PC for VOCs of 2.75% of the ES. The assessment assumed a very much worst case in which all of the VOC was 1,3-butadiene, in reality the real impacts would be likely to be much lower.
The effect of climate change on wind speed and direction should have been considered in the impact assessment.	For dispersion modelling we expect 5 years of met data to be used that is generally less than 10 years old. Climate change is assumed to be less than the inter year variation in the data and so is not expected to affect the predictions significantly.

Concern over impacts when abatement is not operating to full potential and emission limits are exceeded.	The permit sets limits on how long the plant can operate during unavailable abatement failure (abnormal operation). Section 5.5 of this decision document has more details. If an emission limit is exceeded at other times then the plant must stop feeding waste immediately. The EMS will include a preventative maintenance scheme so that equipment is serviced and replaced before it breaks down.
General concern over air quality impacts was expressed including the economic impact.	We are satisfied that there will not be a significant impact from emissions to air and so no significant economic impacts. This is discussed in more detail in section 5.2 of this document.
Concern over the impact from particulate impacts including PM10, PM2.5 and smaller particles. Ultrafine particles are unregulated.	The impact from particulate emissions was shown to be insignificant. Section 5.2.1 (ii) of this decision document has more details on particulate impacts. The emission limit in the permit is for total particulates and the method for monitoring particulates will capture smaller particles. Section 5.3.3 of this decision document has further details.
Modelling underestimates particulates because particulates from NOx and SOx are ignored. A study in Sweden showed 17-32% of background PM2.5 was from an incinerator.	This comment relates to secondary particles that are formed through reactions taking place in ambient air. They are long range pollutants and will not be an issue for local air quality. Emissions from the proposed incinerator will not have a significant impact upon this.
Concern over the impact at nearby Center Parcs site.	The Center Parcs site is ~ 3km from the Installation. We are satisfied that there will not be a significant impact at this location. The air quality impact assessment is summarised in section 5.2.
Action is needed to address air quality in air quality management areas (AQMAs) including those at Ampthill.	Any actions to address air quality issues at the AQMAs are outside the remit of this permit determination. We have however considered the impact from the Installation at the AQMAs. There are two AQMAs within 10 km of the Installation. Impacts from the Installation were shown to be insignificant at both.
Concern over the impact from PCBs.	The impact from PCBs was shown to be insignificant. Dioxin like PCBs were included in the dioxin health risk assessment which showed no significant impact.
The weather data used in the modelling is taken from too far away to be representative. Weather data from	We checked the weather data as part of our audit. This included sensitivity checks using more local weather data that we own. This

Stewartby brickworks should have been used for the modelling.	did not affect the conclusions of the assessment.
Air quality around the Peterborough incinerator has got worse due to the incinerator emissions.	We are not aware of any evidence to support this claim. We checked with Peterborough City Council and they have not carried out any ambient air quality monitoring around the incinerator pre/post operation.
Concern over the combined impact with the planned Millbrook Power Company Limited gas power station.	That site has not yet applied for planning permission. Our view is the Applicant should only consider planned significant emission sources, as part of the potential future increases in background and their cumulative impacts if planning permission has been granted. There are not enough details for the proposal to be considered at this stage. On this basis if Millbrook Power Company Limited apply for a permit before the incinerator is operational we will expect them to consider how emissions from the incinerator will affect background levels.
Concern was expressed that emission limits will be exceeded.	If emission limits are exceeded we will take appropriate action. We will carry out audits of the plant to check that the monitoring is being carried out appropriately.
Why is a 100 m stack needed if pollutant emissions are low risk?	Control measures will be used to minimise the amount of pollutants emitted. The stack will ensure that emitted pollutants are adequately dispersed to reduce the concentration of those pollutants by the time they reach the ground, to minimise the impacts.
Other developments in the area will lead to increased pollution levels. If background pollution levels increase then environmental Standards will be exceeded in future.	Given the level of the predicted impacts this is not likely to occur. In theory a very large increase in traffic or industry in the area could lead to an increase in the level of oxides of nitrogen. The local authority is responsible for local air quality due to traffic emissions. New developments will require planning permission where effects on local air quality would be considered in assessing the planning applications. If required we could review the permits of sites that we regulate in the area to check whether any additional controls would be required.
Has dispersion of pollutants been considered?	The Applicant's dispersion modelling was carried out in order to predict how pollutants will disperse and the resulting impacts from this.
Concern as to whether different weather conditions in the Woburn Sands area have been considered.	We audited the dispersion modelling. The audit included checking the weather data used by the Applicant including using our own weather data from Bedford. We were satisfied that the data used by the Applicant was appropriate.

Concern over higher dioxin emissions during start-up and shut-down periods.	For dioxins and furans, the principle 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. Elevated levels of dioxins at start up will therefore not significantly impact on exposure. A report by AEA for the Environment Agency showed that the mass of dioxins emitted during shutdown and start-up for a four day planned outage was similar to the emission which would have occurred during normal operation in the same period.
Concern over impacts at a new industrial park that is planned at Wooton.	This is proposed in a location north of Stewartby. The Applicant has reported maximum concentrations, these represent 'worst case' predictions and do not necessarily represent public exposure. However, the predicted PCs and PECs are not significant and do not risk exceeding the environmental standards for air. Impacts at Wooton will be less than the reported maximums which are already considered to be permissible and not cause any significant air quality pollution issues.
Emissions from Plymouth incinerator have caused highest ever recorded levels of nitrogen oxide in a residential area.	We do not accept this comment. Incinerators contribute relatively small amounts to the prevailing background levels.
Will the risk assessment cover the local area under different weather conditions?	Five years of weather conditions were used in the dispersion modelling assessment.
Both BAT and EU AQ directive limits allow limits that are too high compared to WHO levels.	We have assessed the air quality in line with recognised standards. This is set out in more detail in section 5.2.
The Environment Agency have admitted that 90% of PM1 and 35% of PM2.5 escape through filters installed in UK incinerators which means that UK incinerators are emitting between 40-120 times more particulates than those in Finland or Sweden.	We do not recognise this statement. Fabric filters are effective at abating particulate emissions. The impact of PM2.5 has been shown to be insignificant based on an emission at the ELV. The HPA (now PHE) position statement notes the small effects of incinerators on local concentration of particles. We are satisfied that fabric filters are BAT for abating particulate emissions. The emission limits set in the Permit are in line with those set in the IED.
Emissions will cause pollution from ozone and peroxyacetyl nitrates (PANs).	Ozone and PANs are produced by the action of sunlight on volatile organic compounds (VOCs) and oxides of nitrogen (NOx). Whilst the PC for NO_2 and VOCs have not been screened out as insignificant, it is considered that there is very little if any risk from the incinerator of an exceedance of an air quality standard. This has been considered in Section 5.2 of this document.

	The potential of substances to form ozone and other substances when reacting with sunlight is a factor considered when setting ambient air quality standards. Therefore it is not considered that any additional controls or conditions are required, beyond those already proposed to minimise emissions.
Concern over impacts from acid rain.	Acid rain can be caused by the emission of acidic gases from large combustion plants, such as large coal fired power stations that can emit larger amount of sulphur dioxide. For this Installation, acid gases will be abated by injection of lime into the exhaust gases. Wet deposition is a long range effect and we consider that the amount of acid gases emitted from the Installation will not be significant enough to contribute towards acid rain.
Where air quality is already above standards, no further increase in levels should be allowed.	Our policy is to not allow a plant to contribute significantly to an exceedance of an ES. The dispersion modelling showed that the impacts of pollutants at locations where the ES is exceeded (for that pollutant) are insignificant. This approach is in accordance with Defra's IED EPR Guidance on Part A installations.
Pollutants could mix together resulting in higher impacts due to cumulative (synergistic) impacts. Thousands of substances will be emitted.	We are satisfied that the Environmental Standards that we have used to assess impacts are protective of both human health and ecological receptors. The IED sets emission limits for the most significant pollutants that are emitted from this type of plant and we have made assessment of impacts for these pollutants. The PHE position statement supports the view that the plant will not have a significant impact on health.
The effect of wind on pollution should have been considered. The plant should not be located upwind of towns such as Bedford and Stewartby.	Wind direction has been considered. This has been taken into account in the dispersion modelling. The modelling predicts no significant impacts at the location of maximum predicted concentration. This means that any other offsite location will experience lesser impacts than the area which has been deemed acceptable. Further details are in section 5.2 of this decision document.
Concern over impacts on people using nearby footpaths.	The Applicant has reported maximum concentrations in the modelled grid, these represent 'worst case' predictions. The modelling predicts no significant impact at this maximum location. Other locations will have lower impacts. So we are satisfied that other locations such as footpaths are unlikely to experience any significant air quality pollution issues.
Peak impacts should have been considered	Peak impacts were considered. The

as well as annual averages.	Applicant predicted short term impacts as well as annual averages. The Applicant's short term results are shown in the second table in section 5.2.1 of this decision document.
The impact assessment is based on emissions at emission limit values. Concern that these could be exceeded.	The impact assessment has been based on the worst case scenario of the plant operating continually at the at the emission limits. In reality sites operate below this level to avoid breaches and to allow headroom before a breach occurs. The emission limit is the maximum permitted limit that we would allow the site to operate to. If emission limits are exceeded the plant will have to stop feeding waste. Any breeches would be subject to the Environment Agency's enforcement and sanctions statement. Further details of the way the dispersion modelling was carried out are in section 5.2 of this decision document.
Concern that emissions will be higher than normal during commissioning.	We have set pre-operational condition (PO4) for the Applicant to submit a commissioning plan. Part of this plan will be to set control limits for the commissioning phase to ensure the environment is protected.
Concern over the accuracy of dispersion modelling.	The uncertainties associated with dispersion models are accounted for within our decision. We took uncertainty into account when we audited the Applicant's dispersion modelling.
Concern that batteries and bulbs containing mercury will be incinerated.	The Permit does not allow waste batteries to be received. It is possible that batteries could be placed in household bins and burned if received at the incinerator under the municipal waste code. However they are likely to be small in number and will not affect emissions significantly.
The statement in the air quality assessment about it being a worst case assessment was challenged because higher altitude receptors were not considered.	The Applicant has reported maximum concentrations in the modelled grid and we are satisfied that this represents the worst case predictions. We have audited the Air Quality Modelling and agree with conclusions reached.
Receptors were not listed in the modelling report.	Receptors were listed in tables 5.1 and 5.2 of the modelling report. Human receptors were also shown on a map (figure 3 of the modelling report).
The modelling report refers to various figures that were not included in the report.	Several diagrams (figures) were present at the end of the dispersion modelling report.
The section on abnormal operation impacts is missing.	The abnormal operations impact assessment was contained within the dispersion modelling report.
Concern over reduced dispersion if the plant runs at a reduced throughput.	The dispersion modelling considered operating at below the design point. The

	Applicant concluded that reduced flow rate and exit velocity would be off-set by the reduced amount of pollutants emitted and that modelling continual operation at full capacity was the worst case. We audited the dispersion modelling and are satisfied that it does represent the worst case.
Nickel is at 294.25% of the Tolerable Daily Intake for children and the ingestion of cadmium and chromium from existing background sources exceeds the TDI for children. No further pollution should be allowed.	This is the figure given for intake of nickel including background levels. The intake from the Installation alone is lower at 0.36% at receptors. The impact assessment for metals including Ni, Cd and Cr is discussed in sections 5.2 and 5.2.3 of this document. Section 5.3 explains that metals are assessed against air quality standards (Environmental Standards) as these are protective for human health. We are satisfied that there will not be a significant impact from these metals.
All emissions should be captured.	Methods will be in place to minimise and abate emissions. These are discussed in section 6 of this document.
Concern over particulate impacts during plant breakdown.	Pressure will be monitored so that bag filter failure can be detected. The Applicant has proposed a multi compartment bag filter, this allows individual bags to be isolated in case of an individual failure. During unavoidable breakdown of the fabric filter system emissions will be allowed to exceed the ELV for short periods as set out in section 5.5. The emission will be limited to 150 mg/m^3 during these periods. Any emissions above that or for longer periods than allowed by the Permit will mean that the plant has to shut down.
Concern over emissions to air from burning radioactive materials.	The Permit will not allow radioactive material to be accepted as a specific waste. It is possible that smoke alarms (containing small radioactive sources) could be placed in household bins and received at the incinerator under the municipal waste code. However they are likely to be small in number and have a low level of radioactivity so there is little likelihood of any significant risk if they were burned. The site will also have radioactivity detectors (as referenced within the environmental statement) preventing such material entering the incinerator.
The European Environment Agency's 2016 report into Air Quality in Europe (EEA Report No28/2016) - waste incineration is a	We are satisfied that there will not be any significant impacts from this Installation from these pollutants as covered in section 5 of

key contributor of some of these key pollutants, such as Particulate Matter, Nitrogen Dioxide and toxic metals such as Cadmium, Nickel and Lead.	this decision document. The PHE report on health impacts from incinerators concludes that modern, well managed incinerators only make a small contribution to local concentrations of air pollutants.
Emissions will be higher than from a gas power station.	We have not compared emissions to gas combustion in our assessment of this Application. The Application is for an incineration plant with the primary purpose of waste disposal whereas a power station's primary purpose is to generate energy. Our assessment of BAT is set out in section 6 of this decision document
The pollution will be worse than from a landfill site.	The Application is for an incineration plant and we have assessed BAT for that sector. A comparison with landfill is not relevant for this environmental permitting assessment. Our assessment of BAT is set out in section 6 of this decision document
Concern that emission limits will not apply at start-up and shut-down.	The emissions limits set by IED chapter IV do not apply at start-up and shut-down. The combustion units will be fired on a support fuel (gas oil) during start up and shut down, 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. The impact at start-up, when emission limits do not apply, is not likely to be significant.
Concern over risk assessment for particulates based on mass. Although it is assessed that 99% of emissions could be filtered, it is the escaping 1% that are the actual harmful fine particles that will do the health damage.	The impact assessment is based on continual emissions at the ELV (which is the maximum amount that will be allowed to be released) and so this represents a worse case assessment. Section 5.3.3 of this decision document has further details on fine particles.
Concern over the insignificant criteria (<1%, <10%) that are set out in our guidance, and also the 70% PEC threshold	We are satisfied with the insignificance criteria as set out in section 5. This approach is well established and used throughout Environmental Permitting for all installations applying for permits to operate. The 70% PEC is a screening threshold set out in our guidance to decide whether further assessment such as detailed modelling is required.
Concern that AQ standards allow levels to be exceeded a certain number of times	This is the way the standards are set in law. For example the short term ES for NO_2 requires levels to be at 200 $\mu g/m^3$ or less for 99.79% of the hours in a year.
There are no treatment measures for NOx or particulates.	This is not correct. NOx will be abated using SNCR and fabric filters will be used to abate

	particulate matter.
A paper by zero waste Europe was quoted. Filter bag systems to collect particulate matter have been shown to be lacking at PM <2.5 '…baghouse filter collection efficiency was 95-99% for PM10s, 65-70% for PM2.5s, and only 5-30% for particles smaller than 2.5 microns, even before the filters become coated with lime and activated carbon"	This is slightly misleading as when the filters are coated with lime the removal efficiency actually increases due to the coating on the filter membrane providing more filtration. A report by AEA showed that emissions of PM10 and PM2.5 were well below the total particulate emission limit set in permits. The Applicant's assessment shows that PM2.5 impacts will be insignificant even when making the worst case assumption that all emitted particulates are PM2.5. Section 5.3.3 has further details including consideration of smaller 'nano' particles.
The original planning application stated that uncontrolled emissions would occur due events such as explosions from incineration of gas cylinders/aerosols and blockages of reagent feeds in the emission scrubbers.	The section referred to in the planning application recognises that there are situations that could cause limits to be exceeded. Measures will be in place to prevent these so far as is practicable. The Permit requires that waste feed must stop if emission limits are exceeded. Abnormal operation is allowed in which waste feed can continue for shorts periods due to unavoidable problems with the abatement plant. If emission limits are exceeded for other reasons then this would not be abnormal operation and waste feed to have to stop. This is discussed in section 5.5 of this decision document. The operator has waste acceptance procedures in place which should identify any unsuitable wastes before theses enter the incinerator.
Comments about health impacts	
General concern over health impacts. Plants elsewhere including in the USA have caused health issues.	Our view is the same as the PHEs in that modern incinerators will not have a significant effect on health.
Concern over a Greenpeace review of health studies of people living near to incinerators.	Our view on the Greenpeace review is set out in section 5.3 of this decision document.
The risk assessment is inadequate. A link to the BSEM report was provided to support this.	We do not agree that the risk assessment is inadequate. PHE reviewed the BSEM report and did not agree with the conclusions. The BSEM report is discussed in more detail in section 5.3 of this decision document.
EPA data shows that the Washington incinerator triggers asthma attacks. A Friends of the Earth document on health effects due to incinerator emissions was submitted. The document was written to help campaigners ensure that health issues are fully considered in any assessment of	PHE reviews research undertaken to examine the suggested links between emissions from municipal waste incinerators and effects on health. PHE's position is "While it is not possible to rule out adverse health effects from modern, well regulated municipal waste incinerators with complete certainty, any potential

incineration. Concern over Health Impacts, a report by the National Research Council from 2000 was cited. Several reports (by doctors and health professionals) were cited that expressed concern over the health impact from incinerators.	damage to the health of those living close-by is likely to be very small, if detectable. This view is based on detailed assessments of the effects of air pollutants on health and on the fact that modern and well managed municipal waste incinerators make only a very small contribution to local concentrations of air pollutants." PHE is not aware of any evidence that requires a change in their position statement. Our view is that there will not be a significant effect on health. This is in line with Public Health England's position statement as discussed in section 5.3 of this decision document.
An Italian study from 2014 claimed to show health impacts around incineration plants.	PHE's position is "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. This view is based on detailed assessments of the effects of air pollutants on health and on the fact that modern and well managed municipal waste incinerators make only a very small contribution to local concentrations of air pollutants." PHE reviews research undertaken to examine the suggested links between emissions from municipal waste incinerators and effects on health. As such they would have been aware of this paper although we did also forward a copy of it to them. PHE also stated on 25/05/17 that they are not aware of any evidence that requires a change in their position statement, this is after the date the paper was published. Our view is that there will not be a significant effect on health. This is in line with Public Health England's position statement as discussed in section 5.3 of this decision document.
Concern that the plant will cause birth defects.	The Environment Agency takes advice from PHE on the health implications of incinerators generally and specifically on each application for a permit. In January 2012 they confirmed they would be undertaking a study to look for evidence of any link between municipal waste incinerators and health outcomes including low birth weight, still births and infant deaths. The results of the health study have not been released yet. However the first

	part of the study showing the levels of pollutants in the air around incineration plants due to emissions from the incinerator has been published. The report shows that the levels are low. Their current position that modern, well run municipal waste incinerators are not a significant risk to public health remains valid. The study has been undertaken to extend the evidence base and provide the public with further information; as such it does not justify a delay in our decision making on permit applications.
Concern that the HPA report admits that the HPA do not assess illness or death around incinerators and does not consider nano-particles	The HPA (now PHE) report does consider studies of health risks in the areas around incineration plants. The report also considers nano-particles.
Concern over health impacts in particular on children, elderly and people with existing health conditions. The impacts on children was not considered.	We are satisfied that there will not be a significant impact on health. Section 5.3 of this decision document has more details. The standards that we have used to assess against are set to protect all members of the public including children.
There has been an increase in chest infections around the Eastcroft plant in Nottingham.	We are not aware of any studies that demonstrates that the Eastcroft incinerator is linked to an increase in chest infections.
Concern over health impacts over unidentified emissions.	IED chapter IV sets emission limits for the most significant pollutants. The PHE position statement supports the view that the plant will not have a significant impact on health.
There is a gaming fish farm within 8km located in Haynes	We checked on potential impacts at this fish farm. Based on the distance and surface area of the water body the uptake of deposited pollutants such as dioxin and furans, dioxin-like PCBs and metals by fish in the fishery is considered to be very low. To confirm this we have conducted checks based on our check modelling and sensitivity analysis. We conservatively assumed that all fish consumed by individuals would be sourced from this fishery, a highly unlikely assumption. Even based on these conservative assumptions the TDI would not be exceeded.
Many residents keep chickens and consume the eggs. Others grow fruit and or vegetables in their gardens or in allotments.	Ingestion of locally grown food was taken into account in the HHRA. The HHRA is very much a worst case assessment with based on the dose of dioxins and furans that would be received

	by local receptors if all 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.
The assumptions used in the HHRA were challenged including the inhalation rates and breast milk composition.	We audited the HHRA and we are satisfied with the assumptions that were used. The HHRA is very much a worst case assessment with based on the dose of dioxins and furans that would be received by local receptors if all 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.
The HHRA should have considered a nearby uninhabited farm, Church End Lower School outdoor pool and fish consumption from Stewartby Lake.	Our audit of the HHRA was based on the point of maximum impact in the whole model domain. Our checks indicated insignificant dioxin and furan and dioxin-like PCB PC intakes, with the highly conservative exposure and food consumption assumptions. Omission of the uninhabited farm will therefore not change these conclusions. The intake of pollutants through dermal absorption is insignificant compared to other pathways such as inhalation and consumption of food stuffs. The risk of exposure via a pool is therefore not considered relevant for the HHRA. There are coarse fishing and angling lakes near the Installation however coarse fish are not typically consumed. Stewartby Lake is therefore not relevant for the HHRA because the fish would not form part of a typical individual's diet.
Concern over health impacts from metals including intake via the food chain.	The emission of metals has been considered in section 5 where emission to air have been compared to the ES. The ESs are protective of human health and we are satisfied that there will not be a significant impact.
Local doctors facilities are already under stress and cannot cope with additional health problems.	The provision of local medical facilities is not something we can consider through environmental permitting. However we are satisfied that the Installation will not have a significant effect on health.
There should be an assessment of the public health impact by means of expert toxic pathological input.	We consulted PHE and the director of public health. Comments received have been taken into account and are summarised in Annex 4, part 1. We have assessed the HHRA and we are satisfied that there will not be a significant risk to human health.
In 1999 the environment minister expressed concern over health impacts from incinerators and that steps to eliminate the emissions should be taken.	Measures to minimise emissions are included in the Application and we are happy that those measures are BAT. We are also satisfied that there will not be a significant impact on health.

The cancer risk will be higher than acceptable. The risk assessment for the Runcorn Incinerator was cited to back up this claim.	In the Runcorn application the HHRA included cancer risk estimates. The US-EPA cancer risk methodology that was used is not formally used in the UK. Here the World Health Organisation (WHO) procedure is followed in which a threshold dose is defined below which there is not considered to be any measurable effect. We assess against the Committee of Toxicity tolerable daily intake of 2 pg WHO-TEQ/kg bw per day. Further details are in section 5.3 of this decision document.
The concentration of contaminants in environmental samples and food should be measured directly because modelling has too many assumptions and errors.	The HHRA uses highly conservative assumptions and is likely to represent very much a worst case assessment. Sampling of local foods is not required and would be very unlikely to be of any benefit given the very small contribution of dioxins from the Installation to the prevailing background levels.
There is no safe level for dioxins. They have higher toxicity at low levels.	As set out in section 5.3, we assessed dioxins against the COT tolerable daily intake (TDI). The TDI is the amount of a substance that can be ingested daily over a lifetime without appreciable health risk.
Concern that the HPA report about health impacts contains a few unknowns.	There are some unknowns identified in the report such as the mechanisms for some health effects. However the conclusions are clear: "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".
There is a correlation between the air pollution and the high rate of infant mortality around the Lakeside and Sheffield Incinerators. There has been a large spike of birth defects around the Slough incinerator	We are not aware of any proven evidence that demonstrates a link between infant mortality or birth defects due with emissions from these incineration plants.
Emissions from the Installation could cause mental illness.	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, including mental health.
Between 50% and 80% of the dioxin pollution of the planet has been caused by the incineration of waste.	In a 2004 report DEFRA estimated that <1% of the UK emissions of dioxins come from incineration of municipal waste.
Comments about noise impacts	
Marston Park was not included in the noise impact assessment.	Impacts were predicted at a location in Marston Moretaine which is on the edge of the Marston Park development.
Other housing estates (such as Hansons	Noise impacts were predicted at Pillinge

reach in Stewartby) should have been considered as a receptor for noise.	Farm which is the most impacted receptor. Noise levels were also predicted at receptors in Stewartby that are closer than Hansons Reach. Impacts at Hansons reach will be lower.
Concern about noise impacts during the day, night and weekends.	These time periods were included in the Applicant's assessment. Section 6.5.5 of this decision document has further details.
The plants in Plymouth and Runcorn and Crymlyn Burrows have caused noise issues.	Based on the noise impact assessment we are satisfied that there will not be a significant impact from noise. If noise issues were to occur we would take action to ensure measures were put in place to rectify this. Condition 3.4 of the permit will secure this control. The noise problems at Plymouth and Runcorn were resolved as follows: There was an issue with noise at Plymouth due to a particular frequency of a fan which has now been resolved. At Runcorn there was a noise issue due to a faulty safety valve during commissioning, this was quickly rectified. The Crymlyn Burrows incinerator no longer operates.
A noise assessment using the out of date assessment BS 4142:1997 is proposed.	An appropriate noise assessment was provided in the Application. This comment refers to a statement made by the Applicant about carrying out another assessment once the plant is operating. We have required the Operator to carry out a noise assessment to verify the noise assessment carried out for the Application (by use of operational noise data). This is set as improvement condition IC8 and specifies that BS4142:2014 shall be used.
How will noise be controlled?	Noise control measures were set out in the Application. The Permit will control noise through conditions 3.4.1 and 3.4.2. We are satisfied that noise will not be an issue, however if noise issues do occur then we can require measures to be implemented including a noise management plan through condition 3.4.2.
Concern over noise from the IBA plant.	Noise from the IBA plant was included in the noise impact assessment. The Permit will control noise through conditions 3.4.1 and 3.4.2.

Comments about impacts at ecological sites	
There are newts present in the area. There are various types of lichen in the area that could be damaged by emissions.	We are satisfied that there will not be a significant impact on species in the nearby area including lichen. Sections 5.4.2 and 5.4.3 have further details.
Comments about impacts on water courses	
Concern over impacts on conservation areas that are linked to Stewartby Lake.	The only emissions will be of clean surface water run-off to an attenuation pond. The Permit specifies that this will be uncontaminated and free from visible oil and grease. The attenuation pond will drain to the nearby restoration scheme pond (LLRS). The LLRS is part of the wider Rookery Pit drainage system and is not part of the Installation. The LLRS will overflow to Stewartby Lake. So there will be no impact on the lake.
The current Rookery South discharge consent specifies that the discharge must not contain any poisonous, noxious or polluting matter, or solid matter greater than 40mg/l – can this be complied with?	The only discharge from the Installation will be of uncontaminated surface water run-off.
Emissions from the stack will pollute water bodies.	It is feasible that if a plant had very high emissions from a stack such as a very large quantity of dust or acid gases than it could be deposited in lakes. However emissions from the stack of this Installation will be sufficiently small so that they will not have the potential to pollute water bodies
Concern about impacts on Stewartby Watersports Club located at Stewartby Lake.	The only emissions will be of uncontaminated surface water run-off to an attenuation pond and then to the nearby restoration scheme pond (LLRS). The LLRS is part of the wider Rookery Pit drainage system and is not part of the Installation. The LLRS will overflow to Stewartby Lake. We are satisfied that there is unlikely to be an impact on any watercourses.
Comments about other impacts	
Concern about mud being tracked from the site onto nearby roads.	The site will not be muddy. Surfacing will consist of concrete or tarmac hardstanding. A wheel wash will be used to clean vehicles leaving the IBA area.
The surrounding area is an area of outstanding natural beauty (AONB).	The nearest AONB is the Chilterns which is ~ 10 km away. The Installation will not impact on any AONB.
Concern about odour impacts.	Odour impacts will not be significant. Control measures are summarised in section 6.5.4 of this decision document.
Concern about impacts from prolonged storage of waste.	Odour can be an issue at sites where waste is stored for long periods However this is not likely to happen at this Installation where

	waste will only be stored for short periods of time before being burned. In the event of an extended shut-down there will be provision to divert waste away from the Installation.
Concern over pollutants leaching into the groundwater.	Measures will be in place to prevent emissions to groundwater. These are summarised in section 6.5.3 of this decision document.
There are odour issues around the plants in Buckingham, Heathrow, Runcorn, Plymouth, Birmingham and Crymlyn Burrows.	There are two incinerators near to Heathrow and our experience is that odour emissions are not an issue. The Greatmoor plant is located in Buckinghamshire. We have received no odour complaints since commissioning of the plant. The plant in Plymouth is a single line plant so during periods of shut down air from the tipping hall is extracted through a carbon filter. The filter was not the right size to cope and there have been some odour issues that have now being rectified. There was also an issue with some extraction trunking that was rectified. At Runcorn some there were some issues with odour during commissioning due to there being insufficient extraction air at that point. Some odour issues during operation were resolved by changes to ventilation louvres. We assume the reference to Birmingham is the Tyseley plant. We are not aware of odour issues at this plant. The Crymlyn Burrows plant did have odour issues that came from a waste processing hall that carried out separation and shredding. No odour was attributed to the incineration operation. The incinerator no longer operates but the waste processing plant does, producing RDF with no odour issues. The Rookery Pit plant will have three lines and as such odour control through extraction of air through the furnace will be maintained during shut-down of individual lines. We are satisfied that there will not be a significant impact from odour.
Concern that there is no odour management plan.	Odour management plans (OMPs) are required for the higher risk odour activities but are not mandatory for incineration plants that have a lower odour risk. Our view is that odour is not likely to be an issue for this

	Installation and that an OMP is not required. In the unlikely event that odour issues do occur, permit condition 3.3.2 will require the provision of an odour management plan if we require it.
Concern that waste will be delivered in open vehicles.	The Application states that waste will be delivered in covered vehicles or containers. Waste transportation is subject to duty of care regulations.
Concern that there is no pest management plan.	We don't believe that pests will be an issue for this Installation. However Permit condition 3.6.2 allows us to request a pest management plan should it be required.
Concern over odour due to burning plastics.	Large amounts of plastics will not be burned. Odorous compounds will be destroyed in the furnace.
Concern over how water run-off from the ash plant and from the wheel wash will be contained.	Water run-off will be contained in the IBA lagoon. Further details are in section 4.2.2 of this decision document.
Lights from traffic along the access road could dazzle train drivers.	The access road provides access to the wider development site and so does not form part of the Installation. In any event we cannot see that this would be a significant issue.
Concern over the cost of damage to the environment. For an incinerator burning 600,000 tonnes of waste annually, damage costs, even using the corrected Customs & Excise figures, would be £1.9 million per annum. Using the CAFÉ figures, damage costs would be £9 million per annum.	In general terms the environmental damage costs would be relevant to the formulation of strategic decisions as a way of approximating impacts. They can also be relevant to comparing the costs of different technologies in terms of BAT assessment. However, they are not a replacement for a detailed assessment of environmental impact based on detailed air quality modelling. We have based our decision on such an assessment and are satisfied that there will not a significant environmental impact, as set out in section 5 of this decision document.
The risk assessment not good enough – unrealistic to say 'not significant' for each risk	We are satisfied that the Applicant has undertaken appropriate risk assessments to demonstrate acceptable impacts, and justified the use of BAT to prevent and where that is not practicable to minimise emissions.
Concern over fugitive emissions and how they can be vented back to vehicles without spillage.	This refers to displaced air when bulk tanks are filled from a tanker. The Application states that for liquid bulk chemicals displaced air will be vented back to the delivery vehicle. For activated carbon and lime it will be vented via a filter. These methods are common practice for bulk chemical transfer.
There will be impacts on listed buildings.	The only pathway for damage would be acid rain caused by acid gas emissions then affecting stonework on buildings. We have considered impacts of acid gases and the impacts were shown to be

	insignificant. We are satisfied that impacts from this Installation will not contribute towards the decay of listed buildings.
Comments about the Applicant	
There have been odour issues at other sites operated by companies within the wider Covanta structure.	We are satisfied that odour will not be a significant issue at this Installation due to the control measures proposed. Section 6.5.3 of this decision document has further details.
It was reported that Covanta companies have burned hazardous wastes, including human foetuses and remains, at plants in the USA. Concern that this will happen at this Installation.	The waste types that are permitted to be received are set out in table S2.2 of the Permit. The Operator will not be able to receive other wastes.
The environmental permit application document details that Covanta failed to meet an improvement condition in the last 5 years.	We could not find reference to this specific case within the Application. We have set improvement conditions in the Permit. We will ensure that they are completed as required. If the Operator fails to comply with any conditions within the Permit (including improvement conditions) then this will be subject to the Environment Agency's enforcement and sanctions policy.
It is stated that the EMA will be certified to ISO 14001:2004, but the latest version is ISO 14001: 2015.	The Applicant confirmed that the EMS would be certified to the current version of the ISO 14001 standard.
The EMS should be certified to ISO 14001 within 6 months rather than the 12 that is proposed.	The Applicant will be required to have a management system that meets the requirements of our guidance before they can start to operate the plant, as required by pre-operational condition PO 1. It is not mandatory to have the management system certified to ISO 140001, but the Applicant has stated that they will do this. This can only be done once the management system is in place and is being used. We consider that 12 months is a reasonable timeframe to achieve this.
Comments about the location	
Concern that the plant will be located too close to houses. Incinerators are not usually built in towns because they are not safe.	Location is primarily a land use planning issue. We have a legal duty to determine any application made to us for an environmental permit. Our role is to determine whether appropriate measures are used to minimise emissions and whether any impacts on the environment and health are acceptable. We have considered the location of receptors in making our decision. It is not correct to state that incinerators are not usually built within towns. The Environment Agency regulates urban

	incinerators including plants in Nottingham and Sheffield.
Comments about monitoring	
Concern that some pollutants will not be continuously monitored. The dioxin limit could be exceeded between measurements. Continuous dioxin monitoring would show higher emissions that periodic monitoring.	The Permit requires continuous monitoring for emissions to air of particulates, oxides of nitrogen, sulphur dioxide, carbon monoxide, total organic carbon, hydrogen chloride and ammonia. Others substances are required to be monitored quarterly or bi-annually. These requirements are in line with the IED and we consider these measures to be appropriate. The prevention and minimisation of dioxins and furans is achieved through injection of activated carbon, optimisation of combustion control, avoidance of de novo synthesis and the effective removal of particulate matter. The plant has to shut down if abatement is not operating outside of abnormal operation. The Permit also requires continuous monitoring of several process variables (e.g. combustion temperature) to ensure that the incinerator is running optimally and minimising emissions. We are satisfied that the monitoring requirements in the Permit are appropriate.
Concern expressed about who will carry out and check the emissions monitoring.	The Operator will monitor emissions from the stack. The monitoring will be carried out in line with recognised standards (including MCERTS) as set out in the Permit. We will carry our regular audits of the monitoring. If any limits are not met, we will investigate these and take appropriate action in accordance with our enforcement and sanctions policy.
Concern that monitoring and enforcement is not sufficient and that it is not transparent.	Our view is that the monitoring will be sufficient to ensure the plant operates in line with the permit. We will check and audit the monitoring. If enforcement action is required then we will take appropriate steps in accordance with the Environment Agency's enforcement and sanctions policy. Monitoring results will be placed on the public register
Concern that monitoring results could be altered. A comparison to car emissions testing was made.	The Operator's monitoring will have either MCERTS certification or MCERTS accreditation as appropriate. This still applies when carried out by external assessors. 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 put this right
Who will monitor air quality?	The Permit does not require the Operator to carry out ambient air quality monitoring. Ambient air monitoring around operating incinerators is not a reliable method of establishing the impact. Our preferred approach is to use air dispersion modelling to predict the impact based on the highest allowed emissions (emission limit values) and then require monitoring to ensure those limits are not exceeded. We have audited the modelling and we are satisfied that it is suitable for assessing the impact from the Installation. The local authority carry out air quality monitoring in the local area.
Metal species should be monitored as well as metals.	The emission limits and monitoring set in the Permit is for metals and their compounds.
There is a contradiction between the application form and supporting documents as to whether continuous monitors will be used.	The application forms do not contradict the supporting documents. The Permit requires continuous monitoring for emissions to air of particulates, oxides of nitrogen, sulphur dioxide, carbon monoxide, total organic carbon, hydrogen chloride and ammonia. Other substances will be monitored non-continuously at set periods.
The CEMS calibration report should be done quicker than the proposed 12 months.	This needs to be done based on a period of monitoring data. The improvement condition we have set (IC 7) requires an initial calibration report to be submitted within 3 months from the completion of plant commissioning.
Periodic monitoring should be carried out every two weeks. Frequent reports should be submitted and frequency should only be reduced after two years of results.	We are satisfied that the monitoring frequency we have set in the Permit is appropriate and is in line the IED requirements.
Comments about energy recovery	
Difference in electrical output between planning application and EPR application.	We have assessed the Application documents that have been submitted to us. We are satisfied that the proposed energy recovery is BAT as set out in section 4.3.7 of this decision document.
Concern that CHP that was proposed in the planning application will not go ahead.	The planning application and this environmental permitting Application are separate processes. We have assessed the energy efficiency measures and recovery measures that were submitted in the Application. This is summarised in section 4.3.7 of this decision document.
The EU Cogeneration Directive [European Parliament 2004] requires that energy from waste plants that generate more than 25	The directive states that plant can be considered high efficiency co-generation if the overall efficiency is >70%, however it

megawatts must have an overall efficiency of at least 70%.	does not state that such plants must achieve this. We are satisfied that as much energy as practicable is being recovered. Section 4.3.7 of this decision document has further details.
The application states that facility will be designed to export 52.5 MWe but the non-technical summary states 60 MWe.	This variance relates to the difference between electricity generated and electricity exported. Although 60 MWe will be generated, a proportion of this will be used within the Installation (7.5 MWe) meaning that the remaining 52.5 MWe will be available for export. The Sankey diagram in the Application shows this. The Applicant subsequently revised the figures to show that 65 MW of electricity would be generated with 60 MW of electricity exported.
Combustion emissions should be used to drive turbines to create more energy.	Combustion emissions will be used to generate steam. The steam will then be used to drive a steam turbine to generate electricity.
Comments about BAT control measures	
A question was asked about the fate of combustion products and how they will be captured.	Incinerating waste produces pollutants that will be emitted to air via the stack. Measures will be in place to prevent and where that is not practicable to minimise these emissions as set out in section 6 of this decision document.
Concern that the filtration system will not be 100% effective in controlling particulate and metal emissions.	No abatement system will be 100% effective. Fabric filtration systems are very effective at removing particulate matter including metal particles to well below the IED emission limit values.
Lack of control over waste received will lead to a lack of control over emissions.	Waste acceptance procedures will be used so that unsuitable wastes are not received. In addition, emission limit values set in the Permit will have to be complied with at all times.
The plant will be controlled from many miles away.	Nothing in the application suggests that the Installation will be controlled from a remote location. Operating techniques will require people on-site to control operations.
Carbon capture and storage should be used.	We require combustion plants that generate 300 MW or more electricity to be carbon capture ready. This Installation is well below this level and carbon capture is not appropriate at this scale.
Concern that manual overrides will be used to bypass furnace temperature interlocks.	The Permit requires that waste feed stops if the furnace temperature falls below 850°C.
Concern that emissions will be able to by-pass the abatement equipment.	The Application states that there will not be an abatement by-pass.
Stack height should be determined based on impacts not on airport requirements.	This may have been a factor for the planning application. We have assessed the environmental impacts of the proposed stack height and

	are satisfied that there will not be any significant impacts.
It is not clear as to whether the stack height of 105 m is from ground level.	The stack will be 105 m from the base on which the installation which sits below the surrounding ground level.
Concern that the decision on whether to use flue gas recirculation (FGR) has not been made.	Plants with and without FGR can both be BAT. Section 6.2.2 of this decision document explains this is some more detail. The emission limits in the Permit will have to be complied with whether FGR is used or not.
Section 2.6.3 discusses options for acid gas abatement but does not state which will be used.	The BAT assessment document makes it clear that a dry lime system will be used.
A stack height assessment has not been carried out.	We are satisfied that the proposed stack height is BAT: • NO_2 is often used to assess stack height. The PC at the point of maximum impacts is predicted to be 2.17% of the ES. The PC at the most impacted receptor is predicted to be 1.68% of the ES which is just above the level that would screen out as insignificant. • The Applicant proposes a 105 m high stack. This height is at the top of the range of stack height that we would expect for a plant of this size.
Concern that the plant will not be able to meet the sulphur dioxide limit.	The measures proposed in the Application mean that the plant will be fully capable of meeting the sulphur dioxide emission limit.
Concern that there are not enough measures to control emissions. Measures to eliminate emissions should be used.	It is not possible to completely eliminate emissions. What we have done is to check that the Applicant is using BAT to prevent and where that is not practicable minimise emissions, and we are satisfied that they are. This is set out in more detail in section 6 of this decision document.
Wheel washers are not effective.	Wheel washers are often used at landfill sites where the potential for material (mud) to be tracked off-site is higher than at the proposed Installation. A wheel wash for the Installation is proposed for the bottom ash treatment and storage area. We are satisfied that this is a sensible measure to have in place to reduce the risk as material being tracked off-site and that it will be capable of being effective.
The Application does not consider all available options.	The Application contained a BAT appraisal of available options. This is discussed in section 6 of this decision document. We are satisfied with the appraisal that has been undertaken.
Who will ensure that the doors are kept closed?	Self-closing doors will be installed on vehicle entry/exit points for the tipping hall that will automatically close when waste deliveries are not being received.
Best Practicable Environmental Option	It is important to draw a distinction between

(BPEO) – this method establishes the need to conduct such an assessment covering each location which manages the waste.	Sustainability Appraisal and Best Practicable Environmental Option (BPEO) and BAT. Sustainability Appraisal forms part of the decision making process which should be applied so as to shape planning strategies that support the Government's planning objectives for waste management. Thus Sustainability Appraisal is an important part of plan formation and planning decisions are made by reference to planning policies. BPEO forms a similar function in Wales. BAT assessment is a technical appraisal that the proposed technique is the best available for the protection of the environment as a whole.
Comments about existing pollution in the area	
The land and groundwater is already contaminated.	We are satisfied that the level of any existing land or groundwater contamination was established in the Applicant's site condition report. The measures proposed by the Applicant are appropriate to prevent any emissions reaching ground or groundwater. Further details are in section 6.5.3 of this decision document.
Comments about regulation	
What will happen if emissions are exceeded and how long can they be exceeded for?	The Permit requires that waste feed must stop if emission limits are exceeded. Abnormal operation is allowed in which waste feed can continue for shorts periods due to unavoidable problems with the abatement plant. This is discussed in section 5.5 of this decision document. Any non-compliance with the Permit will be considered in terms of the Environment Agency's enforcement and sanctions policy.
Dioxin breaches are re-tested resulting in under reporting of breaches.	Any dioxin emissions above the ELV will be recorded as a breach and a non-compliance with the Permit. If a breach does occur, re-testing along with assessing other operational data will be carried out in order to establish the cause of the breach and enable causes to be rectified.
What will happen if the plant causes pollution of the local area or the site?	The plant is highly unlikely to cause significant pollution. If it did occur we would take action in line with our enforcement and sanctions statement. That can be found on the gov.uk website. On Permit surrender the Operator will be required to return the site to the same condition as at Permit issue.

It was claimed that UK incinerators have a poor environmental record. It was claimed that in 2001 that there were 156 breaches of emission levels in Sheffield and 90 in Coventry. A report by Greenpeace showed many emission limit breaches at plants during 1999 and 2000.	These reports date back to 17 or 18 years ago. Current performance of incineration pants that we regulate in England is good and leads us to the conclusion that the proposed Installation will be able to comply with the emission limits.
Are standards in the UK tighter than those in the USA?	It would be unfair to directly compare regulation of this sector in the UK to the USA without looking at regulation as a whole in the USA. In addition the two countries have different set-up in terms of location of plants, population density and location of receptors that could affect the way sites are regulated.
How will complaints be dealt with?	If we receive a complaint we will investigate the complaint and take action if required.
The Environment Agency does not have the resources to ensure Covanta complies with the permit.	We will regulate the site to ensure that Permit conditions are complied with and take action if they are not.
Concern as to whether the plant will be updated as legislation changes in the future Reference was made to possible changes due to leaving the European Union.	If Permit changes are required by future legislation then we have the ability to vary the Permit to reflect this.
Concern that the plant could expand in the future.	If the Operator wants to expand in the future they would have to apply for a Permit variation. We would assess any such variation to make sure that it does not have a significant effect on the environment. We will consult on any variations that are classed as 'substantial'.
Comments about accident risk	
Methane emissions from nearby landfill sites will create an accident risk.	Stewartby landfill site is located ~ 1.5 km to the north east of the Installation. Landfill gas (methane) can migrate through the ground. Any migration will be controlled thorough the landfill permit. At this distance it is not considered to be a risk.
Concern that Marston Middle School (situated on The Crescent) is not included in the fire prevention plan as a receptor.	Our fire prevention plan guidance refers to plans being provided that show receptors within 1 km of the site boundary. The Applicant has provided such a plan. Marston Middle School is > 1km from the site.
Concern over ash spillages reaching nearby lakes.	APC residues will be stored in a sealed silo. IBA storage and treatment will be in an area with sealed drainage. So the risk of spills reaching nearby lakes is insignificant.
Disaster planning scenarios and their potential environmental and public health impact should be considered	The Applicant provided an accident risk assessment in the Application. An accident management plan will also form part of their environmental management system. COMAH legislation covers sites that pose the highest accident risks and these sites

	would have major accident plans. This Installation is not subject to COMAH regulations due to not meeting any of the COMAH thresholds.
Comments about residues	
Ash will be contaminated with heavy metals and dioxins.	APC residues will contain heavy metals and dioxins and also unreacted lime APC residues are hazardous waste and will be disposed of appropriately as hazardous waste. Bottom ash will need to be sampled to establish its hazard status and any material found to be hazardous will then need to be handled as hazardous waste. Pre-operational condition PO3 requires that an ash sampling protocol is agreed with us.
25% of waste will be left as ash, so it will not be very effective at landfill diversion.	Incineration is designed to reduce the amount of waste going to landfill and recover energy from the waste. The Installation will achieve both of these aims. The Application is based on the incineration of 585,000 tonnes of waste per year. It states that 150,000 tonnes of IBA and 25,000 tonnes of APC residues will be produced. IBA is likely to be recovered as aggregate but APC residues are likely to be landfilled. APC residues make up ~4% of the mass of waste input.
Concern over impacts if the ash dust suppression system fails.	The main control will be that all storage and processing will be in a fully enclosed building. The dust management plan states that mobile water trucks will be used if the suppression system fails.
A document written by Buckfastleigh Community Forum on bottom ash was submitted. The main points of the report are: • Misleading and erroneous claims that “bottom ash is inert” • Conflict between political and commercial expediency and the precautionary principle • Sampling and testing protocols of bottom ash • Hazardous status of bottom ash and ecotoxicity • Hazardous properties and exploding aggregate • Bottom ash leachate and risks of re-use • Heterogeneity and unnecessary pollution of waste streams; and The dangers associated with intermediate storage of bottom ash	Bottom ash is not classed as inert waste, but normally as non-hazardous waste. A sampling protocol will be developed to ensure that the sampling and hazardous testing is done properly. Pre-operational condition (PO3) requires that the protocol is in place and approved. The Permit does not control how IBA is used once it leaves the site although transport and subsequent use will be covered by duty of care legislation. IBA is used for a variety of purposes (for example as an aggregate) without incident. Bottom ash will be stored at the Installation in an area with sealed drainage. Dust emissions will be controlled through a dust management plan. Further details are in section 6.5.3 of this decision document.

The IBA maturation area is described as being designed for ~ 10,000 tonnes. It should be designed for the maximum amount.	The maturation area will be designed for the maximum amount of IBA which is 12,000 tonnes.
The proposal for the "shovel driver" to conduct inspection of the IBA, during transfer, is unacceptable as this relies on the judgement of an individual and consistency of judgement cannot be guaranteed. Sampling of the IBA must be carried out prior to transfer to the IBA processing building to ensure it is acceptable for use in processing and will not create a hazardous waste when processed.	This part of the Application describes a check that the driver will do as the IBA is transferred from the storage area to the processing area. It is described as an additional check. Sampling and testing for hazardous status will be carried out prior to the material leaving the site. There is no requirement to test before this point. However measures will be in place to prevent emissions as set out in the dust management plan and section 6.5.3 of this decision document.
Six months storage of ash is too long.	The Application states that there will be capacity to store up to 6 months worth of processed ash (IBAA). The quantities of IBAA being stored on site will be influenced by the market demand for IBAA material. IBAA will typically be held in the storage area for one month prior to shipment to the construction industry We are satisfied that a maximum of 6 months storage is acceptable and that the proposed measures will control emissions.
Dust monitoring using sticky discs is not sufficient. Trigger levels should be set and actions specified if levels breached.	The primary control will be storage and processing in a fully enclosed building. Monitoring is provided as an additional control. Sticky discs are a recognised method of monitoring dust and in included in our guidance M17 (monitoring of particulate matter in ambient air around waste facilities). Trigger levels were provided in a dust management plan based on guidelines in our guidance note M17. The trigger levels are the levels at which further action will be taken to control emissions. The dust management plan and trigger levels form part of the Permit requirements. We are satisfied that the measures proposed by the Applicant, along with the requirements of PO10 will prevent any significant dust emissions.
National policy states that the 'reception, storage and handling of residues from EfW generating stations to be carried out within enclosed building'.	This appears to be a quote from a DECC report titled 'National Policy Statement for Renewable Energy Infrastructure'. The full quote is: *'In addition to the mitigation measures set out in EN-1, reception, storage and handling of waste and residues should be carried out within defined areas,*

	for example bunkers or silos, within enclosed buildings at EfW generating stations'. APC residues will be stored in sealed silos. IBA will be stored and processing in fully enclosed buildings and controlled through a dust management plan, further details are in section 6.5.3 of this decision document. We consider that this meets the aims of the statement
A report was quoted showing that lead in ash from moving grate plants is 250 times higher than ash from fluidised bed plants.	This report differs to the BREF and the first draft of the revised BREF that states that a greater proportion of metals stay in the bottom ash on fluidised bed plants. The Applicant considered fluidised bed in their BAT assessment. We are satisfied that fluidised bed would not be BAT for the reasons set out in section 6 of this decision document.
An incinerator in Berkshire was rejected due to toxic ash.	We have not refused an application for an incinerator in Berkshire. West Berkshire refused a planning application for a plant in Chieveley in 2012. We cannot comment on the decisions of another authority under another regime
Comments about the consultation	
There should have been a leaflet drop to inform people about the consultation. Consultation should have taken place over a larger area.	The way we have consulted in set out in section 2.2 of this decision document. We are satisfied that we took appropriate steps to inform people about the Application. This was borne out by the large number of responses we received.
A summary document written in plain English should have been available. The health assessment should have been written so that it could be easily understood by the public.	The Application documents included a non-technical summary. However all of the Application documents were written by the Applicant and the style that they were written in was a choice for them. We have not provided our own summary of these documents because it is important that we consult on the Applicant's proposal rather than our own summary of it. In this decision document we have tried to explain our decision as accurately, comprehensively and plainly as possible.
Concern that the consultation was only available on-line.	The consultation was not just available on line. The steps we took to inform people about the Application are set out in section 2 of this decision document.
Many comments that the on-line consultation was easy to use, but a few comments that it was hard to use.	We have tried to make the on-line tool as user friendly as we could. We will take all feedback into account to see whether there are any improvements that

	we could make in the future.
There was no information on what the Environment Agency can consider in the application assessment process.	The adverts or the web page did not contain a document to explain what we could and could not consider. This is something that we may consider doing in the future.
The Application documents were too large to read in the time provided for the consultation.	Our consultation period is usually 20 working days (4 calendar weeks), but for this Application we extended it to 30 working days (6 calendar weeks). Our view is that the consultation period was appropriate for this Application.
Children should have been consulted.	We consider that we took appropriate steps to inform people about the Application.
The consultation is a sham, it is a done deal. Local views are being ignored, there should be a referendum.	The consultation is not a sham. We have considered the comments that have been submitted as set out in Annex 4 of this decision document. We have to assess the Application within the law, which does not include provision to decide based on a referendum.
The consultation on environmental grounds alone is too narrow.	We have assessed the Application within the legal framework. This is an application for an environmental permit
Other issues	
Permitting the installation does not fit with the Environment Agency's aims to create better places for people, create better places for wildlife, support sustainable development, 2020 vision.	Our role in EPR permitting is to ensure that any Installation does not cause significant pollution. We are satisfied that this Installation will not cause significant pollution and that it will provide a high level of protection for the environment as a whole.
Concern about whether the plant will be able to comply with future standards.	The impacts have been assessed against current standards. It is not possible to make an assessment against future standards which may or may not change from the current ones. If standards do change we would, if applicable, be able to vary the permit to ensure that those standards are achieved in the future.
The Application is not written by independent people.	It is common for an applicant to employ a consultant to write the application. We assessed the Application documents in the in line with all legal requirements.
Concern that hazardous waste will be mixed with household and commercial waste.	The Permit does not allow hazardous waste to be burned. Waste pre-acceptance and acceptance procedures will be used to prevent hazardous waste being received.
Pollution will occur if residues are disposed of in a landfill site.	This will be controlled through the landfill site permit.
There was an accusation of corruption to ensure that a permit is granted.	We completely refute this accusation.
There will be contravention of the precautionary principle as set out in the Stockholm Convention on Persistent	The United Kingdom Interdepartmental Liaison Group on Risk Assessment (UK-ILGRA) state in their paper "The

Organic Pollutants (POPs). The convention requires emissions of POPs to be reduced.	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, (Response to British Society for Ecological Medicine Report, "The Health Effects of Waste Incinerators) say that "as there is a body of scientific evidence strongly indicating that contemporary waste management practices, including incineration, have at most a minor effect on human health and the environment, there are no grounds for adopting the 'precautionary principle' to restrict the introduction of new incinerators.
All local councils are against the proposed incinerator.	This of itself is not a ground for refusal. We consulted with Bedfordshire Council and Central Bedfordshire Council. Their comments were taken into account in determining this Application.
A previous application was withdrawn, why have Covanta re-applied?	The Applicant has the right to apply when they wish. We have a legal duty to assess any application submitted to us.
It is illegal to incinerate household waste.	It is legal to incinerate household waste provided the operator of the plant has the appropriate permits to carry out an incineration activity.
The new combustion BREF should be taken into account.	The waste incineration BREF is the relevant BREF for this Installation. The revised waste incineration BREF is not yet in place, although a first draft was published in May 2017.
Veolia are listed as the operational contact on the application form.	It is up to the Applicant as to who they name as an operational contact. However the Applicant amended this form so that the contact was an employee of Covanta.
There were some errors in cross referencing documents on the application forms. EIA documents just described as being included as electronic files.	Revised Application forms were submitted. EIA documents were submitted as electronic files. These files were made available for the public consultation.
The Application should be for a hazardous waste plant because hazardous waste could be received and rejected.	The Permit does not allow hazardous waste to be incinerated. It is BAT to have procedures to quarantine and reject unsuitable wastes (such as hazardous wastes) if they are received, but this does not mean that the incinerator should be permitted as a hazardous waste incinerator.
The application form does not state the maximum storage amount.	The main Application document stated the maximum waste amount that will be incinerated. A maximum storage amount was specified in the fire prevention plan. The Permit (table S2.2) restricts the amount of waste that can be burned per year.

The Application only gives indicative and typical raw material usage.	It would be unreasonable to expect the Applicant to provide exact quantities at this stage. The Permit will require raw material usage to be reported so that we can check they are being used efficiently.
The application form states that there are no emissions to land but there is a section in the supporting information titled emissions to land.	There are no emissions to land. Section 2.5.2 of the supporting document is titled 'Monitoring Emissions to Land'. This section discusses testing that will be carried out of residues that will subsequently be disposed of to land at a landfill site. There is no proposal to dispose of wastes on-site.
A reference to the location plan is missing in the non-technical summary	The reference was missing in the non-technical summary, but a location plan was present in the plans and drawings section of the Application.
The non-technical summary refers to complying with other air quality guidance. The guidance should have been listed.	The non-technical summary is a summary document and so does not necessarily give all of the information. There are further details in the Applicant's air quality report.
Section 2.7 is missing from the index.	This section was not included in the index but section 2.7 was present in the body of the document.
The Application lists 585,000 as the nominal capacity. The maximum should be used and risk assessments should be based on the maximum.	The Applicant confirmed that 585,000 tonnes per year would be the maximum that the plant would operate at. The Permit (table S2.2) restricts waste throughput to this level. Even so the Applicant's risk assessments were based on continual operation which equates to 657,000 tonnes per year.
The text on figure 1 in section 1.4.1 is illegible.	This figure is a schematic of the plant. The text is readable but not particularly clear. An indexed version is included in section 4.1.3 of this decision document.
There are several cross referencing errors in the IED compliance section.	The Applicant submitted a revised version of this table. The amended table still contained some errors in cross referencing. However the gaps were not significant in that the relevant sections were still included in the Application documents or have been addressed by Permit conditions.
Why is IED article 50(6) stated as being not applicable?	Article 50 (6) refers to infectious clinical waste which will not be permitted for incineration at this Installation.
The mass of each waste category should be listed as required by IED article 52(2).	The Application states that delivery of waste will be part of the EMS to ensure that all regulatory requirements will be met. The Application also states that all waste deliveries will be weighed at the weighbridge.
Section 2.4.5 does not have enough detail on dry residue handling as required by IED article 53(2).	We required the Applicant to submit a dust management plan. This management plan described measures for handling and treating the IBA. APC residues will be stored in silos and transferred to tankers in a sealed system/
Section 2.10 states that the plant will be	This section refers to the development of

designed in line with standards, the standards should be listed.	the site's EMS, an outline of which was provided in section 2.10. Pre-operational condition (PO1) requires the EMS to be in place prior to operation.
Incinerators contravene the Human Rights Act.	We do not agree with this. See section 7.2.2 of this decision document.
Waste incinerators in other areas of the UK have been closed down due to poorly managed pollution levels.	We are satisfied that this Installation will be able to comply with the emission limit values that have been set in the Permit. Any non-compliance with the Permit will be dealt with in line with our enforcement and sanctions policy.
There were a few comments submitted that were in support of the Installation.	No action required.
It was claimed that the OPRA spreadsheet contained several errors.	We have checked the OPRA spreadsheet and are satisfied that it is accurate as a basis for charging.
Europe is moving away from incineration.	Incineration is still a BAT technique for waste disposal.
Where will the water that is pumped away from Rookery Pit go?	The Environmental Statement mentions dewatering of areas to enable construction. It states that there will be dewatering of accumulated surface waters within the western half of Rookery South Pit by pumping from the base of Rookery South Pit into the marginal ditch to the west of the pit. Pumping of water out of Rookery pit to lower the water level does not fall within the scope of environmental permitting.
An incinerator in Avonmouth was rejected due to odour, flies and dust affecting quality of life.	We have not refused any EPR applications for incinerators in Avonmouth although we did refuse an application for an IBA treatment plant in Avonmouth which was a site specific decision.
Will there be compensation if health effects do occur in the future?	This is not a matter we can comment on as it would be fact specific if and when it arose, although we do not consider the issue will arise.
There are contradictions between the Application and the planning application documents.	The planning process and EPR permitting process are different processes and so it is not surprising that the documents differ in some respects. We have assessed the Application submitted to us. The Permit will require the Installation to be operated as described in the Application.
Concern over the accuracy of waste acceptance paperwork, no confidence that only non-hazardous waste will be received.	When we inspect the site we will check that appropriate waste pre-acceptance and acceptance procedures are being used.
ISO 14001 not good enough, ISO14006 deals with global warming	ISO 14001 is a recognised certification scheme for EMSs. ISO 14006:2011 is intended to be used by those organisations that have implemented an EMS in accordance with ISO 14001, but can help in

	integrating eco design into other management systems.

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

Brief summary of issues raised:	Environment Agency comment
Concern over traffic congestion, road safety and road damage. Waste should be transported by rail.	Movement of traffic to and from the Installation is a relevant consideration for the grant of planning permission, but does not form part of the Environmental Permit decision making process.
There is over capacity of incineration in the UK. A Eunomia report was quoted.	This is a matter for waste planning and government strategy but does not form part of the Environmental Permit decision making process.
Concerns over visible impacts.	Visible impact is a relevant consideration for the grant of planning permission, Environmental Permit is primarily concerned with assessing the impacts of emissions.
Concern that the incinerator will take waste from other areas of the country, which does not comply with the proximity principal. Waste will be transported over long distances increasing impacts. Waste will be imported from outside the United Kingdom	This source of waste arriving at the plant is outside of the control / scope of the environmental permit. Our remit is to ensure that the proposed wastes are suitable for incineration in the proposed furnace technology.
Waste should be recycled or re-used. Waste amounts should be reduced.	This is outside the scope of this determination which is to assess the impact of emissions from the proposed activity. Recycling initiatives are a matter for the local authority.
An EU commission report favours phasing out energy from mixed waste with recycling as the focus.	Incineration is recognised as a BAT option in the BREF. Recycling initiatives are a matter for the local authority.
Concern that the drainage from the Installation could contribute to flooding.	The Environment Agency provides advice and guidance to the local planning authority on flood risk in our consultation response to the local planning authority. Our advice on these matters is normally accepted by both the Applicant and Planning Authority. When making permitting decisions, flood risk is still a relevant consideration, but generally only in so far as appropriate measures are in place to prevent pollution in the event of a credible flooding incident. The risk of flooding was addressed as part of the planning process.
Concern that claimed benefits of jobs for the area will not happen.	Creation of jobs does not form part of the Environmental Permit decision making process.
Concern that building the incinerator will encourage further industry to be built in the area.	Whether further industry is allowed to be built in the future is a matter for the local planning authority.
Concern over the effects on the area including the economy, houses prices and tourism. Not enough jobs will be created.	Given we do not consider that the emissions from the installation will cause significant pollution or harm to human health there

	should be no adverse impact on the area. We cannot require additional jobs to be created.
Concern over the labour standards that Covanta has at its other sites.	Workplace conditions are covered by other legislation and are outside the remit of environmental permitting.
Concern over the health and safety of workers.	Health and safety for workers is the remit of the HSE. We consulted the HSE on this Application.
Rail should be used to deliver the waste.	We have to assess the application made to us and assess the environmental impacts of that.
Concern that this is not the right location for the incinerator, near to houses and on green belt land.	Location is primarily a land use planning issue. We have a legal duty to determine any application made to us for an environmental permit. Our role is to determine whether appropriate measures are used to prevent and minimise emissions and whether any impacts on the environment and health are acceptable. We have considered the location of receptors in making our decision.
Concern over impacts during construction.	Impacts from construction cannot be considered through environmental permitting. Our remit is to look at the impacts from operation of the Installation.
The plant will mean that people will not be able to go outdoors as much thereby damaging health. The land should be used for something else.	Land use is a matter for the planning authority. Based on our assessment of the impact of the emissions from the installation there is no reason why people should stop using outdoor space. In the context of Environmental Law, pollution is defined as any emission as a result of human activity which may be harmful to human health or the quality of the environment, cause offence to a human sense, result in damage to material property, or impair or interfere with amenities or other legitimate uses of the environment. We do not consider any significant pollution will be caused.
Concern that piling will create a pathway to groundwater.	Impacts from Piling do not form part of the environmental permitting process but would have been considered through the planning process. We are satisfied that measures will be in place to protect groundwater from any impacts from the operation of the installation.
The planning application was for an electricity generating station and not for a waste incinerator.	We have assessed the Application that has been submitted to us.
Plans for new homes should not be approved.	This is a matter for the local planning authority.
The plant should not have been classed as nationally significant and so planning permission should not have been assessed by the National Infrastructure Planning.	The decision to class it as nationally significant was based on criteria in the 2008 Planning Act and is not something within our remit.
Work has already started at the site	Construction work can start because the

entrance, access road and vegetation has been cleared from the site.	site has planning permission. An environmental permit is required to operate an installation but is not required to construct one.
A table in the EIA document stated that further assessment is required.	This referred to a table of consultation responses in relation to the planning application scoping report. It is not relevant to our decision.
The EIA documents are out of date.	The EIA documents formed part of the planning application. They were submitted with the EPR application and we had regard to those documents as set out in section 7.1.1 of this decision document. We are satisfied that the EPR Application documents contained the information we need to determine the Application.
Will the wind turbine in Marston be removed?	We have no control over whether the wind turbine will remain in place or not.
Concern that pylons will be erected to transport the electricity that is produced.	If this was required it would require a planning application. It would not fall within the scope of the EPR.
An equality impact assessment of residents in the area should be done in line with the Equality Act 2010.	Equality impact assessment were introduced under the Race Relations Amendment Act 2000, as a way of requiring public service providers to assess the likely impact of policy decisions on particular groups (now classed as groups with protected characteristics under the Equality Act 2010) their aims to ensure that the needs of specific groups are taken into account in policy making. We do not consider it is relevant for this Application decision process.
The proposed development is not in accordance with the Development Plan. The site has not been allocated in the Local Plan or Waste Local Plan for a waste management facility or more specifically as an incinerator.	This is a matter for the planning decision.

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 11/09/17 and 07/11/17 and the public drop-in event held on 20/09/17 at The Forest Centre, Marston Moretaine.

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. Where this is the case, the Environment Agency response has not necessarily been repeated and reference should be made to section A for an explanation of the particular concerns or issues.

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.

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

Comments were received from local councillors, Woburn Sands Town Council, Wooton Parish Council, Houghton Conquest Parish Council, Bedford and Kempston Labour Party, Stewartby Parish Council, Bedford Borough and Central Bedfordshire Councils, Marston Moretyene Parish Council, Bedford Borough and Kempston Town Council

and a joint response on behalf of Parish Councils in Bedfordshire and Buckinghamshire; namely Ampthill, Aspley Guise, Brogborough, Cranfield, Flitwick, Houghton Conquest, Hulcote and Salford, Husborne Crawley, Kempston, Lidlington, Marston Moretaine, Millbrook, Ridgmont, Stewartby, Wilstead, Woburn, Woburn Sands, and Wootton

Brief summary of issues raised:	Summary of action taken / how this has been covered
Comments about air emissions and air risk assessment	
Page 28, paragraph 5 of the draft decision document should say that any significant contribution to a breech is unacceptable, rather than likely to be unacceptable.	In the context of the whole paragraph we consider that the text is appropriate. In any event no exceedences of any ESs are predicted from this Installation. The full text is: 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.

The issue of temperature inversion has not been considered. The Environment Agency should obtain up-to-date meteorological data from inside the Vale for a period long enough to take into account the frequency of temperatures inversion events. It is unsatisfactory to rest on 'other studies' to assess impact of temperature inversions Impacts from temperature inversions are only mentioned in the Annex and not in the body of the decision document. A permit at Sirhowy Valley in Wales was refused because of temperature inversions.	We have considered whether impacts would increase from temperature inversions and our view is that we do not need to obtain any further meteorological data. We are satisfied that the potential impact from temperature inversions has been adequately considered. This issue was raised in the consultation on the Application and is covered in Annex 4, part A. However given the number of responses on this issue we have added details to section 5.2 of the decision document for clarity. The temperature inversions referred to in the Sirhowy Valley application that lead to increases in impacts are specific to steep valleys where low wind stable conditions can cause downslope winds, also known as cold drainage flows. These can cause cold air pooling which can lead to increases in air quality impacts, mainly concerning the short-term impacts. This type of inversion is not likely in the Rookery Pit site because the topography is not likely to lead to cold drainage flows. Based on the differences between the Rookery Pit site and the Sirhowy Valley site in terms of topography and our sensitivity checks to other models for this and similar applications, our view is that the Applicant's conclusions remain valid.
The draft decision document does not consider the scale of the plant in that percentages of standards are considered rather than mass emissions.	The scale of the plant has been considered. Impact assessments were based on the proposed plant scale and throughput. The relevant standards for air quality (ESs) are expressed as concentrations of mass per unit volume of air. Therefore it is appropriate to consider the concentrations of pollutants in air from the Installation to compare to the ESs.
The impact of small PM2.5 particles has not been considered. The impact of smaller particles has been given insufficient attention.	The impact of PM2.5 has been assessed and is considered to be insignificant. Section 5.2.2 has further details. The impacts from smaller particles has also been considered. Section 5.3.3 has further details.
The dispersion modelling grid resolution of	We audited the dispersion modelling and

158 m is not sufficient.	our view is that the grid resolution is sufficient.
The dispersion modelling does not identify the location of maximum impacts.	The Applicant provided dispersion modelling that predicted the impact at the location of maximum predicted ground level concentration. Although the location of this maximum was not identified contour plots were provided that showed the highest concentrations would be to the north east of the Installation.
Impacts beyond 15 km from the site should have been considered.	The Applicant provided dispersion modelling that predicted the impact at nearby receptors as well as the impact at the location of maximum predicted ground level concentration. We are satisfied that these assessments have concluded acceptable impacts, and that the impacts further away will be lower still.
The statement in the decision document 'However, where an emission cannot be screened out as insignificant, it does not mean it will necessarily be significant.' is not clear.	This text is in section 5.1.2, on page 29 of the decision document. The text following this statement explains the further steps that we take to assess impacts when they are not screened out as insignificant.
The draft decision document shows that Cr (VI), PAH, As and Cd will exceed the ESs.	The decision document does not show that the ESs for these substances will be exceeded. Although the background for PAH already exceeds the ES, the impacts of PAH from the Installation will be insignificant. As and Cr(VI) were assessed in further detail in section 5.2.3 which shows that the ESs are highly unlikely to be exceeded.
The impact from vehicle emissions whilst on-site has not been covered in the draft decision document.	This was raised as an issue in the consultation on the Application and is covered in Annex 4, part A.
The draft decision document accepts that temperature inversions conditions could lead to increases in the long-term and short-term Process Contributions but argue that the variability is within any modelling uncertainties. This does not give confidence in the dispersion model used, if there is so much variability.	All dispersion models have a degree of uncertainty. It is taken into account when we audit the dispersion modelling.
High mercury, particulates and oxides of nitrogen levels have been found around 30 plants in the USA.	The dispersion modelling for this Application has shown that impacts of oxides of nitrogen particulates and mercury would not be significant. Section 5 of this decision document has further details.
Comments about impacts on water courses	
There is confusion over how water discharges will be dealt with.	We do not agree that there is confusion. To clarify: The only emissions from the Installation will be of uncontaminated surface water (rainwater) run-off to an attenuation pond

	and then to the nearby restoration scheme pond (LLRS). The LLRS is part of the wider Rookery Pit development site drainage system and is not part of the Installation. The LLRS will overflow to Stewartby Lake.
Question how frequently will the water in the attenuation pond and LLRS pond be checked for contamination and if it is found what is the process to prevent it reaching Stewartby Lake.	We have not required monitoring of the attenuation pond. Emissions to this pond will be of clean surface water run-off only. The Permit specifies that the surface water run-off is Uncontaminated surface water run-off and our view is that monitoring is not required. The LLRS does not form part of the installation.
Is it still proposed to use tankers to remove water in the event of high rainfall?	Yes. Section of this decision document 6.5.3 describes this.
Comments about other impacts	
The decision document contains the statement 'based upon the information in the application we are satisfied that appropriate measures will be in place to prevent and / or minimise fugitive emissions'. This shows that IED article 46(5) that requires prevention is not enforced.	Section 6.5.3 covers all forms of potential fugitive emissions. We are satisfied that the requirements of IED article 46(5) will be met.
Concern with the Applicant's claim that only receptors within 500m could be affected by dust from the IBA plant. The fire prevention plan receptor diagram includes receptors up to 1000 m so this is not consistent with the dust documents.	We are satisfied that there is very low risk of dust impacts occurring. Details of measures are set out in section 6.5.3 of this document. The fire prevention plan diagram is in line with the requirements of our guidance. The risk of impacts in the event of a fire differ to those posed from dust, hence the different distances.
Comments about the Applicant	
Covanta had an incident with lime spillage on their plant at Poolbeg in Ireland.	A lime spillage occurred in an internal room at the Dublin Facility, on June 7th, 2017 during ongoing testing and commissioning. Covanta's investigation concluded that the release was due to an incorrectly fitted hopper door gasket by the engineering procurement & construction contractor. Proper installation of this type of door will be specifically investigated at the Rookery facility. The Irish Environmental Protection Agency concluded that there was no environmental impact as a result of the lime release.
Concerns in the draft decision document they say previous Covanta incidents were learning lessons.	This is part of the text from section 4.3.2 of the decision document highlighting that the wider Covanta structure has procedures in place to minimise reoccurrence of incidents. Based on the information in the Application (including the proposed control measures and management systems) we are satisfied

	that the Applicant will be able to operate the Installation in accordance with the permit.
An operator of a waste disposal installation must also be a member of a government approved scheme.	The EPR core guidance states 'The core guidance says 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.
No evidence of any operating and maintenance manuals for the plant. Concern that this detail has not been provided at the application stage but will be done after the Permit is issued.	The Applicant confirmed that their management system would meet the requirements of our guidance. We are satisfied that the details of operating and maintenance procedures can be provided at a later date, as required by pre-operational condition PO 1. Operation cannot commence until pre-operational conditions have been completed.
Comments about energy recovery	
Concern that the energy efficiency review required every 4 years by condition 1.2.1b could be more frequent.	We are satisfied that this is an appropriate period to do a full review. In addition condition 1.2.3 requires the use of CHP to be reviewed every 4 years or sooner in the event of significant changes.
Concern as to whether the permit requirement to review CHP this every four years will be meaningful.	We expect the Applicant to do a proper review in line with condition 1.2.3. We will assess these reviews and can vary the Permit to require CHP if required.
Comments about BAT control measures	
For the SCR BAT assessment how are the costs evidenced? Are additional costs due to catalyst replacement? How is the cost of loss of exported power calculated?	The costs are in line with other applications that we have assessed. The costs included maintenance and reagents which for SCR would include catalyst replacement. Loss of exported power will be based on the price that the electricity could have been sold for.
No evidence that negative pressure will be achieved and no mention of pressure testing.	The use of air from the reception building for combustion air to generate negative pressure within the reception hall is standard practice at most incineration plants and is a reliable way of controlling odour without the need for continuous pressure testing. We have set pre-operational condition PO8 to ensure that air flows will be sufficient.
Concern that several of the design aspects are still indicative such as FPP drawings.	We are satisfied that the FPP submitted shows that the Installation can be operated in principal with an appropriate plan to minimise fire risk and the consequence of a fire if one was to occur. However we recognise that some details will need to be confirmed later in the process and we are satisfied that these can be confirmed through a pre-operational condition. If major changes were proposed then we would require a permit variation application to be submitted.

Comments about regulation	
How will the requirements of condition 2.1.2 be controlled?	Condition 2.1.2 requires waste authorised by this permit shall be clearly distinguished from any other waste on the site such as waste generated from areas of the site not covered by the permit such as waste from offices. Waste authorised by this permit will be delivered into the waste bunker and so will be separate to other wastes. This is something that we will check when we inspect the site.
What is the form of the notification and the time limit for condition 2.3.2?	This condition allows us to require a revised plan, such as dust management plan, if we require it. We would require any revised plans to be submitted in writing. Condition 2.3.2 allows us to specify the time period in which this would be required.
Table S1.1 (page 10) of the permit gives the listed activity as 3 tonnes per hour. What is the maximum?	The maximum waste throughput is specified in table S2.2 as 585,000 tonnes per year which equates to 66 tonnes per hour if the plant was to operate continually for the year.
Does condition 4.3.2 mean that Covanta will police their own site?	This condition requires the Operator to notify us of a permit condition breach. When we visit the site we will ensure that any breaches have been reported. We will also undertake our own inspections to check for compliance with the permit conditions
Request that if a permit is issued it should have a condition for Parish Councils to be consulted.	This is not required. We have consulted on the Application and the draft decision as described in section 2.2 of this document. The Permit requires the Operator to inform the Environment Agency if there was to be an operation that could give rise to significant pollution. If we are notified of such an event we will advise anyone we consider it appropriate to.
Concern over how condition 2.3.4 about not burning recyclable material be enforced.	This condition only allows separately collected fractions to be incinerated if they are unsuitable for recycling. The Operator will have procedures to record the waste types that are received at the Installation. When we visit the site we will audit records of waste receipt to make sure that this condition is being complied with. There are also requirements outside of EPR on the producers of waste to ensure that their waste is suitably dealt with.
Concern as to whether Environment Agency staff will be experienced enough to monitor the site.	We will ensure that the site is regulated effectively by appropriate staff. We regulate a number of facilities similar to this Installation.

Comments about accident risk	
Several standards are quoted in the FPP, how will be Environment Agency ensure that these standards are met?	The FPP is incorporated into the Permit through table S1.2. When we audit the site we will check that applicable standards have been met.
Why only receptors within 1km considered. Fire could affect receptors much further away.	Our fire prevention plan guidance refers to plans being provided that show receptors within 1 km of the site boundary. These are the receptors that would be most at risk in the event of a fire. The Applicant has provided such a plan.
The FPP states that all areas of the site will be within 50 m of a fire hydrant whereas the FPP site plan does not show this.	The plan is indicative and will be confirmed in the final design. The FPP states that the location of hydrants will be agreed with the local fire officer. There is no 50 m requirement in our guidance.
Comments about residues	
Is there a time limit on IBAA storage?	We have not specified a limit in the Permit. The Applicant stated that IBAA will typically be held in the storage area for one month, however the storage area will have the provision for 6 months storage if required.
Concern over the lack of information and therefore lack of consultation on how IBA will be treated and how residues will be minimised in amount and harmfulness and recycled where appropriate.	We do not agree that there was a lack of information or public consultation. The Application was consulted on as set out in section 2 of this decision document. The Application contains details of how IBA and APC residues will be handled and either recovered or disposed of thereby minimising the harmfulness. The quantity of IBA will be minimised by achieving good burnout of the waste. The quantity of APC residues will be minimised by optimising the acid gas abatement as required by improvement condition IC5.
Concern over pre-operational condition PO10. Both transport of IBA for off-site treatment or requirement for fully enclosed building are major changes to the proposal and could require planning permission. The public would have been denied any opportunity to scrutinize the plans, and express comments and opinions which contravenes the IED.	We don't consider that these would be major changes in terms of the environmental impact. The Operator is required to comply with both the environmental permitting regime and the planning regime. If any amendments are required to the planning permission, the Applicant will need to obtain these. A permit only authorises on site treatment it does not require it and an Operator can choose to send IBA off site. The IED requires sufficient information to be provided so the public can make informed comments and we are satisfied that we have done this. We are satisfied we have enough information to issue a permit and for the remaining detail of any on site processing of

	IBA to be addressed through pre-operational condition PO10.
The statement in the Application 'any heavy metals within the IBA will be present as salts. These salts will be retained in solution when mixed with water and would not be expected to dissolve.' Concern that use of recirculating water will result in heavy metal emissions, silt traps will not prevent the release of dissolve metal salts in ash water run-off	The IBA will be stored in an area with a sealed drainage system. There will be no emission from the Installation of water run-off from the IBA area. Recirculated water will be used but as stated above there will be no emissions from this area.
The Application states that IBA will be stored in a building with open sides which is not in accordance with the draft permit.	The revised dust management plan received on 06/07/17 describes an enclosed building for the IBA storage area. The Permit requires that IBA and IBAA are in fully enclosed buildings. The Permit requires that has been incorporated into the permit as an operating technique and thus must be followed.
Concern over recirculating water for dust suppression will not reduce metal leaching potential from the ash which means it does not comply with IED articles 44(c) and 53(1) to minimise the residue harmfulness. Use of recirculating water will mean that sampling is not representative.	The use of recirculated water that will be collected with rainwater for dust suppression is standard practice at IBA plants. It reduces the amount of fresh water needed. The Applicant stated that the use of recirculating water is unlikely to have an effect on the IBAA composition. However if testing showed that the use of recirculating water was to become an issue then fresh water could be used. We are satisfied that recovering the IBA for use as an aggregate is complying with the quoted IED articles.
The EA has not considered BAT for residue treatment.	The Applicant justified their choice of treatment in section 2.6.6 of the supporting information document in the Application and we are satisfied that the proposed method is BAT.
Water run-off from IBA should be classed as a residue and analysed as such.	This is not a residue from the incineration process and so we have not required analysis of it in the Permit. However if the water is required to be removed from site for disposal then the Operator will need to characterise the waste water to assess its hazard status.
Carbonisation and hydration does not reduce the pH value of the material IBA contrary to what is stated in the Application.	Treatment of IBA by ageing does reduce the pH of the IBA. This is confirmed in the waste incineration BREF.
Testing of residues is required before a new recycling or disposal route. This should be done before any new construction use of the aggregate, not just once to cover any construction use.	Our position is that the testing required by IED and reflected in the Permit should be before any generic disposal or recycling route rather than case-by case basis which we would regard as impractical and

	unnecessary. In addition bottom ash will be tested for its hazard status in line with the ESA ash sampling protocol.
What will bottom ash be used for?	Bottom ash will be removed from site after treatment. It is intended that it will be used as aggregate in construction projects.
Comments about the consultation	
What has changed to persuade the Environment Agency to issue a permit?	We have assessed this Application on its merits. Our reasons for deciding to issue the Permit are set out in this decision document.
Previous 2000 comments on the application consultation have been ignored.	The comments were not ignored. Annex 4, part A shows how we considered the comments that we received.
Nine days notification of the consultation event was not long enough and was poorly advertised. The event was also poor with not enough staff, out of date maps, staff not well informed.	The consultation on the draft started on 11/09/17. We received over 1950 responses to the consultation on the Application. We notified people who made comments on the initial consultation on the Application that the consultation on the draft decision had started, this included details of the drop-in event that was held on 20/09/17. We are satisfied that this was sufficient to inform people about the event and this is borne out by the fact that over 300 people attended the event. A map used at the drop-in event did not show the location of all nearby housing but the purpose of the map was to show the location of the stack. The event was staffed by experienced Environment Agency staff. A large number of people attended the event and so there were some delays in being able to speak to staff.
The Environment Agency has only carried out the bare minimum consultation.	We carried out an extended consultation. The way we consulted in set out in section 2 of this decision document.
It is virtually impossible on line to work out which are new documents or when they were submitted or what they replace.	The on-line consultation was a consultation on our draft decision. The website included the additional information submitted by the Applicant in response to our information requests. This information was added after it was requested by members of the public. The document were labelled so that documents submitted in the first schedule 5 respo0nse could be distinguished from those submitted in the 2nd schedule 5 response. We are satisfied with the way the information was set out on the consultation webpage.

Other issues	
Page 11 of the DD that describes the site does not mention large populations of Wootton, Kempston, Elstow and Wilsted, also missing Kimberley College and the new population growth of Stewartby and Cranfield.	The aim of section 4.1.2 is to give a brief summary of the site setting. The section describes the nearest receptors to the Installation and the nearest towns.
Issuing a permit would go against the Environment Agency's own document (Environment Agency position on energy from waste) which states will look after the environment, promote waste disposal as close to source as possible, working to make environment cleaner and healthier and will not issue permit is not significant pollution	Our view is that the Permit will protect the environment and that the Installation will not cause significant pollution. The distance that waste is transported before being incinerated is not something that can be considered through environmental permitting.
Concerns about the plant not incinerating recyclable waste have not been adequately addressed.	We do not agree with this. This issue was raised in the first consultation and is covered in Annex 4, part A.
The Environment Agency have not considered changes to the local area since planning was granted.	We do not agree with this. We have assessed the Application in the context of the current locality. This has included consideration of nearby receptors.
A materials recovery facility or mechanical biological treatment should be used to remove and recover recyclable waste before it is incinerated.	This is outside the scope of this determination which is to assess the impact of emissions from the proposed activity. Recycling initiatives are a matter for the local authority.

b) Representations from Community and Other Organisations

Representations were received from Marston Park Residents Association, UK Without Incineration, Woburn Sands and District Society, Ampthill Community Safety Group, Ampthill and District Preservation Society, Kempston Central WI, Bedfordshire Climate Change Forum, Vale Community Church, Maulden Neighbourhood Plan, FCC Environment (UK) Limited, Friends of the Earth, Bedfordshire Against Covanta Incinerator, Campaign to Protect Rural England (Bedfordshire), Houghton Conquest Lower School

They key issues raised are shown below. Where an issue has already been covered above it is not necessarily repeated below.

Brief summary of issues raised:	Summary of action taken / how this has been covered
Comments about air emissions and air risk assessment	
The draft decision document reads like there is already that emission present so, who cares?	This is not the intention of the text in the decision document. The decision document does recognise that the Installation will emit pollutants. The purpose of EPR permits is to ensure that emissions and impacts are minimised and that significant pollution will not occur. We are satisfied that this Permit will achieve those aims.
Is information in the draft decision document (section 5.3.3) on filter efficiency based on mass or size? The focus should be on size distribution and not mass.	This section discusses the particulate capture efficiency of the particulate stack monitoring methods. The 99.5% efficiency refers to mass ratios. We are satisfied that the monitoring method is appropriate.
What particle size distribution results are expected from improvement condition IC2 given that this has been used at many other sites?	Responses from other sites show that emissions of both PM10 and PM2.5 are very low (well below the ELV for total particulates set in the permits) to the point where they are so low that it is difficult to calculate an accurate size distribution. Some results that we have, show that PM2.5 make up between ~10% and 80% of the PM10 emission. The aim of IC2 is to demonstrate the particle size distribution for this Installation.
Concern over what is meant by significant and insignificant. Concern that the draft decision document suggests this could be between 1% and 20%.	Figures of 1% and 10% are used to assess what would normally be considered insignificant impacts for air quality. 1% refers to long term impacts and 10% to short term refers to short term impacts. Significant relates to the impact from an emission and whether it causes significant pollution. An example of significant pollution would be where a site is causing an air quality standard to be exceeded. If an emission does not screen out as insignificant then a detailed assessment is made. The figures are indicative, in some cases impacts below 1% or 10% may not be conclusive and in other cases being above

	those values may also not be conclusive. This is explained further in section 5.1.2 of this decision document.
North Norfolk paid out £38million to withdraw from a PFI funded incinerator, judging it cheaper than the estimated £650million in additional health costs over 25 years.	Norfolk County Council planned to approve the planning application in 2012, but the decision was called in by the Secretary of State. After the government withdrew PFI funding Cory Wheelabrator formally withdrew the planning application. Compensation was paid from the council to Cory Wheelabrator. To our knowledge this decision was not made due to concerns over health impacts.
No emission limit has been set for dioxins.	This is not correct. A limit of 0.1ng/m^3 has been set for dioxins and furans in table S3.1 of the Permit. The limit is expressed as I-TEQ.
For PM2.5 the World Health Organisation states that "There is no evidence of a safe level of exposure or a threshold below which no adverse health effects occur".	This statement is correct. However we have assessed PM2.5 against the relevant ES which has been set to protect against significant impacts. Impacts compared to the ES have been shown to be insignificant. Section 5.2.2 of this decision document has further details.
Small particles could still be large in number even though the mass released is low. Looking at mass misrepresents the potential impacts of small particles	This issue is acknowledged in section 5.3.3 of this decision document. Our view is that taking this into account the risk to health is still very low as set out in the PHE position statement on health effects of incineration plants.
There is no evidence of case studies into temperature inversions.	The case studies referred to is work that the Environment Agency has done to investigate the effect of temperature inversions.
Page 38 and 42 of the air quality report shows that the ESs will be exceeded. The Permit should be refused.	The substances referred to in the tables on these pages as PAH, As and Cr(VI). Although the background for PAH already exceeds the ES, the impacts of PAH from the Installation will be insignificant. As and Cr (VI) are assessed in detail in section 5.2.3 of this decision document which shows that the ESs are highly unlikely to be exceeded.
Concern that impacts at start-up and shut-down have not been considered.	The emissions limits set by IED chapter IV do not apply at start-up and shut-down. The combustion units will be fired on a support fuel (gas oil) during start up and shut down, 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. The impact at start-up and shut-down (which will be infrequent), when emission limits do not apply, is not likely to be significant.

The Forest Centre should have been considered as a human 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. 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.
Other countries carry out better air monitoring than the UK. DEFRA's TEOM machine do not give accurate readings of PM2.5.	The quality of Defra's monitoring is outside the scope of our determination. We have to work with the data available to us. In any event the impact of PM2.5 was shown to be insignificant so if there were any issues over the accuracy of the background they would not be likely to change our conclusion.
DEFRA has no PM2.5 or PM1 monitors near to incinerators.	This is outside the scope of our determination. In any event ambient air monitoring around operating incinerators is not a reliable method of establishing the impact. Our preferred approach is to use air dispersion modelling to predict the impact based on the highest allowed emissions (emission limit values). We have audited the modelling and we are satisfied that it is suitable for assessing the impact from the Installation. The Permit requires monitoring to be carried out to ensure that the mission limits values that were used in the modelling are met.
Comments about health impacts	
The not yet published PHE report on health impacts from incineration plants will be flawed because it looks at PM10 and not PM2.5.	In January 2012 PHE confirmed they would be undertaking a study to look for evidence of any link between municipal waste incinerators and health outcomes including low birth weight, still births and infant deaths. The results of the health study have not been released yet. However the first part of the study showing the levels of pollutants in the air around incineration plants due to emissions from the incinerator has been published. The report shows that the levels are low. PHE have made the assumption that total particulate matter equated to PM10. PM10 includes everything smaller than 10 microns, and thus includes PM2.5. PHE will then link the information on exposure to particulates to an epidemiological study on birth outcomes (to be completed and published in due course) and so this will therefore include the effects of PM2.5.

Risk assessment is very poor for assessing the complexities of human health. Some pollutants do not have thresholds below which they are safe.	We are satisfied that the risk assessment has considered the appropriate standards for assessing human health. We are satisfied that there will not be a significant risk to health. Section 5.3 of this decision document has further details.
PHE have stated that reducing levels of PM2.5 will benefit human health but the incinerator will increase them.	Emissions from the incinerator will increase PM2.5 levels but by an insignificant amount even when making conservative assumptions. Section 5.2.2 of this decision document has further details.
Long term health impacts have not been assessed.	Long term health has been assessed, as described in section 5.3 of this decision document.
Comments about impacts at ecological sites	
Concern over impacts at Marston Thrift SSSI.	Marston Thrift is ~3.5km from the Installation. This is further than the 2 km screening distance that is agreed with Natural England. At this distance we are satisfied that emissions from the Installation will not damage the special features of the SSSI.
An updated ecological survey and ecological management plan should have been submitted.	We were satisfied with the information we had and did not consider any further information was required. We assessed impacts on ecological sites and are satisfied that there will not be a significant impact. Section 5.4.2 of this decision document has further details.
Concern that the ecosystem of Rookery South has already been damaged.	This refers to construction impacts which are outside the scope of environmental permitting but may be relevant to the planning regime.
Comments about impacts on water courses	
The Impact of effluent discharge has not been considered.	There will be no effluent discharges from the Installation. Uncontaminated surface water will drain to an attenuation pond and then to the LLRS.
The LLRS pond should be part of the installation with limits set in the permit.	We do not agree. The LLRS is part of the wider Rookery Pit development site drainage system and is not part of the Installation. In any event we have limited emissions of water from the Installation to uncontaminated surface water run-off.
The attenuation pond should be part of the installation.	This pond is part of the installation. The pond can be seen on drawing 2118-002 R2 in the Application.
The Environment Agency has not followed the DCO recommendations in terms of assessing the drainage and setting limits.	The DCO statement of reasons stated that the EA would assesses drainage and set standards for effluent quality designed to protect the receiving watercourse (including proposals for monitoring discharge water quality). It is important to note that the planning application included provision for process water to overflow to the attenuation lagoon.

	However the EPR Application only proposed emission of uncontaminated surface water run-off. On this basis we have assessed the drainage proposals and we are satisfied that emission limits are not required.
The schedule 5 response refers to drainage from access roads – does this mean the Green Lane access road?	This refers to roads within the Installation. The access road to Green Lane does not form part of the Installation
The schedule 5 response did not answer the question about contaminated rainwater containment.	The response received on 19/05/17 considered methods for containing fire water run-off and contaminated rainwater.
Concern about uncontaminated water being pumped into Stewartby lake.	We are satisfied that measures will be in place to ensure that only uncontaminated surface water run-off will be emitted via an attenuation pond to the LLRS. The LLRS will ultimately overflow to Stewartby lake. We are satisfied that uncontaminated rainwater run-off will not cause pollution.
Comments about other impacts	
Concern over impacts at Ampthill Park, Houghton House, Woburn Abbey and Woburn Golf Course	We are satisfied that emissions from the Installation will not have a significant impact on any receptor including these historic houses and golf course.
Concern over what will happen if negative pressure fails.	Negative pressure will be generated by the furnace pulling in air from the reception building. So as long as the plant is burning waste negative pressure is likely to be maintained. Failure of negative pressure odour control during shut-down was previously raised as an issue and in covered in Annex 4, part A.
The H1 risk assessment does not consider IBA.	The risks from the IBA plant were considered in the Application and a dust management plan was submitted.
Comments about the Applicant	
Question 3a of application form C2 about convictions should have been answered yes because of issues at other Covanta sites in the USA.	The question in the application form refers to relevant convictions. Relevant convictions are defined in our relevant conviction guidance. Relevant convictions do not extend to any convictions under legislation in the USA. In any event we requested additional information from the Applicant on this issue. Section 4.3.2 of this decision document has details of how we considered it.
There have been 100 incidents of significance within the past 5 years for 41 plants in the USA.	Plants should aim to have no emission limit exceedences. However to put this in context the numbers quoted equate to less than 1 incident/emission breach every two years for each plant. Incineration plants in the UK are among the most tightly regulated plants. Half hourly average emission limits are set for 4 pollutants. This means that there will be approximately 70,000 ½ hourly average

	results reported per year which is 70,000 'chances' for an emission limit to be exceeded. Despite this, our experience is that the incineration sector is a sector that performs well in terms of permit compliance.
It is claimed that the previous incidents are the responsibility of a different legal entity. However the same officers are involved for various Covanta companies. Environment Agency guidance says that different company names does not distance officers from previous records.	The Applicant is a different legal entity to the companies in the USA which is what we state in section 4.3.2 of the decision document. Companies house lists directors/officers for the Application and many of them have addresses in the USA. We requested information from the Applicant on enforcement action that has been taken at sites in the USA operated by companies within the wider Covanta group. This is covered in section 4.3.2. We are satisfied that the Applicant will comply with the conditions of the Permit.
Comments about monitoring	
Concern that the Operator will do their own 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 find problems with the monitoring we will take action to put this right.
Dioxin limits and monitoring should apply at start-up and shut-down.	The emission limits set by IED chapter IV do not apply at start-up and shut-down. A report by AEA for the Environment Agency showed that the mass of dioxins emitted during shutdown and start-up for a four day planned outage was similar to the emission which would have occurred during normal operation in the same period and so the overall impact (given that we are considering long term impacts) will be the same.
Comments about energy recovery	
The draft decision does not comply with IED article 50(5) for heat to be recovered as far as practicable. An organic rankine cycle should be used to recover heat from the exhaust gases.	Heat will be recovered as far as practicable. Heat will be recovered from the exhaust gases in the form of electricity. This will use a steam turbine which will use a rankine cycle to generate electricity from the exhaust gases. Steam turbines are BAT for electricity generation from incineration plants. Operation of the plant as CHP has been considered and more details are in section 4.3.7 of this decision document.
It appears that the use of CHP has not been	We do not agree with this. The Applicant

considered properly. The Applicant's CHP assessment is a sham, and the EA review of it likewise.	considered the use of CHP and we assessed it. This is discussed further in section 4.3.7 of this decision document.
Comments about BAT and control measures	
The decision document for the Newhaven incinerator states that the particulate filters will only be 65-70 % efficient for PM2.5 to PM10 and 5-30% efficient for particles smaller than PM2.5.	The Newhaven decision document also says that smaller particles will be removed by the filter cake that forms on the outside of the filter bags. Research has shown the removal efficiency is very high even for smaller particles. What is written in the decision document for this Application reflects our current position.
No details were provided on the design or location of the interceptors.	The Application stated that surface water will discharge via interceptors. The location of these will be on the surface water drains. We were satisfied that this was sufficient information to determine that appropriate measures would be in place to prevent pollution from surface water run-off. Given the controls set through the Permit, the Operator will need to ensure that the interceptors are suitably designed.
Drawing 2170/077/022 Rev D shows effluent treatment equipment; reverse osmosis and a rotating biological contactor.	The Application has confirmed that this drawing was not to be used. There is no effluent discharge and so these measures are not proposed or required.
Concern as to what method was used in the Applicant's economic BAT assessment and how this related to government guidance on air quality economic analysis.	The Applicant provided a BAT assessment. Parts of the assessment including the consideration of abatement for oxides of nitrogen could be described as a cost effectiveness assessment (CEA) where costs are considered against environmental benefit. The method of using a CEA is covered in Environment Agency guidance H1 annex K. Although H1 annex K has been withdrawn from the gov.uk website the use of a CEA is still an appropriate technique.
What is the cost threshold where SCR would be considered?	We would require the use of SCR if it was needed to prevent significant pollution. We would also require use of SCR it if offered a significant improvement in air quality where those benefits were not outweighed by the costs or other environmental factors. It is not possible to put a general cost point on this as each case would be different. For this Application we are satisfied that use of SNCR is BAT.
Comments about regulation	
Changes to several conditions in the Permit were requested: In condition 1.1.1 specify incineration of non-hazardous waste.	 This is not required. Condition 2.1.1 and table S1.1 restricts the Installation to non-

	hazardous waste.
In condition 2.1.1 specify incineration of non-hazardous waste.	This is not required. Condition 2.1.1 refers to table S1.1 which restricts the Installation to non-hazardous waste.
Remove the second sentence in conditions 3.2.1, 3.3.1 and 3.4.1	The second sentences states: 'The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions'. These are standard permit condition that recognise that a plant can sometimes cause a level of pollution due to unforeseen circumstances even if all appropriate measures have been applied. However we would not allow a plant to cause significant pollution. Whilst the wording means no offence has been committed it does not mean that the situation would be acceptable or that other forms of enforcement action such as additional measures would not subsequently be required.
Condition 3.5.4 should specify without advanced notice. Also the text unless agreed in writing should be removed.	The full condition reads 'Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.1(a), S3.2 and S3.3 unless otherwise agreed in writing by the Environment Agency'. The condition does not need to specify without advance notice. We have the power to enter a site without giving advance notice. The stated text 'unless agreed in writing' is included in the standard condition as there are some sites where there are emission points where permanent access is not practicable. However for this Installation permanent means of access will be required.
In condition 3.5.5 the uncertainty values should be expressed as mass rather than percentages.	All monitoring has a degree of uncertainty. The uncertainty figures in condition 3.5.5 are directly from the IED.
Remove condition 4.3.3 because it gives a chance for change of fuel, which will give a	Condition 4.3.3 is about the Environment Agency requiring the Operator to carry out spot monitoring, it does not allow a change

wrong picture.	of fuel. Changes to waste types would require a variation application.
Comments about residues	
The permit only requires IBAA to be in a building and not the IBA as well.	This is not the case. Both IBA and IBAA storage will be in fully enclosed buildings as specified in table S1.1 of the Permit.
IBA could be transported by conveyor or vehicle. Have the risks from both options been assessed?	We are satisfied that the risks have been assessed.
No details were provided about the conveyor.	The conveyor was described in the dust management plan and we are satisfied that we have enough detail to assess it. Final details will be provided through pre-operational condition PO 10.
In the event of high rainfall, how will overflow from the IBA catch pit be prevented?	The catch pit overflows to the IBA lagoon. The Applicant did not provide details on the sizing of the catch pit, but we are satisfied that this detail would be considered by the Operator at the detailed design stage. Given the controls set through the Permit, the Operator will need to ensure that this is suitably sized.
Other issues	
Concern that the Permit allows 14 days to inform the Environment Agency of any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.	This condition 4.3.4 (b), is a standard condition used in all permits and we are satisfied that it is an appropriate timescale as these processes take a considerable time and it provides adequate opportunity for us to take any action we consider necessary in response to the notification.
Concern that the Permit allows 14 days to notify the Environment Agency of where the operator proposes to make a change in the nature or functioning, which may have consequences for the environment, and the change is not otherwise the subject of an application for approval under the regulations or this permit.	This comment refers to condition 4.3.5. The notification must be at least 14 days before making the change. It only covers changes that would not require a variation of the Permit. Any changes to the Installation that could have any significant impacts on the environment would be subject to a variation application and could not be made through this condition.
The Permit waste table lists plastic five times.	Most plastics should be separated at source and the Installation will not take separately collected fractions unless unsuitable for recovery The Applicant confirmed that plastic will make up a small amount of the total waste. We are satisfied that the plastics can be burned whilst complying with the Permit emission limits.
Negative air pressure will affect workers health.	Workers health is the remit of the HSE. However our view is that the use of negative pressure to control odour will not impact on the health of people working at the plant.
Greenhouse gases from production of abatement reagents, such as lime, have not been considered.	Impacts from production of materials at other plants is not within the scope of the Permit determination. Other legislation

	controls greenhouse gas emissions at other plants where required.
An ideal waste strategy would produce no toxic emissions, no toxic by-products, no residues that need landfilling (zero waste), good recovery of materials and be capable of dealing with all types of waste.	Waste strategy is matter for government and the local waste authorities we have to assess the environmental acceptability of the proposed activity.
The operational contact named on the application form should be someone from Covanta.	The Applicant had previously provided an amended application with an appropriate contact for the Applicant on it.
The IBA plant should be listed as a DAA on the OPRA spreadsheet.	This is not correct. As explained in section 4.1.1 of this decision document residue treatment is part of the incineration activity as it comes within the IED definition of waste incineration plants.
The operator performance section of the OPRA spreadsheet should include performance of Covanta in the USA.	The OPRA spreadsheet is used as the basis for charging the applicant. Operator performance for the purpose of charging is restricted to performance of the Applicant only.
Effluent discharge should be included in the OPRA spreadsheet.	There are no effluent discharges from the Installation, only uncontaminated surface water run-off. Therefore the OPRA spreadsheet is correct.
The baseline data in the site condition report (SCR) is out of date.	The SCR was reviewed by our groundwater and contaminated land specialists. We are satisfied that the report established the baseline conditions sufficiently.
The BAT assessment document refers to section 2.6 of the supporting information. But section 2.6 is missing.	Section 2.6 is not missing, it is contained in the supporting information document.
The access road should be part of the Installation.	The access road provides access to the wider development site and so does not form part of the Installation.
A group opposed to the incinerator stated that they had been refused access to a member of the permitting team in order to ask questions directly.	Permits are assessed by the Environment Agency as a whole. The Environment Agency has taken more than adequate steps to engage and consult with the public as set out in section 2 of this decision document.
Concern over the Environment Agency public participation statement including links not working.	A document is available on gov.uk titled Working together: your role in our Environmental permitting our public participation statement. Two links to further information on EPR do not work. However the document still explains why and how we consult and further information on EPR is available on the gov.uk website
On page 7 of the draft decision document RGN6 is referred to, but this is withdrawn guidance.	On page 7, this is described as internal guidance. We describe it an internal because it was withdrawn from the gov.uk website but is still relevant for internal use.
Page 41 of the draft decision document refers to PPS10 which was withdrawn in 2014 and replaced by the National Planning Policy for Waste.	This section is quoting a statement on health that was contained in PPS10. We consider that it is still a relevant statement.
The stack will affect air flows across Stewartby Lake.	The stack will not affect air flows enough to affect the way the wind blows across the

	lake.
The statement in the decision document about plasma gasification not being available is not true.	We are satisfied that the statement we made about plasma gasification (repeated below) is correct: 'Some technologies such as plasma arc gasification are currently considered not to meet the definition of 'availability' due to their very limited application worldwide'.

c) Representations from Individual Members of the Public

Over 1270 responses were received from individual members of the public. They key issues raised are shown below. Where an issue has already been covered above it is not necessarily repeated below.

Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Comments about air emissions and air risk assessment	
No emissions should be allowed to reach the ground, they should be emitted into outer space.	It is not practicable to build a stack high enough to achieve this proposal. The proposed stack is of sufficient height to ensure that no significant impacts will occur.
Traffic emissions have been ignored.	It has not been ignored. This issue was raised in the consultation on the Application and is explained about in Annex 4, part A.
The Plume Plotter website shows that the incinerator will cause elevated impacts around the area.	Plume Plotter appears to be a tool which uses air quality modelling software to predict the ground level concentrations of nitrogen oxides and other pollutants that may arise from the incinerator based on a number of factors. The information on the website indicates that the results may be based on expected modelling methods. However, there is no information on the website as to how the model was validated and we have not seen the model input parameters, and so cannot comment on the validity of the predictions. We have audited the dispersion modelling submitted with this Application and we are satisfied that there will not be any significant impacts.
The draft decision document discusses techniques to minimise dioxin and oxides of nitrogen emissions but they should be eliminated.	No abatement method can be 100% effective. However we are satisfied that the proposed abatement methods will be BAT as explained in section 6 of this decision document.

Concern as to whether the fabric filters will be of high enough quality and have a small enough mesh size to control emissions.	Filter bags will be fabricated from felt, comprised of compressed fibres with a polytetrafluoroethylene (PTFE) membrane forming a 3-dimensional filter. In addition, particulate removal also occurs via a three-dimensional dust cake which is maintained on the surface of the filter membrane by controlling the bag cleaning process and the pressure drop through the fabric filter. The membranes have very small pores (2 µm - <1µm) which in combination with the filter cake which accumulates on the bag filters provide effective abatement of particulates.
Concern over increased pollution during high winds.	Weather conditions were taken into account in the dispersion modelling.
The impacts at receptors including lakes, schools, new houses and wildlife have not been considered properly.	Our view is that impacts have been considered at appropriate receptors including impacts at the point of maximum impact.
The draft decision document suggests that full dispersion model was not required.	Dispersion modelling was required as discussed in section 5 of this decision document.
Concern over fibres (including plastic fibres) emitted to air and how they will be monitored.	Fibres are a type of particulate matter. Emissions from the incineration process will be controlled by fabric filters. The impact will be insignificant as set out in section 5 of this decision document. The emission of particulate matter will be monitored continuously. Emissions of plastic fibres due to litter are not likely to occur. Waste will be delivered in enclosed delivery vehicles and tipped into the bunker within the reception building. r.
Impacts on Marston Millennium Park have not been considered. All comments relating to impact on human health reference Pillinge Farm and not the Millennium Park.	The dispersion modelling predicts no significant impacts at the location of maximum predicted concentration. This means that any other offsite location will experience lesser impacts than the maximum concentration which has been deemed acceptable. Further details are in section 5.2 of this decision document.
The draft decision document does not consider the issue of temperature inversions.	This has been considered. It was raised as an issue in the consultation on the Application and is addressed in Annex 4 part A of this decision document.
Concern over the impacts from increased inhalation of emissions when running.	We have assessed against the ES and do not consider there will be any significant impacts
Environmental standards have changed since the planning application was assessed.	We have assessed this Application against the latest standards.
A lot of comments were received claiming that the Environment Agency should change its view and look at emissions from additional traffic in the area around the site.	This issue was raised in the consultation on the Application and is covered in Annex 4, part A.
Concern over the impacts from incomplete combustion products.	Incomplete combustion will be minimised by ensuring the furnace is at 850^{o}C for 2 seconds as required by IED.

Abnormal conditions have not been assessed.	Abnormal conditions have been assessed. This is covered in section 5.5 of this decision document.
Concern that the plume will contain pollutants rather than just steam as stated during the planning process.	The plume from the stack will contain pollutants as described in this decision document.
Burning plastics will damage the ozone layer.	Large amounts of plastics will not be received. Complete combustion will help to minimise emission of ozone depleting substances.
80% of metals emitted will be as ultrafine particles, so there will be a health risk from metal particulates.	The emission of metals and small particles and their impact has been considered in section 5.2 of this decision document.
The Environment Agency have used weather data from Bedford which is not appropriate for considering weather inversions.	We used weather data from Bedford as part of our audit of the air dispersion modelling. We are satisfied with the conclusions of our audit as set out in section 5.2 of this decision document. The way we have considered temperature inversions is also set out in section 5.2.
The impact of emissions has been ignored. No information on what will be emitted.	This is not correct. Section 5.2 of this decision document explains what will be emitted and how emissions have been considered.
The impact of particulate emissions has not been considered.	Our view is that they have been considered fully, Section 5.2 has details of how we have considered particulate emissions.
The impact assessment does not look at changing impacts over the next 40 years including climate change.	We aim to use 5 years of met data that is generally less than 10 years old. Climate change is assumed to be less than the inter year variation in the data and so is not expected to affect the predictions significantly.
The safe level for particulates used in the draft decision document is not correct. A paper titled Every Breath We Take, by Royal College of Physicians was cited. COMEAP 2016 meeting minutes conclude that there is still not enough research evidence to quantify the long-term health impacts of PM2.5 and doubt over safe levels.	For PM2.5 there is no threshold below which no adverse health effects occur. However we have assessed PM2.5 against the relevant ES and found that potential impacts will be classed as insignificant. Section 5.2.2 of this decision document has further details
Concern over the emission of poly brominated organic compounds which could be present in textiles.	Such substances would be mostly destroyed by the incineration process. Section 5.3.2 of this decision document considers the impact of brominated and mixed dioxins / furans and dioxin like PCBs.
Concern over emissions of nitrous oxide. There is no limit for nitrous oxide.	Limits are set in the Permit for nitrogen dioxide which is the pollutant of concern for human health. Nitrous oxide can be produced by the SNCR abatement system. There is no limit set in IED for nitrous oxide and there is no ES. We have required it to be monitored in order to assess the

	efficiency of the SNCR abatement system, but our view is that a limit is not required.
Four hours of abnormal operation is too long and the impacts have not been considered.	Impacts have been considered and we consider that 4 hours is acceptable. Section 5.5 of this decision document has further details.
The UK Government is subject to infraction proceedings for breaching the EU Air Quality Directive.	The Installation will not lead to an exceedance of any ES.
Emissions of oxides of nitrogen and carbon dioxide will be higher than from cars.	We have not compared emissions to cars in our assessment of this Application. The Application is for an incineration plant. Our assessment of BAT is set out in section 6 of this decision document.
What limits have been proved to be safe, and have long term studies been done?	We have assessed against current appropriate limits and standards for assessing air emissions and public health. The standards are based on research and study in the effects of pollutants on health and the environment.
The PM2.5 limit is lower in Scotland at 10 µg/m^3.	The relevant ES for PM2.5 is 25 µg/m3. This standard comes from the Ambient Air Directive. Impacts of PM2.5 were shown to be insignificant when assuming the worst case that particulate matter is emitted continually at the ELV and that all of the particulate emissions are PM2.5. Scotland have set a value of 10 µg/m^3 to be met by 2020. If we assessed against the Scottish standard, again using the worst case criteria set out above, the PC would still be at the level where we would consider it to be insignificant.
The health risk assessment submitted with the planning application states that most particulate matter will be 0.5 to 3µm in size.	We have assessed particulate matter against the standards for PM10 and PM2.5. PM10 is all particles of 10 µm diameter and less and PM2.5 are 2.5 µm and less. We are satisfied that we have assessed against the appropriate standards. Further details are in section 5 of this decision document.
During the recent consultation the Environment Agency gave the impression that emissions would be propelled out of the stack by chemical reactions which will lead to further emissions.	Emissions of combustion products will be via a 105 m high stack. Chemical reactions will not propel the emission from the stack. It will be achieved by combustion air fans and induced draft fans.
A copy of the Central Bedfordshire Air Action Plan was submitted.	We are satisfied that the Installation will not have a significant effect on air quality.
The ammonia used in this process reacts with sulphurous acid formed when steam and sulphur dioxide combine as they travel up the stack, leading to the production of particulates. These particulates are formed beyond the filters and emitted unabated. Similarly NO_X can react with metals in the plume to form nitrates.	Any 'secondary particulates' formed in the stack are not considered to be significant.

Concern that planning documents state the impacts will be highest to the east where the plume will ground.	The Applicant has reported maximum concentrations in the modelled grid, these represent 'worst case' predictions. The modelling predicts no significant impact at this maximum location.
Concern over ultrafine particles combining with vehicle emissions to generate dangerous particulates.	The HPA (now PHE) in their response to the British Society of Ecological Medicine Report state 'HPA advice is that exposure to particulates will increase the risk of adverse health effects. However modern, well managed incinerators are a minor source of such exposures'. Therefore we are satisfied that emissions from the Installation acting in-combination are not likely to have a significant effect on health.
Abnormal operation periods should not be allowed. If allowed then the time should be restricted.	The reasons for allowing abnormal operation are set out in section 5.5 of this decision document. The Permit does restrict the abnormal operation periods to a maximum of 4 hours for any one period and a maximum total of 60 hours per year. It also requires normal operation to be restored as soon as possible.
Concern that no limits have been set for PAH or ammonia.	There are no limits set in IED for these substances. The impact assessment showed that impacts on human health would be insignificant. Monitoring for ammonia has been set in order to monitor the efficiency of the SNCR abatement system. Monitoring for PAH has been set to gather information on emissions, but we are satisfied that limits are not required.
Modelling not fit for purpose.	We do not agree. We audited the dispersion modelling and are satisfied it is fit for purpose.
Particulate emissions from incinerators will be more harmful than from other sources due to being coated with metals, chlorinated hydrocarbons, dioxins and other volatile organic compounds.	We are satisfied that emissions from incinerators will not have a significant effect on health. This is in line with the PHE statement of health effect from municipal waste incinerators.
The impact of slow wind speed has not been considered.	Wind speed has been considered. This has been taken into account in the dispersion modelling. The modelling predicts no significant impacts at the location of maximum predicted concentration. Further details are in section 5.2 of this decision document.
Gypsum will form from flue gas treatment which could escape the bag filters.	Solids formed by the acid gas abatement system will be trapped by the bag filters in the same way as other particulates and will be subject to the particulate ELV.
Concern that the Operator plans to operate the plant at the maximum allowed emissions as shown by the dispersion modelling.	This is not the case. The dispersion modelling was based on the maximum allowed emissions to provide a worst case assessment. In reality emissions will be below the maximum ELVS. Further information on this is in section 6.1 of this decision document.

Nanotechnology in consumer goods means that the waste will contain more heavy metals which will be emitted.	The emission limits set in table S3.1 of the Permit for metals will apply whatever waste stream is used.
Comments about health effects	
Concern about health effects on people with existing lung problems or other existing health issues.	We are satisfied that there will not be a significant impact on health, including people with existing health conditions.
There is no information in the draft decision about health risks.	This is not correct. Section 5.3 of the decision document covers health impacts.
Concern that health studies might not take account of people who develop health problems after they have moved away the area.	PHE keep health studies (epidemiological studies) under review. Our view is in line with PHE's that there will not be a significant impact.
The draft states frequently that there will not be a significant effect on health. What does significant mean?	The wording from the PHE statement (set out below) on the impacts on health of emissions to air from municipal waste incinerators explains what we mean by 'not significant': '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'.
The difference in the fat content in breast milk used in the HHRA and the values quoted by the WHO has not been explained in the draft decision document.	We audited the HHRA and we are satisfied with the assumptions that were used. The HHRA is very much a worst case assessment which is based on the dose of dioxins and furans that would be received by local receptors if all of their food and water were sourced from the locality where the deposition of dioxins, furans and dioxin like PCBs is predicted to be at its highest. While there may be elevated intake of dioxins and furans and dioxin-like PCBs by breast fed babies, this will be due to the levels already in the adult female, rather than the PC from the Installation which will be insignificant. The difference in fat content will not affect this conclusion.
The draft decision document explains that impacts at an outdoor pool and on fish from Stewartby lake will not be significant. However the fact that they were missed from the assessment by the Applicant casts doubt as to whether all receptors were considered.	We do not agree. As explained in annex 4, part A the risk to fish at this fish farm was very low. We carried out some checks to confirm this. We are satisfied that the conclusions of the Applicant's assessment are valid.
The draft decision document is vague as to whether there will be health impacts.	Our views is that the decision document is clear that there will not be any significant health impacts.
The draft decision document does not refer to the new Public Health England Report.	This is covered in section 5.3.1 of the decision document.

An incinerator in Belfast was refused planning permission. The Environment minister said due to not being satisfied that it would not harm human health.	This was a decision made for site specific reasons. We are satisfied that this Installation will not have a significant effect on human health.
Concern that PHE have said that health effects cannot be ruled out with complete certainty.	This is part of a statement from the PHE report on health from emissions to air from municipal waste incinerators. The full text is as follows and shows that any risk is very small (when reading in the full context of the paragraph). 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.
Incinerators should not be built within 50 km of farms or food production – particularly grazing animals. There are local dairy and meat producers within this 50km radius.	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 document.
Concern over health effects on developing embryos.	We are satisfied that there will not be a significant impact on health including unborn children. The Environment Agency takes advice from PHE on the health implications of incinerators generally and specifically on each application for a permit. In January 2012 they confirmed they would be undertaking a study to look for evidence of any link between municipal waste incinerators and health outcomes including low birth weight, still births and infant deaths. The results of the health study have not been released yet. However the first part of the study showing the levels of pollutants in the air around incineration plants due to emissions from the incinerator has been published. The report shows that the levels are low. PHE's current position is that modern, well run municipal waste incinerators are not a significant risk to public health remains valid. The study has been undertaken to extend the evidence base and provide the public with further information; as such it does not justify a delay in our decision making on permit applications.
Dioxin and Furan impacts have not been	This is not correct. The impact of dioxin

assessed adequately.	emissions has been considered in detail and is described in section 5.3 of this decision document.
The incinerator will affect health due to stress and will affect wellbeing.	In the context of Environmental Law, pollution is defined as any emission as a result of human activity which may be harmful to human health or the quality of the environment, cause offence to a human sense, result in damage to material property, or impair or interfere with amenities or other legitimate uses of the environment. This definition does not extend to fear, anxiety or stress.
Concern that the HPA have not inspected the site to assess how close receptors are including the nearby park.	The HPA are now known as PHE. We consulted PHE on the Application. It is a matter for PHE as to whether they consider it necessary to inspect a site. PHE had no concerns over public health. Their comments are summarised in Annex 4, part A of this decision document.
Concern that director of public health has not responded to the consultation.	We consulted the local authority director of public health but received no comments. We also sent a reminder about the consultation but no comments were received. It is not unusual for the director of public health to provide no comments on incinerator applications.
Research on health effects for MSW but this site will burn commercial and industrial (C&I) waste.	We consider that all of the wastes in the Permit are suitable for this plant We consulted PHE on the Application. The Application is clear that the incinerator will burn a mixture of MSW and C&I waste. PHE had no concerns over health impacts.
The draft decision document refers to a Scottish document 'Incineration of waste and reported Health effects' It has been selectively quoted. The Scottish report also refers to several weaknesses in the evidence.	This refers to the section titled Expert Scientific Opinion in section 5.3 of this decision document and a report by the Scottish Health Protection Agency. The section in 5.3 in the decision document is a summary of the main conclusions of this report.
In a 2005 document assessing the health impacts of waste management the EA said "For many contaminants, it is necessary to account for existing body burdens and intakes from other sources during the risk assessment process for incinerators. Dioxin intake is already above the TDI so no further increase is acceptable.	The uptake by the body of dioxins/furans has been considered. Even when using very conservative assumptions, the risk has been shown to be insignificant. Therefore the existing body burdens do not need to be considered in this case.
Concern over bio-accumulation of dioxins over a long time period.	The effect of bio-accumulation was considered in the HHRA, summarised in section 5.3 of this decision document.
The natural level of dioxins in soil is close to zero, so comparisons by Covanta with levels of dioxins currently found in some urban soils is inappropriate.	The uptake by the body of dioxins/furans has been considered. Even when using very conservative assumptions, the risk has been shown to be insignificant. Existing levels in the soil will not affect this conclusion.
Concern over the health impact from nano	The impact of such particles is considered

particles.	in section 5.3 of this decision document.
The exact mechanisms of effect of particles on health are incompletely understood.	Unknowns such as these are acknowledged in the PHE report on health impacts from air emissions from municipal waste incineration plants. However the conclusions are clear: "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".
The Environment Agency do not believe that dioxins can damage health.	We acknowledge that dioxins can damage health. However our view is that emissions from this Installation will be very small and the impact on health will be insignificant.
The Environment Agency has not used the most recent health studies. Recent health studies have been ignored by the Environment Agency. A list of 27 literature studies, dated 2013 to 2017 were cited as evidence of health concerns.	Some of the literature reports related to plants in other parts of the world (such as India, China and Afghanistan). These plants will be subject to different legislation and therefore are not likely to be directly comparable to well regulated plants in the UK or Europe. Some of the other reports did not relate to health impacts from incinerators and some found no evidence of health issues. PHE reviews research undertaken to examine the suggested links between emissions from municipal waste incinerators and effects on health. As such they would have been aware of any relevant recent studies. PHE commented that they don't as a rule provide comments on individual papers as it is more appropriate to form a view based on the weight of evidence towards or against adverse health effects occurring in a given exposure situation. PHE also stated in January 2018 that they are not aware of any evidence that requires a change in their position statement. Our view is that there will not be a significant effect on health. This is in line with Public Health England's position statement as discussed in section 5.3 of this decision document.
The Permit will allow significant pollution and damage to health to occur.	We do not agree with this. Our view is that the permit will ensure that a high level of protection is provided for the environment and human health.
The Environment Agency has ignored health issues and the fact that any emission will affect health.	We have not ignored this issue. We accept that the Installation will emit pollutants to air but our view is that it will not cause significant pollution or have a significant effect on human health. This is in line with

	the PHE report on health impacts from air emissions from municipal waste incineration plants: "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". Further details of health impacts are in section 5.3 of this decision document.
The PHE statement on health is applicable for modern and well run facilities but this site will be neither of these.	The Installation will be modern (being subject to stringent limits set in the IED) and will be subject to the latest emission limit values. We will ensure through regulation that it is well run.
The PHE report on health impacts is from 2009 and is out of date.	PHE have confirmed that this report is still valid.
Concern over the impact on the health of pets.	We are satisfied that there will not be a significant risk to human health. The ESs for human health are set to safeguard human health and not specifically set for animals. However we are satisfied that if human health is protected then impacts on animals are not likely to be significant.
Children around the incinerator in Chester (USA) have higher than normal levels of lead in their blood and a higher rate as asthma.	We have assessed the impacts of lead and impacts have been shown to be low. See section 5.2 of this decision document. We are satisfied that emissions will not have a significant impact on health including childhood asthma.
A new primary school is within ½ mile of the site	The nearest school is ~1km from the boundary of the Installation. The Applicant has reported maximum concentrations, these represent 'worst case' predictions and do not necessarily represent public exposure. However, the maximum predicted PCs and PECs are not significant and do not risk exceeding the environmental standards for air. Impacts elsewhere will be less than the reported maximums which are already considered to be permissible and not cause any significant air quality pollution issues.
Concern over statements about loss of life in the health assessment and how this was calculated. Why is this loss of life acceptable?	Loss of life years refers to a COMEAP assessment. COMEAP is not an appropriate method for assessing impacts from this Installation as set out in section 5.3 of this decision document.
What will happen in the future if the PHE change their position and conclude that incinerators do cause health impacts?	We would take appropriate action as required to prevent any Installation causing a significant impact. Permits are reviewed periodically in line with a regulatory timetable for permit review.
A news report stated that Covanta Energy	We are not aware of any such news report

Limited admit the health of the location people and local environment will be affected.	and so cannot comment on the accuracy of this statement. Our view is that there will not be a significant effect on health or the environment.
An incinerator in Derbyshire was rejected due to health concerns.	The Environment Agency has not refused an application for a municipal waste incinerator in Derbyshire.
Cancer takes 20 -30 years to develop so studies on modern incinerators are not yet reliable.	We are satisfied that the PHE will have considered appropriate timescales in assessing cancer risk when reviewing health study reports. In fact the PHE refer to a COC study that looks at the risk of cancer for residency for periods in excess of 10 years.
Concern that health impacts of the brickworks have not been considered.	The brickworks is now closed. We have considered the health impacts of the incinerator that is the subject of this Application. We are satisfied that it will not cause a significant impact on health as discussed in section 5.3 of this decision document.
Too much confidence has been place in scientific measurements of the effects.	This appears to refer to ESs. We are satisfied that these have been used appropriately to determine if significant pollution of harm to health will occur.
Comments about noise impacts	
Concern over noise from reversing bleepers.	The HGV waste delivery vehicles should be reversing inside the sound insulated building, so is unlikely to be significant. Other possible sources are the IBA vehicle movements and the front end loader at the IBA. These sources operate during the daytime and any reversing is only likely to be a fraction of the 1 hour daytime assessment time period. Therefore reverse alarms if used should not have a significant effect on the calculated specific sound level. However, they could still alter the rating level through a character correction for tonal and/or intermittent characteristics. Our checks show that they are not likely to be clearly perceptible against the daytime residual sound levels.
Concern over vibration impacts.	Given the distance to residential properties we are satisfied that there will be no significant impacts from vibration.
A nearby landfill was not allowed to extend operational hours due to on-site traffic noise.	The Applicant's noise assessment included on-site vehicle movements and we are satisfied that there will not be a significant impact.
Concern that a 5 dB tonal penalty was not included for the air cooled condensers.	We checked the sensitivity to tonal contributions when we audited the noise assessment. Our view was that if the Installation is constructed in line with the design and mitigation measures proposed, it is unlikely that there should be any perceptible tonality or intermittency. Even if a tonal penalty was applied then

	noise impacts are not likely to be an issue.
What is the estimated noise levels of the condensers and how will it be mitigated.	The sound power level of each air cooled condenser fan will be 93 dB(A). Mitigation measures will be: • The air cooled condenser (ACC) will be located to the north of the installation and so will be screened from the nearest receptors by the main building • Low level noise condensers were chosen.
The number of vehicle movements per hour was not included in the noise assessment and the route was not shown. The tipping of waste not considered.	The Applicant's noise assessment was based on a total 595 HGV movements per day (297 in and 297 out) they also modelled cars/LGV with a total of 168 per day. The delivery route was defined in the modelling. Waste tipping will be carried out in the main building and so noise from this will not be a significant source of noise.
The statement of three vehicle movements per hour is not correct, it should be much higher. What will happen if the number is higher?	Three movements per hour refers only to IBA vehicles. As shown in the row above the noise assessment did include total vehicle movements which are much more than 3 per hour.
The Forest Centre is the nearest human receptor but has not been considered for noise impacts. Also noise impacts at Stewartby Lake have not been considered.	Residential properties will be the most sensitive to noise impacts. The Applicant used BS4142 : 2014 to assess the impact which included impacts at the nearest residential receptor. We are satisfied that there would not be a significant impacts from noise.
Concern over noise impacts on the access road if vehicles have to queue during shut-down of the IBA plant.	The access road is not part of the Installation. In any event we expect that the Operator will have procedures in place to prevent this from occurring.
Concern over noise impacts if vehicle deliveries increase when plant operates above the 585,000 tonnes per year limit.	The Permit limits waste receipt to 585,000 tonnes per year. If the Operator wants to increase this after the Permit is issued they will need to apply for a variation. They would need to consider any increased impacts from the installation in such a variation application.
Noise impacts, nigh-time noise/sleep impacts, noise from vehicle movements, has not been considered.	Noise impacts have been considered as discussed in section 6.5.5 of this decision document. The noise assessment included on-site vehicle movements and also considered night-time noise.
Who will monitor noise levels?	The Permit does not require noise levels to be monitored but it does require the plant to be operated as described in the Application.

	We are satisfied that Permit conditions 3.4.1 and 3.4.2 will control noise. In the unlikely event that noise were to become an issue we can use condition 3.4.2 to require a noise management plan which could include a requirement to monitor for noise if deemed necessary.
Concern over noise impacts at Kimberley College. Noise also not considered at Great Blakelands.	Noise impacts were assessed at the nearest residential receptors, the closet of which is ~ 350m from the Installation. Impacts at other receptors (~1km from the Installation) will be lower than those already assessed as acceptable at the closest receptor.
Comments about impacts at ecological sites	
Concern that only SSSIs within 2km have been considered. There are other SSSIs downwind that could be affected.	This is a screening distance that is agreed with Natural England for permit applications such as this one. Beyond this distance we are satisfied that emissions from the Installation will not harm the SSSI.
Bedfordshire Wildlife Trust have not been informed about the Application.	We considered that we did not need to consult with Bedfordshire Wildlife Trust on the Application documents. We are satisfied with the way that we have considered impacts on ecological sites and wildlife, as set out in section 5.4 of this decision document.
Considerations of pollution at habitats, such as local wildlife sites, has been based on woodland and grassland but nothing has been based on pollutants falling on water.	The impacts of emissions to air on the ecological features of the sites has been considered. There is limited information pertaining to the direct impacts from air emissions on water bodies. Other impacts (diffuse, aquatic) are likely to dominate over any direct impacts from aerial emissions.
Impacts against sulphur dioxide annual mean should have been considered.	The Applicant has considered impacts against the annual mean in their assessment. We are satisfied that impacts will not be significant.
Comments about impacts on water courses	
Concern over pollution because part of the Installation appears to be built on top of a lake.	Measures will be in place to prevent fugitive emissions as set out in section 6.5.3 of this decision document. O.S. maps of the area show that the eastern corner of the site overlays part of the Rookery Pit South lake. The planning permission decision and statement of reasons states: 'Planning permission for the restoration of Rookery South Pit to agriculture – the 'low level restoration scheme' (LLRS) – was granted in December 2010 (reference BC/CM/2000/08). The application for the DCO presumes that Phase 1 of the LLRS is completed before works to construct the RRF commence (DOC/6.1, Section 2.6), to be given effect by proposed Requirement

	31, and it is on this basis that we have considered the application.' So the lake will not exist by the time the Installation is built.
Comments about other impacts	
Concern over odour from vehicle movements.	Vehicle movements are not likely to generate significant odour.
Concern that the IBA lagoon HDPE liner could degrade in UV light.	The Applicant confirmed that the HDPE liner will be of a design/manufacture which is UV resistant. Therefore, it will not degrade with exposure to UV light.
Odour has not been considered. Other Covanta plants have odour issues.	Odour has been considered and we are satisfied that it is unlikely to be an issue at this Installation. Section 6.5.4 of this decision document has further details.
Concern that risk assessment are based on conservative estimates.	It is sensible to base the risk assessments on conservative criteria. Conservative criteria means that actual emissions and impacts are likely to be less. For example the air risk assessment is based on the conservative assumption that the plant will operate continually at the ELVs when in fact it will often operate below the ELVs. So the actual impacts will be lower than those that we have assessed.
Do not agree with Applicant's conclusion to not propose a carbon filter for odour control during shut-downs.	We are satisfied that a carbon filter is not likely to be required. The plant will have three lines which means periods when all three lines are down will be very infrequent. The Applicant stated that this could occur once every 5 to 7 years. Keeping one or two lines operational means that negative pressure can be maintained whilst one or two lines are taken off-line for maintenance. There will also be provision to divert waste deliveries to alternative locations in the event of extended shut-down periods and to use an odour control misting system. Odour condition 3.3.2 will require the implementation of an odour management plan if deemed necessary by the Environment Agency. If required this could ultimately require changes to be made on site if it is deemed that improvements are necessary.
Comments about regulation	
Concern about whether the regulation will be strict enough to control emissions? How many times will Covanta be allowed to breech their permit before it is revoked?	We will regulate the Installation to ensure that Permit conditions are complied with. If they are not then we will take action in line with our enforcement and sanctions statement.
There was a question about what telephone	Our incident hotline, shown below, can be

number people should use to report issues with the incinerator.	used. It is a 24 hour Freephone number: 0800 80 70 60
Comments were made about how we would ensure that various Permit conditions are complied with including the EMS and waste acceptance.	We will carry out inspection and audits on the Installation and the EMS (including waste acceptance procedures) to ensure that Permit conditions are complied with. Any non-compliances will be subject to our enforcement and sanctions statement.
With what precision and accuracy must the composition be specified for condition 2.3.5(b)?	This condition relates to sending waste that is produced to another waste site. The detail of the information will need to be sufficient so that the operator of the other waste site can assess whether they can receive and handle the waste in accordance with their permit.
Concern as to how compliance with the requirement to minimise emissions through conditions 3.2.1, 3.3.1 and 3.4.1 will be achieved.	This relates to the use of BAT. The Operator will be required to use BAT to minimise emissions under these conditions.
How is non-hazardous waste defined for table S1.1?	This is defined as waste that is not hazardous. Hazardous waste is defined in the waste framework directive.
Will improvement condition IC2 just consider stack emissions or will it consider other dust emissions.	IC2 refers to emissions from the stack.
Concern over what will be done with the CFD report required by PO5.	We will assess the report when the Operator submits a copy to us to ensure that the furnace design will be capable of achieving 850^{o}C for 2 seconds. . As this is a pre-operational condition – we need to be satisfied that this condition has been complied with prior to allowing operation to start.
For table S3.1 why were other pollutants not included?	Table S3.1 includes emissions limits for the pollutants identified in chapter IV of the IED. These are the most significant pollutants that will be emitted by the Installation. S3.1 also includes monitoring of some other pollutants for the purpose of monitoring performance and gathering information. The parameters listed are consistent with other municipal incinerators regulated by the Environment Agency. We are satisfied that it is not necessary to include any other pollutants.
What are the limits for ash monitoring composition?	No limits are specified in the Permit for the ash composition monitoring.
Condition 3.2.1 of the Permit is vague, pollution should be defined.	Our view is that this does not need to be defined in the Permit. It is defined in the EPR and the condition allows us to take action if we consider that pollution has been caused.
Comments about accident risk	
There was a recent fire at the incinerator in Bolton.	The cause of this fire at that plant is under investigation. We are satisfied that the risk of fire at this Installation will be minimised through use of the FPP which we have assessed and

	approved.
Concern that there will be a blast zone around the incinerator, this could affect the railway line. Gas cylinders could cause an explosion.	Our view is that there is not a significant risk of explosion from incineration plants. Gas cylinders are not permitted to be received.
What procedures are there in the event of a major incident such as a fire, for example evacuation of the area? There is no disaster risk planning	The fire prevention plan is designed to minimise the likelihood of fire occurring and to minimise the impacts if a fire did occur. Emergency planning and local area evacuation procedures are the sort of thing usually covered in major accident plants for sites subject to COMAH regulations. The Installation is not subject to the COMAH regulations and a major accident plan is not required. We are satisfied that the risk of accidents and their consequences will be minimised through the EMS and condition 1.1.
Concern over chemical spillages.	Measures will be used to prevent spillages and to deal with them if they were to occur. Section 6.5.3 of this decision document has further details.
Concern over whether there will be sufficient water available in the event of a fire and concern over water shortages in the future.	The Applicant stated that water supply would meet the fire service requirements. Pre-operational condition PO9 requires this to be confirmed. If water supply becomes a problem in the future then this would be considered at that time.
Concern that a fire could close the nearby train line.	An FPP will be in place to minimise the risk of a fire occurring and to minimise the impacts should a fire occur. Decisions on road or rail closures would be made by the police and/or fire service.
The accident and fire risk will be increased if Millbrook Power station is built.	The Millbrook Power Station has now applied for planning permission. The application was accepted for examination on 20/11/17. The planning authority will determine this with consideration of any aspects relating to existing permissions in the local area. The applicant will also have to apply to the Environment Agency for an Environmental Permit for permission to operate, for which consideration will be given for any existing permissions which could act in combination. However our view is that the power station is not likely to lead to any increase in fire risk. This application needs to be assessed on its own merits and cannot consider a proposals

	that may never get the necessary authorisations and may never be built. In terms of fire risk we are still satisfied that the accident plan and FPP for the Installation will ensure that the risk of accidents and fires are minimised.
It is stated that accidents will be prevented but consequences will be minimised. This does not make sense.	We are satisfied that this does make sense. It is sensible to take appropriate measures to prevent accidents from occurring in the first place, but it is always appropriate to have plans to minimise consequences in the unlikely event that they do occur, even if the chances of them occurring is low.
What procedures will be used to prevent overfilling of the bunker to prevent fires?	All waste received at the Installation will be weighed and logged, so the Operator will know the quantity of waste being received. Waste will constantly be received and incinerated having a short storage time in the bunker. In the event of shut-down, waste deliveries can be diverted away from the Installation or can be removed from the bunker and taken off-site. The bunker is also (unlike a liquid storage tank for example) not an enclosed system and the level of waste in the bunker can be easily observed. Permit conditions requiring the operator to operate in accordance with an EMS and FPP that minimises risks of pollution and will also be relevant. Therefore our view is that overfilling of the bunker is not likely to be an issue.
Why was the original FPP so inadequate?	This is not unusual because our FPP guidance is relatively new and so it often takes applicants 2 or 3 submissions to write an FPP that we are satisfied with.
The fire service has concerns about the plant. Approval from the fire service should be obtained before the Permit is issued.	The fire service provided comments on the Application. This is covered in Annex 4, part A of this decision document. We are satisfied with the FPP and do not require the fire service to issue formal approval.
Comments about the Applicant	
Concern over compliance issues at Covanta's incinerator in Dublin including flies and emission limit breaches.	The Applicant submitted information about compliance at their Dublin plant: The Dublin plant has been through commissioning where all systems have been tested and stressed to ensure long term compliance of the plant. Since first firing on waste there have been 40 incidents reported by the operator. The site reported incidents where the permit conditions were taken to apply during the commissioning and testing phase. The Irish Environmental Protection Agency (EPA) have classed 18 of these incidents as non-compliances. The incinerator was found to not be the source of the fly problem. The number of times the ELVs were above

	the permit levels were in the region of what we would expect during the commissioning and testing phase. The purpose of commissioning is to fine tune the plant and procedures to ensure compliance with the permit when fully operational. Most of the other reported incidents related to the combustion chamber temperature, which again occurred during the testing and commissioning phase. Most of the events did not result in elevated emissions, were of short duration and relate to testing of the plant to identify correct set-points or relate to issues with equipment rather than fundamental competence issues. The Applicant stated that overall the Dublin plant is operating extremely well. The Applicant provided results from initial emissions testing data that showed emissions well below the respective ELVs.
Concern over the financial viability. If the Dublin plant closed then this could cause the UK company to cease to be financially viable, as it is responsible for all its sister company's debts. The last available accounts show that Covanta Limited had made losses of £45 million.	These companies are separate legal entities. One of the reasons for organisations having a group of companies is that if one were to encounter financial difficulty then one company could close but not all would need to do so. The core EPR guidance states at 9.22 we should only consider financial solvency explicitly in cases where we have doubts as to the financial viability of the activity. We have no doubts as to the general financial viability of the activity. Based on this and that the information relates to other legal entities we have no reason to consider that the Applicant will not be financially competent. In any event, given the conditions in the permit if they cannot discharge the pre-operational conditions they will not be able to commence activities and they can only get to that stage if they are financially competent.
Concern that Covanta will pull out as they have done with other sites.	The Operator will remain responsible for the Permit until the point at which they surrender the Permit. A surrender would be subject to a surrender application to us.
The two schedule 5 responses on regulatory action do not correlate.	The first schedule 5 response was for all environmental breaches that occurred between 2016 and 2017. The Applicant stated that the vast majority of environmental excursions do not have associated fines or penalties. The second response was for all written regulatory agency action for environmental breaches over a five year period.
The management system does not exist yet, so how can the Environment Agency be satisfied with it.	Section 4.3.2 of the decision document states that we are satisfied that an appropriate EMS will in in place. Information in the Application confirmed that the EMS

	would meet the requirements of our guidance. PO1 of the Permit requires the EMS to be in place.
The Basel Convention requires a high level of technical competence.	We have considered the competence of the Applicant. Further details are in section 4.3.2 of this decision document.
Applicant has not provided proof that they will always comply with strict guidelines.	We are satisfied that the Applicant has provided sufficient information to show that they can and will comply with the Permit conditions.
Concern that Covanta has no plants in the UK and so cannot demonstrate competence in the UK.	The way we have assessed competence is set out in section 4.3.3 of this decision document.
Concern that Covanta plant in Italy was not monitoring emissions for 100 days in a year. This was discussed in Parliament in 2012	This was contained in minutes from October 2012 of The Joint Committee on the Rookery South (Resource Recovery Facility) Order 2011 in respect of general objections by local councils. The committee issued its report in February 2013 but found no case to answer in respect of the general objections. We have set monitoring requirements in the Permit and we will check to ensure that it is complied with. If it is not then we will take appropriate action.
Comments about Monitoring	
There should be a biochemist on site to do the monitoring. Concern that monitoring equipment will be subject to drift.	Monitoring will be required to be carried out to MCERTS standards and in accordance with the methods stated in the Permit. These standards will ensure that it is carried out by appropriately trained people to the required standards
How often will the monitoring be checked and audited by the Environment Agency? Particulates will only be checked twice per year.	We will regulate the site carrying out a continual assessment of plant operations and its environmental performance. This will be achieved in the following ways: The operator must monitor emissions to the standards set in the Permit, including MCERTS, and report the results to us. The Permit sets out the frequency for this, particulates will be continuously monitored. We will regularly inspect the Installation, review monitoring techniques and assess monitoring results to measure the performance of the plant. We also audit test labs and can take away their MCERTS accreditation if required. We will carry out on-site audits of operator monitoring at least once a year; The operator must inform us within 24 hours of any breach of the emissions limits, followed by a fuller report of the size of the release, its impact and how they propose to avoid this happening in the future; The operators' monitoring results are placed on the public registers; Depending on the seriousness of any breach, we will take appropriate enforcement action and/or prosecute.

Metal and HF monitoring is not frequent enough.	IED allows periodic monitoring of HF if treatment stages for HCl are used which ensure that the emission limit value for HCl is not being exceeded. We are satisfied that the acid gas abatement will ensure that HCl (which is continuously monitored) will not be exceeded and so periodic monitoring of HF is appropriate. Most metal emissions will be in the particulate phase and so continuous particulate monitoring along with periodic metal monitoring is appropriate.
Concern that the Operator will be able to plan the periodic monitoring so that the plant will be operating well for the monitoring period.	The Permit requires continuous monitoring for emissions to air of particulates, oxides of nitrogen, sulphur dioxide, carbon monoxide, total organic carbon, hydrogen chloride and ammonia. Others substances are required to be monitored quarterly or bi-annually. These requirements are in line with the IED. Metals and dioxins will be monitored periodically. The prevention and minimisation of dioxins and furans is achieved through injection of activated carbon, optimisation of combustion control, avoidance of de novo synthesis and the effective removal of particulate matter. The plant will have to shut-down if the furnace temperature is below 850oC or if the activated carbon injection fails. The primary control for metals is particulate abatement and particulates will be continuously monitored. Periodic monitoring will have to be planned so that the Operator can arrange for appropriate testing to be carried out. However given the continuous monitoring and other permit requirements described above, we are satisfied that periodic monitoring is appropriate for the other substances.
An opacity meter is proposed by the Applicant for monitoring particulate emissions which is not good for smaller particles.	The continuous monitoring used will use standards BS EN 14181 and BS EN 15267-3. We are satisfied that the monitoring technique will capture fine particles.
PM2.5 and PM1 should be continuously monitored.	The monitoring methods will give a result for total particulate matter that will include PM2.5 and PM1. Improvement condition IC2 requires the Operator to propose a methods for determining PM10 and PM2.5 fractions. There is not an MCERTS accredited

	method that can sample and analyse PM1 in isolation.
Covanta have stated that they do not always monitor due to cost.	We are not aware of any such statement being made. The Application shows that appropriate monitoring will be carried out and we have set monitoring requirements in the Permit to require this. We will check to ensure that this monitoring is carried out appropriately. If it is not then we would take appropriate action.
Comments about energy recovery	
The draft decision document states that 70kWh of energy will be used to incinerate 1 ton of waste. This only leaves 19 MWh available to export.	This is not correct. The decision document shows that 65 MW of electricity will be generated with 60 MW exported.
Energy recovery from commercial waste is unknown.	Most incinerators have the option to burn commercial waste. The Applicant has provided data for the amount of expected energy recovery and we have assessed this as being BAT. Section 4.3.7 of this decision document has details.
Comments about BAT and control measures	
Concern that negative pressure will not be maintained due to tipping hall doors opening.	The use of combustion air to generate negative pressure within the reception hall is standard practice at most incineration plants and is a reliable way of controlling odour without the need for continuous pressure testing. We have set pre-operational condition PO8 to ensure that air flows will be sufficient.
Concern that sodium bicarbonate is not proposed based on cost, but cost details were not provided.	The cost of lime compared to sodium bicarbonate was provided in the Applicant's BAT assessment document. The choice of reagent is covered in section 6.2.3 of this decision document.
The Applicant should submit a detailed analysis of the reliability and probability of failure of each component of the flue gas treatment devices and measurement devices.	Our view is that we do not require this level of detail. Periods of abnormal operation are limited by the Permit and impacts considered in section 5.5 of this decision document.
Wet scrubbers should be used after the bag filters.	Wet scrubbing is not BAT for the reasons set out in section 6.2.3 of this decision document.
The furnace temperature should be 1100^{o}C.	The combustion chamber will be > 850^{o}C for 2 seconds after the last injection of combustion air. This is a requirement of IED (for incineration plants) to ensure complete destruction of organics such as dioxins. IED does specify a higher temperature (1100 ^{o}C) for hazardous waste with >1% halogenated materials, but this Installation will not incinerate such wastes and therefore 850^{o}C for 2 seconds is the appropriate standard.
Rapid cooling only minimises reformation of persistent organic pollutants (POP) it	We agree, control measures do not totally eliminate emissions. Our assessment has

doesn't eliminate them. Dioxins are not the only POP present, so concern was expressed about whether other POPs will be controlled.	been to ensure that BAT is used to eliminate emissions are far as is practicable. POPs (dioxins and others) are considered in section 6.4 of the decision document.
Combustion and rapid cooling is not effective at controlling VOCs as shown by ground level monitoring around the Marchwood incinerator.	Measures to control dioxins and other POPS are set out in section 6.2.5 of this decision document. Methods for control of other VOCs are covered in section 6.2.4. We consider these methods to be BAT.
There is no consideration of the reagents that will be used for the abatement methods.	The reagents have been considered with details in section 6 of this decision document.
Concern over use of excessive reagents in the abatement plant.	Improvement condition IC5 requires the abatement systems to be optimised.
Lack of detail over the design of the ammonia tank and pipework.	Storage of ammonia will be in a bunded storage tank. The storage tank will be bunded at 110% of the tank capacity and the offloading location will be fully contained. Vapour during delivery will be back vented to the delivery tanker. We are satisfied that we have sufficient information to be satisfied that ammonia will be stored appropriately.
Concern that not all heat from the furnace will be contained.	Heat generated will be used to generate steam and then electricity. There will be heat losses as no system can be 100% efficient. However we are satisfied that heat recovery is BAT, further details are in section 4.3.7 of this decision document.
Fluidised bed should be used.	Our view is that fluidised bed would not be BAT for this Installation. Section 6.1.1 of this decision document has further details.
Bag filter efficiency should be checked.	Particulate monitoring will be continuous which will ensure that the bag filters are operating effectively and efficiently.
Alternatives technologies that will recover waste and result in lower emissions should be used. Suggestions included: AD, MBT, pyrolysis/gasification to generate syngas, generation of diesel, particle board manufacture, cement production, land restoration, ethanol production.	It is argued that Incineration is not an environmentally sustainable technology and therefore cannot be considered to be the Best Available Technique (BAT). The Environment Agency is aware that a number of proposals are coming forward for other ways of dealing with waste streams such as pyrolysis and mechanical / biological treatment. At this time however, mass burn incineration at this scale can still be considered BAT, subject to the appropriate assessments being made. Anaerobic digestion is most suitable for high moisture content biodegradable wastes such as food and agricultural wastes, and can be applied where there is separate collection of these waste streams. Anaerobic digestion is not however appropriate for mixed municipal waste. Some technologies such as plasma arc gasification are currently considered not to meet the definition of 'availability' due to

	their very limited application worldwide. Pyrolysis and gasification are methods that generate syngas. These methods were considered in the Applicant's BAT assessment, as discussed in section 6 of this decision document. We are satisfied that, at the proposed scale, they would not be BAT for this Installation.
Comments about regulation	
Concern that the Environment Agency will not be able to remotely monitor the furnace temperature.	The Permit requires the furnace temperature to be continuously monitored. In the event that the temperature falls below 850°C the plant will have an automatic system to stop waste feed.
The Environment Agency and an independent environmental expert company should have permanent and 24 hour remote access to the emission monitoring systems at the plant.	Monitoring results will be reported to us and we will audit this when we visit the site. Any emission breech has to be reported to us immediately. Therefore remote monitoring is not required.
The community should be allowed to inspect the Installation.	We do not have the ability to require this. This would be a matter for the public and Operator to discuss.
How will compliance with the 585,000 tonnes per year waste limit be checked?	The Operator will have procedures to weigh all waste deliveries being received and keep records of this. We will check the records when we visit the site.
How will complaints from the public be dealt with?	If we receive complaints about the Installation we will investigate them and take action if required.
The Environment Agency has stated that they can do nothing about impacts from noise, odour and smoke.	This is not the case. Our view is that the Installation will not give rise to any significant pollution. If noise, odour or smoke issues from the Installation were to occur then we would take action as necessary.
There should be a permit condition for harm from particulates to be reviewed over time and for the plant to be closed if found to be harmful.	We carry out periodic reviews of permits. We can also review a permit at any time if required. If there are changes in legislation on the ESs for particulates then we can vary the Permit if required and we can also revoke the Permit is were to decide that significant pollution was occurring. A Permit condition is not required for us to be able to do this.
Action was taken at a hazardous waste site, but it was after harm had already occurred.	When we audit and inspect site we audit management systems including preventative maintenance procedures. If we spot issues with the plant or procedures that could pose a future pollution risk then we would require these to be rectified.
How will the Environment Agency report on the plant performance?	Monitoring results and reports submitted in relation to the Permit will be made available on our public register.

Who will be held responsible if a regulation breach does occur?	We would hold the Operator responsible if this occurred.
Provisions regarding notifications are inadequate. In condition 4.3.1, how are 'significant effect', 'immediate danger to human health' and 'immediate significant adverse effect on the environment' determined?	This is a standard condition used in all of our permits. We consider the phrases are clear and precise. It will initially be for the Operator to assess whether notification is required. We will check this condition has been complied with when we inspect and audit the Installation.
There are no details on how the plant will be controlled in terms of computer software.	The Application states 'The waste incineration plant will be controlled from a dedicated control room. A modern control system, incorporating the latest advances in control and instrumentation technology, will be used to control operations'.
Concern that a software fault, or cyber-attack could cause abatement to shut-down and affect people's health.	Failure of abatement plant would be classed as abnormal operation. This is considered in section 5.5 of this decision document.
The Permit should require start-up and shut-down occurrences to be reported.	We don't consider it necessary to have this reported through the Permit conditions. However we will be able to check this when we inspect the site. If there are excessive shut-down and start-ups then we would investigate the reasons and require action to remedy if required.
The Permit should require total waste incinerated to be reported.	Table S4.2 requires total MSW and total commercial waste to be reported which will make up the total waste incinerated.
Dates and times of periods of abnormal operation should be reported.	Table S4.3 of the Permit requires the number of occurrences and total time period of abnormal operation to be reported. If we consider we need any more information we can require this is provided.
Concern that if the Operator is fined then the Environment Agency will benefit financially.	Any fine imposed by a court is paid to the court the Environment Agency will not receive the money.
The Environment Agency's budget will be less in the future so will it be able to regulate effectively.	We will make best use of the resources that we have in order to regulate the site to ensure that Permit conditions are complied with and take action if they are not.
Condition 3.6 should have a time limit for when a pest management plan should be submitted.	Condition 3.6 allows us to set a time limit if we were to require such a plan. Therefore we do not need a time limit in the Permit.
Schedule 4 requires quarterly reporting yet at the drop in event it was stated by the Environment Agency that this frequency would be increased to monthly for at least the first year of operation.	We do not know where this impression was given. Some of the monitoring (such as dioxins) is quarterly for the first year of operation and we consider this to be appropriate. We are satisfied that the reporting frequency is appropriate. In addition any emissions limits exceedance will be required to be reported within 24 hours.
If dust did occur then plant operatives will be under pressure to keep the plant running rather than address any issues.	We will regulate the Installation to ensure that the Operator takes appropriate measures in the event that any issues were to occur.
Comments about residues	

Fugitive emissions of IBA have not been adequately considered. Concern over impacts of dust on nearby footpath ~350 m away at the Forest Centre and railway line.	This issue was considered, as discussed in section 6.5.3 of this decision document. We are satisfied that the measures set in the Permit will ensure that dust emissions will be insignificant.
Concern that the dust management plan has a 400 m buffer line indicating that impacts will occur.	The plan is not showing that impacts will occur within 400m, it indicates that receptors within 400m could be affected if there was a dust emission. We are satisfied that measures will be in place to prevent dust emissions.
Tarpaulins are not adequate to contain ash from vehicles leaving site – should be airtight seals. Concern over wear and tear over tarpaulins	Our view is that covered vehicles using tarpaulins will be sufficient to minimise emissions from bottom ash transport. The ash will be damp. The EMS will include a preventative maintenance system to ensure that worn items are replaced. APC residues on the other hand are dry and will be transported in sealed tankers. The IBA will be subject to duty of care regulations covering transportation.
Wheel wash described as being used where necessary, this does not sound like it will be used regularly.	Our view is that it is reasonable to use the wheel wash when needed.
Sweeping is not an appropriate method to control dust from IBA.	A mechanical broom road sweeper will be utilized to minimise potential fugitive dust emissions from roadways within the installation boundary. A written procedure for periodic sweeping, targeting specific areas and frequent inspections will be followed for the reduction of fugitive dust emissions. The road sweeper will be subject of a periodic maintenance programme to ensure its long-term performance. Other measures to control dust are set out in section 6.5.3 of this decision document.
Concern over dust while loading IBA and IBAA on lorries. How will this be carried out? Concern as to whether the Operator will be able to temporarily postpone loading and unloading in the event of adverse weather and whether vehicles will be turned away or queue to get into the site.	Loading shovels will be used. IBA and IBAA will be kept damp to minimise any risk. Loading and unloading will be avoided during adverse weather. The Applicant stated that the storage area for IBAA will be sufficient for 6 months storage, so there will be sufficient contingency storage arrangements.
Covanta say that rainwater weathers the bottom ash but rainy days could be limited.	The dust management plan states that other sources of water can also be used, from the service water supply.
Concern that vehicles entering bottom ash areas will become contaminated with ash.	A wheel wash will be used if required to remove ash from vehicles prior to leaving the Installation.
The Wind rose in the dust management	We are satisfied that the Permit will control

plan, from Cranfield, is not representative.	dust emissions. This will apply whatever the wind direction occurs.
How often will the IBA be sprayed to keep it damp and will this be done more frequently during hot weather? Concern that suppression is not an automatic system.	The Applicant stated that the moisture condition of both the IBA and IBAA will be visually monitored daily. The dust management plan describes additional use of the water sprays during dry weather. We are satisfied that the proposed suppression along with storage in a fully enclosed building will prevent any significant dust impacts.
Some of the statements in the dust management plan are vague such as 'actions could include temporary suspension of activities.'	We are satisfied that the dust control measures in the Permit (described in section 6.5.3 of this decision document) along with the dust management plan will control dust emissions. A final dust management plan will be approved through pre-operational condition PO10.
Bottom ash composition will be variable and so some could be hazardous.	The ash sampling protocol developed through pre-operational condition PO3 (in line with the ESA protocol) will take account of possible variability in terms of number and size of samples and the way in which it is sampled.
Concern that ash IBAA is being described as being stored 5m high in 3m high bays.	The Permit requires IBAA to be stored in a fully enclosed building.
Concern that transporting ash off site rather than treating on-site will result in increased vehicle movements and increased dust risk.	We don't agree that this would be the case. The ash would still be required to be removed from site whether treated on or off-site.
The impact from fly ash (APC residue) and bottom ash has not been considered fully.	We do not agree. Control measures are described in section 6.5.3 which will ensure no significant impact from APC residues or bottom ash.
Concern as to what negligible dust means in the dust management plan.	The dictionary definition of negligible is 'so small or unimportant as to be not worth considering; insignificant'. We agree that any dust impacts will be insignificant given the control measures that the Permit requires to be used.
Concern that IBA and IBAA storage will attract flies.	This is the unburnt residue from incineration of the waste. As such it will not contain organic material and so will not attract flies.
Various best practice and guides are listed in the dust management plan, but it does not say how they will be implemented.	The dust management plan does describe measures that will be used to control dust impacts.
Dust monitoring should be carried out at nearby receptors.	Our view is that this is not required for the reasons set out below. The Applicant proposed using sticky discs on the Installation boundary to monitor dust levels. We are satisfied that the control measures required by the permit will ensure that dust emissions beyond the Installation boundary

	are unlikely. We consider that the dust monitoring is an additional control on top of the primary measures which will confirm that the dust control measures are effective and that the details will be required through a pre-operational condition.
Concern over dust from loading IBA onto ships.	The Applicant has not proposed to load IBA or IBAA onto ships.
Concern over increased ash production at start-up.	In terms of bottom ash, we are not aware that increased ash production is an issue at start-up for incineration plants. In terms of fly ash and /or APC residues and any particulate emissions; combustion gases will be routed through particulate filters during start-up.
Concern that the dust management plan states that dust will be a nuisance on clothes and cars.	This part of the dust management plan is about the consequences in the event that a release does occur. The risk is assessed as being insignificant and we agree with that assessment.
Concern that no limits are specified for metals in the residues in table S3.4 of the Permit.	The monitoring set in this table is a requirement of IED but no limits are specified in IED and we do not consider it necessary to specify any. As well as the testing set in the Permit the Operator will need to carry out testing to determine the hazard status. This testing will be in line with the ESA protocol. Pre-operational condition PO 3 requires this to be confirmed.
Concern over 6 month storage time of IBAA and that odour could be an issue. Is 6 months really required?	IBAA will typically be held in the storage area for one month, however the storage area will have the provision for 6 months storage if required. The ash typically has relatively low potential to cause odour issues. Our view is that odour impacts at nearby receptors are not likely to occur.
Concern over dioxins in the ash.	Activated carbon will be used to abate dioxins. The carbon will be part of the APC residues which will be disposed of as hazardous waste. Both APC residues and bottom ash will be analysed for dioxins as required by table S3.4 of the Permit.
Concern that an IBAA building may require planning permission. What will happen if planning is not granted?	An additional structure may require planning permission. If this was not granted then the Operator would not be able to construct a new structure for IBAA storage. In this situation the Permit will not allow the Operator to store IBAA on site. We expect that the Operator would then use the option, mentioned in their Application, to remove the ash off-site for processing.
Concern that the Applicant did not revise	The Applicant did revise it from 5% to 2%.

the dust trigger level of 3% effective coverage when challenged.	
Comments about the consultation	
The drop in was 1-7pm making it difficult for working people to attend. There should be more consultation events. Questions raised at the drop in session were not adequately answered, such as questions on traffic and health impacts.	We consider that we took appropriate steps to consult on the draft decision. We held the drop in event over a period of time to allow as many people to attend as we could. The drop-in was attended by over 300 people. We also attempted to answer questions as well as we could. Where we could not answer specific questions people were referred to the decision document or application or to submit their concerns as a consultation response to be considered before our final decision.
The Environment Agency should ensure that the Food Standards Agency provide a consultation.	We consulted the Food Standards Agency (FSA) but we received no comments. We also sent a reminder about the consultation but no comments were received. It is not unusual for the FSA to provide no comments on incinerator applications.
The consultation website was not working.	We were not aware of any issues with the website during the consultation, but we apologise if there were any periods of service interruption. We received over 1300 responses, most via the website showing that it was working for the vast majority of the time.
The schedule 5 responses were not made available to the public. The Permit refers to information that was not available to the public.	The minded to issue consultation was a consultation of the draft decision. The draft decision document and draft Permit were available to view and comment on through our website. Information submitted in response to the schedule 5 notices was available to view on our public register. After requests by the public we also made the schedule 5 response information available to view on the consultation website and extended the consultation period.
The term 'minded to' gives the impression that the decision has already been made. .	This is not the case. What we meant by a minded to consultation was explained at the beginning of the draft decision document.
The decision document states that the Environment Agency have conducted a number of case studies to assess this as Covanta's modelling does not take temperature inversion into account. This does not appear to have been included in the consultation documents.	Initially we consulted on the Application. We then consulted on our draft decision document. The studies are neither part of the Application nor the draft decision document. There is no obligation to make them available as part of the consultation nor was it necessary to do so to explain our position clearly – which we have done. They are just referred to as part of our explanation as to why we are satisfied that the modelling provided with the Application can be used to assess the impacts. If requested we would have provided this document.

The minded to issue consultation should be extended beyond the 7th November.	The minded to issue consultation was held from 11/09/17 until 07/11/17, which is a period of 8 weeks. This is was an extended consultation from the usual time period of 4 weeks. Our view is that we had provided sufficient opportunity for people to comment on the draft decision and that a further consultation period was not required.
Consultation comments submitted via e-mail could not be viewed on the citizen space website.	This is correct. However all responses were made available to view on our public register.
The documents that were consulted on were of poor quality.	We have sufficient information in order to make a decision to issue the Permit and are satisfied that the documents were suitable for consultation.
Consultation on the draft decision with communities further away should have been carried out.	We are satisfied with the way we consulted on the draft decision, as set out in section 2 of this decision document. This was borne out by the large number of responses that we received.
Not clear as to the purpose of the minded to issue consultation. Concern that people have had to object twice.	The purpose of the minded to issue consultation was to consult on our draft decision as explained clearly in the introduction of the draft decision document. There was no obligation for people to object twice. All comments received from the first consultation on the Application are still valid and the way we have considered them is covered in Annex 4, part A of this decision document.
No details were provided on how people could comment.	This is not correct. The consultation webpage contained details of how comments could be submitted.
Environment Agency documents at the drop-in showed bias towards the Applicant.	We are not biased. However our draft decision was that we were minded to issue the Permit and so documents at the drop would reflect this draft position. However as explained in the draft decision document we were consulting on the draft decision and we had not made a final decision at that point.
Part of the schedule 5 response that referred to an amended supporting document had a missing reference therefore the public could not look at this document.	The reference was missing but the document referred to was placed on the public register and also available on the consultation webpage so this did not affect to read and comment on this aspect of the Application.
Other issues	
The draft permit contains two waste codes that permit any waste.	This is not correct. This refers to codes 17 09 04 and 19 12 12. The Applicant confirmed that 17 09 04 was not required and so we removed this from the Permit. 19 12 12 will be recovered wastes from other waste processes which are contaminated and not suitable for recovery.

How long will the plant operate for and what are the hours of operation.	We do not have the information on how many years the plant will operate for, and the risk assessments are not dependant on this. The Installation will operate 24 hours a day.
Concern over what will happen when the plant has closed down.	The Operator will have the option to surrender their Permit. This is covered in section 4.2.3 of this decision document.
There is a lack of detail on the checks that will be carried out to ensure only suitable wastes are received and burned. Suspect vehicles will be inspected, how are suspect vehicles identified? Will people be trained to do this?	Waste acceptance procedures will meet the requirements of our guidance. The procedures will form part of the Applicant's management system. For clarity we have added a separate pre-operational condition (PO11) so that waste acceptance procedures will be approved before the Installation can operate. The EMS will contain training requirements.
Concern that visual checks will not identify problem wastes.	Visual checks are only part of the procedures that will be used. The main methods of preventing unsuitable wastes being received will be waste pre-acceptance and waste acceptance procedures which are used across the waste industry.
Concern over bluetac and chewing gum being incinerated	These could be present in household waste, but the amounts are likely to be small and we do not believe they would cause any issues.
Concern that there is no requirement in the permit to notify people who would be affected by any infringement.	The Permit requires that the Environment Agency are notified in the event of any Permit breach. We will then notify other people or bodies as required.
A public inquiry should be held to make the decision on the permit.	The Secretary of State could call in a permit application for his own determination which could include holding an inquiry. We have not had any such instruction for the application.
Concern over medical and animal waste being burned including concern that this will attract vermin and flies.	The Permit allows wastes classified with EWC codes 18 01 04 and 18 02 03 to be burned. 18 01 04 is for human wastes and is described as wastes whose collection and disposal is not subject to special requirements in order to prevent infection (for example dressings, plaster casts, linen, disposable clothing, diapers). 18 02 03 is for animal wastes and the Applicant confirmed that this code is for road kill of pets, zoo animal faeces. Pests are not usually an issue at incineration plants because the waste is only stored for a short period of time. The Applicant confirmed that bunker management would be used to mix the waste and that storage time would be 4-5 days which we consider is appropriate. Allowing these wastes to be received, which

	are likely to be small compared to the main waste types received, do not give us cause for concern. Permit condition 3.6.2 allows us to request a pest management plan should it be required.
Concern over whether the carbon dioxide figures used in the global warming assessment can be verified.	We are satisfied with the way the Applicant's BAT assessment considered carbon dioxide and global warming. Any changes in the way the offset is considered would be the same for each option and so will not affect the conclusions of the BAT assessment. Further details are in section, 6.3 of this decision document.
Concern that waste composition will change over time and affect energy efficiency of the plant.	We have assessed the application that has been made to us and that the plant will be able to incinerate the waste types specified in the Permit. If the Applicant wanted to change waste types in the future then they would have to apply to vary the Permit. If the waste feed were to change significantly and the waste calorific value of the waste fell then it is possible that more support fuel would be required but Permit conditions will still have to be met. We can only determine the Application on the information we have but if things should change and they were no longer in the BAT range for energy efficiency then we would have to consider whether to vary the permit or revoke it if required.
Concern that information submitted by the Applicant in the Application cannot be trusted.	Any key measures proposed in the Application have been incorporated into the permit as operating techniques through table S1.2 of the Permit. If the Operator does not operate the plant in this way then we will take action against them.
This application is far too dependent on uncertain and unproved operation.	We do not agree with this. Moving grate incineration is a well proven technique used in the UK and Europe.
The BBC reported that the Planning Commission concluded in 2011 that there would be overwhelming harm caused.	Whether or not this was reported, this was not the conclusion of the planning decision and is also not our conclusion.
The waste tipping hall will be outside.	The waste tipping hall is not outside, it is inside the main incinerator building as shown on site plans in the Application.
Can the 585,000 tonnes per year limit be increased?	This would require the Operator to apply for a variation to their Permit. The variation application would need to assess any increase impacts from the increase.
Light pollution has not been considered.	This issue was raised in the consultation on the Application and is addressed in Annex

	4, part A of this decision document.
Concern that the government and the Environment Agency support the Applicant. EA is not acting independently as per its remit and has been instructed to award an environmental permit at any cost.	We are not biased towards the Applicant and have assessed the Application on its merits. Nor has anyone instructed us to issue a permit.
Concern that due process has not been followed by the Environment Agency.	We have followed due process as set out in this decision document.
The decision document states that Amphtill Park is 2.5km away but it is only 1km in a straight line.	We have checked the distance and Ampthill Park House (on the edge of the Park) is ~ 2.1 km away. We have amended the decision document to reflect this.
The document dates in the various versions of the FPP do not tie up with the revision record in the document.	The latest version of the FPP was received on 26/07/17. The document is also dated 26/07/17.
The calorific value assumed for the waste is too high. Residual waste will have a lower calorific value due to recycling.	The plant is designed to cope with waste with a range of calorific values and throughputs. The Application states that the calorific value will be approximately 9.3 MJ/kg. This is a reasonable value for residual waste.
The issue of carbon dioxide is not mentioned in the decision document.	Carbon dioxide and global warming is covered in detail in the decision document in sections 6.3 and 6.5 of this decision document.
The risk assessment is not sufficient, terms like unlikely and not significant are vague.	We are satisfied with the assessment carried out by the Applicant and with the use of these terms. This decision document sets out how we have considered the risks.
The control measures rely too much on management procedures and performance of plant operators.	Management systems are important at all permitted sites which is why we require the Operator to have an EMS. We do not agree that there will be over reliance on this though. Where appropriate automated systems will be used, such as an automatic system to stop waste feed if the furnace temperature is below 850^{o}C.
Concern over burning electronic components	The Permit does not allow electronic equipment to be burned. The WEEE regulations require that such equipment must be recycled. If any small amounts were received unknowingly in any waste consignment this would not affect the performance of the plant.
Bees could be used to digest wastes such as polyethylene.	This would not be a technique that would be classed as available at the required scale.
Planning permission restricts waste to residual waste but the Permit allows recyclable waste to be incinerated if not suitable for recycling.	Planning and EPR are separate processes, but the Operator will have to comply with both the planning permission and the Permit. The Permit does not allow wastes that have been separately collected for recycling to be burned, unless they are subsequently found to be unsuitable for recovery by recycling. If it is unsuitable for recycling then in our view it should be allowed to be received and

	incinerated and could be considered residual waste although enforcement of any planning conditions is a matter for the planning authority.
The Basel Convention requires that technical guidelines require regular updating in line with developing circumstances.	The BREFs set the standards for plants regulated under IED and EPR. There is a process for reviewing and updating the BREFs when required. We also update our own guidance when required. The new BREF is due in 2019, we will need to review against the new BREF within 4 years of its publication.
Concern that Rookery Pit will be used to landfill APC residues.	There is no proposal to dispose of APC residues into Rookery Pit. If this was proposed it would require a separate application for a landfill activity permit.
The human rights of children have been ignored.	We do not agree with this. Section 7.2.2 covers human rights.
National Infrastructure Planning stated that harm would be overwhelming but still granted planning permission.	We cannot say whether this statement is accurate. The reasons for granting planning permission are outside our control. However we are satisfied that operation of the Installation will not cause significant harm to the environment or health.
The Applicant should publish information showing that the Installation will be safe.	We are satisfied that the risk assessments contained in the Application were appropriate. The Application documents were published to make them publically available.
Concern that the Applicant had originally proposed a subsurface oil tank and only removed it when challenged.	A site plan originally showed a subsurface oil tank. When we asked the Applicant about this they confirmed that a subsurface oil tank would not be used. An Applicant can make minor changes to an application and we are satisfied with the revised proposals for the tank.
Concern over the risk of a terror attack by contaminating the waste.	The risk of a terror attack is continually assessed by the government and included in a national risk register. The Environment Agency will comply with any government instruction on the prevention of terrorism. In the meantime we need to continue to determine applications as normal and have considered all the likely risks.
Concern that typing mistake over the amount of carbon dioxide could mean that there are further typing mistakes.	We assessed the Application and requested further information or clarification where required. We are satisfied with the quality of the information and that we had sufficient information to make a decision to issue the Permit.
Underlying ground is Evesham soil and not Oxford clay as believed.	The information in the site report is based on British Geological Survey Maps. We checked the site condition report and we are satisfied that it has established the baseline conditions of the site so that when the Permit is surrendered we will be able to establish whether any ground contamination has occurred since the Permit was issued.

Evesham soils will result in increased risk due to permeability.	Measures will be in place to prevent emissions to ground so we are satisfied that there will not be a risk of groundwater pollution whatever the soil type is.
Have the Environment Agency conducted their own investigation rather than just checking the operator's numbers?	Our permit determination did include some of our own assessments to check the validity of the Applicant's information. This included our own checks of the Applicant's air quality assessment, their noise assessment and their health risk assessment.
Plant material from farms and growers (including bark and cork) should not be incinerated. The council take garden waste to make compost. Food waste should be treated by anaerobic digestion. Methane from anaerobic digestion could be converted in plastics.	The waste codes in the Permit for bark and cork are wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard and we are satisfied that these are suitable for incineration. The Permit also includes waste code 02 01 03 which is plant tissue waste from agriculture, horticulture, aquaculture, forestry, hunting and fishing, as well as wastes codes corresponding to catering wastes. The Applicant stated that some of the wastes can be treated by other methods, but that decision depends on those treatments being close by and /or being available and that the amount of those wastes will be small compared to the main waste stream of mixed municipal and commercial wastes. it is for the waste producer to apply the hierarchy and at permitting we are ensuring any waste that can't be dealt with higher up is incinerated in an acceptable way We are satisfied that the proposed wastes are suitable for treatment by incineration.
We should take account of the government's forest plan.	The Installation will not impact on any forests.
There should be a back-up entrance route.	A site plan submitted as part of the FPP showed the location of two access points.
Have the Environment Agency been consistent in approach to issuing or refusing other permits	We have been consistent with the way we have assessed other permit applications for incineration plants.
Concern that the Environment Agency have guided Covanta in how to respond to information requests.	Our schedule 5 notices have requested information from the Applicant. Where plans or documents did not include the information that we needed we identified those gaps and referred to any appropriate guidance. We consider that this was an appropriate way to request additional information.

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

Brief summary of issues raised:	**Environment Agency comment**

The Proposal is in conflict with the Central Bedfordshire Local Plan	This a matter for the planning decision and not something we can consider in this determination.
The IPC were under the impression that there was an urgent requirement for this incinerator and so planning permission was granted. This incinerator will not be built until 2021 so how it is no longer urgent.	This is a matter for the planning process and not something we can consider through environmental permitting.
What is the business case, what subsidies will be given, how will council tax be affected, what incineration tax will be charged?	These are matters that we cannot consider through environmental permitting.
The incinerator will prevent a new rail route being built.	This is not something we can consider through environmental permitting.
The contract period is too long. Electricity market is likely to change over next 30 years. More second hand shops would reduce waste production.	
Concern over the total carbon dioxide emitted including construction and transport. Construction works including changes to ponds, other land works, brown roof and green walls should be part of the Permit. Concern over the damage that has already occurred to Rookery Pit.	Impacts from construction are not part of the environmental permitting process.
An Environment Agency leaflet at the drop in stated that It may be appropriate for local authorities to include energy from waste plants in their long term plans as long as: It forms part of a regional or local waste strategy and that it helps develop a network of waste disposal and treatment facilities so that waste is disposed of or treated near to where it is produced.	The leaflet was setting out context of when planners may decide to grant planning permission. However these are issues for the local authority and local waste plans and are not things we can consider in the permit application.
The decision document says location is matter for local authority, but decision was taken by National Infrastructure Planning not local authority.	Location was raised as an issue in the consultation on the Application and is address in Annex 4, part A. What we said was that planning is primarily a planning issue. In this case planning was determined by National Infrastructure Planning.
Concern over the Environment Agency quality management system.	This is not relevant to the determination, however we can confirm that the Environment Agency has a quality and environmental statement that support our ISO 9001 and 14001 certification.
Who is responsible for the planning issues that are referred to in the decision document?	These are issues that form part of the planning process and so should have been considered by the planning authority which is this case was National Infrastructure Planning.
Concern that during plant shut-down HGVs	Traffic issues external to the Installation

may queue on local roads. No details on the CCTV system mentioned in the planning application.	form part of the planning process and not Environmental Permitting. However the Operator will have measures to divert waste away from the Installation during shut-downs.
Do not trust Covanta because the USA has pulled out of the Paris agreement.	Any decision by the USA government on the Paris agreement has no bearing on this permit determination.
Concern that the nearby Forest Centre are neutral on the incinerator due to financial incentives.	We cannot comment on this. In any event we are satisfied that there will not be a significant impact on the Forest Centre.
The incinerator is not needed because Millbrook Power Station will generate electricity.	The need for a facility is not something we can consider through environmental permitting.
The incinerator is likely to affect the rural character of the area.	This is an issue for the planning process and is not something that we can consider through environmental permitting.