

## Environment Agency

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

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

The Permit number is:                   EPR/WP3934AK  
The Operator is:                         Lostock Sustainable Energy Plant Limited  
The Installation is:                       Lostock Sustainable Energy Plant  
This Variation Notice number is:   EPR/WP3934AK/V003

### What this document is about

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

We have reviewed the permit for this installation against the revised BAT Conclusions for waste incineration published on 3<sup>rd</sup> December 2019. This is our decision document, which explains the reasoning for the consolidated variation notice that we are issuing. This review has been undertaken with reference to the decision made by the European Commission establishing best available techniques (BAT) conclusions ('BAT conclusions') for incineration as detailed in document reference C(2019) 7987. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position. It also provides a justification for the inclusion of any specific conditions in the permit that are in addition to those included in our generic permit template.

It explains how we will ensure that the installation complies with the BAT conclusions by 3<sup>rd</sup> December 2023. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position. It also provides a justification for the inclusion of any specific conditions in the permit that are in addition to those included in our generic permit template.

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

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

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

We try to explain our decision as accurately, comprehensively and plainly as possible. We would welcome any feedback as to how we might improve our decision documents in future. The use of technical terms and acronyms are inevitable in a document of this nature: we provide a glossary of acronyms near the front of the document, for ease of reference.

## How this document is structured

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# 1 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.)

APC	Air Pollution Control
BAT	Best Available Technique(s)
BAT-AEEL	BAT Associated Energy Efficiency Level
BAT-AEPL	BAT Associated environmental performance level
BAT-AEL	BAT Associated Emission Level
BATc	BAT conclusion
BREF	Best available techniques reference document
CEM	Continuous emissions monitor
CHP	Combined heat and power
CV	Calorific value
DAA	Directly associated activity – Additional activities necessary to be carried out to allow the principal activity to be carried out
ELV	Emission limit value derived under BAT or an emission limit value set out in IED
EMS	Environmental Management System
EPR	Environmental Permitting (England and Wales) Regulations 2016 (SI 2016 No. 1154)
EWC	European waste catalogue
FSA	Food Standards Agency
IC	Improvement Condition
IED	Industrial Emissions Directive (2010/75/EU)
NOx	Oxides of nitrogen (NO plus NO <sub>2</sub> expressed as NO <sub>2</sub> )
PHE	Public Health England
SAC	Special Area of Conservation
SGN	Sector guidance note
TGN	Technical guidance note
TOC	Total Organic Carbon
WFD	Water Framework Directive (2000/60/EC)

## 2 Our decision

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

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

The consolidated variation notice contains many conditions taken from our standard Environmental Permit template including the relevant Annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the Notice, we consider that those conditions are appropriate.

## 3 How we reached our decision

### 3.1 Requesting information to demonstrate compliance with BAT Conclusions for incineration Plant

We issued a Notice under Regulation 61(1) of the Environmental Permitting (England and Wales) Regulations 2016 (a Regulation 61 Notice) on 05/04/2022 requiring the Operator to provide information to demonstrate how the operation of their installation currently meets, or will subsequently meet, the revised standards described in the incineration BAT Conclusions document. The Notice also required that where the revised standards are not currently met, the operator should provide information that:

- Describes the techniques that will be implemented before 3<sup>rd</sup> December 2023, which will then ensure that operations meet the revised standard, or
- Justifies why standards will not be met by 3<sup>rd</sup> December 2023, and confirmation of the date when the operation of those processes will cease within the installation or an explanation of why the revised BAT standard is not applicable to those processes, or
- Justifies why an alternative technique will achieve the same level of environmental protection equivalent to the revised standard described in the BAT Conclusions.

Where the Operator proposed that they were not intending to meet a BAT standard that also included a BAT Associated Emission Level (BAT AEL) described in the BAT Conclusions Document, the Regulation 61 Notice requested that the Operator make a formal request for derogation from compliance with that AEL (as provisioned by Article 15(4) of IED). In this circumstance, the Notice identified that any such request for derogation must

be supported and justified by sufficient technical and commercial information that would enable us to determine acceptability of the derogation request.

The Regulation 61 Notice response from the Operator was received on 05/07/2022

We considered that the response did not contain sufficient information for us to commence the permit review. We therefore issued a further information request to the Operator on 18/08/2022. Suitable further information was provided by the Operator on 06/10/2022

We have not received any information in relation to the Regulation 61 Notice response that appears to be confidential in relation to any party.

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

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

## **4 The legal framework**

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

- an *installation* as described by the IED;
- subject to aspects of other relevant legislation which also have to be addressed.

We consider that the consolidated variation notice will ensure that the operation of the Installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

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

## 5 The key issues

The key issues arising during this permit review are:

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

### 5.1 Ensuring the Installation complies with the BAT conclusions

We have reviewed the operator's response to the regulation 61 notice and we are satisfied that the Installation will meet the requirements of the BAT conclusions by 3<sup>rd</sup> December 2023. Further detail on our assessment is in annex 1 of this decision document.

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

### 5.2 Emissions to air and the emission limits applied to the plant

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

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

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

We have set the emissions limit values at the top end of the BAT-AEL range in line with section 4.35 of Defra's Industrial emissions Directive EPR Guidance on Part A installations which states: *Where the BAT AELs are expressed as a range, the ELV should be set on the basis of the top of the relevant BAT-AEL range – that is to say, at the highest associated emission level - unless the*

*installation is demonstrably capable of compliance with a substantially lower ELV, based on the BAT proposed by the operator, or exceptional environmental considerations compel a tighter ELV.*

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

We have set IC1 which requires the operator to assess options to reduce NO<sub>x</sub> emissions below the top of the BAT AEL range.

### **5.3 Energy efficiency**

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

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

The Applicant stated that gross electrical efficiency is 32%. This is within the range specified in the BAT conclusions.

### **5.4 Monitoring**

The monitoring requirements for mercury and dioxins/furans are dependent on whether the waste has low and stable mercury content and whether emissions of dioxins are stable respectively. Improvement conditions IC2 and IC3 require the operator to submit information to enable us to require the correct monitoring.



## **Annex 1**

### **Decision checklist regarding relevant BAT Conclusions**

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

The overall status of compliance with the BAT conclusion is indicated in the table below as

NA - Not Applicable

CC - Currently Compliant

FC - Compliant in the future (by 3<sup>rd</sup> December 2023)

NC - Not Compliant

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
1	EMS	Improve overall performance via use of a compliant EMS.	Prior to the commencement of operations at the site, a site-specific EMS will be implemented that complies with all the relevant points listed in BAT 1. Further details on the proposed EMS for the site, including a review against the requirements of BAT 1, are presented in section 3 of report S2846-0050-0003KLH.	FC
2	Energy efficiency	Determine gross electrical efficiency, gross energy efficiency or boiler efficiency (depending on plant type).	Gross electrical efficiency has been calculated using the methodology set out in the BREF. The gross electrical efficiency is calculated to be 32.02%, which compares favourably with the benchmarks provided in the BREF (20-35% for existing plants). Performance tests will subsequently be carried out during the commissioning stages to confirm the efficiency of LSEP. Further details on the efficiency of LSEP are presented in section 4 of report S2846-0050-0003KLH.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
3	Process Monitoring	Monitor key process parameters for emissions to air and water specified in the corresponding table.	The process control system to be installed at LSEP includes for monitoring of the temperatures within the combustion chamber as well as flue gas flow, oxygen, temperature, pressure and water vapour content. This is in accordance with the requirements of BAT 3. There is no wet flue gas treatment undertaken at LSEP, and as proposed within the recent EP variation application, bottom ash treatment is no longer proposed to be undertaken at LSEP. Therefore, monitoring requirements for wastewater from the FGC and IBA treatment are not relevant to LSEP	FC
4	Air emissions monitoring	Monitor emissions to air with at least the frequency in the corresponding table and in accordance with the EN standards.	Monitoring will be carried out in line with BAT 4 requirements. Further details on the proposed air emissions monitoring at LSEP, including a review against the requirements of BAT 4, are presented in section 5 of report S2846-0050-0003KLH.	FC
	PBDD/F	Monitor emissions to air of brominated dioxins and furans periodically if waste streams are known to contain brominated flame retardants are burned	The plant burns municipal waste or similar and therefore PBDD/F monitoring will be carried out from 01/01/23 where possible. Further details on the proposed air emissions monitoring at LSEP, including a review against the requirements of BAT 4, are presented in section 5 of report S2846-0050-0003KLH.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
	PCDD/F	Monitor emissions to air of dioxins and furans using a continuous sampler unless emissions are sufficiently stable.	Attempts will be made to demonstrate via the PCDD/F Monitoring Protocol that emissions to air of PCDD/F are sufficiently stable and that a continuous sampler (long-term monitoring) is not required by 03/12/23; if these are unsuccessful, continuous sampling will be installed as soon as reasonably practical Further details on the proposed air emissions monitoring at LSEP, including a review against the requirements of BAT 4, are presented in section 5 of report S2846-0050-0003KLH	FC
	Mercury	Monitor emissions to air of mercury using continuous monitoring if required.	Attempts will be made to demonstrate via the Mercury Monitoring Protocol that emissions to air of mercury are low and stable and that a continuous sampler is not required; if these are unsuccessful, continuous monitoring will be installed as soon as reasonably practical. Further details on the proposed air emissions monitoring at LSEP, including a review against the requirements of BAT 4, are presented in section 5 of report S2846-0050-0003KLH	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
5	OTNOC monitoring	<p>Appropriately monitor emissions during OTNOC.</p> <p>Monitor PCCD/F and dioxin-like PCB mass emissions during a planned start-up and shut-down following the successful commissioning of the plant; already-operational plants must carry out this monitoring every 3 years; emissions profiles of continuously monitored pollutants must also be established following successful commissioning and for existing plants; consider further monitoring for plants that use abatement-system bypasses during start-up and/or shut-down.</p>	<p>Plant is likely to be commissioned after 03/12/23. Emissions profiles for continuously monitored pollutants will be established during start-up and shut-down following successful commissioning. Monitoring of PCCD/F and dioxin-like PCB mass emissions during a planned start-up and shut-down will also be carried out on a 'best endeavours basis' following the successful commissioning of the plant</p> <p>The continuous emissions monitoring system (CEMS) installed at LSEP will continue to monitor emissions to air of particulate matter (dust), TOC, HCl, CO, SO<sub>2</sub>, NO<sub>x</sub>, NH<sub>3</sub>, and N<sub>2</sub>O during periods of OTNOC.</p> <p>In accordance with the requirements of the EA's BREF interpretation document, LSEP Ltd will endeavour to undertake monitoring of PCCD/F and dioxin-like PCBs during a planned start-up and shutdown following successful commissioning of the plant, with the aim of repeating the test every 3 years thereafter. Monitoring would be done on a best endeavours basis, taking into consideration the challenges in coinciding a visit by the monitoring company with the exact time when the plant is starting up or shutting down. Should a monitoring attempt fail due to these challenges, LSEP Ltd will endeavour to repeat the exercise at the next available opportunity.</p>	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
6	Water emissions monitoring	Monitor emissions from FGC and/or bottom ash treatment.  Monitor to frequencies and standards in corresponding table.	Not applicable as no emissions to water from FGC or bottom ash treatment.	NA
		Reduced monitoring frequency permitted if emissions can be shown to be sufficiently stable.	Not applicable as no emissions to water from FGC or bottom ash treatment.	NA
7	Ash monitoring	Monitor LOI or TOI content of bottom ash to the frequencies and standards in corresponding table .	Monitoring carried out for LOI Monitoring of the LOI content of bottom ash will be undertaken monthly in the first year of operation, and then at least quarterly thereafter, in accordance with the requirements of the EP.	CC
8	POP monitoring	For hazardous waste containing POPs, monitor POP content of waste streams (applicable to dedicated hazardous waste incinerators only). After commissioning and then after significant change that could affect POP content.	Not applicable - plant is not a dedicated hazardous waste incinerator	NA

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
9	Waste input controls	Pre-acceptance / acceptance procedures. Use all techniques (a) to (c) in corresponding table, and where relevant (d), (e) and (f).	Techniques set out in BAT 9 (a)-(c) are in place. Techniques (d)-(f) are not relevant.	CC
10	Bottom ash treatment	Quality output management system part of EMS where bottom ash treatment is carried out.	Not applicable - bottom ash treatment is not carried out.	NA
11	Waste delivery, storage and handling	Monitor waste deliveries in line with corresponding table, depending on the risk posed by the waste type. Radioactivity detection	Measures in line with BAT 11 are in place. All waste deliveries accepted at LSEP will be weighed and visually inspected, in accordance with site waste acceptance procedures. Further detail is provided in section 6 of report S2846-0050-0003KLH.	CC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
12		<p>Storage and handling. Use both techniques listed in corresponding table.</p>	<p>Measures in line with BAT 12 are in place. Both techniques will be used at LSEP. The waste bunker is an impermeable concrete structure, which is designed as water retaining. Therefore, it will prevent both the ingress and egress of water.</p> <p>(a) Periodic integrity inspections of the waste bunker will be undertaken to ensure that the structure remains impermeable to liquids. These inspections are likely to be planned during outage periods. Visual inspections are expected to be completed at least annually in accordance with outage periods, with full civil inspections completed on a periodic (assumed 5-yearly) basis.</p> <p>(b) In order to ensure that the waste storage capacity is not exceeded, waste storage levels will be tracked regularly (assumed on a daily basis), with waste deliveries scheduled based on waste storage levels as required. The design of the waste acceptance process will ensure that the waste storage capacity cannot be exceeded (i.e. no further waste will be accepted at LSEP should the bunker reach maximum capacity).</p> <p>During periods where LSEP is not operational, waste deliveries will not be accepted onto site. Prior to periods of planned maintenance, waste storage in the bunker will run down</p>	FC



BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
13		Storage and handling of clinical waste. Combination of techniques listed in corresponding table.	Not applicable as clinical waste not received at the installation	NA

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
14	Overall environment performance	Reduce unburnt substances in slags / bottom ash and reduce emissions. Use a combination of techniques listed in corresponding table	Techniques (a), (b) and (c) will be implemented at LSEP, as outlined below. (a) Regular mixing of the waste within the bunker will be undertaken using the crane. This will ensure a homogeneous feed into the furnace. The only exception to this will be during periods of shutdown, to avoid the generation of odorous conditions. (b) A computer-based automatic distributed control system (DCS) will be employed at LSEP to control the combustion process, which will be supported by high-performance monitoring of emissions and operating parameters. The DCS will ensure that the settings for each combustion line are adjusted based on the control of the waste feed. (c) The plant is designed to optimise both primary and secondary combustion air distribution to improve the efficiency of the combustion process. The volume of both primary and secondary air will be regulated by the DCS. Primary combustion air will be optimised and improved through the continuous monitoring of process variables, including combustion air flow. Secondary combustion air distribution will be optimised through the use of Computational Fluid Dynamics (CFD) modelling, which will be used to select and optimise the location of secondary air inputs into the combustion chamber, to increase the efficiency of the SNCR system for NOx abatement.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
		BAT-AEPL for TOC or LOI	The BAT-AEPL for unburnt substances in slags and bottom ashes appropriate to LSEP is either a maximum TOC content of 3% or a maximum LOI content of 5%. In accordance with the requirements of the EP, LOI will be monitored to ensure this remains under 5%.	FC
15		Control plant settings to reduce emissions to air. Use techniques such as an advanced control system.	An advanced control system is in place to achieve the requirements of BAT 15. A computer-based automatic DCS will be employed at LSEP to control the combustion process, as described above. The DCS will be supported by high-performance monitoring of emissions and operating parameters. The DCS will ensure that the settings for the combustion lines are adjusted based on the control of the waste feed.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
16		Procedures to limit shutdown and start-up. Set up and implement procedures such as continuous rather than batch operation	LSEP will operate continuously in order to limit the number of shutdown and start-up operations. A preventative maintenance plan will be implemented to ensure that operational equipment has a high level of availability and limit the requirement to shut down for maintenance as far as practicable. A maintenance management system will be implemented at LSEP to schedule preventative maintenance and track any defects and ensure these are rectified. The system will be designed as a full scope computerised maintenance management system (CMMS) allowing the operator to manage the plant requirements via planned maintenance activities, plant inspections, reactive maintenance (defects), outage planning and execution. Outages will be planned (assumed annually) to complete maintenance which cannot be conducted whilst LSEP is operational.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
17	Emission to air and water	Design of FGC system and waste water treatment plant. Appropriate design, operated in design range, maintained to ensure optimal availability.	<p>The FGC systems are designed to be effective in abating the pollutant concentrations to the required limits for existing plants under the BREF. FGC equipment will be maintained according to manufacturer's recommendations to ensure that availability is optimised. Any defects will be logged, tracked and rectified to maintain the availability of the FGC system. Critical spares of equipment (such as spare bag filters) will be held on-site.</p> <p>A wastewater treatment plant is not proposed to be installed at LSEP.</p>	FC
18	OTNOC	Reduce frequency of OTNOC by setting up and implementing an OTNOC management plan.	<p>An OTNOC management plan which meets the requirements of BAT 18 will be implemented by 03/12/23. A description of how critical equipment has been designed to minimise occurrence of abnormal operation (AO) and minimise impacts from AO and start-up and shut-down periods is included with this submission.</p> <p>An OTNOC Management Plan has not yet been developed for LSEP. This will be developed following receipt of OTNOC specific guidance from UK Regulators. Further detail on how OTNOC is minimised is presented within section 7.2.2 of report S2846-0050-0003KLH</p>	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
19	Energy efficiency	Increase efficiency by using a heat recovery boiler.	A heat recovery boiler will be installed to recover heat from the waste gases and use this waste heat to generate electricity	FC
20		Increase efficiency by using a combination of techniques listed in corresponding table.	The following measures listed in the table of BAT 20 are used: (b), (c), (d) and (f). The techniques are discussed in further detail in the supporting document. A review of the techniques listed under BAT 20 of the BREF has been undertaken and is presented within section 4.2 of report S2846-0050-0003KLH	FC
		BAT-AEEL is within the BAT – AEEL range	The gross electrical efficiency has been calculated to be 32.02%. This compares favourably with the BAT-AEEL range for existing plants (20 - 35%). Efficiency calculations for LSEP have been undertaken in accordance with BREF methodology and are set out within section 4 of report S2846-0050-0003KLH.	CC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
21	Diffuse emissions to air	Prevent or reduce diffuse emissions (including odour) using the listed techniques.	Measures in line with BAT 21 are in place Waste will be stored within a dedicated bunker located within an enclosed building, with the doors to the tipping hall only opened to allow deliveries of waste. Potentially odorous air will be extracted from above the storage bunker and used as combustion air within the furnace. Waste levels within the bunker are run down in advance of planned shutdown periods to ensure that there is a minimum quantity of waste held on site during non-operational periods	FC
22		Prevent diffuse emissions of VOCs from gaseous and liquid wastes by direct feed to furnace.	LSEP will not incinerate gaseous or liquid wastes. Therefore, this BATC is not applicable to LSEP.	NA
23		Prevent or reduce diffuse emissions to air from treatment of slags and bottom ashes by including listed measures in the EMS.	Bottom ash treatment is not undertaken at LSEP. Therefore, this BATC is not applicable.	NA
24		Prevent or reduce diffuse emissions to air from treatment of slags and bottom ashes. Use one or a combination of techniques in corresponding table	Bottom ash treatment is not undertaken at LSEP. Therefore, this BATC is not applicable.	NA

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
25	Channelled emissions to air	Reduce emissions of metals and metalloids from incineration of waste. Use one or a combination of techniques in corresponding table.	Techniques (a) and (c) are implemented at LSEP as outlined below. Periodic monitoring in accordance with the requirements of the permit will ensure that compliance with the BAT-AELs for dust, metals and metalloids is monitored, and addressed if non-compliances are identified. (a) A bag filter will be employed to abate metals and metalloids which are in the particulate phase from the flue gases. (c) Powdered activated carbon (PAC) will be injected into the flue gases to abate metals and metalloids which are in the vapour phase from the flue gases.	FC
		BAT-AELs for dust and metals	LSEP has been designed to achieve compliance with the BAT-AELs for existing plants. Compliance will be demonstrated via reporting of emissions monitoring as required by the permit.	FC
26		Reduce emissions of dust from treatment of slags and bottom ashes. Use a bag filter if treating air from treatment of IBA under sub-atmospheric conditions.	Bottom ash treatment is not undertaken at LSEP. Therefore, this BATC is not applicable.	NA



BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
		BAT-AEL for dust from IBA treatment. Applies if using a bag filter to treat air from treatment of IBA under sub-atmospheric conditions	Bottom ash treatment is not undertaken at LSEP. Therefore, this BATC is not applicable.	NA
27		Reduce emissions of HCl, HF and SO <sub>2</sub> using one or a combination of techniques in corresponding table.	Technique (c) will implemented at LSEP as outlined below. (c) Lime will be injected into the flue gases via a dry sorbent injection system to neutralise acid gases such as HCl, HF and SO <sub>2</sub> within the flue gases. Lime and PAC usage will be tracked in tonnes consumed per hour. Emissions of acid gases will be monitored and controlled in accordance with the requirements of the environmental permit. In a dry sorbent injection system, the reagent is injected into the flue gas stream within the flue gas treatment system, located after the boiler. In direct boiler sorbent injection, the reagent is injected directly into the flue gas stream within the boiler. This only achieves partial abatement of the acid gases and does not eliminate the need for additional flue gas cleaning stages. The dry system will be designed to ensure that LSEP will operate in accordance with the relevant ELVs, assumed to be the BAT-AELs, without the requirement for any additional abatement measures. Taking this into consideration, additional boiler sorbent injection is not considered appropriate for LSEP.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
28		Reduce peak emissions of HCl, HF and SO <sub>2</sub> and amount of residue produced, using technique (a) or both techniques in corresponding table.	Technique (a) is implemented at the Facility as outlined below. (a) The reagent dosage is automated to ensure that the consumption of reagents is optimised. The concentration of hydrogen chloride in the flue gases upstream of the flue gas treatment system will be measured in order to optimise the performance of the emissions abatement equipment, including automated reagent dosage. In relation to technique (b), a small proportion of the APC residues will be recirculated to reduce the amount of unreacted reagent in the residues.	FC
		BAT-AELs for HCl, HF and SO <sub>2</sub>	LSEP has been designed to ensure that the concentrations of HCl, HF and SO <sub>2</sub> released comply with BREF limits. Monitoring will be undertaken in accordance with the requirements of the permit to confirm this.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
29		Reduce emissions of NO <sub>x</sub> while limiting emissions of CO, N <sub>2</sub> O and NH <sub>3</sub> using appropriate combination of techniques in corresponding table.	Techniques (a), (c) and (f) are implemented at LSEP as outlined below. (a) The incineration process will be optimised to ensure that the flow rates of primary and secondary combustion air are appropriate to effectively oxidise organic compounds whilst reducing the generation of NO <sub>x</sub> . The automatic combustion control system control the production of NO <sub>x</sub> through ensuring that combustion temperatures are as uniform and consistent as possible, thereby lowering the peak flame temperature. (c) SNCR using ammonia as a reagent is proposed to be employed at LSEP. (f) The SNCR system for the abatement of was NO <sub>x</sub> will be optimised through commissioning of the combustion process. The optimisation of the SNCR system will enable a balance between low reagent consumption, low levels of ammonia slip and NO <sub>x</sub> abatement.	FC
		BAT-AELs for NO <sub>x</sub> , CO and NH <sub>3</sub>	LSEP has been designed to ensure that the concentrations of NO <sub>x</sub> , CO and NH <sub>3</sub> released comply with the BREF limits for 'existing' plants. Monitoring will be undertaken in accordance with the requirements of the permit to confirm this.	FC

30	Reduce emissions of organic compounds including PCDD/F and PCBs using techniques (a), (b), (c), (d) and one or a combination of techniques (e) to (i) in corresponding table	<p>Techniques (a), (c), (d) and (e) are implemented at LSEP, as outlined below.</p> <p>(a) The temperature within the furnace will be maintained above 850°C during operation to ensure that any dioxins and furans are destroyed during the incineration process. Interlocks will be implemented in the DCS to prevent the charging of waste in the event that furnace temperatures drop below 850°C during operation.</p> <p>(c) Online boiler cleaning will be implemented through the installation of shock pulse generators and offline boiler cleaning will be implemented through a regular maintenance schedule to reduce residence time and dust accumulation in the boiler, thus reducing PCDD/F reformation in the boiler.</p> <p>(d) LSEP has been designed to minimise the formation of dioxins and furans, including ensuring rapid flue gas cleaning occurs from temperatures above 400°C to below 250°C in order to reduce the potential for de novo synthesis of dioxins and furans.</p> <p>(e) Dry sorbent injection will be employed at LSEP, with powdered activated carbon (PAC) injected into the flue gas upstream of the bag filter.</p> <p>In relation to technique (b), this is not applicable to municipal solid waste, which is the primary waste stream which LSEP will process. Therefore, this technique is considered to be not applicable to LSEP.</p>	FC
	BAT-AELs for PCDD/F	LSEP has been designed to ensure that the concentrations of PCDD/F released comply with the BREF limits for 'existing' plants. Monitoring will be undertaken in accordance with the requirements of the permit to confirm this.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
31		Reduce mercury emissions using one or a combination of techniques in the corresponding table.	Technique (b) is implemented at LSEP as outlined below. (b) Dry sorbent injection (lime and activated carbon) will be utilised at LSEP. The activated carbon will be combined with a bag filter, where a reaction layer is created in the filter cake and solids generated are removed regularly.	FC
		BAT-AEL for mercury	LSEP has been designed to ensure that the concentrations of mercury released comply with the BREF limits for 'existing' plants. Monitoring will be undertaken in accordance with the requirements of the permit to confirm this. The WI BREF allows for periodic monitoring of mercury where emissions are demonstrated to be sufficiently low and stable. This will be proven during the commissioning process, where monitoring for mercury will be completed to obtain 6 results below the threshold within the mercury protocol. Taking this into consideration, at this stage, LSEP Ltd conclude that a mercury CEMS will not be required.	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
32	Emissions to water	Reduce contamination of uncontaminated water, reduce emissions to water and increase resource efficiency. Segregate waste water streams and treat them separately.	<p>There will be separate foul/domestic water, surface water and process effluent drainage systems at LSEP. Foul effluents from domestic sources will be discharged to sewer in accordance with a Trade Effluent Consent.</p> <p>Uncontaminated surface water run off will be segregated from other wastewater streams requiring treatment, and discharged off-site.</p> <p>In relation to process effluents, these will be reused within the process where possible. There will be no wastewater arising from flue gas treatment. Bottom ash storage will be undertaken in an enclosed building with a dedicated drainage system, with process effluents re-used within the process. The drainage in the Facility's waste reception, handling and storage areas will be contained and reused within the process. Any excess process effluents (for example, generated during emptying of the boiler) will be discharged to sewer in accordance with a Trade Effluent Consent.</p>	FC

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
33	Water usage	Reduce water usage, prevent waste water generation using one or a combination of techniques in the corresponding table	Techniques (a) and (c) are employed at LSEP to reduce water use and to prevent or reduce the generation of wastewater from the incineration plant as outlined below. In addition, air cooled condensers are installed so that water is not required for the cooling process. (a) Water is not required within the flue gas cleaning system, as dry flue gas cleaning systems are installed. (c) Wastewater which is produced by the process is reused as far as possible within the ash quench.	FC
34	Emissions to water	Reduce emissions to water from FGC and/or from storage and treatment of slags and bottom ashes using one or a combination of techniques in the corresponding table and use secondary techniques as close to source as possible.	Not applicable - no direct or indirect emissions to water from FGC or bottom ash treatment	NA
		BAT-AELs	Not applicable - no direct or indirect emissions to water from FGC or bottom ash treatment	NA

BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
35	Resource efficiency	Resource efficiency. Handle and treat bottom ashes separately from FGC residues.	The IBA and 'boiler ash' produced at LSEP will be combined into a single ash stream. This is handled and disposed of separately to the flue gas treatment residues (also referred to as Air Pollution Control Residues or APCr) produced.	FC
36		Resource efficiency for treatment of slags and bottom ashes. Use appropriate combination of techniques in corresponding table depending on hazardous properties of the slags and bottom ashes.	There is no treatment of bottom ashes and slags proposed at LSEP. Therefore, this BATC is not applicable.	NA



BAT No.	Topic	Brief Description	Operator response	Complies with BAT? (NA, CC, FC, NC)
37	Noise	Reduce noise emissions using one or a combination of techniques in the corresponding table.	<p>Techniques (a), (b) (c), (d) and (e) will be employed at the Facility. A noise survey has been completed for the Facility which shows that the noise levels attributable to the Facility will be significantly below the background noise levels for all nearby noise sensitive receptors. This demonstrates that the combination of techniques used at the Facility is appropriate.</p> <p>(a) In accordance with normal industry practice, the technology provider will implement an efficient layout to result in relatively quiet operational noise levels. All waste transfer, loading and processing operations are undertaken within a sealed building with acoustic insulation properties.</p> <p>(b) Plant and equipment will be maintained regularly to minimise any noise resulting from equipment deterioration. Doors and windows of enclosed areas are kept closed except when in use. Waste deliveries will take place primarily during daytime hours.</p> <p>(c) The technology provider will optimise plant selection to reduce noise levels.</p> <p>(d) In relation to noise attenuation, plant rooms have been acoustically designed for limiting noise emissions to acceptable levels for compliance with relevant workplace regulations and relevant planning requirements.</p> <p>(e) Where appropriate, acoustic cladding will be used on buildings.</p>	FC



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

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

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

*(a) the geographical location or the local environmental conditions of the installation concerned; or*

*(b) the technical characteristics of the installation concerned.*

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

## 7 Summary checklist

Aspect considered	Decision
<b>Receipt of application</b>	
Confidential information	A claim for commercial or industrial confidentiality has not been made.
Identifying confidential information	<p>We have not identified information provided as part of the application that we consider to be confidential.</p> <p>The decision was taken in accordance with our guidance on confidentiality.</p>
<b>Operating techniques</b>	
General operating techniques	<p>We have reviewed the techniques used by the operator where they are relevant to the BAT Conclusions and compared these with the relevant guidance notes.</p> <p>The permit conditions ensure compliance with the relevant BREF, BAT Conclusions. The ELVs deliver compliance with the BAT-AELs.</p>
<b>Permit conditions</b>	
Updating permit conditions during consolidation	We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide at least the same level of protection as those in the previous permit and in some cases will provide a higher level of protection to those in the previous permit.
Changes to the permit conditions due to an Environment Agency initiated variation	We have varied the permit as stated in the variation notice.
Improvement programme	Based on the information on the application, we consider that we need to impose an improvement programme.
Emission limits	<p>We have decided that emission limits should be set for the parameters listed in the permit.</p> <p>These are described in the relevant BAT Conclusions in Section 5 of this document.</p> <p>It is considered that the ELVs/equivalent parameters or technical measures described above will ensure that significant pollution of the environment is prevented and a high level of protection for the environment is secured.</p>

Aspect considered	Decision
Monitoring	We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified.
<b>Operator competence</b>	
Management system	There is no known reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.
<b>Growth Duty</b>	
Section 108 Deregulation Act 2015 – Growth duty	<p>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.</p> <p>Paragraph 1.3 of the guidance says:</p> <p>“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.”</p> <p>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.</p> <p>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.</p>