

Best Available Techniques (BAT) conclusions for Large Combustion Plants (EU BREF Note, August 2017)

General BAT Conclusions

<p>BAT 1. In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features:</p>	
<p>1.i commitment of the management, including senior management;</p>	<p><i>Spring Park is part of Ark Data Centres certification to ISO14001:2015 and operates an EMS in accordance with the standard. The Senior Management Team are committed to implementation of the EMS.</i></p>
<p>1.ii definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation;</p>	<p><i>The operator has an Environmental Policy in place which commits the site to legal compliance and continuous improvement.</i></p>
<p>1.iii planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment;</p>	<p><i>SOP's are in place for all processing and allied activities at the site where environmental controls are required. Opportunities are identified and assessed for added value, and against ability to impact on key site KPI's including environmental impacts such as energy usage and other business/production KPI's.</i></p>
<p>1.iv implementation of procedures paying particular attention to: (a) structure and responsibility, (b) recruitment, training, awareness and competence, (c) communication, (d) employee involvement, (e) documentation, (f) effective process control, (g) maintenance programmes, (h) emergency preparedness and response, (i) safeguarding compliance with environmental legislation;</p>	<p><i>The EMS includes documented management procedures and arrangements covering:</i></p> <ul style="list-style-type: none"> <i>a. Management System includes a manual and documented procedures setting out roles and responsibilities.</i> <i>b. All employees receive an induction which includes awareness of the environmental permit and the EMS. All new starters have an individual learning plan which includes all relevant SOP's to support their competence framework which will include any relevant to the management of environmental impacts.</i> <i>c. The management system manual contains procedures relating to internal and external communications processes.</i> <i>d. See point (1.b)</i> <i>e. The management system includes a manual, documented procedures and signposting to relevant records.</i> <i>f. SOP's are/will be established covering all processing and allied activities at the site.</i> <i>g. The site operates a computerised PPM system.</i> <i>h. Contingency plans in the event of breakdowns of key plant and equipment or unplanned events. An accident plan is present on site which includes any emergency procedures for environmental matters e.g. spillage.</i> <i>i. A legal register utilised to identify all compliance requirements and the controls required. Records to demonstrate legal compliance are periodically audited as part of a corporate governance programme.</i>
<p>1.v checking performance and taking corrective action, paying particular attention to: (a) monitoring and measurement (b) corrective and preventive action, (c) maintenance of records,</p>	<ul style="list-style-type: none"> <i>(a) EMS includes a manual and documented procedures setting out the monitoring and measurement programme. KPI's including utilities and waste are tracked.</i> <i>(b) Corrective and preventive action procedures are in place as part of the EMS covering audits, incidents and action reporting. Progress with close out of actions is tracked and reviewed by the senior leadership team.</i>

(d) independent (where practicable) internal or external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;	(c) <i>The EMS includes procedures for the identification, maintenance and retention of applicable records</i> (d) <i>The EMS includes a manual and documented procedures setting out the internal/external audit process. The site receives external environmental audits from bsi Group.</i>
1.vi review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;;	<i>The EMS includes a manual and documented procedures setting out the management review process. The EMS is reviewed at least annually.</i>
1.vii following the development of cleaner technologies;	<i>The operator is an active member of industry forums including TechUK, Climate Neutral Data Centre Pact (CNDCP) and the Major Energy Users Council (MEUC) which help identify best practises which could be brought to the site.</i>
1.viii consideration for the environmental impacts from the eventual decommissioning of the plant at the stage of designing a new plant, and throughout its operating life;	<i>The site has in place a generic closure plan which is periodically reviewed. New equipment goes through a capex process which includes siting and assessment of efficiency including energy, water use and would, where relevant, include decommissioning considerations.</i>
1.ix application of sectoral benchmarking on a regular basis;	<i>The site is benchmarked against other sites in terms of energy, water and waste, in addition to the review of environmental performance and PEC. The operator takes part in industry forums which help identify best practises which could be brought to the site and shared with others in the sector.</i>
1.x waste stream management (see BAT 2);	<i>See BAT 2</i>
1.xi an inventory of waste water and waste gas streams (see BAT 3);	<i>See BAT 3</i>
1.xii residues management plan (see description in Section 6.6.5)	<i>The site applies the waste hierarchy to all waste residues which is periodically reviewed as part of the EMS. Specific measures are in place to avoid the generation of waste.</i>
1.xiii accident management plan (see description in Section 6.6.5);	<i>The accident management plan is part of the site's EMS and has assessed the specific hazards posed by the plant and the associated risks and consequences. The plan identifies the control measures in place to address these risks and associated procedures to be followed in the event of an incident.</i>
1.xiv odour management plan (see BAT 12);	<i>See Bat 12</i>
1.xv noise and vibration management plan (see BAT 17)	<i>See Bat 17</i>
1.xvi odour management plan (see BAT 17)	<i>The process is not inherently odorous.</i>

Monitoring

BAT 2. Determine the net electrical efficiency and/or the net total fuel utilisation and/or the net mechanical energy efficiency of the gasification, IGCC and/or combustion units

Spring Park is part of Ark Data Centres certification to ISO50001:2018 and operates an Energy Management System (EnMS) in accordance with the standard. The Senior Management Team are committed to implementation of the EnMS. Spring Park has had a Climate Change Agreement DATC/T00025 since 2014.

BAT 3. Monitor key process parameters relevant for emissions to air and water

Site operations will not exceed a maximum of 500 hours (inclusive of emergency repair) for any or all of the combustion plant and therefore Emission Limit Values to air and related monitoring is not applicable

BAT 4. Monitor emissions to air with at least the frequency given below and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

See BAT 3

BAT 5. monitor emissions to water from flue-gas treatment with at least the frequency.

N/A – No flue gas treatment is required.

General Environmental and Combustion Performance

BAT 6. Ensure optimised combustion

*The only fuel used is HVO and diesel in combustion plant that comply with the SCOFI regulations.
All equipment is maintained (as a minimum) according to the suppliers' recommendations
Generators are fitted with combustion control systems
All SQ19 engines are new, emissions optimised and as a minimum will comply with TA-Luft T 2g' for NOx to air.*

BAT 7. Applies to catalytic reduction

N/A – No abatement is required on the proposed SQ19 generators. Abatement is installed as per the current Permit on generators HV11 – HV18 in the HVGen Farm

BAT 8. Applies to emission abatement

N/A – No abatement is required

BAT 9. quality assurance/quality control programmes for all the fuels used

9.i Characterisation of fuel

9.ii Testing of fuel quality

9.ii Adjustment of plant settings

The only fuel used is HVO (or diesel) in combustion plant that comply with the SCOFI regulations from national suppliers who have to meet specific technical standards/specifications to place fuel on the UK market.

BAT 10. In order to reduce emissions to air and/or to water during other than normal operating conditions (OTNOC), BAT is to set up and implement a management plan as part of the environmental management system (see BAT 1), commensurate with the relevance of potential pollutant releases

See Main Supporting Document – grid reliability.

With the high level of mains electrical system redundancy, it is anticipated that the mains generators are unlikely to operate for extended periods of operation. Each generator typically runs for less than 5 hours a year, with a cumulative run-time of less than 300 hours a year for the maximum number of 70 generators that will be deployed at the site.

BAT 11. Appropriately monitor emissions to air and/or to water during OTNOC.

Site operations will not exceed a maximum of 500 hours (inclusive of emergency repair) for any or all of the combustion plant and therefore Emission Limit Values to air and related monitoring is not applicable

Energy Efficiency

BAT 12. Applies to plants operating > 1500 hr/yr:

N/A

BAT 13. Reduce water usage and the volume of contaminated waste water discharged

Other than small volumes coolant water there is no process effluent generated by the activity. Discharge of coolant water does not require a consent to discharge from Thames Water.

BAT 14. In order to prevent the contamination of uncontaminated waste water and to reduce emissions to water, BAT is to segregate waste water streams and to treat them separately, depending on the pollutant content.

Surface water, domestic foul and cooling water are segregated and appropriately discharged from the installation.

BAT 15. Applies to flue-gas treatment

N/A

Waste Management

BAT 16. organise operations so as to maximise, in order of priority and taking into account life-cycle thinking:

a.waste prevention, e.g. maximise the proportion of residues which arise as by-products;

b.waste preparation for reuse, e.g. according to the specific requested quality criteria;

c.waste recycling;

d.other waste recovery (e.g. energy recovery),

Ark Data Centres operate a documented waste management plan that is implemented and reviewed for the facility that embodies life cycle thinking.

Noise

BAT 17. In order to reduce noise emissions, BAT is to use one or a combination of the techniques given below.

- a. Operational measures;
- b. Low noise equipment
- c. Noise attenuation
- d. Noise control equipment
- e. Appropriate location of equipment and buildings

Specification of noise performance of equipment was considered at the design stage. Under normal operating conditions noise is not significant. The emphasis in the management of noise from the site is on prevention during 'normal' day to day data centre operations, and as such preventative maintenance, management, monitoring and inspection of all routine potential sources of noise. No additional measures are considered necessary at this time.

BAT 18 – 27 Applies to Solid Fuels

Liquid Fuels

BAT 28 – 30 applies to boilers only

BAT 31. In order to increase the energy efficiency of HFO and/or gas oil combustion in reciprocating engines, BAT is to use an appropriate combination of techniques

Choice of combustion technology and consideration of alternative engines/fuel technologies has been considered as part of this application – see main supporting document.

BAT 32. In order to prevent or reduce NOX emissions to air from the combustion of HFO and/or gas oil in reciprocating engines, BAT is to use an appropriate combination of techniques.

See BAT 31

BAT 33. In order to prevent or reduce CO and volatile organic compounds to air from the combustion of HFO and/or gas oil in reciprocating engines, BAT is to use an appropriate combination of techniques.

See BAT 31

BAT 34. In order to prevent or reduce SOX, HCl and HF emissions to air from the combustion of HFO and/or gas oil in reciprocating engines, BAT is to use an appropriate combination of techniques.

See BAT 31

BAT 35. In order to prevent or reduce dust and particulate-bound metal emissions to air from the combustion of HFO and/or gas oil in reciprocating engines, BAT is to use an appropriate combination of techniques.

See BAT 31

BAT 36-39 Applies to Gas Turbines

BAT 40-54 Applies to Combustion of Natural Gas

BAT 55- 59 Applies to Multi-fuel fired Plants

BAT 60- 71 Applies to Multi-fuel fired Plants

BAT 72 - 75 Applies to Gasification