INDAVER RINGASKIDDY – ASSESSMENT OF COMPLIANCE WITH CONCLUSIONS ON BEST AVAILABLE TECHNIQUES FROM THE REFERENCE DOCUMENT FOR WASTE TREATMENT (2018)

The full and complete Waste Treatment BAT reference document (October 2018) is available at the EIPPC Bureau website: http://eippcb.jrc.ec.europa.eu/reference/

SCOPE
a) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day.
b) Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day excluding activities covered by Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment:
c) Recovery, or a mix of recovery and disposal, of non-hazardous waste with a capacity exceeding 75 tonnes per day involving one or more of the following activities, and excluding activities covered by Directive 91/271/EEC:
d) Temporary storage of hazardous waste not covered under point 5.4 of Annex I to Directive 2010/75/EU pending any of the activities listed in points 5.1, 5.2, 5.4 and 5.6 of Annex I to Directive 2010/75/EU with a total capacity exceeding 50 tonnes, excluding temporary storage, pending collection, on the site where the waste is generated.
e) Independently operated treatment of waste water not covered by Directive 91/271/EEC and discharged by an installation undertaking activities covered under points 5.1, 5.3 or 5.5 as listed above.

Conclusions on BAT	Applicability Assessment (describe how the technique applies or not to your installation)	State whether it is in place or state schedule for implementation
6.1 General BAT Conclusions **6.1.1 Overall environmental performance**		
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:** I. commitment of the management, including senior management;	Applicable Indaver operate a combined Quality, Environmental, Safety and Health (QESH) Management System. The QESH policies are high level documents which define	Proposed facility – BAT to be in place prior to commencement.

II. definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation; III. planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment; 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; V. checking performance and taking corrective action, paying particular attention to: (a) monitoring and measurement (see also the JRC Reference Report on Monitoring of emissions to air and water from IED installations – ROM), (b) corrective and preventive action, (c) maintenance of records, (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; VI. review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness; VII. following the development of cleaner technologies; 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; IX. application of sectoral benchmarking on a regular basis; X. waste stream management (see BAT 2); XI. an inventory of waste water and waste gas streams (see BAT 3); XII. residues management plan (see description in Section 6.6.5); XIII. accident management plan (see description in Section 6.6.5); XIV. odour management plan (see BAT 12);	Indaver's environmental and health and safety objectives and set out the control of the possible impacts from the activities. The proposed facility will also implement an EMS which will address all line items as outlined in the BAT conclusions and which will be consistent with the upper level Indaver QESH policies. The proposed facility will operate to ISO 9001:2000, ISO 14001 and OHSAS 18001.	

XV. noise and vibration management plan (see BAT 17).		
BAT 2. **In order to improve the overall environmental performance of the plant, BAT is to use all of the techniques given below.** **a)** Set up and implement waste characterisation and pre-acceptance procedures **b)** Set up and implement waste acceptance procedures **c)** Set up and implement a waste tracking system and inventory **d)** Set up and implement an output quality management system **e)** Ensure waste segregation **f)** Ensure waste compatibility prior to mixing or blending of waste **g)** Sort incoming solid waste	Applicable Draft waste acceptance and handling procedures have been included demonstrating how wastes will be profiled and characterised between the customer and Indaver. Draft waste handling and acceptance procedures outline the controls that are in place for ensuring that the waste acceptance criteria for the installation are met. All waste trucks entering the waste-to-energy facility will pass through a scanner to detect the presence of any radioactive elements. If detected, the load will be quarantined, and the appropriate authorities notified. All waste trucks will be weighed on entrance to the site. Tankers carrying aqueous waste will be sampled and analysed prior to offloading into the aqueous waste storage tank or direct injection. The proposed facility will also implement an EMS which will address all line items as outlined in the BAT conclusions and	Proposed facility – BAT to be in place prior to commencement.

	which will be consistent with the upper level Indaver QESH policies. The proposed facility will operate to ISO 9001:2000, ISO 14001 and OHSAS 18001	
BAT 3 **In order to facilitate the reduction of emissions to water and air, BAT is to establish and to maintain an inventory of waste water and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the following features:** (i) information about the characteristics of the waste to be treated and the waste treatment processes, including: (a) simplified process flow sheets that show the origin of the emissions; (b) descriptions of process-integrated techniques and waste water/waste gas treatment at source including their performances; (ii) information about the characteristics of the waste water streams, such as: (a) average values and variability of flow, pH, temperature, and conductivity; (b) average concentration and load values of relevant substances and their variability (e.g. COD/TOC, nitrogen species, phosphorus, metals, priority substances / micropollutants); (c) data on bioeliminability (e.g. BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. inhibition of activated sludge)) (see BAT 52); (iii) information about the characteristics of the waste gas streams, such as: (a) average values and variability of flow and temperature; (b) average concentration and load values of relevant substances and their variability (e.g.organic compounds, POPs such as PCBs); (c) flammability, lower and higher explosive limits, reactivity; (d) presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, nitrogen, water vapour, dust).	Applicable – Waste gas from furnace only. No process wastewater streams. Monitoring of air emissions will be in compliance with The Industrial Emissions Directive 2010/75/EC which requires continuous monitoring of specific parameters and regular sampling of dioxins present in the flue gases prior to discharge from the stack to ensure compliance with emission limit values The following parameters will be continuously measured in the stack: total dust, TOC, HCl, HF, SO_2, NO_x, CO, Hg, NH_3, temperature and O_2. These continuous measurements will be accessible in 'real time' in the control room. There will also be regular monitoring for heavy metals Cadmium, Thallium, Antimony, Arsenic, Lead, Chromium, Cobalt, Copper, Manganese, Nickel, and Vanadium. PM_{10} and $PM_{2.5}$ will be monitored quarterly.	Proposed facility – BAT to be in place prior to commencement.

	Dioxins/furans will be monitored continuously during the test programme or as otherwise agreed with the agency. Biennial measurements will also be taken.	
BAT 4. **In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques given below.** a) Optimised storage location b) Adequate storage capacity c) Safe storage operation d) Separate area for storage and handling of packaged hazardous waste	Applicable Waste storage location – Solid hazardous and non-hazardous wastes will be stored in the waste bunker within the main waste handling building. The bunker is in between the tipping hall, where the wastes are received, and the waste hopper, where the wastes are positioned before being fed into the furnace. The waste handling facility is surrounded by concrete hard stand. Adequate storage capacity – The waste bunker has a maximum storage capacity of 8,000 tonnes but with an average storage of circa 4100 tonnes Waste quantities and flow through the process will be carefully monitored and recorded by the Automated Control System. Safe storage operation – Health and safety are an integral part of the facility's design. Hazard and operability studies	Proposed facility – BAT to be in place prior to commencement.

	will be carried out as part of the operational design phase in which hazards will be systematically identified and mitigation measures will be included. In compliance with the Safety, Health and Welfare at Work Act 2005, Indaver will update the company safety statement to cover the operation of the new facility and will appoint safety representatives. Separate area for hazardous wastes – not required as all hazardous wastes accepted at the facility are discharged to the bunker, mixed and then incinerated. Aqueous wastes are stored separately in the aqueous waste tank. In the event that unacceptable waste is detected by the radiation scanners the waste will be quarantined and the appropriate authorities notified.	
BAT 5. **In order to reduce the environmental risk associated with the handling and transfer of waste, BAT is to set up and implement handling and transfer procedures.**	Applicable All waste is handled indoors. All waste trucks entering the waste-to-energy facility will pass through a scanner to detect the presence of any radioactive elements. If detected, the load will be quarantined, and the appropriate authorities notified.	Proposed facility – BAT to be in place prior to commencement.

	All waste trucks will be weighed on entrance to the site. Tankers of aqueous waste will be sampled and analysed prior to offloading into the aqueous waste storage tank or direct injection. Procedures are in place for handling all solid waste residues.	
6.1.2 Monitoring		
BAT 6 **For relevant emissions to water as identified by the inventory of waste water streams (see BAT 3), BAT is to monitor key process parameters (e.g. waste water flow, pH, temperature, conductivity, BOD) at key locations (e.g. at the inlet and/or outlet of the pretreatment, at the inlet to the final treatment, at the point where the emission leaves the installation).**	Not applicable – no process wastewater emissions	N/A
BAT 7 **BAT is to monitor emissions to water 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.**	Not applicable – no process wastewater emissions	N/A
BAT 8 **BAT is to monitor channelled emissions to air with at least the frequency given (in the table), 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.**	Applicable The following parameters will be continuously measured in the stack: total dust, TOC, HCl, HF, SO_2, NO_x, CO, Hg, NH_3, temperature and O_2. These continuous measurements will be accessible in 'real time' in the control room. There will also be regular monitoring for heavy metals Cadmium, Thallium,	Proposed facility – BAT to be in place prior to commencement.

	Antimony, Arsenic, Lead, Chromium, Cobalt, Copper, Manganese, Nickel, and Vanadium. PM_{10} and $PM_{2.5}$ will be monitored quarterly. Dioxins/furans will be monitored biennially. These will be monitored by regular grab sampling in accordance with the specifications set out in EU and Irish legislation for incineration facilities. Dioxins/furans will also be monitored continuously during the test programme or as otherwise agreed with the agency. Monitoring of dioxins will be undertaken using a state of the art continuous dioxin sampler. This is not an EU or Irish legislation requirement but has been included as best practice. The continuous sampler will consist of a dioxin filter which will be installed on the stack to collect dioxin emissions on a fortnightly basis and provide mass emission rates over a two-week period.	
BAT 9 **BAT is to monitor diffuse emissions of organic compounds to air from the regeneration of spent solvents, the decontamination of equipment containing POPs with solvents, and the physico-chemical treatment of solvents for the recovery of their calorific value, at least once per year using one or a combination of the techniques given below.**	Not Applicable – no use of solvents onsite	N/A
BAT 10. **BAT is to periodically monitor odour emissions.**	Applicable – no major odour emissions anticipated. Facility is maintained under negative pressure to prevent odour.	N/A

	Odour assessments will be carried out by the QESH department quarterly. An odour management plan will be set up as part of the EMS for the facility.	
BAT 11 **BAT is to monitor the annual consumption of water, energy and raw materials as well as the annual generation of residues and waste water, with a frequency of at least once per year.**	Applicable Indaver will collect all operational information in the Automated Control System and will document this information in their Annual Environmental Report (AER).	Proposed facility – BAT to be in place prior to commencement.
6.1.3 Emissions to air		
BAT 12. **In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:** a protocol containing actions and timelines; a protocol for conducting odour monitoring as set out in BAT 10; a protocol for response to identified odour incidents, e.g. complaints; an odour prevention and reduction programme designed to identify the source(s); to characterise the contributions of the sources; and to implement prevention and/or reduction measures.	Applicable Facility is maintained under negative pressure to prevent odour. A carbon / bio filter will also be installed to manage air from the bunker during shutdowns. An odour management plan will be set up as part of the EMS for the facility.	Proposed facility – BAT to be in place prior to commencement.
BAT 13. **In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to use one or a combination of the techniques given below.** a) Minimising residence times b) Using chemical treatment c) Optimising aerobic treatment	Applicable Facility is maintained under negative pressure to prevent odour. Waste will be accepted most days to keep the waste fresh as possible. Throughput will be monitored to ensure the waste is being treated as quick as possible.	Proposed facility – BAT to be in place prior to commencement.

	A carbon filter will also be installed to manage air from the bunker during shutdowns. An odour management plan will be set up as part of the EMS for the facility.	
BAT 14 **In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques given below.** a) Minimising the number of potential diffuse emission sources b) Selection and use of high-integrity equipment c) Corrosion prevention d) Containment, collection and treatment of diffuse emissions e) Dampening f) Maintenance g) Cleaning of waste treatment and storage areas h) Leak detection and repair (LDAR) programme	Applicable – potential for dust emissions. Silos will be fitted with high efficiency HEPA filters to prevent dust emissions (activated carbon, clay, lime, boiler ash, and flue gas cleaning residues). Particulates will be transferred to/from the silos using enclosed conveyors within the process building. The silos containing boiler ash and flue gas cleaning residues will be emptied using a specialised collection truck which will have an enclosed container. The plant will be fully enclosed. Silos and conveyors will be regularly inspected and maintained. Bottom ash will be managed using dampening. Bottom ash will be discharged from incinerator into a water bath and then via a conveyor to the ash hall where it will be stored for a maximum of 10 days before being transferred to a collection truck using a	Proposed facility – BAT to be in place prior to commencement.

	front-end loader. All trucks leaving the facility will be securely covered to prevent any ash escaping. Air handling units equipped with dust filters will extract the air from the bottom ash hall to control dust emissions.	
BAT 15. **BAT is to use flaring only for safety reasons or for non-routine operating conditions (e.g. start-ups, shutdowns) by using both of the techniques given below.** a) Correct plant design b) Plant management	Not applicable – No flaring	N/A
BAT 16. **In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given below.** a) Correct design of flaring devices b) Monitoring and recording as part of flare management	Not applicable – No flaring	N/A
BAT 17. **In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to set up, implement and regularly review a noise and vibration management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:** I. a protocol containing appropriate actions and timelines; II. a protocol for conducting noise and vibration monitoring; III. a protocol for response to identified noise and vibration events, e.g. complaints; IV. a noise and vibration reduction programme designed to identify the source(s), to measure/estimate noise and vibration exposure, to characterise the contributions of the sources and to implement prevention and/or reduction measures.	Applicable – Noise mitigation measures will be implemented as outlined in Chapter 10 of the EIAR 2018. The EMS will include a protocol for undertaking noise monitoring in accordance with the requirements of the IE licence. It is anticipated that noise monitoring will be undertaken annually at the Noise Sensitive Locations (NSLs). The EMS will also include a protocol for responding to noise complaints (should they occur). However, based on the noise	Proposed facility – BAT to be in place prior to commencement.

	model completed and presented in Chapter 10 of the EIAR the noise emissions are expected to be not significant.	
BAT 18. **In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to use one or a combination of the techniques given below.** a) Appropriate location of equipment and buildings b) Operational measures c) Low-noise equipment d) Noise and vibration control equipment e) Noise attenuation	Applicable – Noise mitigation measures will be implemented as outlined in Chapter 10 of the EIAR 2018. The EIAR outlines that the following will be included: - Plant will be located as far away from noise-sensitive locations as practicable; - Duct mounted attenuators will be installed on the atmosphere side of all air moving plant; - Splitter attenuators will be installed providing free ventilation to internal plant areas; - Anti-vibration mounts will be installed on all reciprocating plant; - Acoustic attenuators will be installed to the aero condenser structure.	Proposed facility – BAT to be in place prior to commencement.
BAT 19. **In order to optimise water consumption, to reduce the volume of waste water generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques given below.**	Applicable – Management of stormwater / reducing emissions to water and soil. No generation of process wastewaters from the site operations.	Proposed facility – BAT to be in place prior to commencement.

a) Water management **b)** Water recirculation **c)** Impermeable surface **d)** Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels **e)** Roofing of waste storage and treatment areas **f)** Segregation of water streams **g)** Adequate drainage infrastructure h) Design and maintenance provisions to allow detection and repair of leaks i) Appropriate buffer storage capacity	The facility will be sealed with continuous concrete hard stand. The waste handling building will be covered. All stormwater from the roads and yard areas will go to the firewater retention tank and will be monitored before entering the surface water attenuation tank. Only clean stormwater from the roofs of all buildings will go direct to the surface water attenuation tank. The attenuation tanks have been sized to provide adequate buffer capacity. External chemical storage will consist of a fuel tank (double skinned), an aqueous ammonia tank (double skinned), an aqueous waste tank (single skinned and bunded) and self-bunded chemstores. Double skinned tanks will be equipped with leak detection. Refer to drawing CD5009-Chemical & Waste Storage. The tanker unloading area, located adjacent to the fuel tank, will be provided with cut off drains to collect any spillage that may occur during loading/unloading. All underground pipelines and concrete bunds will be integrity tested every 3 years in accordance with the requirements of the IE licence.	
BAT 20.	Not applicable – no process wastewater	N/A

In order to reduce emissions to water, BAT is to treat waste water using an appropriate combination of the techniques given below. a) Preliminary and primary treatment, b) Physico-chemical treatment, . c) Biological treatment, d) Nitrogen removal e) Solids removal.		
6.1.6 Emissions from accidents and incidents		
BAT 21. **In order to prevent or limit the environmental consequences of accidents and incidents, BAT is to use all of the techniques given below, as part of the accident management plan (see BAT 1).** **a)** Protection measures **b)** Management of incidental/accidental emissions **c)** Incident/accident registration and assessment system	Applicable An Emergency Response Plan will be prepared for the facility which outlines the required actions to be undertaken in the event of a spill or leak. Spill kits will be available at key locations across the site and a dedicated Emergency Response Team will be trained in their use. All accidents or incidents will be recorded along with the required remedial actions and will be reported to the EPA in accordance with the requirements of the IE licence.	Proposed facility – BAT to be in place prior to commencement.
6.1.7 Material efficiency		
BAT 22. **In order to use materials efficiently, BAT is to substitute materials with waste.**	Applicable Waste water from the process will be re-used in the wet de-slagger which will	Proposed facility – BAT to be in place prior to commencement.

i.e. Waste is used instead of other materials for the treatment of wastes (e.g. waste alkalis or waste acids are used for pH adjustment, fly ashes are used as binders).	ensure no effluent discharge from the site and help minimise waste usage on site. Flue gas cleaning residues will be re-circulated into the flue gases to reduce the amount of lime required in the process.	
6.1.8 Energy efficiency		
BAT 23. **In order to use energy efficiently, BAT is to use both of the techniques given below.** a) Energy efficiency plan b) Energy balance record	Applicable – An energy efficiency plan will be prepared for the facility in accordance with BAT and will form part of the facility's EMS. The energy balance record (energy consumption and energy generation) will be recorded by the facility's Automated Control System.	Proposed facility – BAT to be in place prior to commencement.
6.1.9 Reuse of packaging		
BAT 24. **In order to reduce the quantity of waste sent for disposal, BAT is to maximise the reuse of packaging, as part of the residues management plan (see BAT 1).**	Not applicable – no packaging waste generated in the process.	N/A
6.2 BAT conclusions for the mechanical treatment of waste **6.2.1 General BAT conclusions for the mechanical treatment of waste** **6.2.1.1 Emissions to air**		
BAT 25.	Applicable	Proposed facility – BAT to be in place

In order to reduce emissions to air of dust, and of particulate-bound metals, PCDD/F and dioxin-like PCBs, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. a) Cyclone b) Fabric filter c) Wet scrubbing d) Water injection into the shredder	Flue gas from the incinerator is treated using the following: - Injection of ammonia solution or urea into the boiler (reduce NO_x levels) also known as Selective Non-Catalytic Reduction (SNCR) - Lime (for acid concentration correction) - Activated carbon or carbon/clay mixture (for removal of dioxins and furans, particulates, and heavy metals) - Baghouse filter (mechanical removal of particulates)	prior to commencement.
6.2.2 BAT conclusions for the mechanical treatment in shredders of metal waste **6.2.2.1 Overall environmental performance**		
BAT 26. **In order to improve the overall environmental performance, and to prevent emissions due to accidents and incidents, BAT is to use BAT 14g and all of the techniques given below:** a. implementation of a detailed inspection procedure for baled waste before shredding; b. removal of dangerous items from the waste input stream and their safe disposal (e.g. gas cylinders, non-depolluted EoLVs, non-depolluted WEEE, items contaminated with PCBs or mercury, radioactive items); c. treatment of containers only when accompanied by a declaration of cleanliness.	Not applicable – no shredder	N/A
6.2.2.2 Deflagrations		
BAT 27. In order to prevent deflagrations and to reduce emissions when deflagrations occur, BAT is to use technique a. and one or both of the techniques b. and c. given below. a) Deflagration management plan b) Pressure relief dampers	Not applicable – no shredder	N/A

c) Pre-shredding		
6.2.2.3 Energy efficiency		
BAT 28. **In order to use energy efficiently, BAT is to keep the shredder feed stable**	Not applicable – no shredder	N/A
6.2.3 BAT conclusions for the treatment of WEEE containing VFCs and/or VHCs **6.2.3.1 Emissions to air**		
BAT 29. **In order to prevent or, where that is not practicable, to reduce emissions of organic compounds to air, BAT is to apply BAT 14d, BAT 14h and to use technique a. and one or both of the techniques b. and c. given below.** **a)** Optimised removal and capture of refrigerants and oils **b)** Cryogenic condensation **c)** Adsorption	Not Applicable – WEEE may be present in the waste being incinerated. However, quantities are small and will not include removal or recovery of refrigerants, oils, battery acids, etc.	N/A
6.2.3.2 Explosions		
BAT 30. **In order to prevent emissions due to explosions when treating WEEE containing VFCs and/or VHCs, BAT is to use either of the techniques given below.** a) Inert atmosphere b) Forced ventilation	Not Applicable – WEEE may be present in the waste being incinerated. However, the incinerator is designed to be able to accommodate small explosions.	N/A
6.2.4 BAT conclusions for the mechanical treatment of waste with calorific value **6.2.4.1 Emissions to air**		
BAT 31. In order to reduce emissions to air of organic compounds, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. **a)** Adsorption **b)** Biofilter **c)** Thermal oxidation **d)** Wet scrubbing	Not applicable	N/A
6.2.5 BAT conclusions for the mechanical treatment of WEEE		

containing mercury **6.2.5.1 Emissions to air**		
BAT 32. **In order to reduce mercury emissions to air, BAT is to collect mercury emissions at source, to send them to abatement and to carry out adequate monitoring.**	Not Applicable – WEEE may be present in the waste being incinerated. However, quantities are small and will not include removal or recovery of refrigerants, oils, battery acids, etc.	N/A
6.3 BAT conclusions for the biological treatment of waste **6.3.1 General BAT conclusions for the biological treatment of waste** **6.3.1.1 Overall environmental performance**		
BAT 33. In order to reduce odour emissions and to improve the overall environmental performance, BAT is to select the waste input.	Not applicable -no biological waste treatment	N/A
6.3.1.2 Emissions to air		
BAT 34. **In order to reduce channelled emissions to air of dust, organic compounds and odorous compounds, including H_2S and NH_3, BAT is to use one or a combination of the techniques given below.** a) Adsorption b) Biofilter c) Fabric filter d) Thermal oxidation e) Wet scrubbing	Not applicable -no biological waste treatment	N/A
6.3.1.3 Emissions to water and water usage		
BAT 35. **In order to reduce the generation of waste water and to reduce water usage,** **BAT is to use all of the techniques given below.** **a)** Segregation of water streams **b)** Water recirculation **c)** Minimisation of the generation of leachate	Not applicable -no biological waste treatment	N/A

6.3.2 BAT conclusions for the aerobic treatment of waste		
6.3.2.1 Overall environmental performance		
BAT 36. **In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters.**	Not applicable -no biological waste treatment	N/A
6.3.2.2 Odour and diffuse emissions to air		
BAT 37. **In order to reduce diffuse emissions to air of dust, odour and bioaerosols from open-air treatment steps, BAT is to use one or both of the techniques given below.** a) Use of semipermeable membrane covers b) Adaptation of operations to the meteorological conditions	Not applicable -no biological waste treatment	N/A
6.3.3 BAT conclusions for the anaerobic treatment of waste **6.3.3.1 Emissions to air**		
BAT 38. In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters.	Not applicable -no biological waste treatment	N/A
6.3.4 BAT conclusions for the mechanical biological treatment (MBT) of waste **6.3.4.1 Emissions to air**		
BAT 39. In order to reduce emissions to air, BAT is to use both of the techniques given below. a) Segregation of the waste gas streams b) Recirculation of waste gas	Not applicable -no biological waste treatment	N/A
6.4 BAT conclusions for the physico-chemical treatment of waste **6.4.1 BAT conclusions for the physico-chemical treatment of solid and/or pasty waste** **6.4.1.1 Overall environmental performance**		
BAT 40. In order to improve the overall environmental performance, BAT is to monitor the waste input as part of the waste pre-acceptance and acceptance procedures (see BAT 2).	Applicable –	Proposed facility – BAT to be in place

	Waste input for pre-treatment plant (boiler ash and flue gas cleaning residues) will produced on site and monitored under licence conditions.	prior to commencement.
6.4.1.2 Emissions to air		
BAT 41. In order to reduce emissions of dust, organic compounds and NH_3 to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. **a)** Adsorption **b)** Biofilter **c)** Fabric filter **d)** Wet scrubbing	Applicable – A water bath will be used to avoid any dust emissions from the pre-treatment plant.	Proposed facility – BAT to be in place prior to commencement.
6.4.2 BAT conclusions for the re-refining of waste oil **6.4.2.1 Overall environmental performance**		
BAT 42. In order to improve the overall environmental performance, BAT is to monitor the waste input as part of the waste pre-acceptance and acceptance procedures (see BAT 2).	Not applicable	N/A
BAT 43. In order to reduce the quantity of waste sent for disposal, BAT is to use one or both of the techniques given below. **a)** Material recovery **b)** Energy recovery	Not applicable	N/A
6.4.2.2 Emissions to air		
BAT 44. In order to reduce emissions of organic compounds to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. **a)** Adsorption **b)** Thermal oxidation **c)** Wet scrubbing	Not applicable	N/A
6.4.3 BAT conclusions for the physico-chemical treatment of waste		

with calorific value **6.4.3.1 Emissions to air**		
BAT 45. In order to reduce emissions of organic compounds to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. **a)** Adsorption **b)** Cryogenic condensation **c)** Thermal oxidation **d)** Wet scrubbing	Not applicable	N/A
6.4.4 BAT conclusions for the regeneration of spent solvents **6.4.4.1 Overall environmental performance**		
BAT 46. In order to improve the overall environmental performance of the regeneration of spent solvents, BAT is to use one or both of the techniques given below. a) Material recovery b) Energy recovery	Not applicable	N/A
6.4.4.2 Emissions to air		
BAT 47. In order to reduce emissions of organic compounds to air, BAT is to apply BAT 14d and to use a combination of the techniques given below. **a)** Recirculation of process off-gases in a steam boiler **b)** Adsorption **c)** Thermal oxidation **d)** Condensation or cryogenic condensation **e)** Wet scrubbing	Not applicable	N/A
6.4.5 BAT-AEL for emissions of organic compounds to air from the re-refining of waste oil, the physico-chemical treatment of waste with calorific value and the regeneration of spent solvents		
BAT-associated emission level (BAT-AEL) for channelled emissions of TVOC to air from the re-refining of waste oil, the physico-chemical treatment of waste with calorific value and the regeneration of spent solvents: • 5-30 mg/Nm^3 of TVOC	Not applicable	N/A

6.4.6 BAT conclusions for the thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil **6.4.6.1 Overall environmental performance**		
BAT 48. In order to improve the overall environmental performance of the thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil, BAT is to use all of the techniques given below. **a)** Heat recovery from the furnace off-gas **b)** Indirectly fired furnace **c)** Process-integrated techniques to reduce emissions to air	Not applicable – spent activated carbon becomes part of the flue gas residue. This is then sent to the solidification plant where it is solidified for recovery in salt mines or other outlets.	N/A
6.4.6.2 Emissions to air		
BAT 49. In order to reduce emissions of HCl, HF, dust and organic compounds to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. **a)** Cyclone **b)** Electrostatic precipitator (ESP) **c)** Fabric filter d) Wet scrubbing **e)** Adsorption f) Condensation g) Thermal oxidation	Not applicable	N/A
6.4.7 BAT conclusions for the water washing of excavated contaminated soil **6.4.7.1 Emissions to air**		
BAT 50. In order to reduce emissions of dust and organic compounds to air from the storage, handling, and washing steps, BAT is to apply BAT 14d and to use one or a combination of the techniques given below. **a)** Adsorption	Not applicable	N/A

b) Fabric filter **c)** Wet scrubbing		
6.4.8 BAT conclusions for the decontamination of equipment containing PCBs **6.4.8.1 Overall environmental performance**		
BAT 51. In order to improve the overall environmental performance and to reduce channelled emissions of PCBs and organic compounds to air, BAT is to use all of the techniques given below. a) Coating of the storage and treatment areas b) Implementation of staff access rules to prevent dispersion of contamination c) Optimised equipment cleaning and drainage d) Control and monitoring of emissions to air e) Disposal of waste treatment residues f) Recovery of solvent when solvent washing is used	Not applicable	N/A
6.5 BAT conclusions for the treatment of water-based liquid waste		
6.5.1 Overall environmental performance		
BAT 52. In order to improve the overall environmental performance, BAT is to monitor the waste input as part of the waste pre-acceptance and acceptance procedures (see BAT 2).	Applicable Tankers of aqueous waste will be sampled and analysed prior to offloading into the aqueous waste storage tank or direct injection.	Proposed facility – BAT to be in place prior to commencement.
6.5.2 Emissions to air		
BAT 53. **In order to reduce emissions of HCl, NH_3 and organic compounds to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below.** a) Adsorption b) Biofilter c) Thermal oxidation	Applicable Aqueous wastes are added into the furnace and are incinerated.	Proposed facility – BAT to be in place prior to commencement.

d) Wet scrubbing	Flue gas from the incinerator is treated using the following: - Injection of ammonia solution or urea into the boiler (reduce NO_x levels) also known as Selective Non-Catalytic Reduction (SNCR) - Lime (for acid concentration correction) - Activated carbon or carbon/clay mixture (for removal of dioxins and furans, particulates and heavy metals) - Baghouse filter (mechanical removal of particulates)	