

Best available techniques (BAT) conclusions for waste treatment industries (August 2018)

General BAT Conclusions

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:	
1.i commitment of the management, including senior management;	The Senior Management team at O'Donovan are committed to the implementation and maintenance of the EMS.
1.ii definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation;	The operator has an Environmental Policy in place which commits the site to legal compliance and continuous improvement.
1.iii planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment;	An EMS Manual is in place which sets out the approach to managing environmental impacts at the site, including procedures, objectives and targets.
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;	The EMS manual includes documented management procedures and arrangements covering: a. Roles and responsibilities; b. Competence, training and awareness; c. Communications; d. See point (1.b) e. Documented Policy, Scope, Manual and procedures; f. Specific operational plans including Dust Management Plan, Odour Management Plan, Fire Prevention Plan, Spillage Procedures; g. The site operates a regular PPM system. h. An accident plan is present on site which includes any emergency procedures for environmental matters e.g. spillage. i. A legal register utilised to identify all compliance requirements and the controls required.
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, (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;	(a) EMS includes a manual and documented procedures setting out the monitoring and measurement programme. KPI's including utilities and waste are tracked. (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. (c) The EMS includes procedures for the identification, maintenance and retention of applicable records (d) The EMS includes a manual and documented procedures setting out the internal/external audit process.
1.vi review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;	The EMS includes a manual and documented procedures setting out the management review process. The EMS is reviewed at least annually.

1.vii following the development of cleaner technologies;	The operator is an active member of industry forums which help identify best practises which could be brought to the site.
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;	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.
1.ix application of sectoral benchmarking on a regular basis;	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.
1.x waste stream management (see BAT 2);	See BAT 2
1.xi an inventory of waste water and waste gas streams (see BAT 3);	See BAT 3
1.xii residues management plan (see description in Section 6.6.5)	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 and minimise the generation of residues arising from the treatment of waste.
1.xiii accident management plan (see description in Section 6.6.5);	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.
1.xiv odour management plan (see BAT 12);	See Bat 12
1.xv noise and vibration management plan (see BAT 17)	See Bat 17

The following applies to the waste treatment activity only at the installation.

BAT 2. In order to improve the overall environmental performance of the plant, BAT is to use all of the techniques given below	
2.a Set up and implement waste characterisation and preacceptance procedures	Pre-acceptance procedures in place including waste characterisation, sampling if required and pre-booking
2.b Set up and implement waste acceptance procedures.	Waste acceptance procedures in place including checking waste arriving against pre-acceptance descriptions, completion of relevant documentation and recording in site system, and visual inspections.
2.c Set up and implement a waste tracking system and inventory	All wastes arriving at and leaving the site are recorded electronically.
2.d Set up and implement an output quality management system	Wastes destined for recovery into recycled aggregate are transferred and processed at another O'Donovan site where the appropriate quality management protocols are in place.
2.e Ensure waste segregation	Manual picking of tipped loads ensures segregation of recyclable materials. The new waste streams to be added to the permit are stored separately in a dedicated storage area on the site for hazardous waste types, comprising a building as well as the use of self-banded metal container. Each waste type will be stored separately in sealed metal or plastic drums, boxes, or cabinets, depending on the type of waste.
2.f Ensure waste compatibility prior to mixing or blending of waste	Manual picking of tipped loads is carried out prior to shredding.
2.g Sort incoming solid waste	Manual picking of tipped loads is carried out prior to shredding.

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:

<p>(i) information about the characteristics of the waste to be treated and the waste treatment processes, including:</p> <p>(a) simplified process flow sheets that show the origin of the emissions;</p> <p>(b) descriptions of process-integrated techniques and waste water/waste gas treatment at source including their performances;</p>	<p>Process flows included in original application. There are no waste water or waste gas streams as a result of the waste treatment processes.</p> <p>Run-off from the yard areas and building are captured in the site surface water drainage system which passes through an interceptor prior to release to foul sewer under the Trade Effluent Discharge Consent for the site.</p> <p>There are no waste gases produced as a result of waste treatment activities.</p>
<p>(ii) information about the characteristics of the waste water streams, such as:</p> <p>(a) average values and variability of flow, pH, temperature, and conductivity;</p> <p>(b) average concentration and load values of relevant substances and their variability</p> <p>(c) data on bioeliminability;</p>	<p>Initial monitoring of the effluent was conducted by Thames Water for charging purposes. No further realgar monitoring takes place and there have been no concerns raised by Thames Water.</p>
<p>(iii) information about the characteristics of the waste gas streams, such as:</p> <p>(a) average values and variability of flow and temperature;</p> <p>(b) average concentration and load values of relevant substances and their variability (e.g organic compounds, POPs such as PCBs);</p> <p>(c) flammability, lower and higher explosive limits, reactivity;</p> <p>(d) presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, nitrogen, water vapour, dust).</p>	<p>There are no waste gases produced as a result of waste treatment activities.</p>

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.

<p>4.a Optimised storage location</p>	<p>Waste is tipped inside the building for processing. Waste is stored in bays within the building and in bays and containers in the yard. There are 15 roll on/roll off containers for segregated waste streams in the yard.</p>
<p>4.b Adequate storage capacity</p>	<p>At present the site has spare capacity and has applied as part of this variation to double the annual throughput.</p>
<p>4.c Safe storage operation</p>	<p>All waste streams are stored away from roadways and vehicle movements to avoid risk of collision. Spill clean-up equipment and spill procedures are in place at the site and all staff trained in these procedures</p>

4.d Separate area for storage and handling of packaged hazardous waste	The new waste streams to be added to the permit are stored separately in a dedicated storage area on the site for hazardous waste types, comprising a building as well as the use of self-bunded metal container. Each waste type will be stored separately in sealed metal or plastic drums, boxes, or cabinets, depending on the type of waste.
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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.

Handling and transfer procedures aim to ensure that wastes are safely handled and transferred to the respective storage or treatment.	Waste handling procedures described in original application. Wastes are tipped in the appropriate area then manually sorted in picking bays prior to transfer by conveyor to the shredder or trommel. Wastes are transferred around the site by conveyor, loading shovel or excavator. Equipment is only operated by trained personnel.
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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).

Emissions to foul sewer are only as a result of surface run-off and not as a result of waste treatment processes. Initial monitoring of the effluent was conducted by Thames Water for charging purposes. No further realgar monitoring takes place and there have been no concerns raised by Thames Water.

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.

Emissions to foul sewer are only as a result of surface run-off and not as a result of waste treatment processes. Initial monitoring of the effluent was conducted by Thames Water for charging purposes. No further realgar monitoring takes place and there have been no concerns raised by Thames Water.

BAT 8. BAT is to monitor channelled 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.

Dust – continuous monitoring in place, see Dust Management Plan Appendix C.

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.

9.a Measurement	N/A
9.b Emissions factor	
9.c Mass Balance	

BAT 10. BAT is to periodically monitor odour emissions

Odour emissions can be monitored using:
EN standards (e.g. dynamic olfactometry according to EN 13725 in order to determine the odour concentration or EN 16841-1 or -2 in order to determine the odour exposure);
when applying alternative methods for which no EN standards are available (e.g. estimation of odour impact), ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.
The monitoring frequency is determined in the odour management plan (see BAT 12).

Whilst odour is not a significant issue at the site due to the types of waste received, as an industrial waste transfer station the operator is obliged to prepare and submit an Odour Management Plan, see Appendix D.

It is not considered that the proposed new waste streams to be accepted on the site will increase the risk of odour due to their nature, low volumes and enclosed storage. As part of the operator's management system, there is a complaints procedure in place to record and investigate any potential instances of odour from the site.

BAT 11. BAT is to periodically monitor 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.

Monitoring includes direct measurements, calculation or recording. The monitoring is broken down at the most appropriate level (e.g. at process or plant/installation level) and considers any significant changes in the plant/installation.

Use of energy and water and waste materials will be monitored as part of the EMS Objectives and Targets.

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

An OMP has been developed for the site, as it is a waste site, however the nature of the waste accepted (mainly construction and demolition waste) is not inherently odorous. See Appendix D.

Emissions to Air

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.

13.a Minimising residence times	Waste is processed within the building and residence times are minimised.
13.b Using chemical treatment	N/A
13.c Optimising aerobic treatment	N/A

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.

A Dust Management Plan is in place for the site. It is not considered that the proposed new waste streams increase the risk dust from the site as existing measures will be adequate. The Dust Management Plan has been reviewed and updated in line with current Environment Agency Guidance and can be found at Appendix C.

Basic measures employed at the site include:

- All waste treatment activities carried out inside the building;
- Minimising drops from conveyors;
- Regular site inspections and housekeeping (weekly facility audit);
- Use of road sweepers
- Perimeter fencing
- Vehicle loads enclosed or sheeted as far as possible;
- Site speed limits and no idling policy;
- Single entry and exit point on to the public highway;
- All roadways and yard areas of hardstanding;
- Wheel washing facilities if required;
- Use of dust suppression systems (see DMP for details);
- Operation of PM10 monitor.

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 - This includes the provision of a gas recovery system with sufficient capacity and the use of high-integrity relief valves	N/A
b. Plant management - This includes balancing the gas system and using advanced process control.	

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.

<p>a. Correct design of flaring devices - Optimisation of height and pressure, assistance by steam, air or gas, type of flare tips, etc.,</p>	<p>N/A</p>
<p>b. Monitoring and recording as part of flare management- This includes continuous monitoring of the quantity of gas sent to flaring. It may include estimations of other parameters (e.g. composition of gas flow, heat content, ratio of assistance, velocity, purge gas flow rate, pollutant emissions</p>	

Noise and vibrations

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:

<p>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.</p>	<p>Plant will be inspected and maintained to minimise noise.</p> <p>Waste segregation, processing and transfer activities are carried out within an enclosed building. Noise generating equipment is located at the end of the building furthest away from the closest sensitive receptors. Equipment is purchased with noise levels taken into account, and proprietary acoustic enclosing of pumps/motors etc. where supplied as such. For mobile plant, the site speed limit is in place, plus a 'no idling' policy and minimisation of vehicle movements on site. Heavy plant is fitted with appropriate noise mitigation. Daily maintenance inspections are carried out on all equipment.</p> <p>A Noise and Vibration Management Plan is not considered necessary at the Site.</p>
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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.

<p>18.a Appropriate location of equipment and buildings</p>	<p>As above.</p>
<p>18.b Operational measures</p>	
<p>18.c Low-noise equipment</p>	
<p>18.d Noise and vibration control equipment</p>	
<p>18.e Noise attenuation</p>	

Emissions to Water

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.	
19.a Water management	Water use is metered and tracked.
19.b Water recirculation	Rainwater harvesting in place to feed dust suppression system.
19.c Impermeable surface	Impermeable surface in place throughout the site.
19.d Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels	Bulk tanks on site consist of rainwater harvesting tanks and a bunded diesel tank (see details in Table 4 of the application document) for vehicle/equipment refuelling. Inspection of the condition of tanks and bunds is part of the weekly facility audit.
19.e Roofing of waste storage and treatment areas	Waste treatment and processing takes place inside the building.
19.f Segregation of water streams	Emissions to foul sewer are only as a result of surface run-off and not as a result of waste treatment processes.
19.g Design and maintenance provisions to allow detection and repair of leaks	Drainage system periodically inspected.
19.h Appropriate buffer storage capacity	Site interceptor (20,000 litres) can be closed off to prevent run-off leaving site if necessary.

BAT 20. In order to reduce emissions to water, BAT is to treat wastewater using an appropriate combination of the techniques	
Interceptor in place on site surface water drainage system prior to release to foul sewer under Trade Effluent Discharge Consent.	

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)	
21.a Protection measures	Accident Management Plan in place as part of the EMS (reproduced in main application document), covering potential incidents, prevention and mitigation measures.
21.b Management of incidental/accidental emissions	
21.c Incident/accident registration and assessment system	

Material Efficiency

BAT 22. In order to use materials efficiently, BAT is to substitute materials with waste.	
Waste is used instead of other materials for the treatment of wastes	N/A

Energy Efficiency

BAT 23 In order to use energy efficiently, BAT is to use both of the techniques given below.	
23.a Energy Efficiency Plan	Energy and fuel used is recorded. Review of energy use and the potential for savings is one of the Objectives and Targets in the EMS.
23.b Energy Balance record	

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).	
Packaging (drums, containers, IBCs, pallets, etc.) is reused for containing waste, when it is in good condition and sufficiently clean, depending on a compatibility check between the substances contained (in consecutive uses). If necessary, packaging is sent for appropriate treatment prior to reuse (e.g. reconditioning, cleaning)	Drums, IBC's, containers and pallets are reused were possible for the collection and storage of low volume hazardous wastes.

General BAT Conclusions for Mechanical Treatment of Waste

Emissions to Air

BAT 25. 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.	
Cyclone Fabric Filter Wet Scrubbing Injection of water into the shredder Associated emission level of dust from shredder	N/A

BAT 26 to 32 deal with treatment of metal in shredder, WEEE and waste of calorific value – N/A

BAT 33 to 39 deal with biological and aerobic/anaerobic treatment of waste – N/A

Physico-chemical Treatment of Solid and/or Pasty Waste

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).
Waste loads arriving on site are recorded at the weighbridge as part of waste acceptance.

BAT 41. In order to reduce emissions of dust, organic compounds and NH3 to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below.
Adsorption; Biofilter; Fabric Filter; Wet scrubbing No dust extraction in place.

BAT 42 to 44 for treatment of waste oil – N/A

BAT 45 for treatment of waste with calorific value – N/A

BAT 46 and 47 regeneration of spent solvents – N/A

BAT 48 to 53 not relevant