

Conclusions on BAT from the Waste Treatment BAT Reference Document

READ ME:

The '*Conclusions on BAT from the Waste Treatment BAT Reference Document*' is a vertical BREF that covers activities for a number of waste (non-hazardous) treatments and deals with common waste treatments, biological and physico-chemical treatments of waste, treatments to recover waste materials and treatment to produce solid and liquid fuels from waste.

For each BAT, in the following table, state whether it is applicable to your installation and describe how each BAT applies or not to your installation and provide information on your compliance with the requirement.

It may be useful to first identify all the '**Not Applicable**' BATs and provide your reasoning in the '**Applicability Assessment**' box as to why you consider this particular BAT is not applicable at/to your entire installation having regard to the scope/ definitions, general considerations and the information on applicability. (You may need to make reference to relevant processes/activities or individual emission points to provide a comprehensive response).

Please use the '**Scope**' box to describe the relevant activities/processes that come within the scope of this BREF.

For each applicable BAT, in the following table, state the status; '**Yes**' or '**Will be**' as appropriate in the '**State whether it is in place or state schedule for implementation**' box. The use of each of these terms is described below.

Information on compliance in the '**Applicability Assessment**' box should include, where applicable, the following:

- (i) Identification of the relevant process/ activity or individual emission points that the BAT requirement applies to at your installation;
- (ii) Where BAT is to use one or a combination of listed techniques, specify the technique(s) implemented/proposed at your installation to achieve the BAT; and
- (iii) A comment on how the requirements are being met or will be met, e.g., a description of the technology/operational controls/management proposed to meet the requirements.

Use of terms:

- (a) '**Yes**' – To be entered where the installation is currently compliant with this BAT requirement.
- (b) '**Will be**' – To be entered where a further technique is required to be installed to achieve compliance with the BAT requirement. In this case you must also specify the date by which the installation will comply with the BAT Conclusion requirement.

Please refer to the EPA BAT Guidance Note for the Waste Sector for BAT associated emission levels. The EPA BAT Guidance Note is the reference for setting emission limit values (without prejudice to the requirements of environmental quality standards).

BAT Guidance Notes are available on the EPA website and the waste guidance note is hyperlinked as follows:

[BAT Guidance Note – Waste Sector \(Transfer & Materials Recovery\)](#)

Conclusions on BAT from the Waste Treatment BAT Reference Document (extracts)

The full and complete Waste Treatment BAT reference document (August 2006) is available at the EIPPC Bureau website:

<http://eippcb.jrc.ec.europa.eu/reference/>

<p><u>SCOPE</u></p> <p><i>Landfilling activities, composting, landfilling pre-treatment.</i></p>
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BAT No.	BAT Description	Applicability Assessment	Status of technique at installation
	5.1 Generic BAT		
	<p>Environmental Management</p> <p>These are techniques related to the continuous improvement of environmental performance. They provide the framework for ensuring the identification, adoption and adherence to BAT options that nevertheless remain important and can play a role in improving environmental</p>		

¹ If necessary, use attachments numbered according to the relevant BAT, e.g. "Attachment BAT 1".

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	<p>performance of the installation. Indeed, these good house housekeeping/management techniques/tools often prevent emissions.</p> <p>A number of environmental management techniques are determined as BAT. The scope (e.g. level of detail) and nature of the Environmental Management System (EMS) (e.g. standardised or non-standardised) will generally be related to the nature, scale and complexity of the installation, and the range of environmental impacts it may have. BAT is to (1 to 5):</p>		
1	Implement and adhere to an EMS that incorporates, as appropriate to individual circumstances, the following features (see Section 4.1.2.8 of BREF).	Applicable	Yes – existing EMS will be extended to cover new activities.
1a	(a) Definition of an environmental policy for the installation by top management (commitment of the top management is regarded as a precondition for a successful application of other features of the EMS).	Applicable	Yes
1b	(b) Planning and establishing the necessary procedures.	Applicable	Will be – existing procedures in place will be extended and/or new procedures introduced on completion of new infrastructure

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1c	(c) Implementation of the procedures, paying particular attention to: <ul style="list-style-type: none"> ▪ structure and responsibility; ▪ training, awareness and competence; ▪ communication, employee involvement; ▪ documentation; ▪ efficient process control; ▪ maintenance programme; ▪ emergency preparedness and response; ▪ safeguarding compliance with environmental legislation. 	Applicable	Yes
1d	(d) Checking performance and taking corrective action, paying particular attention to: <ul style="list-style-type: none"> ▪ monitoring and measurement (see also the Reference document on General Principles of Monitoring); ▪ corrective and preventive action; ▪ maintenance of records; ▪ independent (where applicable) internal auditing in order to determine whether or not the environmental management system conforms to planned arrangements and has been properly implemented and maintained. 	Applicable	Yes
1e	(e) Review by top management	Applicable	Yes

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1f (not mandatory)	(f) Having the management system and audit procedure examined and validated by an accredited certification body or an external EMS verifier.	Applicable	Yes
1g (not mandatory)	(g) Preparation and publication (and possibly external validation) of a regular environmental statement describing all the significant environmental aspects of the installation, allowing for year-by-year comparison against environmental objectives and targets as well as with sector benchmarks as appropriate.	Applicable	Yes – Set out in the facility AER.
1h (not mandatory)	(h) Implementation and adherence to an internationally accepted voluntary system such as EMAS or EN ISO 14001:1996. This voluntary step could give higher credibility to the EMS. In particular EMAS, which embodies all the above-mentioned features, gives higher credibility. However, non-standardised systems can in principle be equally effective provided that they are properly designed and implemented.	Applicable	Yes
1i (not mandatory)	(i) Giving consideration to the environmental impact from the eventual decommissioning of the unit at the stage of designing a new plant.	Applicable	Yes – decommissioning and closure planning included in landfill design.
1j (not mandatory)	(j) Giving consideration to the development of cleaner technologies.	Applicable	Yes

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1k (not mandatory)	(k) Where practicable, sectoral benchmarking on a regular basis, including energy efficiency and energy conservation activities, choice of input materials, emissions to air, discharges to water, consumption of water and generation of waste.	Applicable	Yes
2	Ensure the provision of full details of the activities carried out on-site. A good detail of that is contained in the following documentation (see Section 4.1.2.7 and related to BAT number 1.g)	Applicable	Yes – Operational Report
2a	a. descriptions of the waste treatment methods and procedures in place in the installation	Applicable	Yes – Operational Report
2b	b. diagrams of the main plant items where they have some environmental relevance, together with process flow diagrams (schematics)	Applicable	Yes – Operational Report

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2c	c. details of the chemical reactions and their reaction kinetics/energy balance	Not Applicable – no significant chemical reactions will be taking place.	-
2d	d. details on the control system philosophy and how the control system incorporates the environmental monitoring information	Applicable	Yes – SCADA system monitors temperatures, pH levels, flow volumes, gas concentrations at various locations around the site.
2e	e. details on how protection is provided during abnormal operating conditions such as momentary stoppages, start-ups, and shutdowns	Applicable	Yes – landfill gas utilisation plant has diversion in place to allow controlled flaring. Storage capacity in place in the landfills, collection chambers.

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2f	f. an instruction manual	Applicable	Yes
2g	g. an operational diary (related to BAT number 3)	Applicable	Yes – onsite staff maintain records of all activities on site including environmental monitoring.
2h	h. an annual survey of the activities carried out and the waste treated. The annual survey should also contain a quarterly balance sheet of the waste and residue streams, including the auxiliary materials used for each site (related to BAT number 1.g).	Applicable	Yes – record maintained of all incoming waste and limit set on incoming waste quantities.
3	Have a good housekeeping procedure in place, which will also cover the maintenance procedure, and an adequate training programme, covering the preventive actions that workers need to take on health and safety issues and environmental risks (see Sections 4.1.1.4, 4.1.1.5, 4.1.2.5, 4.1.2.10, 4.1.4.8 and 4.1.4.3)	Applicable	Yes – BnM has a Health and Safety handbook issued to all employees and contractors.

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4	Try to have a close relationship with the waste producer/holder in order that the customers sites implement measures to produce the required quality of waste necessary for the waste treatment process to be carried out (see Section 4.1.2.9)	Applicable	Yes – all incoming waste hauliers are pre-approved.
5	Have sufficient staff available and on duty with the requisite qualifications at all times. All personnel should undergo specific job training and further education (see Section 4.1.2.10. This is also related to BAT number 3)	Applicable	Yes
	Waste IN		
	To improve the knowledge of the waste IN, BAT is to:		
6	Have a concrete knowledge of the waste IN. Such knowledge needs to take into account the waste OUT, the treatment to be carried out, the type of waste, the origin of the waste, the procedure under consideration (see BAT number 7 and 8) and the risk (related to waste OUT and the treatment) (see Section 4.1.1.1). Guidance on some of these issues is provided in Sections 4.2.3, 4.3.2.2 and 4.4.1.2.	Applicable	Yes

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7	Implement pre-acceptance procedure containing at least the following items (see Section 4.1.1.2):		
7a	a. tests for the incoming waste with respect to the planned treatment	Applicable	Yes – waste acceptance procedure in place and agreed with EPA. Will be updated upon completion of additional infrastructure.
7b	b. making sure that all necessary information is received on the nature of the process(es) producing the waste, including the variability of the process. The personnel having to deal with the pre-acceptance procedure need to be able due to his profession and/or experience to deal with all necessary questions relevant for the treatment of the wastes in the WT facility	Applicable	Yes

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7c	c. a system for providing and analysing a representative sample(s) of the waste from the production process producing such waste from the current holder	Applicable	Yes – waste acceptance procedure in place and agreed with EPA. Will be updated upon completion of additional infrastructure.
7d	d. a system for carefully verifying, if not dealing directly with the waste producer, the information received at the pre-acceptance stage, including the contact details for the waste producer and an appropriate description of the waste regarding its composition and hazardousness	Applicable	Yes
7e	e. making sure that the waste code according to the European Waste List (EWL) is provided	Applicable	Yes

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7f	f. identifying the appropriate treatment for each waste to be received at the installation (see Section 4.1.2.1) by identifying a suitable treatment method for each new waste enquiry and having a clear methodology in place to assess the treatment of waste, that considers the physico-chemical properties of the individual waste and the specifications for the treated waste.	Applicable	Yes
8	Implement an acceptance procedure containing at least the following items (see Section 4.1.1.3):		
8a	a. a clear and specified system allowing the operator to accept wastes at the receiving plant only if a defined treatment method and disposal/recovery route for the output of the treatment is determined (see pre-acceptance in BAT number 7). Regarding the planning for the acceptance, it needs to be guaranteed that the necessary storage (see Section 4.1.4.1), treatment capacity and dispatch conditions (e.g. acceptance criteria of the output by the other installation) are also respected.	Applicable	Yes
8b	b. measures in place to fully document and deal with acceptable wastes arriving at the site, such as a pre-booking system, to ensure e.g. that sufficient capacity is available	Applicable	Yes – incoming waste volumes are scheduled.

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8c	c. clear and unambiguous criteria for the rejection of wastes and the reporting of all non-conformances	Applicable	Yes
8d	d. a system for identifying the maximum capacity limit of waste that can be stored at the facility (related to BAT number 10.b, 10.c, 27 and 24.f)	Applicable	Yes
8e	e. visually inspect the waste IN to check compliance with the description received during the pre-acceptance procedure. <i>For some liquid and hazardous waste, this BAT is not applicable</i> (see Section 4.1.1.3).	Applicable	Yes – waste acceptance procedure in place and agreed with EPA. Will be updated upon completion of additional infrastructure.
9	Implement different sampling procedures for all different incoming waste vessels delivered in bulk and/or containers. These sample procedures may contain the following items (see Section 4.1.1.4):		

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9a	a. sampling procedures based on a risk approach. Some elements to consider are the type of waste (e.g. <i>hazardous</i> or non-hazardous) and the knowledge of the customer (e.g. waste producer)	Applicable	Yes – waste acceptance procedure in place and agreed with EPA. Will be updated upon completion of additional infrastructure.
9b	b. check on the relevant physico-chemical parameters. The relevant parameters are related to the knowledge of the waste needed in each case (see BAT number 6)	Applicable	Yes – waste acceptance procedure in place and agreed with EPA. Will be updated upon completion of additional infrastructure.
9c	c. registration of all waste materials	Applicable	Yes – waste acceptance procedure in place and agreed with EPA. Will be updated upon completion of

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			additional infrastructure.
9d	d. have different sampling procedures for bulk (liquid and solids), large and small containers and laboratory smalls. The number of samples taken should increase with the number of containers. In extreme situations, small containers must all be checked against the accompanying paperwork. The procedure should contain a system for recording the number of samples and degree of consolidation	Applicable	Yes – waste acceptance procedure in place and agreed with EPA. Will be updated upon completion of additional infrastructure.
9e	e. details of the sampling of wastes in drums within designated storage, e.g. the timescale after receipt	Not Applicable – waste material in drums not applicable to the facility.	
9f	f. sample prior to acceptance	Applicable	Yes – waste acceptance procedure in place and agreed with EPA. Will be updated upon completion of

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9g	g. maintenance of a record at the installation of the sampling regime for each load, together with a record of the justification for the selection of each option	Applicable	<p>additional infrastructure.</p> <p>Yes – waste acceptance procedure in place and agreed with EPA. Will be updated upon completion of additional infrastructure.</p>
9h	<p>h. a system for determining and recording:</p> <ul style="list-style-type: none"> • a suitable location for the sampling points • the capacity of the vessel sampled (for samples from drums, an additional parameter would be the total number of drums) • the number of samples and degree of consolidation • the operating conditions at the time of sampling. 	Applicable	<p>Yes – waste acceptance procedure in place and agreed with EPA. Will be updated upon completion of additional infrastructure.</p>

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9i	i. a system to ensure that the waste samples are analysed (see Section 4.1.1.5)	Applicable	Yes – waste acceptance procedure in place and agreed with EPA. Will be updated upon completion of additional infrastructure.
9j	j. in the case of cold ambient temperatures, a temporary storage may be needed in order to allow sampling after defrosting. This may affect the applicability of some of the above items in this BAT (see Section 4.1.1.5).	Applicable	Will be – in the event that incoming waste is frozen at a given time, capacity will be available for the temporary storage of the waste to allow defrosting prior to sampling.
10	Have a reception facility covering at least the following issues (see Section 4.1.1.5):		

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10a	a. have a laboratory to analyse all the samples at the speed required by BAT. Typically this requires having a robust quality assurance system, quality control methods and maintaining suitable records for storing the analyses results. <i>Particularly for hazardous wastes, this often means that the laboratory needs to be on-site</i>	Applicable	Yes – onsite laboratory for some environmental monitoring requirements. Sampling of some incoming waste types, such as soils, will be carried out off-site.
10b	b. have a dedicated quarantine waste storage area as well as written procedures to manage non-accepted waste. If the inspection or analysis indicates that the wastes fail to meet the acceptance criteria (including, e.g. damaged, corroded or unlabelled drums) then the wastes can be temporarily stored there safely. Such storage and procedures should be designed and managed to promote the rapid management (typically a matter of days or less) to find a solution for that waste	Applicable	Yes
10c	c. have a clear procedure dealing with wastes where inspection and/or analysis prove that they do not fulfil the acceptance criteria of the plant or do not fit with the waste description received during the pre-acceptance procedure. The procedure should include all measures as required by the permit or national/international legislation to inform competent authorities, to safely store the delivery for any transition period or to reject the waste and send it back to the waste producer or to any other authorised destination	Applicable	Yes

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10d	d. move waste to the storage area only after acceptance of the waste (related to BAT number 8)	Applicable	Yes
10e	e. mark the inspection, unloading and sampling areas on a site plan	Applicable	Yes
10f	f. have a sealed drainage system (related to BAT number 63)	Applicable	Yes
10g	g. a system to ensure that the installation personnel who are involved in the sampling, checking and analysis procedures are suitably qualified and adequately trained, and that the training is updated on a regular basis (related to BAT number 5)	Applicable	Yes
10h	h. the application of a waste tracking system unique identifier (label/code) to each container at this stage. The identifier will contain at least the date of arrival on-site and the waste code (related to BAT number 9 and 12).	Not applicable – incoming waste materials are deposited into landfill, pretreatment facilities or the compost facility. Adequate signage will	

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		direct hauliers to the designated areas and only pre-approved and inducted drivers will be allowed on-site.	
	Waste OUT		
11	To improve the knowledge of the waste OUT, BAT is to analyse the waste OUT according to the relevant parameters important for the receiving facility (e.g. landfill, incinerator) (see Section 4.1.1.1).	Not Applicable	Not intended to process IBA. Unprocessed MSW will be processed in the MSW Processing & Composting Facility. Materials recovered, plastics, metal for recycling and RDF for recovery.
	Management systems		

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	BAT is to:		
12	Have a system in place to guarantee the traceability of waste treatment. Different procedures may be needed to take into account the physico-chemical properties of the waste (e.g. liquid, solid), type of WT process (e.g. continuous, batch) as well as the changes that may occur to the physico-chemical properties of the wastes when the WT is carried out. A good traceability system contains the following items (see Section 4.1.2.3):	Applicable	Yes
12a	a. documenting the treatments by flow charts and mass balances (see Section 4.1.2.4 and this is also related to BAT number 2.a)	Applicable	Yes – documenting of waste treatments is carried out in a variety of ways including automated SCADA system.
12b	b. carrying out data traceability through several operational steps (e.g. pre-acceptance/acceptance/storage/treatment/dispatch). Records can be made and kept up-to-date on an ongoing basis to reflect deliveries, on-site treatment and dispatches. Records are typically held for a minimum of six months after the waste has been dispatched	Applicable	Yes
12c	c. recording and referencing the information on waste characteristics and the source of the waste stream, so that it is available at all times. A reference number needs to be given to the waste and needs to be obtainable at any time in the process to enable the operator to	Applicable	Yes

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	identify where a specific waste is in the installation, the length of time it has been there and the proposed or actual treatment route		
12d	<p>d. having a computer database/series of databases, which are regularly backed up. The tracking system operates as a waste inventory/stock control system and includes:</p> <ul style="list-style-type: none"> ▪ date of arrival on-site, ▪ waste producer details, ▪ details on all previous holders, ▪ an unique identifier, ▪ pre-acceptance and acceptance analysis results, ▪ package type and size, ▪ intended treatment/disposal route, ▪ an accurate record of the nature and quantity of wastes held on-site including all hazards details on where the waste is physically located in relation to a site plan, ▪ at which point in the designated disposal route the waste is currently positioned 	Applicable	Yes – waste acceptance includes recording comprehensive data on incoming waste in accordance with current IED Licence.
12e	e. only moving drums and other mobile containers between different locations (or loaded for removal off site) under instructions from the appropriate manager, ensuring that the waste tracking system is amended to record these changes (see Section 4.1.4.8).	Applicable – for materials leaving site	Will be – for metal waste leaving site, an agreed procedure will be established, and appropriate controls put in place.

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13	Have and apply mixing/blending rules oriented to restrict the types of wastes that can be mixed/blended together in order to avoid increasing pollution emission of down-stream waste treatments. These rules need to consider the type of waste (e.g. <i>hazardous</i> , non-hazardous), waste treatment to be applied as well as the following steps that will be carried out to the waste OUT (see Section 4.1.5)	Not Applicable	
14	Have a segregation and compatibility procedure in place (see Section 4.1.5 and this is also related to BAT number 13 and 24.c), including:	Applicable	Yes
14a	a. keeping records of the testing, including any reaction giving rise to safety parameters (increase in temperature, generation of gases or raising of pressure); a record of the operating parameters (viscosity change and separation or precipitation of solids) and any other relevant parameters, such as generation of odours (see Sections 4.1.4.13 and 4.1.4.14)	Applicable	Yes
14b	b. packing containers of chemicals into separate drums based on their hazard classification. Chemicals which are incompatible (e.g. oxidisers and flammable liquids) should not be stored in the same drum (see Section 4.1.4.6).	Applicable	Yes
15	Have an approach for improving waste treatment efficiency. This typically includes the finding of suitable indicators to report WT efficiency and a monitoring programme (see Section 4.1.2.4 and this is also related to BAT number 1)	Applicable	Yes – continuous monitoring of composting activities to optimise conditions.

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16	Produce a structured accident management plan (see Section 4.1.7)	Applicable	Yes
17	Have and properly use an incident diary (see Section 4.1.7 and related to BAT number 1 and to quality management system)	Applicable	Yes
18	Have a noise and vibration management plan in place as part of the EMS (see Section 4.1.8 and this is also related to BAT number 1). For some WT installations, noise and vibration may not be an environmental problem	Not Applicable – remote location of site from sensitive receptors. Annual noise monitoring carried out in accordance with IED Licence. No issues as regards noise identified to date.	
19	Consider any future decommissioning at the design stage. For existing installations and where decommissioning problems are identified, put a programme to minimise these problems in place (see Section 4.1.9 and this is also related to BAT number 1.i).	Applicable	Yes

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	Utilities and raw material management BAT is to:		
20	The type of source (i.e. electricity, gas, liquid conventional fuels, solid conventional fuels and waste) (see Section 4.1.3.1 and related to BAT number 1.k). This involves:		
20a	a. reporting the energy consumption information in terms of delivered energy	Applicable	Yes
20b	b. reporting the energy exported from the installation	Applicable	Yes
20c	c. providing energy flow information (for example, diagrams or energy balances) showing how the energy is used throughout the process.	Applicable	Yes

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21	Continuously increase the energy efficiency of the installation, by (see Section 4.1.3.4):	Applicable	Yes
21a	a. Developing an energy efficiency plan.	Applicable	Yes
21b	b. using techniques that reduce energy consumption and thereby reduce both direct (heat and emissions from on-site generation) and indirect (emissions from a remote power station) emissions	Applicable	Yes
21c	c. defining and calculating the specific energy consumption of the activity (or activities), setting key performance indicators on an annual basis (e.g. MWh/tonne of waste processed) (related to BAT number 1.k and 20).	Applicable	Yes
22	Carry out internal bench marking (e.g. on an annual basis) of raw materials consumption (related to BAT number 1.k). Some applicability limitations have been identified and these are mentioned in Section 4.1.3.5.	Applicable	Yes

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
23	Explore the options for the use of waste as a raw material for the treatment of other wastes (see Section 4.1.3.5). If waste is used to treat other wastes, then to have a system in place to guarantee that the waste supply is available. If this cannot be guaranteed, a secondary treatment or other raw materials should be in place in order to avoid any unnecessary waiting treatment time (see Section 4.1.2.2)	Applicable	Yes
	Storage and handling BAT is to:		
24	apply the following techniques related to storage (see Section 4.1.4.1):		
24a	a. locating storage areas: <ul style="list-style-type: none"> • away from watercourses and sensitive perimeters, and • in such a way so as to eliminate or minimise the double handling of wastes within the installation 	Applicable	Yes
24b	b. ensuring that the storage area drainage infrastructure can contain all possible contaminated run-off and that drainage from incompatible wastes cannot come into contact with each other	Applicable	Yes

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
24c	c. using a dedicated area/store which is equipped with all necessary measures related to the specific risk of the wastes for sorting and repackaging laboratory smalls or similar waste. These wastes are sorted according to their hazard classification, with due consideration for any potential incompatibility problems and then repackaged. After that, they are removed to the appropriate storage area	Applicable	Yes
24d	d. handling odorous materials in fully enclosed or suitably abated vessels and storing them in enclosed buildings connected to abatement	Applicable	Yes – odour controls on the compost facility and an Odour Management Plan in place for landfill activities.
24e	e. ensuring that all connections between the vessels are capable of being closed via valves. Overflow pipes need to be directed to a contained drainage system (i.e. the relevant bunded area or another vessel)	Applicable	Yes
24f	f. having measures available to prevent the building up of sludges higher than a certain level and the emergence of foams that may affect such measures in liquid tanks, e.g. by regularly controlling the tanks, sucking out the sludges for appropriate further treatment and using anti-foaming agents	Applicable	Will be – on completion of the odour abatement equipment

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
24g	g. equipping tanks and vessels with suitable abatement systems when volatile emissions may be generated, together with level meters and alarms. These systems need to be sufficiently robust (able to work if sludge and foam is present) and regularly maintained	Applicable	Will be – on completion of the odour abatement equipment
24h	h. storing organic waste liquid with a low flashpoint under a nitrogen atmosphere to keep it inertised. Each storage tank is put in a waterproof retention area. Gas effluents are collected and treated	Not Applicable	
25	Separately bund the liquid decanting and storage areas using bunds which are impermeable and resistant to the stored materials (see Section 4.1.4.4)	Not Applicable	
26	Apply the following techniques concerning tank and process pipework labelling (see Section 4.1.4.12):		
26a	a. clearly labelling all vessels with regard to their contents and capacity, and applying an unique identifier. Tanks need to have an appropriately labelled system depending on their use and contents	Applicable	Yes

BAT No.	BAT Description	Applicability Assessment	Status of technique at installation
26b	b. ensuring that the label differentiates between waste water and process water, combustible liquid and combustible vapour and the direction of flow (i.e. in or outflow)	Applicable	Yes
26c	c. keeping records for all tanks, <ul style="list-style-type: none"> • detailing the unique identifier; • capacity; • its construction, including materials; • maintenance schedules and inspection results; • fittings; and • the waste types which may be stored/treated in the vessel, including flashpoint limits 	Applicable	Yes
27	Take measures to avoid problems that may be generated from the storage/accumulation of waste. This may conflict with BAT number 23 when waste is used as a reactant (see Section 4.1.4.10).	Applicable	Yes
28	apply the following techniques when handling waste (see Section 4.1.4.6):		

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28a	a. having systems and procedures in place to ensure that wastes are transferred to the appropriate storage safely	Applicable	Yes
28b	b. having in place a management system for the loading and unloading of waste in the installation, which also takes into consideration any risks that these activities may incur. Some options for this include ticketing systems, supervision by site staff, keys or colour-coded points/hoses or fittings of a specific size	Applicable	Yes
28c	c. ensuring that a qualified person attends the waste holder site to check the laboratory smalls, the old original waste, waste from an unclear origin or undefined waste (especially if drummed), to classify the substances accordingly and to package into specific containers. In some cases, the individual packages may need to be protected from mechanical damage in the drum with fillers adapted to the packaged waste properties	Not Applicable – incoming waste is from approved sources.	
28d	d. ensuring that damaged hoses, valves and connections are not used	Applicable	Yes

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
28e	e. collecting the exhaust gas from vessels and tanks when handling liquid waste	Not Applicable	
28f	f. unloading solids and sludge in closed areas which are fitted with extractive vent systems linked to abatement equipment when the handled waste can potentially generate emission to air (e.g. odours, dust, VOCs) (see Section 4.1.4.7)	Applicable	Yes
28g	g. using a system to ensure the bulking of different batches only takes place with compatibility testing (see Section 4.1.4.7 and 4.1.5 and this is also related to BAT number 13, 14 and 30).	Applicable	Yes
29	Ensure that the bulking/mixing to or from packaged waste only takes place under instruction and supervision and is carried out by trained personnel. For certain types of wastes, such a bulking/mixing needs to be carried out under local exhaust ventilation (see Section 4.1.4.8)	Applicable	Yes
30	Ensure that chemical incompatibilities guide the segregation required during storage (see Section 4.1.4.13 and 4.1.4.14 and this is also related to BAT number 14)	Not Applicable	

BAT No.	BAT Description	Applicability Assessment	Status of technique at installation
31	Apply the following techniques when containerised wastes are handled (see Section 4.1.4.2):		
31a	a. storing of containerised wastes under cover. This can also be applied to any container that is held in storage pending sampling and emptying. Some exceptions on the applicability of this technique related to containers or waste not affected by ambient conditions (e.g. sunlight, temperature, water) have been identified (see Section 4.1.4.2). Covered areas need to have adequate provision for ventilation	Not Applicable – no waste will be received to the facility in containers.	
31b	b. maintaining the availability and access to storage areas for containers holding substances that are known to be sensitive to heat, light and water, under cover and protected from heat and direct sunlight.	Not Applicable – no waste will be received to the facility in containers.	
	Other common techniques not mentioned above BAT is to:		
32	Perform crushing, shredding and sieving operations in areas fitted with extractive ventilation systems linked to abatement equipment (see Section 4.1.6.1) when handling materials that can generate emission to air (e.g. odours, dust, VOCs).	Applicable	Will be

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
33	Perform crushing/shredding operations (see Sections 4.1.6.1 and 4.6) under full encapsulation and under an inert atmosphere for drums/containers containing flammable or highly volatile substances. This will avoid ignition. The inert atmosphere is to be abated.	Not Applicable – no flammable or highly volatile substances will be received.	
33	Perform washing processes considering:		
33a	(a) Identifying the washed components that may be present in the items to be washed (e.g. solvents).	Not Applicable – washing process not applicable	
34b	(b) Transferring washings to appropriate storage and then treating them in the same way as the waste from which they were derived.	Not Applicable – washing process not applicable	
34c	(c) Using treated waste water from the WT plant for washing instead of fresh water. The resultant waste water can then be treated in the WWTP or re-used in the installation.	Not Applicable – washing process not applicable	

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
	Air emission treatments To prevent or control the emissions mainly of dust, odours and VOC and some inorganic compounds, BAT is to:		
35	Restrict the use of open topped tanks, vessels and pits by:		
35a	(a) not allowing direct venting or discharges to air by linking all the vents to suitable abatement systems when storing materials that can generate emissions to the air (e.g. odours, dust, VOCs) (see Section 4.1.4.5).	Applicable	Yes – leachate tanks are covered
35b	(b) keeping the waste or raw materials under cover or in waterproof packaging (see Section 4.1.4.5 and this is also related to BAT number 31.a)	Applicable	Yes
35c	(c) connecting the head space above the settlement tanks (e.g. where oil treatment is a pre-treatment process within a chemical treatment plant) to the overall site exhaust and scrubber units (see Section 4.1.4.1).	Not Applicable – no settlement tanks	

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
36	Use an enclosed system with extraction, or under depression, to a suitable abatement plant. This technique is especially relevant to processes which involve the transfer of volatile liquids, including during tanker charging/discharging (see Section 4.6.1).	Applicable	Yes
37	Apply a suitably sized extraction system which can cover the holding tanks, pre-treatment areas, storage tanks, mixing/reaction tanks and the filter press areas, or to have in place a separate system to treat the vent gases from specific tanks (for example, activated carbon filters from tanks holding waste contaminated with solvents) (see Section 4.6.1).	Applicable	Yes
38	Correctly operate and maintain the abatement equipment, including the handling and treatment/disposal of spent scrubber media (see Section 4.6.11).	Applicable	Yes
39	Have a scrubber system in place for the major inorganic gaseous releases from those unit operations which have a point discharge from process emissions. Install a secondary scrubber unit to certain pre-treatment systems if the discharge is incompatible, or too concentrated for the main scrubbers (see Section 4.6.11).	Applicable	Yes
40	Have leak detection and repair procedures in place in installations a) handling a large number of piping components and storage and b) compounds that may leak easily and create an environmental problem (e.g. fugitive emissions, soil contamination) (see Section 4.6.2). This may be seen as an element of the EMS (see BAT number 1)	Applicable	Yes

BAT No.	BAT Description	Applicability Assessment	Status of technique at installation						
41	<p>Reduce air emissions to the following levels by using a suitable combination of preventive and/or abatement techniques (see Section 4.6). The techniques mentioned above in the BAT 'Air emission treatments' section (BAT numbers 35-41) also contribute to achieve these values.</p> <table border="1"> <thead> <tr> <th>Air parameter</th> <th>Emission levels associated to the use of BAT (mg/Nm³)</th> </tr> </thead> <tbody> <tr> <td>VOC</td> <td>7 – 20 ¹</td> </tr> <tr> <td>PM</td> <td>5 – 20</td> </tr> </tbody> </table> <p>¹ For low VOC loads, the higher end of the range can be extended to 50</p>	Air parameter	Emission levels associated to the use of BAT (mg/Nm ³)	VOC	7 – 20 ¹	PM	5 – 20	<p><i>Refer to the EPA BAT Guidance Note for BAT associated emission levels</i></p> <p>Applicable</p>	<p>Yes</p>
Air parameter	Emission levels associated to the use of BAT (mg/Nm ³)								
VOC	7 – 20 ¹								
PM	5 – 20								
	<p>Waste water management</p> <p>BAT is to:</p>								
42	<p>Reduce the water use and the contamination of water by (see Sections 4.1.3.6 and 4.7.1):</p>								

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
42a	(a) applying site waterproofing and storage retention methods.	Applicable	Yes
42b	(b) carrying out regular checks of the tanks and pits especially when they are underground	Applicable	Yes
42c	(c) applying separated water drainage according to the pollution load (roof water, road water, process water).	Applicable	Yes
42d	(d) applying a security collection basin.	Applicable	Yes
42e	(e) Performing regular water audits, with the aim of reducing water consumption and preventing water contamination.	Applicable	Yes

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
42f	(f) segregating process water from rain water (see Section 4.7.2 and this is also related to BAT number 46)	Applicable	Yes
43	Have procedures in place to ensure that the effluent specification is suitable for the on-site effluent treatment system or discharge (see Section 4.7.1).	Applicable	Yes
44	Avoid the effluent by-passing the treatment plant systems (see Section 4.7.1).	Not Applicable – leachate will not be capable of bypassing treatment system.	
45	Have in place and operate an enclosure system whereby rainwater falling on the processing areas is collected along with tanker washings, occasional spillages, drum washings, etc. and returned to the processing plant or collected in a combined interceptor (see Section 4.7.1).	Applicable	Yes
46	Segregate the water collecting systems for potentially more contaminated waters from less contaminated water (see Section 4.7.2).	Applicable	Yes

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
47	Have a full concrete base in the whole treatment area, that falls to internal site drainage systems which lead to storage tanks or to interceptors that can collect rainwater and any spillage. Interceptors with an overflow to sewer usually need automatic monitoring systems, such as pH checks, which can shut down the overflow (see Section 4.1.3.6 and this is also related to BAT number 63).	Applicable	Yes
48	Collect the rainwater in a special basin for checking, treatment if contaminated and further use (see Section 4.7.1)	Applicable	Yes
49	Maximise the re-use of treated waste waters and use of rainwater in the installation (see Section 4.7.1).	Applicable	Yes
50	Conduct daily checks on the effluent management system and to maintain a log of all checks carried out, by having a system for monitoring the effluent discharge and sludge quality in place (see Section 4.7.1)	Applicable	Yes
51	Firstly identify waste waters that may contain <ul style="list-style-type: none"> • hazardous compounds (e.g. adsorbable organically bound halogens (AOX)); • cyanides; • sulphides; • aromatic compounds; • benzene or hydrocarbons (dissolved, emulsified or undissolved); and 	Applicable	Yes

BAT No.	BAT Description	Applicability Assessment	Status of technique at installation
	<ul style="list-style-type: none"> metals, such as mercury, cadmium, lead, copper, nickel, chromium, arsenic and zinc) (see Section 4.7.2). <p>Secondly, segregate the previously identified waste water streams on-site and thirdly, specifically treat waste water on-site or off-site.</p>		
52	Ultimately after the application of BAT number 42, select and carry out the appropriate treatment technique for each type of waste water (see Section 4.7.1)	Applicable	Yes
53	Implement measures to increase the reliability with which the required control and abatement performance can be carried out (for example, optimising the precipitation of metals) (see Section 4.7.1)	Not Applicable	
54	Identify the main chemical constituents of the treated effluent (including the make-up of the COD) and to then make an informed assessment of the fate of these chemicals in the environment (see Section 4.7.1 and their applicability restrictions identified)	Not Applicable	
55	Only discharge the waste water from its storage after the conclusion of all the treatment measures and a subsequent final inspection (see Section 4.7.1)	Not Applicable	

BAT No.	BAT Description	Applicability Assessment	Status of technique at installation																		
56	<p>Achieve the following emissions level values before discharge by applying a suitable combination of techniques mentioned in Sections 4.4.2.3 and 4.7. The techniques mentioned above in this section on 'waste water management' (BAT number 42 – 55) also contribute to reach these values.</p> <table border="1"> <thead> <tr> <th>Water parameter</th> <th>Emission values associated with the use of BAT (ppm)</th> </tr> </thead> <tbody> <tr> <td>COD</td> <td>20 – 120</td> </tr> <tr> <td>BOD</td> <td>2 – 20</td> </tr> <tr> <td>Heavy metals (Cr, Cu, Ni, Pb, Zn)</td> <td>0.1 – 1</td> </tr> <tr> <td>Highly toxic heavy metals:</td> <td></td> </tr> <tr> <td>As</td> <td><0.1</td> </tr> <tr> <td>Hg</td> <td>0.01 – 0.05</td> </tr> <tr> <td>Cd</td> <td><0.1 – 0.2</td> </tr> <tr> <td>Cr(VI)</td> <td><0.1 – 0.4</td> </tr> </tbody> </table>	Water parameter	Emission values associated with the use of BAT (ppm)	COD	20 – 120	BOD	2 – 20	Heavy metals (Cr, Cu, Ni, Pb, Zn)	0.1 – 1	Highly toxic heavy metals:		As	<0.1	Hg	0.01 – 0.05	Cd	<0.1 – 0.2	Cr(VI)	<0.1 – 0.4	Not Applicable – no release of wastewater.	Leachate will be removed from site to a licenced WWTP for further treatment.
Water parameter	Emission values associated with the use of BAT (ppm)																				
COD	20 – 120																				
BOD	2 – 20																				
Heavy metals (Cr, Cu, Ni, Pb, Zn)	0.1 – 1																				
Highly toxic heavy metals:																					
As	<0.1																				
Hg	0.01 – 0.05																				
Cd	<0.1 – 0.2																				
Cr(VI)	<0.1 – 0.4																				
	<p>Management of the process generated residues</p> <p>BAT is to:</p>																				

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
57	Have a residue management plan (see Section 4.8.1) as part of the EMS including:	Not Applicable – no IBA will be processed and no Ash Solidification plant.	
57a	(a) Basic housekeeping techniques (related to BAT number 3).	Not Applicable – no treatment processes to produce 'residues'.	
57b	(b) Internal bench marking techniques (see Section 4.1.2.8 and this is also related to BAT numbers 1.k and 22).	Not Applicable – no treatment processes to produce 'residues'.	
58	Maximise the use of re-usable of packaging (drums, containers, IBCs, pallets etc.) (see Section 4.8.1)	Not Applicable – no treatment processes to produce 'residues'.	
59	Re-use drums when they are in good working state. In other cases, they are to be sent for appropriate treatment (see Section 4.8.1).	Not Applicable – no treatment processes to produce 'residues'.	

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60	Keep a monitoring inventory of the waste on-site by using records of the amount of wastes received on-site and records of the wastes processed (see Section 4.8.3 and this is also related to BAT number 27)	Applicable	Yes
61	Re-use the waste from one activity/treatment possibly as a feedstock for another (see Section 4.1.2.6 and this is also related to BAT number 23).	Applicable	Yes – MSW Processing & Compost Facility output as daily cover landfill
	Soil contamination To prevent soil contamination, BAT is to:		
62	Provide and then maintain the surfaces of operational areas, including applying measures to prevent or quickly clear away leaks and spillages, and ensuring that maintenance of drainage systems and other subsurface structures is carried out (see Section 4.8.2)	Applicable	Yes
63	Utilise an impermeable base and internal site drainage (see Section 4.1.4.6, 4.7.1 and 4.8.2)	Applicable	Yes

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
64	Reduce the installation site and minimise the use of underground vessels and pipework (see Section 4.8.2 and this is also related to BAT number 10.f, 25, and 40)	Applicable	Yes
	<p>5.2 BAT for specific types of waste treatments</p> <p>This section presents the BAT elements for each process/activity covered in this document. It has been structured in a similar way as previous chapters.</p>		
	<p>Biological treatments</p> <p>BAT is to:</p>		
65	Use the following techniques for storage and handling in biological systems (see Section 4.2.2):		
65a	(a) for less odour-intensive wastes, use automated and rapid action doors (opening times of the doors being kept to a minimum) in combination with an appropriate exhaust air collection device resulting in an under pressure in the hall.	Applicable	Yes

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
65b	(b) for highly odour-intensive wastes, use closed feed bunkers constructed with a vehicle sluice.	Not Applicable – compost facility management as outlined in BAT No. 65.	
65c	(c) house and equip the bunker area with an exhaust air collection device.	Applicable	Yes
66	Adjust the admissible waste types and separation processes according to the type of process carried out and the abatement technique applicable (e.g. depending on the content of non-biodegradable components) (see Section 4.2.3).	Applicable	Yes
67	Use the following techniques when applying anaerobic digestion (see Sections 4.2.4 and 4.2.5):		
67a	(a) application of a close integration between the process with the water management.	Not Applicable	

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
67b	(b) a recycling of the maximum amount of waste water to the reactor. See some operational issues that may appear when applying this technique in Section 4.2.4.	Not Applicable	
67c	(c) operate the system under thermophilic digestion conditions. For certain types of wastes, thermophilic conditions cannot to be reached (see Section 4.2.4).	Not Applicable	
67d	(d) measure TOC, COD, N, P and Cl levels in the inlet and outlet flows. When a better control of the process is required, or a better quality of the waste OUT, more parameters are necessary for measuring and controlling.	Not Applicable	
67e	(e) maximise the production of biogas. This technique needs to consider the effect on the digestate and biogas quality.	Not Applicable	
68	Reduce the air emissions of the exhaust gas when using biogas as a fuel by restricting the emissions of dust, NO _x , SO _x , CO, H ₂ S and VOC by using an appropriate combination of the following techniques (see Section 4.2.6):		

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68a	(a) scrubbing the biogas with iron salts	Not Applicable – LFGU use activated carbon.	
68b	(b) using de-NOx techniques such as SCR	Not Applicable – LFGU use activated carbon.	
68c	(c) using a thermal oxidation unit	Not Applicable – LFGU use activated carbon.	
68d	(d) using activated carbon filtration.	Applicable	Yes
69	Improve the mechanical biological treatments (MBT) by (see Sections 4.2.2, 4.2.3, 4.2.8, 4.2.10, 4.6.23):		

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69a	(a) using fully enclosed bioreactors.	Applicable	Yes
69b	(b) avoiding anaerobic conditions during aerobic treatment by controlling the digestion and the air supply (by using a stabilised air circuit) and by adapting the aeration to the actual biodegradation activity.	Applicable	Yes
69c	(c) using water efficiently.	Applicable	Yes
69d	(d) thermally insulating the ceiling of the biological degradation hall in aerobic processes.	Applicable	Yes
69e	(e) minimising the exhaust gas production to levels of 2500 to 8000 Nm ³ per tonne. Levels below 2500 Nm ³ per tonne do not have been reported.	Applicable	Yes

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
69f	(f) guaranteeing a uniform feed.	Applicable	Yes
69g	(g) recycling process waters or muddy residues within the aerobic treatment process to completely avoid water emissions. If waste water is generated, then this should be treated to reach the values mentioned in BAT number 56.	Applicable	Yes
69h	(h) continuously learning of the connection between the controlled variables of biological degradation and the measured (gaseous) emissions.	Applicable	Yes
69i	(i) reducing emissions of nitrogen compounds by optimising the C:N ratio.	Applicable	Yes
70	Reduce the emissions from mechanical biological treatments to the following levels (see Section 4.2.12) by using an appropriate combination of the following techniques: (a) maintaining good housekeeping (related to BAT number 3). (b) regenerative thermal oxidiser. (c) dust removal.	Applicable	Yes

BAT No.	BAT Description	Applicability Assessment	Status of technique at installation										
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Parameter</th> <th style="width: 50%; text-align: center;">Treated exhaust gas</th> </tr> </thead> <tbody> <tr> <td>Odour (ouE/m³)</td> <td style="text-align: center;"><500 – 6000</td> </tr> <tr> <td>NH₃ (mg/m³)</td> <td style="text-align: center;"><1 – 20</td> </tr> <tr> <td colspan="2">For VOC and PM, see the generic BAT 41</td> </tr> <tr> <td colspan="2">The TWG recognised that N₂O (see section 4.6.10) and Hg also needed to be added to this table, however not enough data were provided to validate values on these issues.</td> </tr> </tbody> </table>	Parameter	Treated exhaust gas	Odour (ouE/m ³)	<500 – 6000	NH ₃ (mg/m ³)	<1 – 20	For VOC and PM, see the generic BAT 41		The TWG recognised that N ₂ O (see section 4.6.10) and Hg also needed to be added to this table, however not enough data were provided to validate values on these issues.			
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For VOC and PM, see the generic BAT 41													
The TWG recognised that N ₂ O (see section 4.6.10) and Hg also needed to be added to this table, however not enough data were provided to validate values on these issues.													
71	Reduce the emissions to water to the levels mentioned in BAT number 56. In addition, restrict the emissions to water of total nitrogen, ammonia, nitrate and nitrite as well (see Section 4.7.7 and the concluding remarks Chapter 7).	Not Applicable – No emissions to water from any Biological treatment											
	Physico-chemical treatments	Not Applicable – Bord na Mona has not developed the MBT facility. Planning permission has now expired.											
	For the <u>physico-chemical treatment of waste waters</u> , BAT is to:												

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
72	Apply the following techniques in physico-chemical reactors (see Section 4.3.1.2):		
72a	(a) Clearly defining the objectives and the expected reaction chemistry for each treatment process.	Not Applicable – as above	
72b	(b) Assessing each new set of reactions and proposed mixes of wastes and reagents in a laboratory-scale test prior to waste treatment.	Not Applicable – as above	
72c	(c) Specifically designing and operating the reactor vessel so that it is fit for its intended purpose.	Not Applicable – as above	
72d	(d) Enclosing all treatment/reaction vessels and ensuring that they are vented to the air via an appropriate scrubbing and abatement system.	Not Applicable – as above	

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72e	(e) Monitoring the reaction to ensure that it is under control and proceeding towards the anticipated result.	Not Applicable	
72f	(f) Preventing the mixing of wastes or other streams that contain metals and complexing agents at the same time (see Section 4.3.1.3).	Not Applicable	
73	In addition to the generic parameters identified for waste water in BAT number 56, additional parameters need to be identified for the physico-chemical treatment of waste waters. Some reference is given on this issue in the concluding remark Chapter 7.	Not Applicable	
74	Apply the following techniques for the neutralisation process (see Section 4.3.1.3)		
74a	a. ensuring that the customary measurement methods are used	Not Applicable	

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74b	b. separately storing the neutralised waste water	Not Applicable	
74c	c. performing a final inspection of the neutralised waste water after a sufficient storage time has elapsed.	Not Applicable	
75	Apply the following techniques to aid precipitation of the metals in treatment processes (see Section 4.3.1.4):		
75a	a. adjusting the pH to the point of minimum solubility where the metals will precipitate	Not Applicable	
75b	b. avoiding the input of complexing agents, chromates and cyanides	Not Applicable	

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
75c	c. avoiding organic materials that may interfere with precipitation from entering the process	Not Applicable	
75d	d. allowing the resulting treated waste to clarify by decantation when possible, and/or by the addition of other dewatering equipment	Not Applicable	
75e	e. using sulphidic precipitation if complex agents are present. This technique may increase the sulphide concentration in the treated waste water.	Not Applicable	
76	Apply the following techniques to break-up emulsions (see Section 4.3.1.5):		
76a	a. testing for the presence of cyanides in the emulsions to be treated. If cyanides are present, the emulsions need a special pre-treatment first.	Not Applicable	

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76b	b. setting up simulated laboratory tests.	Not Applicable	
77	Apply the following techniques to oxidation/reduction (see Section 4.3.1.6):	Not Applicable	
77a	a. abating the air emissions generated during the oxidation/reduction	Not Applicable	
77b	b. having safety measures and gas detectors in place (e.g. suitable for detecting HCN, H ₂ S, NO _x).	Not Applicable	
78	apply the following techniques to waste waters containing cyanides (see Section 4.3.1.7):		

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78a	a. destroying the cyanides by oxidation	Not Applicable	
78b	b. adding caustic soda in excess to prevent a decrease in pH	Not Applicable	
78c	c. avoiding the mixing of cyanide wastes with acidic compounds	Not Applicable	
78d	d. monitoring the progress of the reaction using electropotentials.	Not Applicable	
79	Apply the following techniques to waste waters containing chromium (VI) compounds (see Section 4.3.1.8):		

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79a	a. avoiding the mixing of Cr(VI) wastes with other wastes	Not Applicable	
79b	b. reducing Cr(VI) to Cr(III)	Not Applicable	
79c	c. precipitating the trivalent metal.	Not Applicable	
80	Apply the following techniques to waste waters containing nitrites (see Section 4.3.1.9):		
80a	a. avoiding mixing nitrite wastes with other wastes	Not Applicable	

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80b	b. checking and avoiding nitrous fumes during the oxidation/acidification treatment of nitrites.	Not Applicable	
81	Apply the following techniques to waste waters containing ammonia (see Section 4.3.1.11):		
81a	a. using a dual column air stripping system with an acidic scrubber for waste with ammonia solutions up to 20 w/w-%	Not Applicable	
81b	b. recovering the ammonia in the scrubbers and returning it to the process prior to the settlement stage	Not Applicable	
81c	c. removing the ammonia removed in the gas phase by scrubbing the waste with sulphuric acid to produce ammonium sulphate	Not Applicable	

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81d	d. extending any air sampling for ammonia in exhaust stacks or filter press areas to cover the VOCs in filtration and dewatering (see Section 4.3.1.12).	Not Applicable	
82	Link the air space above filtration and dewatering processes to the main abatement system of the plant (see Section 4.3.1.12)	Not Applicable	
83	Add flocculation agents to the sludge and waste water to be treated, to accelerate the sedimentation process and to facilitate the further separation of solids (see Section 4.3.1.16 for some applicability restrictions identified). To avoid use of flocculation agents, evaporation is better in those cases where it is economically viable (see Section 4.7.6.1)	Not Applicable	
84	Apply rapid cleaning and steam or high pressure water jet cleaning of the filter apertures of the sieving processes (see Section 4.3.1.17).	Not Applicable	
	For the <u>physico-chemical treatment of solid wastes</u> , BAT is to:		

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85	Promote the insolubilisation of amphoteric metals, and to reduce the leaching of toxic soluble salts by a suitable combination of water washing, evaporation, recrystallisation and acid extraction (see Section 4.3.2.1, 4.3.2.8, 4.3.2.9) when immobilisation is used to treat solid waste containing hazardous compounds for landfilling	Not Applicable	
86	Test the leachability of inorganic compounds, by using the standardised CEN leaching procedures and by applying the appropriate testing level: basic characterisation, compliance testing or on-site verification (see Section 4.3.2.2)	Not Applicable	
87	Restrict the acceptance of wastes to be treated by solidification/immobilisation treatment to those not containing high levels of VOCs, odorous components, solid cyanides, oxidising agents, chelating agents, high TOC wastes and gas cylinders (see Section 4.3.2.3)	Not Applicable	
88	Apply control and enclosure techniques for loading/unloading and enclosed conveyor systems (see Section 4.3.2.3)	Not Applicable	
89	Have an abatement system(s) in place to handle the flow of air, as well as the peak loadings associated with charging and unloading (see Section 4.3.2.3)	Not Applicable	

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90	Use at least a solidification, vitrification, melting or fusion process before landfilling solid waste according to techniques in Sections from 4.3.2.4 to 4.3.2.7.	Not Applicable	
	For the <u>physico-chemical treatment of contaminated soil</u> , BAT is to:		
91	Control the rate of excavation, the amount of contaminated soil area that is exposed, and the duration that soil piles are left uncovered during the excavation and removal of contaminated soil (see Section 4.3.2.10)	Not Applicable	
92	Use a bench-scale test to determine the suitability of the process to be applied and the best operational conditions for its use (see Section 4.3.2.11)	Not Applicable – landfilling only	
93	Have collection and control equipment in place such as afterburners, thermal oxidisers, fabric filters, activated carbon, or condensers for the treatment of the gases from thermal treatments (see Section 4.3.2.11)	Not Applicable – landfilling only	

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94	Report the efficiency achieved during the processes for the different components reduced and also for those that have not been affected by the process (see Section 4.3.2.3)	Not Applicable – landfilling only	
	Recovery of materials from waste		
	For the <u>re-refining of waste oils</u> , BAT is to:		
95	Operate a careful control of the incoming materials supported by analytical equipment (viscometry, infrared, chromatography and mass spectrometry as appropriate), laboratories and resources (see Section 4.1.1.1)	Not Applicable	
96	Check at least for chlorinated solvents and PCBs (see Sections 4.1.1.1 and 4.4.1.2)	Not Applicable	

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97	Use condensation as a treatment for the gas phase of the flash distillation unit (see Section 4.6.8)	Not Applicable	
98	Have vapour return lines for loading and unloading vehicles, routing all vents to a thermal oxidiser/incinerator or an activated carbon adsorption installation (see Sections 4.1.4.6, 4.6.7 and 4.6.14)	Not Applicable	
99	Direct vent streams to a thermal oxidiser with waste gas treatment if chlorinated species are present in the vent stream. If high levels of chlorinated species are present then condensation followed by caustic scrubbing and an activated carbon guard bed is the preferred treatment path (see Section 4.6)	Not Applicable	
100	Utilise a thermal oxidation at 850 °C with a two seconds residence time for the vacuum distillation vent of vacuum generators or for the air from process heaters (see Section 4.6)	Not Applicable	
101	Use a highly efficient vacuum system (see Section 4.4.1.1)	Not Applicable	

BAT No.	BAT Description	Applicability Assessment	Status of technique at installation								
102	Use the residues from vacuum distillation or thin film evaporators as asphalt products (see Section 4.4.1.15)	Not Applicable									
103	Use a re-refining process of waste oil which can achieve a yield higher than 65 % on a dry basis (see Sections from 4.4.1.1 to 4.4.1.12)	Not Applicable									
104	<p>Achieve the following values in the discharged waste water from the re-refining unit (see Section 4.4.1.14) by using a suitable combination of process-integrated techniques and/or primary, secondary, biological and finishing treatments (see Sections 4.4.1.14 and 4.7):</p> <table border="1"> <thead> <tr> <th>Waste water parameter</th> <th>Concentration (ppm)</th> </tr> </thead> <tbody> <tr> <td>Hydrocarbons</td> <td><0.01 – 5</td> </tr> <tr> <td>Phenols</td> <td>0.15 – 0.45</td> </tr> <tr> <td colspan="2">For other water parameters, refer to BAT number 56 in the Generic BAT section</td> </tr> </tbody> </table>	Waste water parameter	Concentration (ppm)	Hydrocarbons	<0.01 – 5	Phenols	0.15 – 0.45	For other water parameters, refer to BAT number 56 in the Generic BAT section		Not Applicable	
Waste water parameter	Concentration (ppm)										
Hydrocarbons	<0.01 – 5										
Phenols	0.15 – 0.45										
For other water parameters, refer to BAT number 56 in the Generic BAT section											
	For the <u>treatment of waste solvent</u> , BAT is to:										
105	Operate a careful control of the incoming materials as supported by analytical equipment, laboratories and resources (see Section 4.1.1.1)	Not Applicable									

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
106	Evaporate the residue from the distillation columns and to recuperate the solvents (see Section 4.4.2.4)	Not Applicable	
	For the <u>regeneration of waste catalyst</u> , BAT is to:		
107	Use bag filters to abate particulates from the fumes generated during the regeneration process (see Sections 4.4.3 and 4.6.5)	Not Applicable	
108	Use a SO _x abatement system (see Section 4.4.3.3).	Not Applicable	
	For the <u>regeneration of waste activated carbon</u> , BAT is to:		

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109	Have an effective quality control procedure in place to ensure that the operator can differentiate between the carbon used for potable water or food grade carbon and the rest of spent carbons (the so-called 'industrial carbons') (see Section 4.4.4.2)	Not Applicable	
110	Require a written undertaking from customers indicating what the activated carbon has been used for (see Section 4.1.2.3 and this is also related to BAT number 12.c)	Not Applicable	
111	Utilise an indirect fired kiln for industrial carbons –it may be argued that this could equally be applied to potable water carbons. However, limits on capacity and corrosion may deem that only multiple hearth or direct fired rotary kilns may be used (see Section 4.4.4.1)	Not Applicable	
112	Utilise an afterburner with a minimum of 1100 °C, two seconds residence time and 6 % excess oxygen for the regeneration of industrial carbons where refractory halogenated or other thermally resistant substances are likely to be present. In other cases, less stringent thermal conditions are sufficient (see Section 4.4.4.2)	Not Applicable	
113	Utilise an afterburner with a minimum heating temperature of 850 °C, two seconds residence time and 6 % excess oxygen for potable water and food grade active carbons (see Section 4.4.4.2)	Not Applicable	

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114	Apply a flue-gas treatment train consisting of quench and/or venturi and aqueous scrubbing sections, followed by an induced draft fan (see Section 4.4.4.2)	Not Applicable	
115	Utilise a caustic or soda ash scrubbing solutions to neutralise acid gases for industrial carbon plants (see Section 4.4.4.2)	Not Applicable	
116	Have a WWTP containing an appropriate combination of flocculation, settlement, filtration and pH adjustment for the treatment of potable water carbons. For effluents of industrial carbons, applying additional treatments (e.g. metal hydroxide precipitation, sulphide precipitation) are also considered BAT (see Section 4.4.4.3)	Not Applicable	
	Preparation of waste to be used as fuel		
	For the preparation of waste to be used as fuel, BAT is to:		

BAT No.	BAT Description	Applicability Assessment State "applicable" if the technique applies to your installation. State "not applicable" if not and provide a comprehensive explanation ¹ .	Status of technique at installation If applicable, state "in place" if the technique is in place at your installation. If not, state "not in place", the date it will be in place and a comprehensive explanation ¹ .
117	Try to have a close relationship with the waste fuel user in order that a proper transfer of the knowledge of the waste fuel composition is carried out (see Section 4.5.1)	Not Applicable	
118	Have a quality assurance system to guarantee the characteristics of the waste fuel produced (see Section 4.5.1)	Not Applicable	
119	Manufacture different type of waste fuels according to the type of user (e.g. cement kilns, different power plants), to the type of furnace (e.g. grate firing, blow feeding) and to the type of waste used to manufacture the waste (e.g. hazardous waste, municipal solid waste) (see Section 4.5.2)	Not Applicable	
120	<i>When producing waste fuel from hazardous waste, use activated carbon treatment for low contaminated water and thermal treatment for highly polluted water (see Sections 4.5.6 and 4.7). In this context, thermal treatment relates to any thermal treatment in Section 4.7.6 or incineration which is not covered in this document</i>	Not Applicable	
121	<i>When producing waste fuel from hazardous waste, ensure correct follow-up of the rules concerning electrostatic and flammability hazards for safety reasons (see Sections 4.1.2.7 and 4.1.7)</i>	Not Applicable	

BAT No.	BAT Description	Applicability Assessment	Status of technique at installation
	For the <u>preparation of solid waste fuels from non-hazardous waste</u> , BAT is to:		
122	Visually inspect the incoming waste to sort out the bulky metallic or non-metallic parts. The purpose is to protect the plant against mechanical destruction (see Section 4.1.1.3 and this is also related to BAT 8.e)	Not Applicable	
123	Use magnetic ferrous and non-ferrous metal separators. The purpose is to protect the pelletisers as well as fulfil the requirements of the final users (see Sections 4.5.3.3 and 4.5.3.4)	Not Applicable	
124	Make use of the NIR technique for the sorting out of plastics. The purpose is the reduction of organic chlorine and some metals which are part of the plastics (see Section 4.5.3.10)	Not Applicable	
125	Use a combination of shredder systems and pelletisers suitable for the preparation of the specified size waste fuel (see Sections 4.5.3.1 and 4.5.3.12)	Not Applicable	

BAT No.	BAT Description	Applicability Assessment	Status of technique at installation
	For some installations preparing solid waste fuels from source-separated waste streams, the use of some or all of the above-mentioned techniques may not be necessary to comply with BAT (see Section 4.5.3.1)		
	<i>For the preparation of solid waste fuel from hazardous waste, BAT is to:</i>		
126	<i>Consider emissions and flammability hazards in case a drying or heating operation is required (see Sections 4.1.2.7 and 4.5.4.1)</i>	Not Applicable	
127	<i>Consider carrying out the mixing and blending operations in closed areas with appropriate atmosphere control systems (see Sections 4.1.4.5, 4.5.4.1 and 4.6)</i>	Not Applicable	
128	<i>Use bags filters for the abatement of particulates (see Section 4.6.26)</i>	Not Applicable	

BAT No.	BAT Description	Applicability Assessment	Status of technique at installation
	<i>For the preparation of liquid waste fuels from hazardous waste, BAT is to:</i>		
129	<i>Use heat-exchange units external to the vessel if heating of the liquid fuel is required (Section 4.5.4.1)</i>	Not Applicable	
130	<i>Adapt the suspended solid content to ensure the homogeneity of the liquid fuel (see Section 4.5.4.1)</i>	Not Applicable	