

Project No: 314789

## Best Available Techniques (BAT) Report

Prepared for:

### AO Recycling Limited

Stafford Park Plastics Recycling Facility

11 Stafford Park

Telford

TF3 3AY

### Contents Amendment Record

This report has been issued and amended as follows:

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## Executive Summary

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'Best available techniques' (BAT) means the available techniques which are the best for preventing or minimising emissions and impacts on the environment. BAT is used where the operation is an installation (e.g. a facility that carries out an industrial process like a refinery, food factory or intensive farm).

'Techniques' include both the technology used and the way your installation is designed, built, maintained, operated and decommissioned.

An environmental permit application must state how it will follow each BAT that applies to the activity or propose an alternative and will be stated in the 'operating techniques' section of the application form.

For each relevant BAT requirement this report details how the installation will either:

- follow the BAT conclusions and meet the BAT-associated emissions level (for BAT that are contained in BAT conclusions)
- follow the BREF note and the technical guidance for activities that don't have BAT conclusions

As the operation will be classed as an 'installation' it is required that it meets the relevant technical standards; in this case those referenced within the Waste Treatment BREF BAT Conclusions.

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## Section 1.0: Introduction

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AO Recycling Ltd is the recycling arm of a large white goods retailer. The company is based in Telford. The organizations main activities involve the recycling of Waste Electric and Electronic Equipment (WEEE) such as refrigerators, cookers, dishwashers etc. AO Recycling Ltd. has been trading since 2009 and is currently employing more than 250 people covering 3 sites, which includes the Plastics Recycling Facility (PRF) located at Stafford Park.

The PRF Site accepts up to 50,000 tonnes per annum (tpa) of mixed plastic waste originating from end-of-life refrigerators, WEEE, large domestic appliances and small domestic appliances. The waste is treated in a staged separation process. A maximum of 2,592 tonnes of waste can be stored on Site at any one time.

The PRF accepts mixed plastics from the shredding of end-of-life refrigerators, WEEE, large domestic appliances and small domestic appliances in the form of approximately 962 tonnes per week of Acrylonitrile butadiene styrene (ABS), Polystyrene (PS), Polypropylene (PP), PP filled, brominated and Polyvinyl Chloride (PVC) plastics.

## Section 2.0: Technical Standards

BAT ref	Indicative BAT	BAT justification
<b>1 GENERAL BAT CONCLUSIONS</b>		
<b>1.1</b>	<b>Overall environmental performance</b>	
<b>BAT1</b>	<p><i>In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features:</i></p>	<p>AO Recycling Limited operating at;  <div style="text-align: center;">Stafford Park Plastics Recycling Facility  Telford  Shropshire  TF3 3AY</div> is certified to ISO14001:2015, ISO9001:2015 &amp; ISO45001:2018 Environmental, Quality and Health and Safety Management standards.  The Stafford Park site has been incorporated into the scope of the standards and has been externally certified by third party certification body.</p>
	<ol style="list-style-type: none"> <li>1. <i>commitment of the management, including senior management;</i></li> <li>2. <i>definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation;</i></li> <li>3. <i>planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment;</i></li> <li>4. <i>implementation of procedures paying particular attention to:</i> <ol style="list-style-type: none"> <li>a) <i>structure and responsibility,</i></li> <li>b) <i>recruitment, training, awareness and competence,</i></li> <li>c) <i>communication,</i></li> <li>d) <i>employee involvement,</i></li> <li>e) <i>documentation,</i></li> <li>f) <i>effective process control,</i></li> </ol> </li> </ol>	<p>The application of all aspects of the organisation's Integrated Management System (IMS) is rigorously assessed both internally and by external parties to ensure compliance with BS EN ISO 9001:2015 Quality Management Systems, BS EN ISO 14001:2015 Environmental Management Systems and BS ISO 45001:2018 Occupational Health and Safety Management Systems, legal and other requirements.</p> <p>Please see Integrated Management System Policy Manual.</p>

	<ul style="list-style-type: none"> <li>g) <i>maintenance programmes,</i></li> <li>h) <i>emergency preparedness and response,</i></li> <li>i) <i>safeguarding compliance with environmental legislation;</i></li> </ul> <p>5. <i>checking performance and taking corrective action, paying particular attention to:</i></p> <ul style="list-style-type: none"> <li>a) <i>monitoring and measurement (see also the JRC Reference Report on Monitoring of emissions to air and water from IED installations – ROM),</i></li> <li>b) <i>corrective and preventive action,</i></li> <li>c) <i>maintenance of records,</i></li> <li>d) <i>independent (where practicable) internal or external auditing in order to determine whether or not</i></li> </ul> <p>6. <i>review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;</i></p> <p>7. <i>following the development of cleaner technologies;</i></p> <p>8. <i>consideration for the environmental impacts from the eventual decommissioning of the plant at the stage of designing a new plant, and throughout its operating life;</i></p> <p>9. <i>application of sectoral benchmarking on a regular basis;</i></p> <p>10. <i>waste stream management (see BAT 2);</i></p> <p>11. <i>an inventory of waste water and waste gas streams (see BAT 3);</i></p> <p>12. <i>residues management plan (see description in Section 6.5);</i></p> <p>13. <i>accident management plan (see description in Section 6.5);</i></p> <p>14. <i>odour management plan (see BAT 12);</i></p> <p>15. <i>noise and vibration management plan (see BAT 17).</i></p>	
<b>BAT 2</b>	<p><i>In order to improve the overall environmental performance of the plant, BAT is to use all of the techniques given below:</i></p>	

<p>a</p>	<p><i>Set up and implement waste characterisation and pre-acceptance procedures</i></p>	<p>The waste characterisation and pre-acceptance procedures undertaken by the site are summarised here:</p> <p><b>Pre-acceptance and waste characterisation procedures:</b></p> <p>Upon receipt of an enquiry the operator will obtain the following written information:</p> <ul style="list-style-type: none"> <li>▪ Waste type (EWC code) and origin of the waste;</li> <li>▪ The operator will also obtain information regarding any processes that have been undertaken to obtain the waste. Or if the waste is from another treatment site, the process that has produced the waste;</li> <li>▪ The operator will determine the quantity of waste and determine if there is sufficient capacity to be able to accept the waste in line with permit conditions;</li> <li>▪ All wastes will be accompanied by an appropriate chemical analysis to determine its key contaminants which will ensure that prior to acceptance the waste is suitable for the treatment options available on site;</li> <li>▪ The written enquiry will include the physical formation of the waste;</li> <li>▪ The enquiry will include the hazards that the wastes will pose, including the relevant Hazard Codes; and</li> <li>▪ Information regarding how verification samples are to be stored and preserved.</li> </ul> <p>If the waste is suitable for the treatment process, the waste will be accepted.</p>
<p>b</p>	<p><i>Set up and implement waste acceptance procedures</i></p>	<p>The waste acceptance procedures undertaken by the site are summarised here:</p> <p>Acceptance procedures:</p> <ul style="list-style-type: none"> <li>▪ All loads are weighed upon arrival at the site. The weighbridge is calibrated, and the site is always manned during operational hours. The storage capacity of the site is assessed daily, and waste will only be accepted if there is sufficient capacity;</li> <li>▪ The specified information will be obtained from all drivers arriving at the site, as prescribed in the site's waste acceptance procedures. If the waste load arrives without the necessary paperwork, it will be rejected;</li> </ul>

		<ul style="list-style-type: none"> <li>▪ The documentation is checked on arrival and if it is incorrect or the waste does not match the written description then the waste will be rejected;</li> <li>▪ All staff undertaking waste acceptance procedures will receive suitable training in the waste acceptance procedures, as well as in waste handling and the relevant health and safety and environmental procedures in place;</li> <li>▪ Wastes travel from the waste producer to the facility with transfer/consignment notes, which detail all relevant information, including waste producer details, site where waste is from, time and date of loading, carrier details, site reference numbers, waste details, disposal site and time and date of arrival at the treatment site;</li> </ul>
c	<i>Set up and implement a waste tracking system and inventory</i>	<p>Waste tracking system:</p> <ul style="list-style-type: none"> <li>▪ The transfer/consignment notes and any accompanying documentation will be scanned and stored electronically. The documentation will be made available to the EA upon request;</li> <li>▪ Documents are stored electronically on the company server;</li> <li>▪ Records are created which detail the above information, and which also includes load weights and total job weights, hazards, location of the waste on site, disposal (or where the waste is within the recovery route) and identification of staff who have been responsible for the decision to reject or accept the waste.</li> </ul>
d	<i>Set up and implement an output quality management system</i>	<p>Recovered outputs from the current and proposed process that will process the non-packaging waste plastic to the required standards</p> <p>The standards that apply to all waste non-packaging plastics are:</p> <ul style="list-style-type: none"> <li>▪ BS EN 15343:2007 Recycling traceability and assessment of conformity</li> <li>▪ BS EN 15347:2007 Characterisation of waste plastics</li> <li>▪ CEN/TR 15353:2007 Guidelines for the development of standards relating to recycled plastics</li> </ul> <p>The standards that apply to specific non-packaging waste plastic types are:</p> <ul style="list-style-type: none"> <li>▪ BS EN 15342:2007 Characterisation of polystyrene (PS) recyclates</li> </ul>



		<ul style="list-style-type: none"> <li>▪ BS EN 15344:2007 Characterisation of polyethylene (PE) recyclates</li> <li>▪ BS EN 15345:2007 Characterisation of polypropylene (PP) recyclates</li> <li>▪ BS EN 15346:2007 Characterisation of poly (vinyl chloride) (PVC) recyclates</li> <li>▪ BS EN 15348:2007 Characterisation of polyethylene terephthalate (PET) recyclates</li> </ul>
e	<i>Ensure waste segregation</i>	<p>Waste is stored in accordance with the Site Layout Plan.</p> <p>This delineates storage areas by type so that non-hazardous waste is kept separate from hazardous waste and to ensure that no incompatible wastes are stored adjacent to each other. This is based on the storage layout that has worked effectively since the commencement of site activities.</p> <p>The waste to be received on site are from similar processes and are therefore compatible. A record shall be kept which ensures that waste loads can be tracked to ensure that any wastes can be segregated if required.</p>
f	<i>Ensure waste compatibility prior to mixing or blending of waste</i>	<p>All waste will be visually inspected at the weighbridge.</p> <p>If the waste is accepted, it will be directed to the reception area where it will be unloaded, and an additional inspection will be undertaken. If the waste does not comply with the information on the waste consignment notes or with the conditions of the permit, it shall be immediately transferred to the quarantine area, or if the driver is still on the premises, the waste will be reloaded back onto the truck and removed from site. The producer will be notified, and a record of the date, time and producer will be made and stored in the site's office.</p>
g	<i>Sort incoming solid waste</i>	<p>All waste will be visually inspected at the weighbridge.</p> <p>If the waste is accepted, it will be directed to the reception area where it will be unloaded, and an additional inspection will be undertaken. If the waste does not comply with the information on the waste consignment notes or with the conditions of the permit, it shall be immediately transferred to the quarantine area, or if the driver is still on the premises, the waste will be reloaded back onto the truck and removed from site. The producer will</p>

		be notified, and a record of the date, time and producer will be made and stored in the site's office.
<b>BAT 3</b>	<p><i>In order to facilitate the reduction of emissions to water and air, BAT is to establish and to maintain an inventory of waste water and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the following features:</i></p> <ol style="list-style-type: none"> <li>1. <i>information about the characteristics of the waste to be treated and the waste treatment processes, including:</i> <ol style="list-style-type: none"> <li>a) <i>simplified process flow sheets that show the origin of the emissions;</i></li> <li>b) <i>descriptions of process-integrated techniques and waste water/waste gas treatment at source including their performances;</i></li> </ol> </li> <li>2. <i>information about the characteristics of the waste water streams, such as:</i> <ol style="list-style-type: none"> <li>a) <i>average values and variability of flow, pH, temperature, and conductivity;</i></li> <li>b) <i>average concentration and load values of relevant substances and their variability (e.g. COD/TOC, nitrogen species, phosphorus, metals, priority substances/micropollutants);</i></li> <li>c) <i>data on bio eliminability (e.g. BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. inhibition of activated sludge)) (see BAT 52);</i></li> </ol> </li> <li>3. <i>information about the characteristics of the waste gas streams, such as:</i> <ol style="list-style-type: none"> <li>a) <i>average values and variability of flow and temperature;</i></li> <li>b) <i>average concentration and load values of relevant substances and their variability (e.g. organic compounds, POPs such as PCBs);</i></li> </ol> </li> </ol>	Effluent Sampling Procedures SP11 addresses these requirements.

	<p>c) <i>flammability, lower and higher explosive limits, reactivity;</i></p> <p>d) <i>presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, nitrogen, water vapour, dust).</i></p>	
<b>BAT4</b>	<i>In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of the techniques given below.</i>	
<i>a</i>	<i>Optimised storage location</i>	<p>There will be no storage of waste within the building. The external waste storage bays will be monitored by site operatives during operational hours and also benefit from 24/7 CCTV coverage which will be monitored by AO staff at their nearby Halesfield Site. This ensures that the storage areas can be adequately monitored outside of operational hours.</p> <p>The site layout has been designed to provide a link between the treatment activity and storage areas to ensure wastes receive minimal handling.</p> <p>The Stafford Park industrial/commercial area surrounds the Site boundary in all directions. The closest premises are located adjacent to the northern boundary.</p> <p>The nearest residential properties are located in Shifnal, approximately 510m to the southeast of the site. Beyond this, properties in Telford lie 770m from the site at their closest point.</p>
<i>b</i>	<i>Adequate storage capacity</i>	<p>Materials are stored in accordance with their treatment route and are stored in such a way as to provide avoid double handling i.e. wastes are received, stored, treated and moved to the post treatment area.</p> <p>Wastes will only be removed from the storage area if sufficient capacity is available for them to be treated. Once treated, the material is bulked in the storage areas until it is removed from site.</p>

		<p>All storage areas are clearly marked as to their contents, hazardous characteristics, quantity and the date the waste was put in the storage area.</p> <p>The operator will keep account of all waste on the site at any one time and within the process. The records calculating how much waste is on site will be updated daily and will consider waste received on site (volumes will be known from weighbridge information) and wastes removed from site.</p>
c	<i>Safe storage operation</i>	<p>The Site is operational between 06:00 and 22:00 on weekdays, during which time at least one staff member will be present on Site. In the event of a fire, the Fire Service would be able to gain immediate access during these hours. The Site will not open on Saturday, Sunday or public holidays.</p> <p>Outside of operational hours the security gate will be locked. A 24/7 emergency contact number will be provided on the site notice board to allow emergency services to contact company personnel at the nearby Halesfield Site. In the event of a fire outside of operational hours, the gates to the Site will be remotely opened and closed by the 24/7 weighbridge operatives at Halesfield, who will continuously monitor the Site via CCTV. Furthermore, in an emergency outside of operational hours, a response team from Halesfield will drive 7 minutes to the Stafford Park Site to aid with handling the emergency.</p>
d	<i>Separate area for storage and handling of packaged hazardous waste</i>	<p>In addition to storing accepted waste on site in Bays 6-9, Bays 1-5 will be dedicated to the storage of waste produced on site. Note: some waste streams are stored in Bays 6-9 as they are hazardous and may contain POPs.</p> <p>OP17-SP: Maintenance &amp; control of drainage network.</p>
<b>BAT5</b>	<i>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.</i>	<p>Handling and transfer activities are overseen by the technically competent site manager(s).</p>

		<p>Handling and transfer of wastes will be in accordance with the waste duty of care (by raising waste transfer note/consignment notes prior to transfer and following this up with quarterly returns/hazardous waste returns.</p> <p>To prevent, detect and mitigate spills, all waste handling takes place on an impermeable surface with sealed drainage (as detailed in the Site Drainage Plan, (Appendix 3).</p>
<b>BAT6</b>	<p><i>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 pre-treatment, at the inlet to the final treatment, at the point where the emission leaves the installation)</i></p>	<p>The existing Effluent Sampling Procedures SP11 addresses these requirements.</p>
<b>1.2</b>	<b>Monitoring</b>	
<b>BAT7</b>	<p><i>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.</i></p>	<p>The existing Effluent Sampling Procedures SP11 addresses these requirements.</p> <p>It is ensured that a laboratory using a UKAS accredited quality management system is selected. This fulfils the requirements of ISO IEC 17025:2017 and the MCERTS performance standard. The site also has a contract in place with the laboratory to ensure an effective turnaround time for sample results.</p>
<b>BAT8</b>	<p><i>BAT is to monitor channelled emissions to air 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.</i></p>	<p>Channelled emissions to air from the extruder are being modelled using H1. Analysis and an H1 assessment has been undertaken and ELVs are not exceeded.</p> <p>Relevant parameters are listed in;</p> <p>BAT29 – Brominated flame retardents</p> <p>BAT25 – Dust</p> <p>BAT31 - TVOC</p>
<b>BAT9</b>	<p><i>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</i></p>	<p>Not applicable; no regeneration of spent solvents, or decontamination of equipment containing POPs with solvents is carried out on site.</p>

	<i>recovery of their calorific value, at least once per year using one or a combination of the techniques given below.</i>	
<b>BAT10</b>	<i>BAT is to periodically monitor odour emissions.</i>	Not applicable; the applicability is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.
<b>BAT11</b>	<i>BAT is to monitor the annual consumption of water, energy and raw materials as well as the annual generation of residues and waste water, with a frequency of at least once per year.</i>	The annual consumption of water, energy and raw materials and also the annual generation of residues and wastewater will continue to be recorded and reported, as necessary, on an annual basis.
<b>1.3</b>	<b><i>Emissions to air</i></b>	
<b>BAT12</b>	<p><i>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:</i></p> <ul style="list-style-type: none"> <li><i>o a protocol containing actions and timelines;</i></li> <li><i>o a protocol for conducting odour monitoring as set out in BAT 10;</i></li> <li><i>o a protocol for response to identified odour incidents, e.g. complaints;</i></li> <li><i>o 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.</i></li> </ul>	Not applicable; the applicability is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.
<b>BAT13</b>	<i>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</i>	Not applicable; the applicability is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.
<b>BAT14</b>	<p><i>In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques given below.</i></p> <p><i>Depending on the risk posed by the waste in terms of diffuse emissions to air, BAT 14d is especially relevant.</i></p> <ul style="list-style-type: none"> <li><i>a) Minimising the number of potential diffuse emission sources</i></li> <li><i>b) Selection and use of high-integrity equipment</i></li> </ul>	<p>To prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, the following techniques are employed.</p> <ul style="list-style-type: none"> <li>a) Potential diffuse emission sources are reduced as far as possible by using enclosed treatment areas where possible.</li> <li>b) AO Recycling maintains a procedure and supporting processes to ensure that procurement processes control potential hazards and reduce Health, Safety, Environmental and Quality risks associated with products, raw materials,</li> </ul>

	<ul style="list-style-type: none"> <li>c) <i>Corrosion prevention</i></li> <li>d) <i>Containment, collection and treatment of diffuse emissions</i></li> <li>e) <i>Dampening</i></li> <li>f) <i>Maintenance</i></li> <li>g) <i>Cleaning of waste treatment and storage areas</i></li> <li>h) <i>Leak detection and repair (LDAR) programme</i></li> </ul>	<p>substances, new equipment/machinery, services etc. being introduced into the workplace.</p> <ul style="list-style-type: none"> <li>c) AO Recycling maintains a procedure, work instructions and records to assist in determining, providing and maintaining a safe working environment to achieve conformity of its products and/or services.</li> <li>d) All waste processing will take place within the main building. All fines and dust generated will be captured and retained by a dust extraction system within the building.</li> <li>e) Not applicable</li> <li>f) AO Recycling maintains sufficient resources for the implementation, maintenance and continual improvement of its equipment.</li> <li>g) The Site will undergo regular cleaning using mobile plant and wash down hoses/jet wash to prevent a build-up of debris and dust on Site. The results of all daily and weekly monitoring will be recorded in the Site Diary, as well as any remedial actions.</li> <li>h) AO Recycling maintains sufficient resources for the implementation, maintenance and continual improvement of its equipment.</li> </ul>
<b>BAT15</b>	<i>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.</i>	Not applicable as flaring is not carried out at the installation.
<b>BAT16</b>	<i>In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given.</i>	Not applicable as flaring is not carried out at the installation.
<b>1.4</b>	<b>Noise and vibrations</b>	
<b>BAT17</b>	<p><i>In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to set up, implement and regularly review a noise and vibration management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:</i></p> <ul style="list-style-type: none"> <li><i>i. a protocol containing appropriate actions and timelines;</i></li> </ul>	<p><b>Applicability</b></p> <p><i>The applicability is restricted to cases where a noise or vibration nuisance at sensitive receptors is expected and/or has been substantiated.</i></p>

	<p>II. a protocol for conducting noise and vibration monitoring;</p> <p>III. a protocol for response to identified noise and vibration events, e.g. complaints;</p> <p>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>There have been no substantiated noise or vibration complaints from the site since it became operational.</p> <p>A noise or vibration nuisance at sensitive receptors is not expected.</p> <p>Noise assessments will be carried out at regular intervals in all areas of the site by the SHEQ Manager/Team using independent competent contractors. These assessments will be reviewed and retaken when new machinery or equipment is installed in areas of work.</p> <p>The Head of Engineering and Innovation liaising with the SHEQ Manager/Team and the equipment manufacturer/supplier will wherever practicable purchase/lease new equipment with emitted levels of noise at <math>\leq 80\text{dB}</math>. Where this is not practicable alternative engineering control measures will be tried and put to use.</p>
<p><b>BAT18</b></p>	<p><i>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</i></p>	<p>The following techniques are currently implemented to ensure noise from the site is kept to a minimum:</p> <ul style="list-style-type: none"> <li>▪ All plant and machinery to be regularly inspected and maintained (in accordance with the planned maintenance programme), to ensure that no item will produce excessive noise;</li> <li>▪ If any defective plant item is creating a noise nuisance, then the SM will undertake to have the issue dealt with within the shortest time possible;</li> <li>▪ Regular lubrication of moving parts;</li> <li>▪ Regular replacement of wearing parts;</li> <li>▪ No routine maintenance work outside of daytime hours to be undertaken and provisions for noise control during maintenance;</li> <li>▪ Equipment operation by experienced staff;</li> <li>▪ Buildings to be kept closed where practicable;</li> </ul>



		<ul style="list-style-type: none"> <li>▪ All site staff to be instructed on the importance of noise control and minimising noise emissions from the site during their inductions;</li> <li>▪ Horns on vehicles and mobile plant not to be used, unless absolutely necessary;</li> <li>▪ Engines not to be ‘revved’, unless absolutely necessary;</li> <li>▪ Vehicle and mobile plant engines to be switched off when stationary, unless impracticable;</li> <li>▪ Vehicle speeds within the site are restricted to 10mph.</li> </ul>
<b>1.5</b>	<b><i>Emissions to water</i></b>	
<b>BAT19</b>	<p><i>In order to optimise water consumption, to reduce the volume of wastewater 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:</i></p> <ol style="list-style-type: none"> <li>1. <i>Water management</i></li> <li>2. <i>Water recirculation</i></li> <li>3. <i>Impermeable surface</i></li> <li>4. <i>Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels</i></li> <li>5. <i>Roofing of waste storage and treatment areas</i></li> <li>6. <i>Segregation of water streams</i></li> <li>7. <i>Adequate drainage infrastructure</i></li> <li>8. <i>Design and maintenance provisions to allow detection and repair of leaks</i></li> <li>9. <i>Appropriate buffer storage capacity</i></li> </ol>	<ol style="list-style-type: none"> <li>1. Water consumption is optimised by using measures which include: <ul style="list-style-type: none"> <li>▪ water-saving plans (e.g. establishment of water efficiency objectives, flow diagrams and water mass balances)</li> <li>▪ optimising the use of washing water (e.g. dry cleaning instead of hosing down, using trigger control on all washing equipment)</li> </ul> </li> <li>2. Water recirculation options are being investigated.</li> <li>3. The surface of the whole waste treatment area (e.g. waste reception, handling, storage, treatment and dispatch areas) is made impermeable to the liquids concerned.</li> <li>4. Tanks for liquids that are located in a suitable secondary containment; the volume is sized to accommodate the loss of containment of the largest tank within the secondary containment;</li> <li>5. Waste is stored and treated in covered areas to prevent contact with rainwater and thus minimise the volume of contaminated run- off water.</li> <li>6. Each water stream (e.g. surface run-off water, process water) is collected separately, based on the pollutant content. In particular, uncontaminated waste water streams are segregated from waste water streams that require treatment.</li> </ol>

		<p>7. AO Recycling ensures that infrastructure required for the operation of its processes and to achieve conformity of its products and/or services is in place. The Organisation considers the following requirements:</p> <ul style="list-style-type: none"> <li>▪ Buildings and associated utilities</li> <li>▪ Equipment, including hardware and software</li> <li>▪ Transportation resources</li> <li>▪ Information and communication technology.</li> </ul> <p>8. A preventative maintenance programme is in place with all site infrastructure and equipment inspected on a regular basis and serviced in accordance with the manufacturer's recommendations. Records are kept of all inspections and any necessary repairs or maintenance are noted, with timescales for these to be carried out.</p> <p>All process equipment is designed to allow straightforward detection and repair of leaks</p> <p>9. Buffer storage has been calculated to ensure there is sufficient storage capacity for the operation.</p>
<p><b>BAT20</b></p>	<p><i>In order to reduce emissions to water, BAT is to treat wastewater using an appropriate combination of the techniques given:</i></p>	<p>Water utilised within the system is not treated, it is stored, sampled and analysed prior to discharge.</p> <p>If the analysis results are below all limits/thresholds, the effluent can be discharged into the drainage network with a flow rate no greater than 2 m/s. Temperature and pH shall be tested prior to discharge from the discharge point to make sure that the effluent is within the boundaries stated on the Site's Consent to Discharge.</p> <p>Note: The maximum volume of trade effluent to be discharged in any continuous period of 24 hours shall not exceed 90 cubic metres.</p>

		<p>If analysis shows that any threshold/limit has been reached, the effluent shall be transferred to a suitably licenced site via a licenced waste carrier. The effluent will be treated according to what limits were breached.</p> <p>If POPs are found to be in the effluent, treatment shall be high temperature incineration.</p>
1.6	<b>Emissions from accidents and incidents</b>	
BAT21	<p>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).</p> <ol style="list-style-type: none"> <li>1. Protection measures</li> <li>2. Management of incidental/accidental emissions</li> <li>3. Incident/accident registration and assessment system</li> </ol>	<p>An Accident Management Plan is in place; in summary it identifies:</p> <ul style="list-style-type: none"> <li>▪ Likely causes of accidents;</li> <li>▪ The consequences of such accidents;</li> <li>▪ Prevention measures in place to reduce the likelihood of accidents; and</li> <li>▪ How any accidents that do occur will be managed.</li> </ul> <p><b>1. Protection measures:</b></p> <p>The Site is already enclosed by perimeter fencing and benefits from a Site entrance gate designed to prevent unauthorised access. The Site will be operational between 06:00 and 22:00 on weekdays with a significant amount of Site operatives present at these times. Outside of working hours or during any periods of shut down for maintenance, the Site will be monitored remotely using CCTV which will be observed by a member of staff at AO's Halesfield Site. All doors to buildings will be locked when not in use and the factory building is protected by a monitored alarm system.</p> <p>The gates and fencing will be inspected weekly to identify any weaknesses or defects. Any defects identified will be repaired with a temporary solution within 24 hours, with a permanent fix implemented within 7 days, unless a timescale is otherwise agreed with the EA.</p> <p><b>2. Management of incidental/accidental emissions:</b></p> <p>The process gives rise to a single emission point to air (except for potential emissions of dust or odour) which are controlled through the measures stipulated in the respective dust and odour management plans. This is being modelled through H1.</p>

		<p>All storage areas are provided with an impermeable surface (concrete) with sealed drainage. The impermeable concrete surface meets the following intended design objectives:</p> <ul style="list-style-type: none"> <li>• Impermeable to incidental rainfall</li> <li>• Sufficient strength to accommodate plant and equipment</li> <li>• Designed with kerbing or edge bunds to retain all incidental rainfall; and</li> <li>• Designed with sealed joints where applicable and with sufficient falls so that collected surface water can only discharge to engineered sump(s).</li> </ul> <p><b>3. Incident/accident registration and assessment system:</b></p> <p>All near misses or incidents are reported to the SM, who enters the information onto a data base. All incidents or near misses will be investigated and reported on within monthly staff meetings</p>
<b>1.7</b>	<b>Material efficiency</b>	
<b>BAT22</b>	<i>In order to use materials efficiently, BAT is to substitute materials with waste.</i>	Not applicable: This process takes in waste and enables its recovery, where feasible and adopts a zero waste to landfill approach, in accordance with the waste hierarchy. There is no scope to substitute materials with waste.
<b>1.8</b>	<b>Energy efficiency</b>	
<b>BAT23</b>	<i>In order to use energy efficiently, BAT is to use both of the techniques given below:</i>	An energy efficiency plan will be incorporated into the Installation's Environmental Management System.
<b>1.9</b>	<b>Reuse of packaging</b>	
<b>BAT24</b>	<i>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).</i>	Not applicable; no packaging waste generated as part of the Installation activities.
<b>2</b>	<b>BAT CONCLUSIONS FOR THE MECHANICAL TREATMENT OF WASTE</b>	
	<i>Unless otherwise stated, the BAT conclusions presented in Section 2 apply to the mechanical treatment of waste when it is not combined with biological treatment, and in addition to the general BAT conclusions in Section 1.</i>	
<b>2.1</b>	<b>General BAT conclusions for the mechanical treatment of waste</b>	
<b>2.1.1</b>	<b>Emissions to air</b>	

<p><b>BAT25</b></p>	<p><i>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.</i></p> <ol style="list-style-type: none"> <li>1. Cyclone</li> <li>2. Fabric filter</li> <li>3. Wet scrubbing</li> <li>4. Water injection in to the shredder</li> </ol> <p><i>The associated monitoring is given in BAT 8.</i></p>	<p>The machine/plant INTAREMA® 1512 TVEplus® consists of one or more of the following components to reduce emissions to air of dust:</p> <ol style="list-style-type: none"> <li>a) Feeding system: Belt conveyor, reel feeder device, edge trim receiver, feeding screw</li> <li>b) Process combination: PCU hood, preconditioning unit (PCU), cylinder with single-screw extruder, barrel cooling, optional water injection, optional degassing with vacuum unit, optional dosing systems, control cabinet with control panel.</li> <li>c) Melt filter: EREMA backflush filter with hydraulic unit, EREMA laser filter with torque wrench, manual screen changer, hydraulic screen changer.</li> <li>d) Pelletising system: Hot die face pelletiser, pellet dewatering screen, water pump station, pellet drying centrifuge.</li> <li>e) Pellet transport system: Transport blower, air exchanger system, pipelines, powered throughput meter, bag fill unit, cyclone-silo combination.</li> </ol>
<p><b>2.2</b></p>	<p><b>BAT conclusions for the mechanical treatment in shredders of metal waste</b></p>	
<p><i>Unless otherwise stated, the BAT conclusions presented in this section apply to the mechanical treatment in shredders of metal waste, in addition to BAT 25.</i></p>		
<p><b>2.2.1</b></p>	<p><b>Overall environmental performance</b></p>	
<p><b>BAT26</b></p>	<p><i>In order to improve the overall environmental performance, and to prevent emissions due to accidents and incidents, BAT is to use BAT 14g and all of the techniques given below:</i></p> <ol style="list-style-type: none"> <li>1. implementation of a detailed inspection procedure for baled waste before shredding; 17.8.2018 L 208/69 Official Journal of the European Union EN</li> <li>2. removal of dangerous items from the waste input stream and their safe disposal (e.g. gas cylinders, non- depolluted EoLVs, non-depolluted WEEE, items contaminated with PCBs or mercury, radioactive items);</li> <li>3. treatment of containers only when accompanied by a declaration of cleanliness.</li> </ol>	<p>BAT26 is not relevant to the Installation activities</p>
<p><b>2.2.2</b></p>	<p><b>Deflagrations</b></p>	

<b>BAT27</b>	<i>In order to prevent deflagrations and to reduce emissions when deflagrations occur, BAT is to use technique a. and one or both of the techniques b. and c. given below.</i>	BAT27 is not relevant to the Installation activities
<b>2.2.3</b>	<b>Energy efficiency</b>	
<b>BAT28</b>	<i>In order to use energy efficiently, BAT is to keep the shredder feed stable.</i>	BAT28 is not relevant to the Installation activities
<b>2.3</b>	<b>BAT conclusions for the treatment of WEEE containing VFCs and/or VHCs</b>	
	<i>Unless otherwise stated, the BAT conclusions presented in this section apply to the treatment of WEEE containing VFCs and/or VHCs, in addition to BAT 25.</i>	
<b>2.3.1</b>	<b>Emissions to air</b>	
<b>BAT29</b>	<i>In order to prevent or, where that is not practicable, to reduce emissions of organic compounds to air, BAT is to apply BAT 14d, BAT 14h and to use technique a. and one or both of the techniques b. and c. given. The associated monitoring is given in BAT 8.</i>	BAT29 is not relevant to the Installation activities as no treatment of WEEE containing VFCs and/or VHCs is carried out.
<b>BAT30</b>	<i>In order to prevent emissions due to explosions when treating WEEE containing VFCs and/or VHCs, BAT is to use either of the techniques given below.</i>	BAT30 is not relevant to the Installation activities as no treatment of WEEE containing VFCs and/or VHCs is carried out.
<b>2.4</b>	<b>BAT conclusions for the mechanical treatment of waste with calorific value</b>	
	<i>In addition to BAT 25, the BAT conclusions presented in this section apply to the mechanical treatment of waste with calorific value covered by points 5.3(a)(iii) and 5.3(b)(ii) of Annex I to Directive 2010/75/EU.</i>	
<b>2.4.1</b>	<b>Emissions to air</b>	
<b>BAT31</b>	<i>In order to reduce emissions to air of organic compounds, BAT is to apply BAT 14d and to use one or a combination of the techniques given. The associated monitoring is given in BAT 8.</i>	BAT31 is not relevant to the Installation activities
<b>2.5</b>	<b>BAT conclusions for the mechanical treatment of WEEE containing mercury</b>	
<b>BAT32</b>	<i>In order to reduce mercury emissions to air, BAT is to collect mercury emissions at source, to send them to abatement and to carry out adequate monitoring.</i>	BAT32 is not relevant to the Installation activities as it does not carry out mechanical treatment of WEEE containing mercury.
<b>3</b>	<b>BAT CONCLUSIONS FOR THE BIOLOGICAL TREATMENT OF WASTE</b>	

	<i>Unless otherwise stated, the BAT conclusions presented in Section 3 apply to the biological treatment of waste, and in addition to the general BAT conclusions in Section 1. The BAT conclusions in Section 3 do not apply to the treatment of water-based liquid waste.</i>	
<b>BAT33</b>	<i>In order to reduce odour emissions and to improve the overall environmental performance, BAT is to select the waste input.</i>	BAT33 is not relevant to the Installation activities
<b>BAT34</b>	<i>In order to reduce channelled emissions to air of dust, organic compounds and odorous compounds, including H<sub>2</sub>S and NH<sub>3</sub>, BAT is to use one or a combination of the techniques given below.</i>	BAT34 is not relevant to the Installation activities
<b>BAT35</b>	<i>In order to reduce the generation of waste water and to reduce water usage, BAT is to use all of the techniques given below.</i>	BAT35 is not relevant to the Installation activities
<b>3.2</b>	<b>BAT conclusions for the aerobic treatment of waste</b>	
	<i>Unless otherwise stated, the BAT conclusions presented in this section apply to the aerobic treatment of waste, and in addition to the general BAT conclusions for the biological treatment of waste in Section 3.1.</i>	
<b>BAT36</b>	<i>In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters.</i>	BAT36 is not relevant to the Installation activities
<b>BAT37</b>	<i>In order to reduce diffuse emissions to air of dust, odour and bioaerosols from open-air treatment steps, BAT is to use one or both of the techniques given below.</i>	BAT37 is not relevant to the Installation activities
<b>3.3</b>	<b>BAT conclusions for the anaerobic treatment of waste</b>	
<b>BAT38</b>	<i>In order to reduce emissions to air and to improve the overall environmental performance, BAT is to monitor and/or control the key waste and process parameters.</i>	BAT38 is not relevant to the Installation activities
<b>3.4</b>	<b>BAT conclusions for the mechanical biological treatment (MBT) of waste</b>	
	<i>Unless otherwise stated, the BAT conclusions presented in this section apply to MBT, and in addition to the general BAT conclusions for the biological treatment of waste in Section 3.1. The BAT conclusions for the aerobic treatment (Section 3.2) and anaerobic treatment (Section 3.3) of waste apply, when relevant, to the mechanical biological treatment of waste.</i>	

<b>BAT39</b>	<i>In order to reduce emissions to air, BAT is to use both of the techniques given below.</i>	BAT39 is not relevant to the Installation activities
<b>4.1</b>	<b>BAT conclusions for the physico-chemical treatment of solid and/or pasty waste</b>	
<b>BAT40</b>	<i>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).</i>	There is no proposal to increase the amount of waste materials being processed through the equipment, the purpose of this upgrade is also to improve treatment process efficiency. Please see BAT2
<b>BAT41</b>	<i>In order to reduce emissions of dust, organic compounds and NH<sub>3</sub> to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below.</i>	Please see BAT14.
<b>4.2</b>	<b>BAT conclusions for the re-refining of waste oil</b>	
<b>BAT42</b>	<i>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).</i>	BAT42 is not relevant to the Installation activities
<b>BAT43</b>	<i>In order to reduce the quantity of waste sent for disposal, BAT is to use one or both of the techniques given below.</i>	BAT43 is not relevant to the Installation activities
<b>BAT44</b>	<i>In order to reduce emissions of organic compounds to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below.</i>	BAT44 is not relevant to the Installation activities
<b>4.3</b>	<b>BAT conclusions for the physico-chemical treatment of waste with calorific value</b>	
<b>BAT45</b>	<i>In order to reduce emissions of organic compounds to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given.</i>	BAT45 is not relevant to the Installation activities
<b>4.4</b>	<b>BAT conclusions for the regeneration of spent solvents</b>	
<b>BAT46</b>	<i>In order to improve the overall environmental performance of the regeneration of spent solvents, BAT is to use one or both of the techniques given.</i>	BAT46 is not relevant to the Installation activities as re-refining of waste oil is not carried out.
<b>BAT47</b>	<i>In order to reduce emissions of organic compounds to air, BAT is to apply BAT 14d and to use a combination of the techniques given.</i>	BAT47 is not relevant to the Installation activities as re-refining of waste oil is not carried out.
<b>4.6</b>	<b>BAT conclusions for the thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil</b>	



<b>BAT48</b>	<p><i>In order to improve the overall environmental performance of the thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil, BAT is to use all of the techniques given below.</i></p> <ul style="list-style-type: none"> <li><i>(a) Heat recovery from the furnace off-gas;</i></li> <li><i>(b) Indirectly fired furnace;</i></li> <li><i>(c) Process-integrated techniques to reduce emissions to air.</i></li> </ul>	<p>The site does not carry out thermal treatment of spent activated carbon, waste catalysts or contaminated soil. Therefore, BAT 48 is not applicable.</p>
<b>BAT49</b>	<p><i>In order to reduce emissions of HCl, HF, dust and organic compounds to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below.</i></p> <ul style="list-style-type: none"> <li><i>(a) Cyclone;</i></li> <li><i>(b) Electrostatic precipitator (ESP);</i></li> <li><i>(c) Fabric filter;</i></li> <li><i>(d) Wet scrubbing;</i></li> <li><i>(e) Adsorption;</i></li> <li><i>(f) Condensation;</i></li> <li><i>(g) Thermal oxidation.</i></li> </ul>	<p>The site does not carry out thermal treatment of spent activated carbon, waste catalysts or contaminated soil. Therefore, BAT 49 is not applicable.</p>
<b>4.7</b>	<b>BAT conclusions for the water washing of excavated contaminated soil</b>	
<b>BAT50</b>	<p><i>In order to reduce emissions of dust and organic compounds to air from the storage, handling, and washing steps, BAT is to apply BAT 14d and to use one or a combination of the techniques given.</i></p>	<p>The site does not carry out water washing of excavated contaminated soil, therefore, BAT 50 is not applicable.</p>
<b>4.8</b>	<b>BAT conclusions for the decontamination of equipment containing PCBs</b>	
<b>BAT51</b>	<p><i>In order to improve the overall environmental performance and to reduce channelled emissions of PCBs and organic compounds to air, BAT is to use all of the techniques given.</i></p>	<p>The site does not carry out the decontamination of equipment containing PCBs, therefore, BAT51 is not applicable.</p>
<b>5 BAT CONCLUSIONS FOR THE TREATMENT OF WATER-BASED LIQUID WASTE</b>		

<b>BAT52</b>	<i>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).</i>	The site does not accept water based liquid waste, therefore, BAT52 is not applicable.
<b>53</b>	<i>In order to reduce emissions of HCl, NH<sub>3</sub> and organic compounds to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below.</i> <ul style="list-style-type: none"> <li><i>(a) Adsorption</i></li> <li><i>(b) Biofilter</i></li> <li><i>(c) Thermal oxidation</i></li> <li><i>(d) Wet scrubbing</i></li> </ul>	The site does not accept water based liquid waste, therefore, BAT53 is not applicable.



