

# Vantage Business Park

784-B042236

## Best Available Techniques and Operating Techniques

### Environmental Permit Variation Application

**Airbag Disposal Limited**

**February 2023**

**Document prepared on behalf of Tetra Tech Environment Planning Transport Limited.  
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## TABLE OF CONTENTS

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1.0	INTRODUCTION.....	1
2.0	REGULATED ACTIVITIES.....	3
3.0	WASTE ACCEPTANCE PROCEDURES .....	6
4.0	WASTE TREATMENT AND STORAGE ACTIVITIES .....	9
5.0	EMISSIONS .....	14
6.0	EMISSION LIMITS, MONITORING AND APPROPRIATE MEASURES.....	15
7.0	MANAGEMENT OF DOCUMENTATION .....	20
8.0	PROCESS EFFICIENCY APPROPRIATE MEASURES ENERGY AND RESOURCES .....	17
9.0	GENERAL MANAGEMENT .....	19
10.0	BAT ASSESSMENT .....	22

## LIST OF TABLES

---

Table 1: Permitted Activities (R Codes).....	3
Table 2: R/D Codes for Proposed Waste Treatment Activities .....	3
Table 3: Waste Storage Arrangements.....	12
Table 4: Proposed Process Monitoring Requirements .....	15
Table 5: Conformance Testing .....	16

## DRAWINGS

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ABD/B0242236/PER/01 – Environmental Permit Boundary

ABD/B0242236/PER/02 - Indicative Site Layout Plan

## APPENDICES

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Appendix A – Proposed Waste Types

Appendix B – Certificate of Technical Competence

Appendix C – Copy of ISO 14001 Certificate

## 1.0 INTRODUCTION

### 1.1 REPORT CONTEXT

- 1.1.1 This report has been prepared by Tetra Tech on behalf of the Operator, Airbag Disposal (UK) Limited (ABD) in connection to their permitted facility at Unit 9 Vantage Business Park (the site), Sheffield Road, Tinsley, Sheffield, S9 1BG.
- 1.1.2 ABD currently hold a bespoke environmental permit (EPR/FB3702UD and EAWML 404425) that allows the storage and recovery of waste airbags that have either been received from third parties already deployed or that are deployed on site. The treatment activities regulated in the permit include manual and mechanical sorting and separation of the deployed airbags for recovery.
- 1.1.3 ABD are now seeking to expand their waste operations at the site to allow the allow the acceptance and/or treatment of hazardous and non-hazardous wastes that will predominantly comprise of metals, WEEE (including fridges), car exhausts, batteries, plastics, cardboard and Time Expired Pyrotechnics (TEPs). Treatment will comprise variety of methods which include manual and mechanical sorting, separation shredding, granulating and baling. To facilitate this expansion, ABD are also seeking to increase the annual throughput of the site from 5,000 tonnes to 70,000 tonnes per annum. There are no proposed changes to the operational characteristics of the waste airbag treatment process and therefore this document will solely focus on the new waste activities that are proposed in this environmental permit variation application.
- 1.1.4 This Best Available Techniques and Operating Techniques (BATOT) document is an integrated document which describes both the operating techniques that will be implemented at the site to ensure compliance with the conditions of the Environmental Permit and also demonstrate that BAT will be employed.
- 1.1.5 This report has been prepared to satisfy the requirements of the following: -
- Environment Agency - Develop a management system: environmental permits (August 2021);
  - Environment Agency - Control and monitor emissions for your environmental permit (May 2021);
  - Environment Agency - Best available techniques: environmental permits (February 2016);
  - Environment Agency - Treating metal waste in shredders: appropriate measures for permitted facilities (October 2021)
  - Environment Agency - Waste electrical and electronic equipment (WEEE): appropriate measures for permitted facilities (July 2022);
  - Environment Agency - Waste temperature exchange equipment: appropriate measures for permitted facilities (July 2022);
  - European Commission's BAT Reference (BREF) Document for Waste Treatment (August 2018); and,
  - European Commission's BAT Conclusion Waste Treatment (August 2018).

### 1.2 SITE SETTING

- 1.2.1 The site is located in Unit 9 within the wider Vantage Business Park in central Sheffield. The site is centered at approximate Nation Grid Reference (NGR) SK 40228 91537. The site location and environmental permit boundary is shown on Drawing Number ABD/B0242236/PER/01.
- 1.2.2 Access to the site is achieved by an access road located directly off the A6178 to the east of the Blackburn Meadows Way junction. The immediate surrounding of the site comprise industrial units directly east and

south. To the west of the site lies Blackburn Meadows Way and to the north is a railway line and the River Don. The nearest residential property is located approximately 155m south of the site on Ferrars Road.

## 2.0 REGULATED ACTIVITIES

### 2.1 OVERVIEW OF SITE ACTIVITIES

2.1.1 ABD currently hold a bespoke environmental permit (EPR/FB3702UD and EAWML 404425) that allows the operation of a non-hazardous physical treatment facility. At present, ABD are permitted to store and treat waste airbags that have either been received from third parties already deployed or that are deployed on site. The treatment activities regulated in the permit include manual and mechanical sorting and separation of the deployed airbags for recovery.

2.1.2 According to the Table S1.1 of the Environmental Permit, the current waste activities are undertaken under the following R Codes provided in Annex II to Directive 2008/98/EC of The Council of 19th November 2008 Waste.

**Table 1: Permitted Activities (R Codes)**

R Code	Description
R4	Recycling/reclamation of metals and metal compounds
R5	Recycling/reclamation of other inorganic materials
R13	Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where the waste is produced)

2.1.3 ABD are now seeking to expand their waste operations at the site to allow the acceptance and/or treatment of hazardous and non-hazardous wastes that will predominantly comprise of metals, WEEE (including fridges), car exhausts, batteries, plastics, cardboard and Time Expired Pyrotechnics (TEPs). Treatment will comprise variety of methods which include manual and mechanical sorting, separation shredding, granulating and baling. Further details regarding the treatment processes are provided in Section 4 below.

2.1.4 The treatment of non-hazardous waste will be less than 75 tonnes per day and treatment of hazardous waste will be less than 10 tonnes per day. As such, it's considered that the acceptance and treatment of non-hazardous waste will be an extension to the permitting non-hazardous waste physical treatment activity. The acceptance and treatment of non-hazardous waste will comprise a new waste activity that will be incorporated into the environmental permit. In addition to the above, ABD propose to store 100 tonnes of hazardous waste at the site at any one time. In light of these changes, the following activities will be undertaken on site:

- Physical Treatment of Non Hazardous Waste (Variation to existing activity):
- Physical Treatment of Hazardous Waste (New Activity):
- Section 5.6 Part A(1)(a) – Temporary storage of hazardous waste pending any of the activities listed in Section 5.1, 5.2 and 5.3 (New activity).

2.1.5 The proposed treatment activities will be undertaken as waste operations and will comprise the R and D Codes provided in Annex II to Directive 2008/98/EC.

**Table 2: R/D Codes for Proposed Waste Treatment Activities**

R/D Code	Description
R3	Recycling/ reclamation of organic substances which are not used as solvents
R4	Recycling/reclamation of metals and metal compounds

R5	Recycling/reclamation of other inorganic materials
R13	Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where the waste is produced)
D15	Storage pending any of the operations numbered D 1 to D 14 (excluding temporary storage, pending collection, on the site where the waste is produced)

## 2.2 SITE LAYOUT

2.2.1 The proposed waste activities will be undertaken within the confines of a building and an indicative site layout is provided on Drawing Number ABD/B0242236/PER/02.

## 2.3 OPERATING HOURS

2.3.1 The operating hours for the site will be limited to the following hours, set out below:

- Monday to Thursday: 08:00 to 16:30
- Friday: 08:00 to 16:00

2.3.2 There would be no work on Saturdays, Sundays Bank and National Holidays.

## 2.4 WASTE QUANTITIES

2.4.1 The proposed annual throughput for the site will not exceed a maximum of 70,000 tonnes.

## 2.5 WASTE TYPES

2.5.1 Details of the proposed waste types are provided in Appendix A.

## 2.6 PLANT AND EQUIPMENT

2.6.1 The following equipment will be used on site:-

- Shredder
- Granulator
- Overhead Magnets
- Eddy Current Separator
- Decanter
- Forklift Truck

2.6.2 Only personnel who are trained and licensed to operate equipment and carry out maintenance will do so.

2.6.3 All plant and equipment will be maintained in accordance with a preventative maintenance programme which will be defined by the manufacturer's requirements. This will ensure that the integrity and operational efficiency of all plant and equipment is maintained and therefore minimise the risk of mechanical failure which may result in increased dust emissions. This particular programme forms part of the site's Environmental Management System (EMS).

2.6.4 In addition, all plant and equipment will be visually inspected on a daily basis by the Site Manager (or a nominated deputy) prior to use. The purpose of this inspection is to identify any signs of defects that may affect the integrity and operational efficiency of the plant.

- 2.6.5 In the event that a defect is identified on any item of plant or equipment, the use of the plant/equipment will be suspended until the necessary remedial works have been undertaken.



## 3.0 WASTE ACCEPTANCE PROCEDURES

### 3.1 PRE-ACCEPTANCE PROCEDURES

- 3.1.1 Prior to waste being accepted onto the site, the waste producer will be required to provide the following information of their waste to ABD: -
- Details of the waste producer/holder including their organization name, address and contact details;
  - The source of the waste
  - A description of the waste including composition and quantity;
  - The waste classification code; and
  - Any hazardous properties or presence of any regulated chemicals (e.g. Persistent Organic Pollutants/ POPs).
  - Confirmation that the waste does not contain a radioactive source
- 3.1.2 For mirror entry List of Waste (LoW) codes, if the information provided by the waste producer/holder indicates that the waste has not been properly assessed, ABD will contact the waste producer and request for further information to verify the waste assessment. If the waste producer is unable to verify the assessment, ABD will assume that the waste is not in line with the EWC codes accepted on site and therefore will not be accepted.
- 3.1.3 For WEEE identified as POPs waste in accordance with the EA's 'Classify different types of waste' guidance, if the information provided by the waste producer/holder indicates that the WEEE is not POPs waste, ABD will contact the waste producer/holder and request for further information to verify the waste assessment. If the waste producer is unable to verify the assessment, ABD will assume that the waste is POPs waste.
- 3.1.4 On occasion, if required, ABD will visit the waste producer/holder at their site to verify the information that was provided as part of the pre-acceptance procedures.
- 3.1.5 ABD will not accept wastes onto the site unless the above information is established.
- 3.1.6 If the information provided demonstrates that the waste is acceptable, the Site Manager will assess the waste's suitability for storage and treatment at the site. As part of this assessment, the Site Manager
- 3.1.7 If the waste is deemed suitable for storage and treatment, arrangements will be made to deliver the waste to the site.
- 3.1.8 All records relating to the pre-acceptance will be kept for cross-reference a verification at the waste acceptance stage. These records will be kept for a minimum of 3 years.
- 3.1.9 ABD will reassess the information required at pre-acceptance on an annual basis or if the following apply: -
- Waste changes;
  - Process giving rise to the waste changes;
  - Waste received does not to conform to the pre-acceptance information;

### 3.2 ACCEPTANCE PROCEDURES

- 3.2.1 Waste will only be accepted if there is sufficient capacity. The delivery of waste will always be planned in advance with the delivery date agreed by ABD and the waste producer/holder.

- 3.2.2 All vehicles delivering waste will be licensed waste carriers and each delivery must be accompanied by a complete Waste Transfer Note (for non-hazardous waste) or a Hazardous Waste Consignment Note (for hazardous waste) consistent with fulfilling the company's responsibilities under the Duty of Care Regulations. Before the waste vehicle arrives on site, a check will be made to ensure that the waste carrier is properly licensed. This information can be checked by the following methods:-
- By phoning the EA on 03708 506 506 and requesting an instant Waste Carrier Validation Check; or
  - Checking online on the EA's waste carrier register on their website.
- 3.2.3 Upon arrival, the waste delivery driver will provide documentation to the Site Manager detailing the source and description of the waste. These documents will be inspected by an appropriately trained operator to ensure that the information corresponds with the information provided during the pre-acceptance stage and therefore complies with the conditions of the environmental permit.
- 3.2.4 Loads where possible, will be visually inspected by an appropriately trained operator to ensure that it's consistent with the information provided during the pre-acceptance stage and the documentation provided by the delivery driver. A visual inspection of fridges will be undertaken inside the fridge to check for non-compliant items such as food and drinks.
- 3.2.5 If there is uncertainty regarding the documentation, the Site Manager would seek to contact the waste producer/holder to resolve the issue.
- 3.2.6 Under the above circumstances the waste will only be accepted if the Site Manager is satisfied that it can be accepted. The Site Manager shall also make an entry into the site diary giving the reason(s) for their decision to accept or reject the waste. If the waste is rejected the actions defined in Section 3.3 must be followed.
- 3.2.7 If the document checks show that the waste is acceptable, the driver will report back to the waste delivery vehicle and be directed to the waste reception area which benefits from an impermeable surface. Staff will supervise the waste being discharged from the waste delivery vehicle and a further inspection will be undertaken.
- 3.2.8 If the documentation provided to the office is incorrect or the visual inspections indicate that the waste does not match the written description provided during the acceptance or pre-acceptance stage, then the waste will be rejected in accordance with Section 3.3.

### **3.3 UNAUTHORISED AND REJECTED WASTE**

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- 3.3.1 In the event that a load is identified as unacceptable upon discharge of the load, the waste shall be reloaded into the container if possible and isolated.
- 3.3.2 In the event that any load is identified as unacceptable upon discharge of the load when the haulier has exited the site, the waste shall be isolated or quarantined on the site.
- 3.3.3 If necessary, the EA will be contacted to agree the most appropriate course of action.
- 3.3.4 If a load is rejected, the following information shall be recorded:-
- Time and date of incident;
  - Haulier and vehicle registration number;
  - Customer;
  - Waste type; and
  - Reason for rejection.

3.3.5 Records will be kept of all rejected loads and these will be made available to the EA.

## 3.4 WASTE TRACKING

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3.4.1 ABD benefit from a waste tracking system which will hold all the information generated during:-

- Pre-acceptance
- Acceptance
- Non-conformance or rejection
- Storage
- Repackaging
- Treatment
- Removal off site

3.4.2 The tracking system will be used to provide a waste inventory and a stock control system and will include the following information:-

- The date the waste arrived on-site
- The original producer's details (or unique identifier)
- A unique reference number
- Waste pre-acceptance and acceptance information
- The intended treatment or disposal route
- Accurate records of the nature and quantity of wastes held on site, including all hazards (identifying the primary hazards)
- Where the waste is physically located on site

3.4.3 ABD will maintain back-up copies of computer records off site. These records will be readily accessible in an emergency.

3.4.4 All records relating to waste acceptance will be kept for a minimum of 2 years after the waste has been treated or removed from the site.

## 4.0 WASTE TREATMENT AND STORAGE ACTIVITIES

4.1 The activities that will be undertaken at the site are described below and have been split into distinct activities.

### 4.2 WEEE – TREATMENT PROCEDURE

4.2.1 All items of WEEE will be processed immediately upon receipt. Prior to mechanical treatment, items of WEEE will be manually dismantled to remove the substances, mixtures and components as specified in Annex VII of the WEEE Directive (2012/19/EU) Such items will be stored and bulked on site prior to transfer to an appropriate permitted facility.

4.2.2 Following manual dismantling, items of WEEE will be loaded into a hopper which conveys into the granulator and shredding machinery. The resultant material will then pass through an overband magnet and eddy current separator to allow segregation of components (i.e. plastics and metals) which are subsequently stored and bulked in designated containers prior to transfer off site to a suitable permitted facility for further recovery and/or disposal.

#### Post Shredding – Testing and Sampling

4.2.3 According to the EA's 'Classify different types of waste' guidance, WEEE often has components that contain substances or persistent organic pollutants (POPs). As noted in the guidance, if the levels of hazardous substances or POPs are over a certain amount, the item will be classified as hazardous or POPs waste.

4.2.4 The treatment of WEEE that is not POPs waste, but which may contain POPs in some components, may result in fractions where the POPs threshold is exceeded. As such, in accordance with Section 5.12 of the EA's 'Waste electrical and electronic equipment (WEEE): appropriate measures for permitted facilities', any fractions of plastics containing brominated flame retardants will be characterised in accordance with the WM3 guidance. This will determine if the shredded material is POPs waste and therefore ensure that the waste is transferred to an appropriate permitted facility to be destroyed. In the event that the shredded materials is not classified as POPs waste, the material will be transferred off site for further recovery and/or disposal.

### 4.3 FRIDGES – TREATMENT PROCEDURE

4.3.1 The treatment of fridges will be undertaken in two steps: Step 1 is the manual dismantling of the items and Step 2 is the shredding of the fridge carcass (i.e. the fridge with the various components removed). Steps 1 and 2 are described below.

4.3.2 Step 1 of the fridge treatment process comprises the manual dismantling of appliances including removal of the components, fluids and gases as appropriate.

4.3.3 The Step 1 process is undertaken as follows:-

- Oil and refrigerant gas are removed from the compressor via vacuum.
- Gas is stored into a gas tight pressure vessel which are subsequently stored in a designated area prior to transfer off site to an appropriate permitted facility.
- Compressor oil is heated to remove dissolved refrigerant gas. Any gas which is recovered from the oil will be stored in gas tight pressure vessels (as mentioned above).
- The residual oil will be stored within an appropriate bunded storage tank.
- Once all gas and fluids have been removed from the compressor, the compressor will be removed manually. Compressors will be stored and bulked in designated containers prior to transfer off site to a suitable permitted facility for further recovery and/or disposal.

- 4.3.4 Step 2 of the fridge treatment process comprises the shredding of the fridge carcass within a self contained environment that benefits from an automated control system. The resultant material will then pass through an overband magnet and eddy current separator to allow segregation of components (i.e. plastics and metals) which are subsequently stored and bulked in designated containers prior to transfer off site to a suitable permitted facility for further recovery and/or disposal.
- 4.3.5 Lightly shredded foam will be extracted by suction force and dispatched into an appropriate container which is stored in a designated area prior to transfer off site to an appropriate permitted facility.

#### **4.4 CAR EXHAUSTS – TREATMENT PROCEDURE**

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- 4.4.1 Treatment of car exhausts will comprise a de-canning facility for removing the scrap ferrous cans from the catalyst material, as a preparatory step prior to transfer off site to a suitable permitted facility.
- 4.4.2 In some of the catalytic converters there is a support mat made from refractory ceramic fibre (RCF). This matting is used to protect the honeycomb centre and also as insulation to maintain the high temperatures needed for the reactions to take place within the catalyst. RCF has properties similar to asbestos as is classed as hazardous waste. In most cases it is not possible to determine if a catalytic converter has RCF matting before it is de-canned.
- 4.4.3 The canned material is sorted during the de-canning process to separate the incoming material into the two different types of catalytic converters (hazardous RCF containing type and the non-RCF containing). The metallic converters are prepared on site before being placed in appropriate containers for recycling off-site.
- 4.4.4 Any dust generated from this process will be collected by a Local Exhaust Ventilation (LEV) system which will be installed within the building. Dust collected from the LEV system will be abated using high efficiency particulate air (HEPA) bag filters, with the outlets discharged within the building. There is no external point source emission to air from the LEV system.

#### **4.5 METAL RECYCLING – TREATMENT PROCEDURE**

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- 4.5.1 Metals will either be delivered to the site as a direct load or will be recovered from other waste streams that will be processed at the site.
- 4.5.2 Depending on the nature of the waste material, items may be subject to manual sorting and segregation to remove any components that are not suitable for mechanical treatment. Items will then be loaded into a hopper which conveys into a shredder. The metal will then be shredded to achieve the desired grades and then will be segregated via an overband magnet and eddy current separator. The resultant material will then be stored and bulked in designated containers prior to transfer off site to a suitable permitted facility for further recovery and/or disposal.

#### **4.6 NON-HAZARDOUS WASTE – TREATMENT PROCEDURE**

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- 4.6.1 In addition to metals, ABD propose to accept plastics and cardboard for treatment however, it's envisaged that plastics and cardboard may derive from other wastes that will be processed in the site.
- 4.6.2 Treatment of plastics will be similar to metals whereby items will be subject to manual sorting and segregation prior to processing via shredding. The resultant material will then be stored and bulked in designated containers prior to transfer off site to a suitable permitted facility for further recovery and/or disposal.
- 4.6.3 The treatment of cardboard will solely comprise of baling. Cardboard will primarily comprise of packaging waste that's used to contain some waste materials that are delivered to the site. Upon arrival, waste will be removed from the cardboard packaging and then the cardboard will be processed immediately by a baler.

The baled cardboard will then be stored on site in a designated area until enough material has been bulked-up to be transported off site for either recycling or disposal.

## 4.7 TEPS – TREATMENT PROCEDURE

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- 4.7.1 This activity will comprise the acceptance and/or treatment of specific TEPs which comprise of life jackets, railing fog detonators and fire extinguishers. All items will be processed immediately upon receipt.
- 4.7.2 For life jackets that don't contain inflators, two cuts will be made on either side of the jacket. The jacket will then be placed into the shredder as most of the material consists of polyvinyl chloride and polyethylene.
- 4.7.3 Life Jackets with inflators have to be treated initially as they contain CO<sub>2</sub> cylinders. To be recycled, the cylinder must be empty. A used cylinder has an identifiable puncture hole which must be punctured by the waste holder prior to disposal however, site operatives will complete a visual inspection of all life jackets to ensure that the cylinder has been punctured and will puncture the cylinder if necessary. The life jacket and punctured cylinder will then be loaded into the shredder and pass through an overband magnet and eddy current separator to allow segregation of components. The resultant material will then be stored and bulked in designated containers prior to transfer off site to a suitable permitted facility for further recovery and/or disposal.
- 4.7.4 The treatment of fire extinguishers will be limited to the discharge of the contents of the extinguisher and dismantling by removal of vales and other parts of the cylinder. Once the contents have been discharged, the metal cylinder will be loaded into the shredder and pass through an overband magnet and eddy current separator to allow segregation of components. The resultant material will then be stored and bulked in designated containers prior to transfer off site to a suitable permitted facility for further recovery and/or disposal.

Railing fog detonators will be subject to destruction via a decommissioning chamber which is currently used on site for the treatment of waste airbags.

## 4.8 BATTERIES – STORAGE AND SORTING

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- 4.8.1 Waste batteries will derive from End-of-Life Vehicles (ELV) which are subsequently imported on to the site or from items of WEEE that are processed at the site. All waste batteries will be stored within in appropriate leak-proof and UN approved boxes and will be categorised and separated by type, class or group. Waste batteries will be bulked on site prior to transfer off site to specialist recyclers.
- 4.8.2 In accordance with the EA's appropriate measures guidance, all lithium ion batteries from electric vehicles will be stored separately from other types of batteries.

## 4.9 WASTE STORAGE

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### Storage Arrangements

- 4.9.1 All waste accepted at the site will be stored within the confines of a building which benefits from an impermeable concrete surface. As detailed on the Site Layout Plan (Drawing Number ABD/B0242236/PER/02), waste will be stored in containers that are situated in designated storage areas.
- 4.9.2 In addition, all waste will be stored in appropriate containers which are summarised in Table 3 below.
- 4.9.3 The site will operate to ensure that all incoming waste loads are processed (if required) immediately upon receipt and therefore there will not be a designated storage area for waste pending treatment. Subsequently,

the storage arrangements in Table 3 reflect the storage arrangements for waste following treatment with the exception of batteries as there will be no mechanical treatment of waste batteries at the site.

**Table 3: Waste Storage Arrangements**

Waste Type	Location	Storage	Container Dimensions	On-site storage Time
Batteries	Storage area on ground floor below mezzanine floor.	<p>All batteries will be stored in UN approved containers, which are then transferred to a segregated area from other wastes.</p> <p>All lithium ion batteries from electric vehicles will be stored separately from other types of batteries.</p> <p>In addition, lead acid batteries and other types of batteries will be stored in non-metallic water tight containers.</p>	<p><b>Container for Lithium Ion Batteries</b></p> <p>Dimensions: 1.2m (L) x 1m(W) x 0.74m (H)</p> <p>Maximum Storage Capacity: 400kg</p> <p><b>Containers for Lead Acid Battery and Other Battery Types</b></p> <p>Dimensions : 1.2m (L) x 1m (W) x 0.58m(H)</p> <p>Maximum Storage Capacity : 1,200kg</p>	4 - 5 Days
WEEE	Storage area on ground floor below mezzanine floor.	<p>All WEEE waste will be transferred to a WEEE IBC and 1,100 Litre metal and plastic crates prior to treatment on site.</p> <p><b>4H2 containers and stillages</b></p> <p>Container Size: 1.2m (L) x 1m (W) x 0.74m (H)</p>	<p><b>WEEE IBC</b></p> <p>Dimensions : 1.3m (L) x 1.37m (W) x 1.11m (H)</p> <p>Maximum Storage Capacity : 200kg</p> <p><b>1100 Litre WEEE Wheelie Bin</b></p> <p>Dimensions: 1.3M (L) x 1.37 (W) x 1.12 (H)</p> <p>Maximum Storage Capacity: 200kg</p>	1 - 2 Weeks
Plastics	Storage area on ground floor below mezzanine floor.	<p>Prior to treatment, all plastic will be stored in an 8 Yard Metal Skip.</p> <p>Following treatment, plastics that are recovered from the mechanical treatment process will be stored in 4H2 containers and</p>	<p><b>8 Yard Skip</b></p> <p>Dimensions : 3.4m (L) x 2.1m (W) x 1.5m (H)</p> <p>Maximum Storage Capacity: 8,000kg (8 tonnes)</p> <p><b>4H2 containers and stillages</b></p> <p>Container Size: 1.2m (L) x 1m (W) x 0.74m (H)</p> <p>Maximum Storage Capacity: 440 kg</p>	1-2 Weeks

Waste Type	Location	Storage	Container Dimensions	On-site storage Time
		stillages prior to transfer off site.		
Cardboard	Card/packaging storage area on ground floor	Once wastes have been received on site and unpacked, the cardboard will be baled as part of the process.  Cardboard will only be stored once baled.	Will be stored within until a certain amount is baled. The maximum quantity of bales held on site will range between 1-4 bales.	1 – 2 Weeks
Metals	Skip on ground floor	Storage will occur once metals have been stripped from the wastes received.  8 Yard Metal Skip	<b>8 Yard Skip</b>  Dimensions : 3.4m (L) x 2.1m (W) x 1.5m (H)  Maximum Storage Capacity: 8,000kg (8 tonnes)	2-3 Days
Explosives and TEPS	Storage area on ground floor below mezzanine floor.	All explosives and TEPS are stored in UN approved containers, which are then transferred to a segregated area from other wastes.	UN approved 4H2 containers and stillages  Dimensions: 0.6m (L) x 0.4m (W) x 0.25m (H)  Maximum Storage Capacity: 50g	2 - 3 Days

4.9.4 To ensure that there is no cross contamination or reactions between incompatible materials, each waste stream will be stored within separate containers which will be segregated in to designated storage areas (as shown on Drawing Number ABD/B0242236/PER/02). Each storage area will be clearly marked to inform site operatives what waste is stored within each storage area to ensure that incompatible materials are not placed in the wrong areas.

4.9.5 All waste storage areas and containers will be subject to a visual inspection on a daily basis to ensure continuing integrity and fitness for purpose. In the event that any damage breaches the integrity of the engineered containment so that it no longer meets the required standards, necessary remedial work will be completed as soon as practicable.

#### **Stock Management**

4.9.6 To ensure that the site does not exceed its maximum storage capacity or waste is stored longer than the time periods outlined in Table 3, effective stock management procedures will be implemented.

4.9.7 As noted in Section 3.4, ABD will benefit from a waste tracking system that will provide a waste inventory and a stock control system.

4.9.8 In the event that the site reaches the maximum storage capacity, ABD will not make any arrangements to bring any more waste to the site until such time the waste currently stored on site is transferred off site to provide sufficient capacity to allow more waste to be delivered to the site.



## 5.0 EMISSIONS

### 5.1 POINT SOURCE EMISSIONS TO AIR

- 5.1.1 As mentioned in Section 4, the building benefits from a LEV system however, the outlets are discharged within the building. There is no external point source emission to air from the LEV system.
- 5.1.2 As such, it's considered that there are no point source emissions to air as a result of this application.

### 5.2 FUGITIVE EMISSIONS TO AIR (INCLUDING ODOUR)

- 5.2.1 Fugitive emissions to air have been identified as a potential environmental risk resulting from the proposal, as detailed in the Environmental Risk Assessment that accompanies this application as Appendix D.

### 5.3 EMISSIONS OF NOISE AND VIBRATION

- 5.3.1 Emissions of noise and vibration have been identified as a potential environmental risk resulting from the proposal. As such, a Noise Impact Assessment (NIA) has been prepared which provides an assessment of noise from the proposed activities in accordance with the EA's 'Noise and Vibration Management: Environmental Permits guidance (Updated 31<sup>st</sup> February 2022) and the BS 4141:2014 standard. In addition, a Noise Management Plan (NMP) has been prepared to describe the measures that will be in place to minimise the risk of noise from the proposed activities. Copies of the NIA and NMP are provided as Appendix G of the Environmental Permit application.

### 5.4 POINT SOURCE EMISSIONS TO WATER AND SEWERS

- 5.4.1 There will be no point source emissions to air as a result of this application.

### 5.5 FUGITIVE EMISSIONS TO LAND AND WATER

- 5.5.1 Fugitive emissions to land and water have been identified as a potential environmental risk resulting from the proposal, as detailed in the Environmental Risk Assessment that accompanies this application as Appendix D.

## 6.0 EMISSION LIMITS, MONITORING AND APPROPRIATE MEASURES

### 6.1 MONITORING REQUIREMENTS

6.1.1 The mandatory minimum monitoring requirements are outlined within the BAT Conclusion for Waste Treatment and the EA’s appropriate measures guidance documents for treatment metal waste in shredders and WEEE. The minimum standard applies to emissions to air, water and sewer, waste and environmental monitoring (including that going to land). In addition, it describes the minimum reporting standards required, the process variables to be monitored and the appropriate monitoring standards that must be complied with.

### 6.2 EMISSIONS TO AIR

6.2.1 As mentioned in Section 5.1, there will be no point source emissions to air as a result of this application and therefore no monitoring is proposed.

### 6.3 EMISSIONS TO WATER OR SEWER

6.3.1 As mentioned in Section 5.4, there will be no point source emissions to water or sewer as a result of this application and therefore no monitoring is proposed.

### 6.4 PROCESS MONITORING

6.4.1 In accordance with the EA’s ‘Waste temperature exchange equipment: appropriate measures for permitted facilities’ guidance, ABD will monitor the following parameters in connection to the fridge treatment process.

**Table 4: Proposed Process Monitoring Requirements**

Item	Parameter	Monitoring Frequency	Monitoring Standard or Method	Other specifications
Pre-destruction processing Compressor oil	Concentration of refrigerant in the oil (%w/w)	Quarterly	Independent conformance testing	-
Destruction plant contained environment	Lower Explosive Limit (LEL) or Limiting Oxygen Concentration (LOC)	Continuous	-	-
Residual materials conformance testing	Quantity of foam remaining on the granulated metal after processing (%w/w)	Quarterly	Independent conformance testing	-
	Quantity of foam remaining on the granulated plastic after processing (%w/w)	Quarterly	Independent conformance testing	-
	Quantity of residual blowing agents remaining in the foam after processing (%w/w)	Quarterly	Independent conformance testing	-

Record of residual wastes removed from the site	Quantities of Residual materials from pre-destruction And destruction process	Quarterly	-	-
Refrigeration degassing unit	Refrigeration unit type	Daily	Record of each unit type	Type 1-4
	Refrigerant type			CFC, HCFC, HFC, HC or ammonia
	Number of defective			-
Refrigeration unit carcass destruction	Refrigerant type	Daily	Record of each carcass destruction	Type 1-4
	Blowing agent type			CFC, HCFC, HFC, HC
Record of insulation panel foam destruction	Volume of panel processed	Monthly	Calculation	-
Quantity of refrigerant & blowing agent recovered	Quantity of refrigerant collected over reporting period	Monthly	Weighed using calibrated scales	-
	Quantity of blowing agent collected over reporting period	Monthly		-

6.4.2 ABD will only use accredited laboratories to complete conformance tests and analysis of the waste fractions.

6.4.3 Section 5 of the appropriate measures guidance notes that the following must be achieved in relation to conformance testing.

**Table 5: Conformance Testing**

Item	Limit
Quantity of refrigerant & blowing agent recovered	80% or more based upon monthly assessment of fridges treated during that period.
The quantity of foam remaining on the granulated metal after processing	< 0.5% w/w
The quantity of foam remaining on the granulated plastic after processing	< 1% w/w
The quantity of residual blowing agents remaining in the polyurethane foam	<ul style="list-style-type: none"> <li>0.5% w/w where foam is stored in a contained environment subject to further recovery or destruction</li> <li>0.2% w/w in other cases</li> </ul>

6.4.4 If process monitoring shows that the performance of the treatment plant does not meet any of the standards stated in Table 5, ABD will send a report to the EA, summarising:

- The actions that will be taken to improve performance to achieve the standards given, including any additional sampling and testing
- The dates ABD will complete these actions by, including the dates for any additional sampling and testing.

## 7.0 PROCESS EFFICIENCY APPROPRIATE MEASURES ENERGY AND RESOURCES

### 7.1 ENERGY EFFICIENCY

- 7.1.1 The energy requirements of the facility are very low and are mainly associated with lighting within the storage and treatment and the operation of plant.
- 7.1.2 The energy requirements of the facility in general are low and no improvements are considered necessary. In line with the Environmental Management System (EMS), basic energy saving measures are adopted and continually reviewed. This includes measures such as:
- Efficient use of plant and machinery to avoid unnecessary ignition;
  - Plant and machinery to be switched off when not in use; and
  - Regular maintenance of all plant and machinery.

### 7.2 RAW MATERIALS

- 7.2.1 The activities on site require low amounts of resources.
- 7.2.2 Fuels and chemicals associated with on-site plant will be appropriately stored and banded. Monitoring of the use of fuel and chemicals will be undertaken in accordance with the site's EMS.

### 7.3 WATER USE

- 7.3.1 According to the European Commission's BREF document for Waste Treatment, it is noted that metal waste shredders do not use much water and many facilities run without water. The only exception where water may be used is for the injection into the mill or for wet scrubbing.
- 7.3.2 There is no intention to utilise any water in the shredding process and therefore the amount of water that will be used is expected to be low.
- 7.3.3 As required under the environmental permit, a water efficiency audit will be undertaken within 4 years of permit issue, and this will be submitted to the EA within 2 months of completion. Following this, an audit will be carried out at least once every 4 years. The audit will identify opportunities to improve water efficiency by taking the following approach:-
- Use of water flow diagrams and mass balances to map water usage;
  - Establish water efficiency objectives within identified constraints;
  - Identify opportunities for reduction; and
  - Develop an action plan to implement the improvements.

### 7.4 WASTE MINIMISATION, RECOVERY AND DISPOSAL

- 7.4.1 In accordance with the EA's 'Select a Waste Recovery or Disposal Method for your Environmental Permit', an assessment was undertaken to determine the environmental impact of the proposed disposal/recovery method. This assessment forms part of the Environmental Risk Assessment provided as Appendix D of the Environmental Permit application.
- 7.4.2 The results of this assessment conclude that the proposed disposal/recovery method of the wastes produced on site represents the lowest impact scores that may be achieved. As such, it is considered that

the risk of the proposed disposal/recovery methods are low and that there is little potential to further minimise the impact of these waste streams. Consideration will be given to seeking alternative treatment and disposal routes in the future where new technologies are brought online.

7.4.3 As required under the Environmental Permit, ABD will have a programme of waste minimisation audits to ensure that an audit is carried out at least once every 4 years. Audits will include the following:-

- Methodology used;
- Analysis of raw materials used;
- Assessment of opportunities for reduction; and
- An action plan for improvements.

7.4.4 The audit will be submitted to the EA within 2 months of completion.

7.4.5 Data will be incorporated for each principal stage of the operation, which will enable the calculation of the actual mass balance of the operation. This will then be used to assess opportunities to improve efficiency and reduce waste production. Following this, an action plan will be prepared which will set out a timescale for the implementation of the improvements.

## 8.0 GENERAL MANAGEMENT

### 8.1 ENVIRONMENTAL MANAGEMENT SYSTEM

- 8.1.1 As noted in the EA's 'Develop a Management System: Environmental Permits' guidance, all permitted facilities are required to have an EMS to describe the procedures in place to minimise the risk of pollution from the activities covered in the environmental permit. In addition, the BAT conclusion for Waste Treatment includes a requirement for an EMS.
- 8.1.2 ABD have an EMS in place meets the requirements of ISO14001 and the EA's 'Develop a management system: environmental permits' guidance. A copy of the ISO 14001 certificate is provided in Appendix C.
- 8.1.3 All site operatives would be adequately trained in health, safety and environmental issues. Staff would only be permitted to undertake activities that they have been trained for. They would be made aware of the procedures they must follow in the event of an accident or incident and would be able to access any relevant documentation that they may require. All training, experience and qualifications of staff would be noted, and these records would be maintained and kept up to date.

### 8.2 STAFF COMPETENCE

- 8.2.1 The facility will be managed by a Site Supervisor who holds a valid and relevant Certificate of Technical Competence.
- 8.2.2 All site staff will be trained in the site operating procedures, including waste acceptance, storage, treatment and emergency procedures, and records of all training provided will be maintained.

### 8.3 ACCIDENT MANAGEMENT PLAN

- 8.1 ABD recognise the importance of the prevention of accidents that may have environmental consequences and that it is crucial to limit those consequences.
- 8.2 An Accident Management Plan will be implemented and maintained at the site to ensure the site's staff are fully prepared for such incidents. The accident management plan will form part of the EMS and will be reviewed on an annual basis or as soon as practicable after any reportable incident on site. The document will be continually improved in these reviews to include best practice and minimise the risk of accidents occurring.
- 8.3 An initial assessment of the risk of accidents and abnormal operating conditions posed to the environment and site personal are identified in the Environmental Risk Assessment provided as Appendix D of the Environmental Permit Application.
- 8.4 The mitigation measures identified within the Environmental Risk Assessment will be implemented to limit the consequences of accidents on the environment and site personnel.

### 8.4 CONTINGENCY PLAN AND PROCEDURES

- 8.4.1 In accordance with the EA's 'Develop a management system: environmental permits' guidance, the site's EMS will have documented procedures for all site operations. This will include contingency plans that will detail what actions will be undertaken in the event of any breakdown, enforced shutdowns and any changes to normal operations (e.g. flooding or extreme weather). This will ensure that the necessary measures are employed to minimise the environmental risks arising from abnormal operating conditions.

## 9.0 MANAGEMENT OF DOCUMENTATION

- 9.1.1 ABD have an EMS which is compliant with ISO 14001 and this includes procedures for the management of documentation.
- 9.1.2 The Management System provides documented procedures for:-
- Operation and Maintenance;
  - Competence and Training;
  - Accidents/Incidents/Non-Conformance/Breakdowns/Enforced Shutdowns;
  - Organisation; and
  - Managing Documentation and Records.
- 9.1.3 All staff will be appropriately trained in health, safety and environmental issues, including the correct procedures to follow in the event of an accident or an emergency. All training, experience and qualifications gained by the site staff will be noted and kept up to date within the site records.
- 9.1.4 Procedures will be in place to cover all aspects of operations that may have an adverse impact upon the environment.
- 9.1.5 The procedures are reviewed and may be amended under the following scenarios:-
- Periodic review identifies and improved method of operation. The revised procedure will have a reduced or unchanged risk of impact upon safety, health and environment;
  - A need to amend procedures is identified following a near miss investigation;
  - A need to amend procedures is identified following an incident investigation; and
  - Legislative requirements change resulting in a need to alter procedures.

## 9.2 SITE RECORDS

- 9.2.1 A record will be kept that provides details on all wastes accepted at the site. This will include details on waste types, quantities and the date of delivery. This will be provided to the EA at three-monthly intervals, within one month of the end of each period. A record of basic waste characterisation and any compliance testing or on-site verification will be maintained in the site office.
- 9.2.2 A site diary will be kept in the site office, and this will be updated daily. The diary will be used to record any accidents, incidents or complaints. This will provide an ongoing record throughout the period of operation at the site, and this will enable any investigative or corrective action that may be required.
- 9.2.3 The Environmental Permit and other documents containing information regarding the operation of the site will be kept in a convenient location, allowing access for any person that may be working at or visiting the site.
- Maintenance of Records
- 9.2.4 The Site Diary will be maintained and updated to include the following:-
- The name of Certificate of Technical Competence holder in attendance;
  - Details of all visitors, including status and times of arrival and departure;
  - Details of maintenance, modification, repair, replacement, delivery and return and breakdown of any plant and machinery; and

- Damage to vehicles, fences, gates etc. and incidents of trespass.

9.2.5 A separate Visitors Book is maintained and visitors must record their time of arrival and departure from the site.



## 10.0 BAT ASSESSMENT

- 10.1 The following table set out the BAT requirements as set out in the European Commission's BAT Conclusion for Waste Treatment and how ABD will meet these requirements with regards to the proposed changes.

BAT Conclusion	BAT Justification
<b>Environmental Management System</b>	
<p>BAT 1 – In order to improve the overall environmental performance, BAT is to elaborate and implement an environmental management system (EMS) that incorporates all of the following features:</p> <ul style="list-style-type: none"> <li>i. commitment of the management, including senior management;</li> <li>ii. definition, by the management, of an environmental policy that includes the continuous improvement of the environmental performance of the installation</li> <li>iii. planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment</li> <li>iv. implementation of procedures paying particular attention to:                             <ul style="list-style-type: none"> <li>a) structure and responsibility,</li> <li>b) recruitment, training, awareness and competence</li> <li>c) communication</li> <li>d) employee involvement</li> <li>e) documentation</li> <li>f) effective process control</li> <li>g) maintenance programmes</li> <li>h) emergency preparedness and response</li> <li>i) safeguarding compliance with environmental legislation;</li> </ul> </li> <li>v. checking performance and taking corrective action, paying particular attention to:                             <ul style="list-style-type: none"> <li>a) monitoring and measurement (see also the JRC Reference Report on Monitoring of emissions to air and water from IED installations – ROM)</li> <li>b) corrective and preventive action</li> <li>c) maintenance of records</li> <li>d) independent (where practicable) internal or external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;</li> </ul> </li> <li>vi. review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness</li> <li>vii. following the development of cleaner technologies;</li> </ul>	<p>ABD hold an accredited management system for the site which meets the requirements of ISO 14001 and includes the features described under BAT 1.</p>

<ul style="list-style-type: none"> <li>viii. consideration for the environmental impacts from the eventual decommissioning of the plant at the stage of designing a new plant, and throughout its operating life;</li> <li>ix. application of sectoral benchmarking on a regular basis;</li> <li>x. waste stream management (see BAT 2);</li> <li>xi. an inventory of waste water and waste gas streams (see BAT 3);</li> <li>xii. residues management plan (see description in Section 6.5);</li> <li>xiii. accident management plan (see description in Section 6.5);</li> <li>xiv. odour management plan (see BAT 12);</li> <li>xv. noise and vibration management plan (see BAT 17)</li> </ul>	
<b>Environmental Performance</b>	
<p>BAT 2 – In order to improve the overall environmental performance of the plant, BAT is to use all of the techniques given below.</p> <ul style="list-style-type: none"> <li>a) Set up and implement waste characterisation and pre-acceptance procedures;</li> <li>b) Set up and implement waste acceptance procedures</li> <li>c) Set up and implement a waste tracking system and inventory</li> <li>d) Set up and implement an output quality management system</li> <li>e) Ensure waste segregation</li> <li>f) Ensure waste compatibility prior to mixing or blending of waste</li> <li>g) Sort incoming solid waste</li> </ul>	<p>For points a), b) c) and e), please refer to Section 3 of this document which details the site’s waste acceptance procedures.</p> <p>For point f), ABD propose to process a variety of waste streams via shredding. There is no intention to mix different waste streams as part of the process and therefore ABD intend to treat each waste stream separately in batches.</p> <p>For points e) and g), waste will be stored in designated areas within the main building. To ensure that there is no cross contamination or reactions between incompatible materials, all incoming waste loads will be sorted into separate waste streams which are then stored in the relevant storage area.</p>
<p>BAT 3 – In order to facilitate the reduction of emissions to water and air, BAT is to establish and to maintain an inventory of waste water and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the following features:</p> <ul style="list-style-type: none"> <li>(i) information about the characteristics of the waste to be treated and the waste treatment processes,</li> </ul>	<p>Not applicable. As noted in Section 7.3, the amount of water that will be used for the waste treatment activities is expected to be low and therefore the amount of waste water that may be generated will also be low.</p>

<p>including:</p> <ul style="list-style-type: none"> <li>(a) simplified process flow sheets that show the origin of the emissions;</li> <li>(b) descriptions of process-integrated techniques and waste water/waste gas treatment at source including their performances;</li> </ul> <p>(ii) information about the characteristics of the waste water streams, such as:</p> <ul style="list-style-type: none"> <li>(a) average values and variability of flow, pH, temperature, and conductivity;</li> <li>(b) average concentration and load values of relevant substances and their variability (e.g. COD/TOC, nitrogen species, phosphorus, metals, priority substances/micropollutants);</li> <li>(c) data on bioeliminability (e.g. BOD, BOD to COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. inhibition of activated sludge)) (see BAT 52);</li> </ul> <p>(iii) information about the characteristics of the waste gas streams, such as</p> <ul style="list-style-type: none"> <li>(a) average values and variability of flow and temperature;</li> <li>(b) average concentration and load values of relevant substances and their variability (e.g. organic compounds, POPs such as PCBs);</li> <li>(c) flammability, lower and higher explosive limits, reactivity;</li> <li>(d) presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, nitrogen, water vapour, dust).</li> </ul>	
<p><b>Storage of Waste</b></p>	
<p>BAT 4 – In order to reduce the environmental risk associated with the storage of waste, BAT is to use all of techniques given below.</p> <ul style="list-style-type: none"> <li>a) Optimised storage location</li> <li>b) Adequate storage capacity</li> <li>c) Safe storage operation</li> </ul>	<p>Details regarding the waste storage arrangements are provided in Section 4.9 of this document.</p>

<p>d) Separate area for storage and handling of packaged hazardous waste</p>	
<p><b>Handling and Transfer of Waste</b></p>	
<p>BAT 5 - In order to reduce the environmental risk associated with the handling and transfer of waste, BAT is to set up and implement handling and transfer procedures.</p>	<p>As noted in Section 8, the site benefits from an EMS that provides documented procedures to cover all aspects of operations that may have an adverse impact upon the environment. This will include handling and transfer of waste.</p>
<p><b>Monitoring</b></p>	
<p>BAT 6 - For relevant emissions to water as identified by the inventory of waste water streams (see BAT 3), BAT is to monitor key process parameters (e.g. waste water flow, pH, temperature, conductivity, BOD) at key locations (e.g. at the inlet and/or outlet of the pretreatment, at the inlet to the final treatment, at the point where the emission leaves the installation).</p>	<p>Not applicable. As noted in Section 6.3, there will be no point source emissions to water as a result of this variation.</p>
<p>BAT 7 - BAT is to monitor emissions to water with at least the frequency given below, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.</p>	
<p>BAT 8 - BAT is to monitor channelled emissions to air with at least the frequency given below, and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.</p>	<p>Not applicable. As noted in Section 6.1, there will be no point source emissions to air as a result of this variation.</p>
<p>BAT 9 - BAT is to monitor diffuse emissions of organic compounds to air from the regeneration of spent solvents, the decontamination of equipment containing POPs with solvents, and the physico-chemical treatment of solvents for the recovery of their calorific value, at least once per year using one or a combination of the techniques given below.</p> <p>a) Measurement - Sniffing methods, optical gas imaging, solar occultation flux or differential absorption</p> <p>b) Emissions factors - Calculation of emissions based on emissions factors, periodically validated (e.g. once every two years) by measurements.</p>	<p>Not applicable. ABD does not propose to undertake the regeneration of spent solvents, the decontamination of equipment containing POPs with solvents, and the physico-chemical treatment of solvents for the recovery of their calorific value.</p>

<p>c) Mass balance - Calculation of emissions based on emissions factors, periodically validated (e.g. once every two years) by measurements.</p>	
<p>BAT 10 - BAT is to periodically monitor odour emissions</p>	<p>Not applicable. The proposal comprises an extension to the site's waste activities which includes the acceptance of additional waste codes such as automotive waste, metal, plastics, batteries and WEEE. The proposed waste types are not putrescible in nature and therefore the risk of odour is expected to be low.</p>
<p>BAT 11 - BAT is to monitor the annual consumption of water, energy and raw materials as well as the annual generation of residues and waste water, with a frequency of at least once per year.</p>	<p>As mentioned above, ABD hold an accredited management system for the site which meets the requirements of ISO 14001. Based on the requirements of the ISO 14001 standard, ABD are required to monitor and review their environmental performance which includes aspects such as water, energy, raw material consumption and waste generation.</p>
<p><b>Emissions</b></p>	
<p>BAT 12 - In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:</p> <ul style="list-style-type: none"> <li>- a protocol containing actions and timelines;</li> <li>- a protocol for conducting odour monitoring as set out in BAT 10;</li> <li>- a protocol for response to identified odour incidents, e.g. complaints;</li> <li>- 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.</li> </ul>	<p>Not applicable. Please see response to BAT 10.</p>
<p>BAT 13 - In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to use one or a combination of the techniques given below.</p> <ul style="list-style-type: none"> <li>a) Minimising residence time</li> <li>b) Using chemical treatment</li> </ul>	<p>Not applicable. Please see response to BAT 10.</p>

<p>c) Optimising aerobic treatment</p>	
<p>BAT 14. In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques given below.</p> <ul style="list-style-type: none"> <li>a) Minimising the number of potential diffuse emissions sources</li> <li>b) Selection and use of high integrity equipment</li> <li>c) Corrosion Prevention</li> <li>d) Containment, collection and treatment of diffuse emissions</li> <li>e) Dampening</li> <li>f) Maintenance</li> <li>g) Cleaning of waste treatment and storage areas</li> <li>h) Leak detection and repair programme</li> </ul>	<p>As mentioned previously, ABD do not propose to accept any waste streams that are putrescible in nature and therefore the risk of odour and organic compounds is expected to be low.</p> <p>A Dust Management Plan has been prepared to describe the measures that will be in place to prevent occurrence of dust from the proposed activities. This document is provided as Appendix E of the main permit application.</p>
<p>BAT 15 – BAT is to use flaring only for safety reasons or for non-routine operating conditions (e.g. start-ups, shutdowns) by using both of the techniques given below.</p>	<p>Not applicable. ABD do not propose to use any flaring at the site.</p>
<p>BAT 16. In order to reduce emissions to air from flares when flaring is unavoidable, BAT is to use both of the techniques given below.</p>	
<p><b>Noise</b></p>	
<p>BAT 17 - In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to set up, implement and regularly review a noise and vibration management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:</p> <ul style="list-style-type: none"> <li>i. a protocol containing appropriate actions and timelines;</li> <li>ii. a protocol for conducting noise and vibration monitoring;</li> <li>iii. a protocol for response to identified noise and vibration events, e.g. complaints;</li> <li>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</li> </ul>	<p>As part of the application, a Noise Impact Assessment has been prepared which provides an assessment of noise from the proposed activities in accordance with the EA’s ‘Noise and Vibration Management: Environmental Permits guidance (Updated 31st February 2022) and the BS 4141:2014 standard. In addition, a Noise Management Plan (NMP) has been prepared to describe the measures that will be in place to minimise the risk of noise from the proposed activities. Copies of the NIA and NMP are provided as Appendix G of the Environmental Permit application.</p>

<p>BAT 18 - In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to use one or a combination of the techniques given below.</p> <ul style="list-style-type: none"> <li>a) Appropriate location of equipment and buildings</li> <li>b) Operational measures</li> <li>c) Low noise equipment</li> <li>d) Noise and vibration control equipment</li> <li>e) Noise attenuation</li> </ul>	
<b>Emissions to Water</b>	
<p>BAT 19. In order to optimise water consumption, to reduce the volume of waste water generated and to prevent or, where that is not practicable, to reduce emissions to soil and water, BAT is to use an appropriate combination of the techniques given below.</p> <ul style="list-style-type: none"> <li>a) Water Management</li> <li>b) Water Recirculation</li> <li>c) Impermeable Surface</li> <li>d) Techniques to reduce the likelihood and impact of overflows and failures from tanks and vessels</li> <li>e) Roofing of waste storage and treatment areas</li> <li>f) Segregation of water streams</li> <li>g) Adequate drainage infrastructure</li> <li>h) Design and maintenance provisions to allow detection and repair of leaks</li> <li>i) Appropriate buffer storage capacity</li> </ul>	<p>As noted in Section 7.3, the activities on site require low amounts of water and therefore the volume of waste water generated is expected to be low. However, as mentioned in the response to BAT 11, water consumption will be monitored and reviewed on an annual basis as part of the requirements for the ISO 14001.</p> <p>To minimise emissions to soil and water, all site activities will be undertaken within the confines of a building.</p> <p>As noted in Section 4.9, waste will be stored within appropriate sealed containers which will contain any contaminated run off that may be generated. In addition, the building benefits from an impermeable concrete surface to prevent the transmission of potentially contaminated liquids into groundwater beneath the site.</p> <p>All areas of the impermeable concrete surface, covered buildings, roofed areas and containers will be visually inspected at least weekly to ensure continuing integrity and fitness for purpose. In the event that any damage breaches</p>



	<p>the integrity of the engineered containment so that it no longer meets the required standards, necessary remedial work will be completed as soon as practicable.</p>
<p>BAT 20. In order to reduce emissions to water, BAT is to treat waste water using an appropriate combination of the techniques given below.</p> <ul style="list-style-type: none"> <li>a) Equalisation</li> <li>b) Neutralisation</li> <li>c) Physical separation, e.g. screens, sieves, grit separators, grease separators, oil-water separation or primary settlement tanks</li> <li>d) Adsorption</li> <li>e) Distillation/rectification</li> <li>f) Precipitation</li> <li>g) Chemical oxidation</li> <li>h) Chemical reduction</li> <li>i) Evaporation</li> <li>j) Ion exchange</li> <li>k) Stripping</li> <li>l) Activated sludge process</li> <li>m) Nitrification/denitrification when the treatment includes a biological treatment</li> <li>n) Coagulation and flocculation</li> <li>o) Sedimentation</li> <li>p) Filtration (e.g. sand filtration, microfiltration, ultrafiltration)</li> <li>q) Flotation</li> </ul>	<p>Not applicable. Please see response to BAT 6 and 7.</p>

**Emissions from Accidents and Incidents**

<p>BAT 21 - In order to prevent or limit the environmental consequences of accidents and incidents, BAT is to use all of the techniques given below, as part of the accident management plan (see BAT 1).</p> <ul style="list-style-type: none"> <li>a) Protection measures</li> <li>b) Management of incidental/accidental emissions</li> <li>c) Incident/accident registration and assessment system</li> </ul>	<p>As noted in Section 8.3, the site will benefit from an Accident Management Plan which details the mitigation measures to prevent or limit the environmental consequences of accidents and incidents. The Accident Management Plan will form part of the EMS.</p>
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**Material Efficiency**

<p>BAT 22. In order to use materials efficiently, BAT is to substitute materials with waste</p>	<p>As mentioned in Section 7.4, ABD will undertake a waste minimisation audit every four years which will include an assessment of opportunities to reduce the amount of waste produced on site. As part of this assessment, ABD will consider opportunities to substitute materials with waste.</p>
<p><b>Energy Efficiency</b></p>	
<p>BAT 23 - In order to use energy efficiently, BAT is to use both of the techniques given below.</p> <ul style="list-style-type: none"> <li>a) Energy efficiency plan</li> <li>b) Energy balance record</li> </ul>	<p>As mentioned in Section 7.1, the energy requirements of the facility are very low and are mainly associated with lighting within the storage and treatment and the operation of plant.</p> <p>Nevertheless, as mentioned in the response to BAT 1, ABD hold an accredited management system for the site which meets the requirements of ISO 14001. Based on the requirements of the ISO 14001 standard, ABD are required to monitor and review their environmental performance which includes aspects such as energy consumption.</p> <p>In addition, there is a requirement under the Environmental Permit for the reporting of key indicators such as energy usage. Activities associated with the site will be reported with these forms which allows year on year monitoring of key performance indicators.</p>
<p><b>Reuse of Packaging</b></p>	
<p>BAT 24 - In order to reduce the quantity of waste sent for disposal, BAT is to maximise the reuse of packaging, as part of the residues management plan (see BAT 1).</p>	<p>Not applicable. Due to the nature of the proposed waste streams, it is unlikely that any waste will be delivered to the site in packaging.</p>

In addition, there is no intention to repackage any waste as part of the waste treatment activities. As such, the potential to reuse packaging is expected to be low.

**BAT Conclusions for Mechanical Treatment of Waste**

**Emissions to Air**

BAT 25. In order to reduce emissions to air of dust, and of particulate-bound metals, PCDD/F and dioxin-like PCBs, BAT is to apply BAT 14d and to use one or a combination of the techniques given below.

- a) Cyclone
- b) Fabric filter
- c) Wet Scrubbing
- d) Water Injection into the shredder

The shredder and granulator machinery will be enclosed which will minimise the release of dust emissions from the treatment process.

In addition, the building benefits from a Local Exhaust Ventilation (LEV) system to facilitate the collection of dust that may be generated from site operations. Dust collected from the LEV system will be abated using HEPA bag filters, with the outlets discharged within the building.

All plant and equipment will be maintained in accordance with the manufacturer's requirements. This will minimise the risk of mechanical failure which could result in an increased risk to air emissions.

All plant and equipment will be inspected on a daily basis (prior to use) by the Site Manager. The purpose of this inspection is to identify any signs of defects that may affect the integrity or operational efficiency of the plant/equipment. If any defects are identified, the defective plant/equipment will not be used until the necessary remedial works have been undertaken.

**Overall Environmental Performance**

<p>BAT 26 - In order to improve the overall environmental performance, and to prevent emissions due to accidents and incidents, BAT is to use BAT 14g and all of the techniques given below:</p> <ul style="list-style-type: none"><li>a) implementation of a detailed inspection procedure for baled waste before shredding;</li><li>b) removal of dangerous items from the waste input stream and their safe disposal (e.g. gas cylinders, non-depolluted ELVs, non-depolluted WEEE, items contaminated with PCBs or mercury, radioactive items);</li><li>c) treatment of containers only when accompanied by a declaration of cleanliness.</li></ul>	<p>For Points a) and c), ABD do not propose to shred any baled waste or treat any containers at the site. As such, it's considered that these BAT requirements are not applicable.</p> <p>Point b), all items of WEEE will be manually dismantled to remove the substances, mixtures and components as specified in Annex VII of the WEEE Directive (2012/19/EU). This process will be undertaken prior to mechanical treatment.</p> <p>In addition to WEEE, ABD intend to accept waste fire extinguishers and CO<sub>2</sub> cylinders from waste life jackets. Prior to mechanical treatment, checks will be undertaken on all CO<sub>2</sub> cylinders to ensure that they have been punctured. Any remnants within fire extinguishers will be discharged into an appropriate container before the metal cylinder is loaded into the granulator and shredder machinery.</p>
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**Deflagrations**

<p>BAT 27 - In order to prevent deflagrations and to reduce emissions when deflagrations occur, BAT is to use technique a. and one or both of the techniques b. and c. given below.</p> <ul style="list-style-type: none"><li>a) Deflagration Management Plan</li><li>b) Pressure Relief dampers</li><li>c) Pre-shredding</li></ul>	<p>As noted in the response to BAT 26, all items of WEEE will be manually dismantled to remove the substances, mixtures and components as specified in Annex VII of the WEEE Directive (2012/19/EU). This process will be undertaken prior to mechanical treatment. This will minimise the risk of materials entering the granulator and shredder machinery that may result in an increased risk to deflagrations.</p> <p>In addition to WEEE, ABD intend to accept waste fire extinguishers and CO<sub>2</sub> cylinders from waste life jackets. Prior to mechanical treatment, checks will be undertaken on all CO<sub>2</sub> cylinders to ensure that they have been punctured. Any</p>
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	<p>remnants within fire extinguishers will be discharged into an appropriate container before the metal cylinder is loaded into the granulator and shredder machinery.</p>
<p><b>Energy Efficiency</b></p>	
<p>BAT 28 - In order to use energy efficiently, BAT is to keep the shredder feed stable</p>	<p>In accordance with the BREF document for Waste Treatment, the shredder feed can be controlled by avoiding disruption or overload of the waste feed which would lead to unwanted shutdowns and start-ups of the shredder.</p> <p>Any waste processed via shredding will be loaded into the plant manually with mobile plant. As such, extra care will be taken when loading waste into the hopper to minimise the risk of disruption or overloading hopper.</p>
<p><b>BAT conclusions for the treatment of WEEE containing VFCs and/or VHCs</b></p>	
<p>BAT 29 - In order to prevent or, where that is not practicable, to reduce emissions of organic compounds to air, BAT is to apply BAT 14d, BAT 14h and to use technique a. and one or both of the techniques b. and c. given below.</p> <ul style="list-style-type: none"> <li>a) Optimised removal and capture of refrigerants and oils</li> <li>b) Cryogenic condensation</li> <li>c) Adsorption</li> </ul>	<p>As part of the fridge treatment process oil and refrigerant gas will be removed from the compressor via vacuum. ABD will aim to achieve a refrigerant removal rate of 90% which is identified as BAT in the BAT Conclusion for Waste Treatment.</p>
<p>BAT 30 - In order to prevent emissions due to explosions when treating WEEE containing VFCs and/or VHCs, BAT is to use either of the techniques given below.</p>	<p>To facilitate this, ABD will undertake process monitoring which is detailed in Section 6 of this document. The purpose of this monitoring is to determine the efficiency of the treatment process.</p>
<p>BAT 31 - In order to reduce emissions to air of organic compounds, BAT is to apply BAT 14d and to use one or a combination of the techniques given below</p>	
<p><b>BAT conclusions for the mechanical treatment of WEEE containing mercury</b></p>	

BAT 32 - In order to reduce mercury emissions to air, BAT is to collect mercury emissions at source, to send them to abatement and to carry out adequate monitoring

According to the DEFRA guidance document 'Guidance on Best Available Treatment Recovery and Recycling Techniques (BATRRRT) and treatment of Waste Electrical and Electronic Equipment (WEEE)', mercury is typically used in gas discharge lamps, medical equipment, data transmission, telecommunications and mobile phones. It has also been used in batteries, thermostats, position sensors, relays and switches.

As part of the waste treatment process, all items of WEEE will be subject to manual dismantling to remove the substances, mixtures and components as specified in Annex VII of the WEEE Directive including mercury containing components, such as switches or backlighting lamps.

There is no intention to mechanically treat any mercury containing components at the site and therefore it's considered that this BAT requirement is not applicable.

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## DRAWINGS

ABD/B0242236/PER/01 – Environmental Permit Boundary

ABD/B0242236/PER/02 - Indicative Site Layout Plan

## APPENDIX A – PROPOSED WASTE TYPES



Waste Code	Description
<b>02</b>	<b>WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING</b>
<b>02 01</b>	<b>Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing</b>
02 01 04	Waste plastics (except packaging)
<b>03</b>	<b>WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD</b>
<b>03 03</b>	<b>Wastes from pulp, paper and cardboard production and processing</b>
03 03 07	Mechanically separated rejects from pulping of waste paper and cardboard
03 03 08	Wastes from sorting of paper and cardboard destined for recycling
<b>07</b>	<b>WASTES FROM ORGANIC CHEMICAL PROCESSES</b>
<b>07 02</b>	<b>Wastes from the MFSU of plastics, synthetic rubber and man-made fibres</b>
07 02 13	Waste plastic
<b>12</b>	<b>WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS</b>
<b>12 01</b>	<b>Wastes from shaping and physical and mechanical surface treatment of metals and plastics</b>
12 01 05	Plastics shavings and turnings
<b>15</b>	<b>WASTE PACKAGING, ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED</b>
<b>15 01</b>	<b>Packaging (including separately collected municipal packaging waste)</b>
15 01 01	Paper and cardboard packaging
15 01 02	Plastic packaging
<b>16</b>	<b>WASTES NOT OTHERWISE SPECIFIED IN THE LIST</b>
<b>16 01</b>	<b>End-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 6 06 and 16 08)</b>
16 01 03	End-of-life tyres
16 01 08	Components containing mercury
16 01 09	Components containing PCBS
16 01 10	Explosive components (for example air bags)
16 01 17	Ferrous metal
16 01 18	Non-ferrous metal
16 01 19	Plastic
16 01 21*	Hazardous components other than those mentioned in 16 01 07 to 16 01 11 and 16 01 13 and 16 01 14
16 01 22	Components not otherwise specified
<b>16 02</b>	<b>Wastes from electrical and electronic equipment</b>
16 02 13*	Discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12
16 02 14	Discarded equipment other than those mentioned in 16 02 09 to 16 02 13
16 02 15*	Hazardous components removed from discarded equipment

16 02 16	Components removed from discarded equipment other than those mentioned in 16 02 15
<b>16 04</b>	<b>Waste explosives</b>
16 04 02	Fireworks wastes
<b>16 05</b>	<b>Gases in pressure containers and discarded chemicals</b>
16 05 04*	Gases in pressure containers (including halons) containing hazardous substances
<b>16 06</b>	<b>Batteries and accumulators</b>
16 06 01*	Lead batteries
16 06 02	Ni-Cd batteries
16 06 03	Mercury-containing batteries
16 06 04	Alkaline batteries (except 16 06 03)
16 06 05	Other batteries and accumulators
<b>17</b>	<b>CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)</b>
<b>17 02</b>	<b>Wood, glass and plastic</b>
17 02 03	Plastic
17 02 04*	Glass, plastic and wood containing or contaminated with hazardous substances
<b>17 04</b>	<b>Metals (including their alloys)</b>
17 04 05	Iron and steel
17 04 07	Mixed metals
17 04 10*	Cables containing oil, coal tar and other hazardous substances
17 04 11	Cables other than those mentioned in 17 04 10
<b>17 05</b>	<b>Soil (including excavated soil from contaminated sites), stones and dredging spoil</b>
17 05 08	Track ballast other than those mentioned in 17 05 07
<b>19</b>	<b>WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE</b>
<b>19 10</b>	<b>Wastes from shredding of metal-containing wastes</b>
19 10 01	Wastes from shredding of metal-containing wastes 19 10 01 iron and steel waste
19 10 02	Non-ferrous waste
19 12 01	Paper and cardboard
19 12 04	Plastic and rubber
<b>20</b>	<b>MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS</b>
<b>20 01</b>	<b>Separately collected fractions (except 15 01)</b>
20 01 01	Paper and cardboard
20 01 10	Clothes
20 01 21*	Fluorescent tubes and other mercury-containing waste
20 01 33	Batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries
20 01 34	Batteries and accumulators other than those mentioned in 20 01 33

Vantage Business Park  
Best Available Techniques and Operating Techniques

20 01 35*	Discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components
20 01 36	Discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35
20 01 39	Plastics
20 01 40	Metals
<b>20 03</b>	<b>Other municipal wastes</b>
20 03 01	Mixed municipal waste
20 03 07	Bulky waste

## APPENDIX B – CERIFICATE OF TECHNICAL COMPETENCE

**APPENDIX C – COPY OF ISO 14001 CERTIFICATE**