

Management System

Issue 06

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Willerby IVC Facility





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1.0 INTRODUCTION

This Management System has been prepared in accordance with the Environmental Permitting Regulations and sets out the considerations and operational details that are relevant to the operation of the resource recovery facility operated by Biowise Ltd at Willerby, East Yorkshire. It looks to set out the nature of the site, relevant site and infrastructure works, methods of operation and environmental controls. The Management System (MS) relates to composting in closed vessels and open systems, a wood recycling operation and a soil manufacturing operation.

1.1 Permitted Activities

Biowise Ltd (Biowise) is currently permitted to treat a variety of materials at the Willerby recycling facility under a bespoke environmental waste operation permit (EPR/PP3096ZA). Permitted activities are as stated below:

- Composting in closed systems of biodegradable wastes (<90,000 tonnes per annum (tpa)).
- Composting in open systems of biodegradable wastes (<90,000tpa), no more than 30,000 tonnes at any one time);
- Soil manufacture (<50,000 tpa, no more than 20,000 tonnes at any one time); and
- Wood recycling (<75,000 tpa, no more than 10,000 tonnes at any one time).

1.2 Exempt Activities

Activities which are outside the scope of the environmental permit may be carried out at the site and the relevant details registered with the EA prior to commencement.

Currently the following exempt activities are registered on the site:

Table 1 – List of Exempt Activities

Exemption	Reference	Description
T6	AH0819QZ	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
T10	AH0819QZ	Sorting mixed waste
T4	AH0379NX	Preparatory treatments (bailing, sorting, shredding etc.)
S2	AH0379NX	Storage of waste in a secure place.

2.0 SITE DETAILS

2.1 Site Address

Biowise Ltd
Albion Lane,
Willerby,
Hull,
East Yorkshire,
HU10 6TS

2.2 Operational Locations

Site Grid Reference: 500500, 431896 (IVC Facility)

Site Grid Reference: 501172, 431336 (OWC, ASP, Wood and Soils)

2.3 Description

The site is located in Willerby, 7km west of Hull and approximately 14km from the M62. Willerby is situated approximately 2km to the south east of the site and Beverley 8km to the north east. Access to the site is via Albion Lane.

The site is split by Westfield Road into a northern and southern portion of the site. The northern area consists of an in-vessel composting (IVC) facility treating food and green wastes through an enclosed vessel tunnel system. The southern area of the site consists of open windrow composting (OWC), aerated static pile composting (ASP), wood recycling and soils manufacture.

2.4 Plans

Reference Drawing: Site Plans BIO12

2.5 Permits and Licences

Environmental Permit/License Number: WML65512 - EPR/PP3096ZA.

2.6 Calculated Capacity

In order to establish whether or not the site will fall above or below the Industrial Emissions Directive (IED) threshold of 75tpd the following calculations identified below were undertaken. Based upon the proposed maximum at any one time across the IVC, ASP and OWC processes the tonnes per day is calculated to be above the IED threshold. The full range of treatment options are provided to ensure all process throughputs are considered.

Table 2 – Process Capacity

Sanitisation Phase	Stabilisation Phase	Process Tonnage	Process Length (days)	Throughput Capacity
IVC 2,500t	OWC 4,400t	6,900t	56	123t/day
IVC 2,500t	ASP 7,800t	10,400t	35	297t/day
IVC 2,500t	IVC 2,500t	2500t	35	71t/day
ASP 7,800t	ASP 7,800t	7,800t	42	186t/day
ASP 7,800t	OWC 4,400t	12,200t	56	218t/day
OWC 4,400t	OWC 4,400t	4,400t	56	79t/day

2.7 Aggregation

The aggregation of biowaste recovery activities with other non-hazardous waste recovery treatment have been considered.

All waste streams have been accounted for in the supplied information.

2.8 Directly Associated Activities

The associated activities with the IVC system are:

- Compost storage (prior to dispatch offsite)
- Leachate collection and storage (prior to processing)
- Collection and storage of clean site surface water (roof drainage etc. from rainwater)
- Storage of contaminants prior to recovery or disposal.

3.0 OPERATIONAL OVERVIEW

3.1 Waste Management Operations

The currently permitted and proposed waste activities, including operational limits and permitted wastes by scheduled activity, are identified within the Environmental Permit (EPR/PP3096ZA).

3.2 Permitted Wastes

Waste shall only be accepted if it is a type and quantity specified in the permitted list of wastes, and if it conforms to the description in the documentation supplied by the producer and holder. The Environmental Permit (EPR/PP3096ZA) lists all permitted wastes for each treatment activity undertaken on site.

Any wastes that are not categorised as permitted wastes should be considered contrary/non-conforming and dealt with appropriately. There shall only be non-hazardous wastes accepted on site.

3.3 Hours of Operation

Site operational hours for the facility will be typically as identified below:

Monday to Friday	07:00 – 17:00
Saturday	07:00 – 13:00
Sunday and Bank Holidays	Closed

In accordance with the conditions of the planning permission for the site, there will be no deliveries to or from the site outside the hours of 07:00-18:00 (Monday to Friday) and 07:00-13:00 on Saturday, and at no time on a Sunday or Bank Holiday unless otherwise agreed in writing with the local planning authority and the EA informed.

3.4 Staffing

Biowise shall ensure that sufficient personnel, who are suitably trained and competent, are present to manage and operate the on-site reprocessing activities safely and without causing pollution. Personnel will be fully familiar with the requirements of the Permit as is relevant to their specific duties. Personnel shall have clearly defined roles and responsibilities.

The site is operated under the ultimate control of the Manager Director, James Landau, and day to day responsibility rests with the Site Manager, Matt Dennison. The facility will require a minimum of 2 full time employees. Staff numbers will be maintained at a level sufficient to operate and supervise the site effectively and throughout periods of employee sickness and holidays.

3.5 Technical Competence

The manager and operatives will be appropriately trained and will be conversant with the requirements of the Environmental Permit and Management System, with particular regard to:

- Waste acceptance/rejection procedures;
- Operational controls;

- Maintenance procedures;
- Record keeping;
- Awareness of regulatory implications of the permit;
- Awareness of all potential environmental effects from the operations;
- Emergency action plan and prevention; and
- Notification to the Environment Agency and other regulatory authorities.

A copy of the Environmental Permit and Management System will be kept in all site offices and will be readily available for reference by site staff, other company staff, Environment Agency and other regulatory authorities.

A designated person will hold a suitable qualification in order to operate the site compliantly. The suitably qualified person's actual attendance hours on site will be recorded in the Site Diary. The TCM will be available on site for a minimum of 14 hours per week, as defined in the EA legal operator competence requirements. For periods of absence of the TCM above this, suitably qualified and technically competent cover will be contracted in. The current TCM is Matt Dennison. TCM cover will be provided as necessary.

Any changes in technically competent management at the site, and/or the name of any incoming personnel, together with any evidence that such personnel has required technical competence, shall be submitted to the Environment Agency within 5 working days of change in management. No site operations shall take place unless there is sufficient, trained and competent staff on site as per SGN page 76, points 3-7.

3.6 Site Identification Board

In conformance with permitting regulations and the Management System, Biowise shall display a clear, all-weather, easily readable Site Notice at or near the entrance to the site. The Site Sign/Notice shall contain the following information:

- Company Name
- Permit Holder's Name
- Emergency Contact Name
- Permit Holder's Telephone Number
- Statement that the site is permitted by the Environment Agency (EA)
- The Permit Number
- EA National Telephone Numbers

The Identification Board shall be inspected at least once per week. In the event of damage or defect, the board shall be repaired or replaced within three working days.

3.7 Site Security

The site is located in a semi-rural area largely surrounded by farmland and security is aimed at preventing easy or accidental access by humans or livestock.

The site has two sets of steel gates at the entrance to the site on Albion Lane and steel gates at the intersection with Westfield Road. The gates will be chained and padlocked outside normal operating hours. The perimeter of the site is fenced with either agricultural wooden fencing, chain link or wire fencing. Any defects noted in the security of the site will be rectified within a reasonable period of time of their discovery.

Within the IVC facility, the waste reception building is closed and secured outside of operating hours and each vessel is fully enclosed once charged and the composting process has begun.

The access road which connects the site is gated at the site entrance from the highway and these gates are locked outside all normal operating hours.

All visitors to the permitted area will be required to sign in at the weighbridge or IVC office as appropriate, on arrival and exiting the site.

3.8 Relevant Convictions

In the unlikely event of the Permit Holder or a relevant person being convicted of any relevant offence, the full details will be provided to the Environment Agency within 14 days of the conviction, as will be details of any appeals.

3.9 Change of Operator's or Holders Details

The following information shall be notified in writing within 5 working days to the Agency:

- Any change to the Permit holders trading name;
- Any steps taken with a view to the Permit holder going into administration; and
- Any change in the operators trading name, address registered name or registered office address.

3.10 Maintenance of Financial Provision

The Company will make financial provision to meet the obligations of the Permit.

3.11 Notification of Preparatory Works

Commencement of preparatory works for the construction of the site and infrastructure and its completion will be notified to the Agency in writing.

Any additional preparatory works required as a result of the issuing of a new waste Environmental Permit or site improvement would be notified to the Agency or relevant authority. The Permit holder shall give no less than 7 days prior notice of any changes to the Management System.

3.12 Commencement or Cessation of Waste Operations

In the event of any future cessation and subsequent re-commencement of the use of the site for recycling operations, the relevant authorities would be notified in writing specifying the date of any such cessation or re-commencement.

3.13 Notifications and Submissions to the Agency

Except where otherwise specified all submissions to the Agency shall be in writing. These correspondences shall include the reference number and the name of the Permit holder.

4.0 SITE ENGINEERING

4.1 Access and Parking

The main access route to the site is via Albion Lane which is served by the A164. Parking facilities are provided adjacent to the weighbridge office and IVC facility.

4.2 Site Office

The site offices are located at the weighbridge and the IVC facility. A copy of the environmental permit and MS will be held in all site offices. Toilets, washing and mess facilities are provided adjacent to the car parks.

The following information and equipment will be kept in the site office:

- Environmental permit;
- MS;
- Current site diary;
- Inspection forms (weighbridge office only);
- Visitor's book recording all visitors to the site;
- Odour Management Plan
- First aid kit

The main administrative office is located on Albion Lane, adjacent to the entrance to and easily accessible from the permitted site. The following information and equipment will be kept in the main administrative office:

- Conditions of site use for employees, visitors and contractors
- EA inspection forms;
- Duty of care transfer notes (for 2 years minimum);
- Waste delivery tickets;
- Weighbridge tickets;
- Accident book and first aid kit.

4.3 OWC Facility

The green waste composting facility is completely contained on a bunded impermeable concrete pad. The concrete pad is engineered with falls to a sump pit which collects all runoff waters (leachate) which is connected to the drainage system.

All materials are clearly segregated on site to prevent cross-contamination and the pad provides adequate operational capacity as identified within the Site Capacity Assessment (BIO13).

4.4 ASP Facility

The GICOM aerated static pile (ASP) system is a concrete impermeable modular bay system with integrated forced aeration. The ASP process is a contained and automated static pile composting system. There are five bays, each 30m (w) x 20m (l) x 4m (h) with an individual capacity of 1,560t and a combined capacity of 7,800t.

4.4.1 Air Handling System

Each floor is equipped with a stainless steel fan installed with a 22kW capacity that can reach up to 5kPa pressure. The fans nominally provide an airflow for half of each section at 50m³/h/m². Each bay floor section is 30m x 20m, equalling 600m². Each fan can therefore supply 50m³/h/m² x 600m² x 50% = 15,000m³/h.

The fan is connected to an aluminium plenum. The plenum is connected with a servo-controlled valve and a pressure box (4 per floor). Each pressure box is connected (with a machete, so it can be disconnected during emptying the floor) to 7 thick walled polyethylene (PE) pipes. There are 4 pressure boxes per bay, therefore 28 pipes per bay.

4.4.2 Aeration Piping

Each floor has 28, 20.5mm thick walled PE pipes with drilled holes for the delivery of air up into the compost media. The pipes are laid down 1,050mm apart. The 28 pipes per floor (individual bay) are divided into 4 groups of 7 pipes. Each group has a valve system which allows air into this specific group of pipes, and hence into the compost that is laid on top of it. This enables individual control of air flow within each bay, split into 4 quarter segments.

The floor is designed so up to 50m³/h/m² of fresh ambient air can be delivered. These floors are controlled by an on/off regime of the specific section. It is calculated to work with 2 out of 4 sections at any given moment.

4.4.3 Process Control System

Each ASP bay is supplied with sensors that partially automate the composting process in line with defined critical limits. The aerated stabilisation floors are supplied with measurement of:

- Pile temperature: 4 temperature probes per bay.
- Air temperatures: 2 sensors for the whole ASP array, for the supplied fresh air (dry and wet bulb).
- Backpressure: 1 pressure sensor per plenum, or 1 sensor per ASP bay.
- Pile oxygen: 1 oxygen sensor per bay.
- Power uptake.

The monitoring system is linked to a computer software package that enables batch traceability through the process with attached monitoring records.

4.5 IVC Facility

The GICOM tunnel composting system is a fully enclosed system incorporating waste reception and preparation and enclosed tunnel composting process. In addition there is an aeration system for the forced aeration of process tunnels and capture of treatment air within the tunnels and reception hall for treatment prior to release. The air treatment system includes wet scrubbing and biofiltration.

4.5.1 Contracted Arrangements

GiCom will provide a 12 month technical guarantee following successful commissioning of the plant. GiCom will also supply a full set of spare parts along with 24/7/365 technical support in the event of breakdown. Remote access is provided to the computer controlled system to enable remote identification of remedial works required and parts ordering.

4.5.2 Reception Hall

The waste reception hall is an enclosed system for the reception and pre-treatment of waste to be processed within the composting tunnels. The reception hall includes fast action roller shutter doors, operated during waste delivery. The reception hall includes waste storage prior to pre-treatment and pre-processing operations prior to tunnel loading. Pre-processing includes hand picking and shredding.

4.5.3 Process Tunnels

There are 8 tunnels in total with an internal dimension of each tunnel of 35m x 5,2m x 6m (l * w * h). All tunnels are executed with outlet openings in the floors according to the GICOM "spigot" principle. Air is supplied to the tunnels PVC pipes of Ø 200mm and directed vertically into the compost batch through spigots. When the tunnel is filled with organic material the process air is blown from the aeration plenum into the composting tunnel. The process air is circulated via ducts into the tunnel. When needed, fresh air can be directed to the tunnel and water can be added via overhead sprinkler.

By circulating the process air it is possible to control parameters that are important to the composting process, such as temperature, humidity and oxygen concentration. The composting conditions can be optimised through the automated system delivering a maximum airflow to the tunnels of 100m³/m²/h.

4.5.4 Air Treatment System

After the tunnel has been filled with compost feedstock the door is closed and the tunnel climate control program is initialised. The composting tunnels will be managed with respect to temperature and moisture to optimise the process, attain pathogen reduction requirements, and meet process objectives. All exhaust process and ventilation air is led to the odour control system via a valve system, a motor and a pressure-controlled blower via enclosed seaworthy ductwork. This system contains a water scrubber and a biofilter.

The water scrubber, fed with the effluent from the process water buffer tank - and if necessary fresh water, humidifies and scrubs the process air throughout the residence time of the air. The water stream coming from the scrubber is lead back to the buffer tank.

The fresh air stream to the tunnels is drawn from the reception hall via an overhead ductwork system with managed controls. The process air exhausted from the tunnels, directly comes in the above described odour control system. Additional ventilation air can by-pass the tunnels. This means the air going into the scrubber and biofilter system is a mixture of process air and additional ventilation air. The total maximum air flow is designed at 99,000m³/h. Under normal operational conditions the total process airflow will be 68,640m³/h is treated by the scrubbers and biofilters.

Air (both ventilation air and process air) is treated in 2 scrubbers of each 12.25m x 1.91m diameter. The volume of each scrubber is 35m³. Scrubbers are made from seaworthy aluminium. Under normal operating conditions the air velocity in the scrubber is 3.36m/s and residence time is 3.6 seconds. At maximum airflow the air velocity in the scrubber is 4.85m/s and residence time is 2.54 seconds.

There are 4 biofilters for the treatment of air from the reception hall and 8 compost tunnels. The internal dimensions of each biofilter is 15m x 11m (l * w) with a maximum airload of 150m³/h/m². The biofilter fans blow the process air through the scrubber followed by the biofilter. The biofilter is built with a spigot floor, for an optimal air distribution. In total 4 biofilter fans are installed. The capacity of these fans is 24,750m³/h each. Fan power is 30kW. At

maximum capacity the biofilter fans supply $150\text{m}^3/\text{h}/\text{m}^2$ of the biofilter. The biofilter will be constructed of coarse shredded untreated wood. The biofilters will be filled to 2.5m^3 of media per m^2 of biofilter resulting in scrubbed air exiting the biofilter at a velocity of 0.04 meters per second at maximum capacity, with a residency time of 61 seconds. At nominal operational conditions the velocity is 0.03 meters per second and residence time is 86 seconds.

Over time biofilter material loses its coarseness. This is identified by visual inspection of the biofilter media and backpressure. Once the media has been identified as requiring replacement (see Odour Management Plan), appropriate wood chip material is brought in and the spent biofilter media composted.

Temperature monitoring is undertaken within the biofilter media and any temperature above 42°C triggers the system to ventilate the biofilters to cool them down. In the plenum chamber, pressure and energy uptake are measured. These parameters help running the facility at its maximum efficiency.

When filling the tunnels correctly odour concentrations out of the biofilter will be below $1.00_{\text{OU}}/\text{m}^3$.

4.5.5 Computer Control System

The GICOM process computer (G-2000) controls the entire process. The computer is equipped with custom designed, patented software which allows dynamic control and pre-programming of critical limits for each composting activity. As the air exits the composting tunnels, several parameters are continuously measured in the airstream. The software is programmed to control certain variables at certain pre-determined times or points in the composting process cycle. The speed of the blower and the circulation rate is controlled to maintain the desired conditions in the waste.

All monitored results are recorded and displayed by the computer on a continuous basis. As results are recorded, they are simultaneously compared with critical limits. Based on this comparison the computer adjusts air and water flows and conditions affecting the tunnels, the building area, the scrubbers and the biofilters.

4.5.6 System Maintenance

The biofilter can take up to 44% of air above nominal capacity. This way additional heat as released by peak loadings of waste can be cooled by extra ventilation. In summertime (when peak loadings are most likely to happen) the scrubber system can evaporate more water, which means that process air is cooled down in the scrubber before it enters the biofilter.

In wintertime conditions, the fresh air intake of the tunnels is normally less. However the air leaving the tunnels have a normal enthalpy, or energy content. Like in most buildings, additional ventilation will be less compared to summer conditions. Over all the biofilter might cool down to $\sim 20^\circ\text{C}$ in winter. At these temperatures the biofilter will still function as normal.

The scrubber system is built without mechanical parts. Maintenance consists mainly of checking the nozzles and when needed, cleaning them. This can be done during normal operation of the plant without shutdown.

The scrubber pumps, when malfunctioning, take over each other's function, be it at a lesser capacity. This means the scrubber system can continue to work, should there be a pump malfunction.

The biofilter consists of 4 separate sections. These are controlled individually by a separate GiCom system per unit. In case one biofilter unit fails, or requires intensive maintenance, the other biofilter fans can take over. Most of the routine maintenance is done during operation. Replacement of the biofilter media is normally undertaken in winter, because of the low activity in the biofilter. However, during replacement the remaining biofilters can treat the air out of the replaced filter. Once a biofilter is replaced (normally with 24 hrs) with new material, it can directly be used again. The biofilters are also equipped with a spraying system for fresh water, to achieve the right humidity in the media.

The nominal ventilation of the reception hall is 4.2 air exchanges per hour. This is enough to ventilate exhaust air of loaders and trucks. Should there be an abnormal requirement to vent exhaust gases within the reception hall then ventilation can be increased to 6.1 times per hour.

4.6 Drainage and Containment System

The northern composting pad (ASP array) is laid to a 1 in 50 fall to Sump Pit A (24m³ capacity) to the north west of the pad. The southern pad is also laid to a 1 in 50 fall to a Sump Pit B (8m³ capacity) to the north west of the pad. Leachate is pumped from both sumps over the parabolic screen to the OWC Leachate Tank with a 398m³ capacity. The tank is large enough to cope with a 48hr M5 worst case storm event producing 40mm of rainfall. The Boythorpe tank rests on a similar bunded slab of concrete with any run off over a ledge into the operational area so as to prevent any discharge of collected liquor should the tank leak.

For the IVC the leachate will be managed via the separate leachate drainage and storage system. Process water from each of the composting tunnels will drain to a series of collection sumps, which in turn will have an overflow leading to the leachate collection tank which can hold 50m³. In addition, the process water coming from the water scrubber is directed back to the leachate collection tank.

4.7 Roof Drainage

Rainfall that lands on the main hall building is collected through the roof drainage system and directed straight to soakaway. Fresh water for use on site is provided by a borehole. The operational Drainage Management Plan (BIO09) identifies the clean and dirty water storage provisions with management procedures.

4.8 Storage Area

Composted materials will be stored prior to blending and dispatching to end markets. Product meeting the CQP and BSI PAS 100:2011 may be stored outside waste management controls, providing that the relevant quality protocols have been met. If the compost is considered to be too wet as indicated by moisture assessment, it will be transferred back to the concrete stabilisation pad for further processing.

Any non-PAS100 compost or compost oversize will be stored on the OWC process pad constructed from concrete hardstanding with a sealed drainage system. Composted materials will be stored prior to blending and dispatching to end markets. PAS100 and non-PAS100 materials will be clearly segregated from each other by physical location and batch markers. Non-PAS100 materials will be exported from site under agricultural deployment or utilised for the restoration of the adjacent landfill, so will not be stored for a long period prior to transfer off the pad preventing any backlog of materials.

4.9 Weighbridge Facility

The site is equipped with a 50 tonne Avery concrete weighbridge. The weighbridge will be serviced and calibrated annually by an external contractor and will also be subject to spot checks by the Weights & Measurement department of the local authority to ensure calibration is maintained. The weighbridge will be kept accurate to within 20 kilograms.

In the event of a breakdown of the weighbridge, manual tickets will be completed using each vehicle's average weight for the preceding six months. Once the weighbridge is back in operation the records are manually entered onto the system to ensure completeness of records.

4.10 Fuel and Petrochemical Storage

There is a fuel tank located at the IVC which is surrounded by a bund which is capable of containing a minimum of 110% of the volume of fuel stored in the tank in line with the requirements of Section 2.2.5 of SGN S5.06. All pipework and associated infrastructure is enclosed within the bund. A lock is fitted to the tank valve to prevent unauthorised operation. All valves and gauges on the bund are constructed to prevent frost damage. The tanks are clearly marked and carry signs showing the material contained within and its maximum capacity.

All oils and lubricants will be stored in barrels and containers and will be clearly labelled and kept in purpose made bunded steel containers at all times when not in use.

4.11 Raw Materials

There are no raw materials utilised on site which have potential for significant environmental impact.

4.12 Plant and Equipment

Waste will be handled using the plant and equipment such as those listed below. Additional plant will be hired in to cover breakdowns or any very busy periods. Only trained operators will be permitted to drive/operate machines on-site.

Table 3 – List of Operational Plant and Equipment

Plant	Function
Loading Shovel/Telehandler	Mixing, turning and loading
Dumper Truck/Tractor & Trailer	Material transportation
Shredder	Shredding waste materials
Crusher	Crushing screened aggregates
Screener	Separating product fractions
Picking Line	Removal of gross contaminants

4.13 Contaminant Storage

Those wastes received which are unsuitable for processing or not permitted under the Permit and which arrive as minor contaminants within larger loads, are stored in dedicated containers provided and removed from site to an appropriate disposal site on a regular basis.

Any load containing a greater level of non-permitted wastes is rejected immediately on arrival and following first inspection of the load.

5.0 SITE OPERATIONS

Site operations are carried out as per detail identified within Section 5.0. The operational procedures are based upon existing operational procedures and are deemed appropriate for the waste types to be processed. Where appropriate guidance has been derived from sections of SGN S5.06.

Material treated at the IVC facility will be treated in accordance with the relevant treatment parameters for ABPR as specified in EC 1069/2009 and EC 142/2011.

5.1 Pre-Acceptance

Prior to the acceptance of wastes being accepted on site, Biowise will obtain baseline information in writing relating to:

- the type of process producing the waste
- the specific process from which the waste derives
- the quantity of waste;
- the form the waste takes (solid, liquid, sludge etc)
- presence, strength and description of odour assessment
- physical appearance and colour
- hazards associated with the waste (e.g. low pH)

On a risk based approach as recommended in the EC BREF for Waste Treatment Industries¹, analysis will be undertaken to determine the properties of the waste material where specific hazards are identified at the baseline reporting stage. The analysis will aim to identify the suitability for the proposed treatment method, and any special treatment requirements. Analysis will include the following parameters:

- check on constituents declared by waste producer/holder to ensure Permit compliance, treatment plant specification and final disposal
- all hazardous characteristics
- moisture content
- pH
- C:N ratio

Sampling will be representative of the type of load that is expected to be received on site and sampling will be obtained from a batch in line with British Standard EN 12579. Sample frequency will be in line with anticipated variation in feedstock, e.g. seasonal variation between summer and winter months.

Verification of the written information provided by the producer may be required, and this will require a visit to the producer (at least annually) specifically where a third party is involved, e.g. waste broker. Following characterisation of the waste, a technical assessment will be made by technical staff of its suitability for treatment or storage to ensure Permit conditions are being met. The assessment will include:

- suitability for process by confirmation of waste classification and physico-chemical properties;
- suitability for treatment in line with operational parameters e.g. C:N ratio allows appropriate blending to target ratio with other waste materials available; and

¹ European Commission (2006) Reference Document on Best Available Techniques for the Waste Treatments Industries.

- suitability for acceptance based on risk to pollution, e.g. odour level.

5.2 Waste Acceptance

Personnel shall ensure that the site has the required number of qualified staff on site prior to the waste acceptance and rejection procedures. Personnel shall ensure that the site has capacity to store and treat any incoming waste. Personnel shall ensure that the site will not exceed Permit conditions by accepting any incoming wastes.

All incoming vehicles will enter via the existing waste facility site entrance and to the weighbridge. Documentation will be checked by the operative, to ensure that the waste complies with the waste types permitted by the Planning Permission, Permit Regulations or any subsequent updates. The relevant documentation includes Carriers Certificate of Registration and Duty of Care Waste Transfer Note, which will be signed by the operative to confirm the acceptance/receipt of the waste prior to the driver being allowed to proceed to the reprocessing site.

Upon arrival waste will:

- be weighed, unless alternative reliable volumetric systems linked to specific gravity data are available
- not be accepted into site unless sufficient storage capacity exists and site is adequately manned to receive waste
- have all documents checked and approved, and any discrepancies resolved before the waste is accepted

5.3 Visual Inspection

Where possible, confirmatory checks will be undertaken before offloading where safety is not compromised. Inspection must in any event be carried out immediately upon offloading at the installation.

Vehicles depositing material will proceed to the respective waste reception areas, vehicles collecting compost product will proceed to the respective loading area. For any waste arriving on site, a record is kept of:

- Date and time of waste delivered;
- Type of waste;
- Weight of load;
- Duty of care transfer note;
- Vehicle registration number;
- Haulier and waste carrier registration number;
- SIC code, and;
- European Waste Code (EWC).

Any input materials stored for incorporation to future batches (e.g. woody material kept for mixing into loads delivered in Spring, which tend to contain high proportions of soft, sappy, putrescible plant tissues) shall carry a batch code marker. A Batch Record Sheet shall be created and maintained for such stockpiled material so that it is traceable when mixed with recently delivered input materials that form new composting batches.

5.4 Waste Rejection

In the unlikely event that it is found necessary to refuse to accept a particular load for disposal, a standard rejection procedure will be implemented. The waste rejection procedure to be complied with will include:

- A hard standing holding or quarantine area will be incorporated into the waste reception area. For loads which are rejected prior to deposit, the driver will be instructed to park the vehicle as an interim measure for closer inspection. The competent manager will be contacted by radio prior to the rejected materials being removed from the site and, if appropriate, the ticket and billing rate amended.
- For loads which are rejected following deposit, the unsuitable materials or the whole load depending upon the degree of contamination, will be isolated. Subsequent actions will be dependent upon the reason for rejection and would be similar to those outlined above.
- In the event that the waste material should be determined to be Hazardous Waste then the relevant consignment notification form will be prepared, in conjunction with the haulier or producer and the material will be transported to an appropriate treatment or disposal site.
- Rejected waste will be recorded on a Waste Rejection Notification Form which will accompany the load and a copy will be sent electronically to the waste producer.

5.4.1 Rejection Criteria

Non-targeted waste materials for recovery through the proposed composting facility shall include:

- Dog, cat and horse waste;
- Wood and paper ash;
- Non-organic materials;
- Cardboard;
- Liquid wastes;
- Powders or dusts;
- Highly decomposed wastes e.g. non-stackable
- Highly odorous wastes, as determined by experienced site operatives.

Any load contaminating 7% or more non-targeted materials by weight shall be considered above the acceptable contamination threshold and would result in rejection. Any rejected load will be placed in quarantine, clearly segregated from all other materials and removed from site as soon as practicable.

5.5 Waste Contamination

As part of the recycling process it is anticipated that there will be some materials unsuitable for recycling (contraries e.g. plastic bags and rubble) in the incoming loads and the majority of these contraries will be removed by the site operatives before the waste is processed.

The plastic bags and other light contrary materials removed from the feedstock will be bagged by hand using the appropriate PPE. Larger contrary fractions will be removed using mechanical equipment, for example, a 360° excavator or a front loader. Contaminants will be dispatched to an appropriately licensed facility for recovery or disposal.

5.6 Waste Measurements

The quantities of all waste input and outgoing compost product will be measured by means of the waste facility's weighbridge. Electronic records will be made of the loaded and unloaded weight of each vehicle (in tonnes), together with the nature and composition of each load. The weighbridge will be subject to regular maintenance and calibration checks.

5.7 Waste Storage

All specified waste is received and initially stored strictly within the waste loading/unloading areas.

No other forms of waste are stored within the site other than those non permitted wastes pending removal to an appropriate site. The waste storage area is checked regularly and any faults are repaired as soon as reasonably practicable. Waste is removed until such repairs are finished and all repairs and faults are recorded.

All material received within the IVC will be considered to require treatment in line with the ABPR. Segregation of clean and dirty areas will be adhered to at all times in line with the requirements of ABPR and the APHA. This will include identification of clean and dirty machines that will operate solely within the clean and dirty areas of the IVC. Disinfectant footbaths will be installed for site operatives moving between clean and dirty areas. Wash down facilities will be provided for all vehicles entering/leaving dirty areas and for any machinery that is required to switch between clean and dirty areas.

5.8 Waste Dispatch

All contraries will be stored in a secure area and their weights and other particulars recorded prior to transporting from the site to a suitably permitted facility. All wastes shall be inspected prior to dispatch to confirm their description and composition.

5.9 Composting Techniques

The facility deploys a number of different composting techniques which can be utilised in parallel or series depending upon operational requirements. The flow diagram below outlines the different process routes depending upon material treated and technique employed. The default treatment technology for sanitisation is the IVC and for stabilisation is the ASP bays (highlighted in red below). The use of open windrow composting will be as a back up to the ASP system for any down time during routine or abnormal outage.

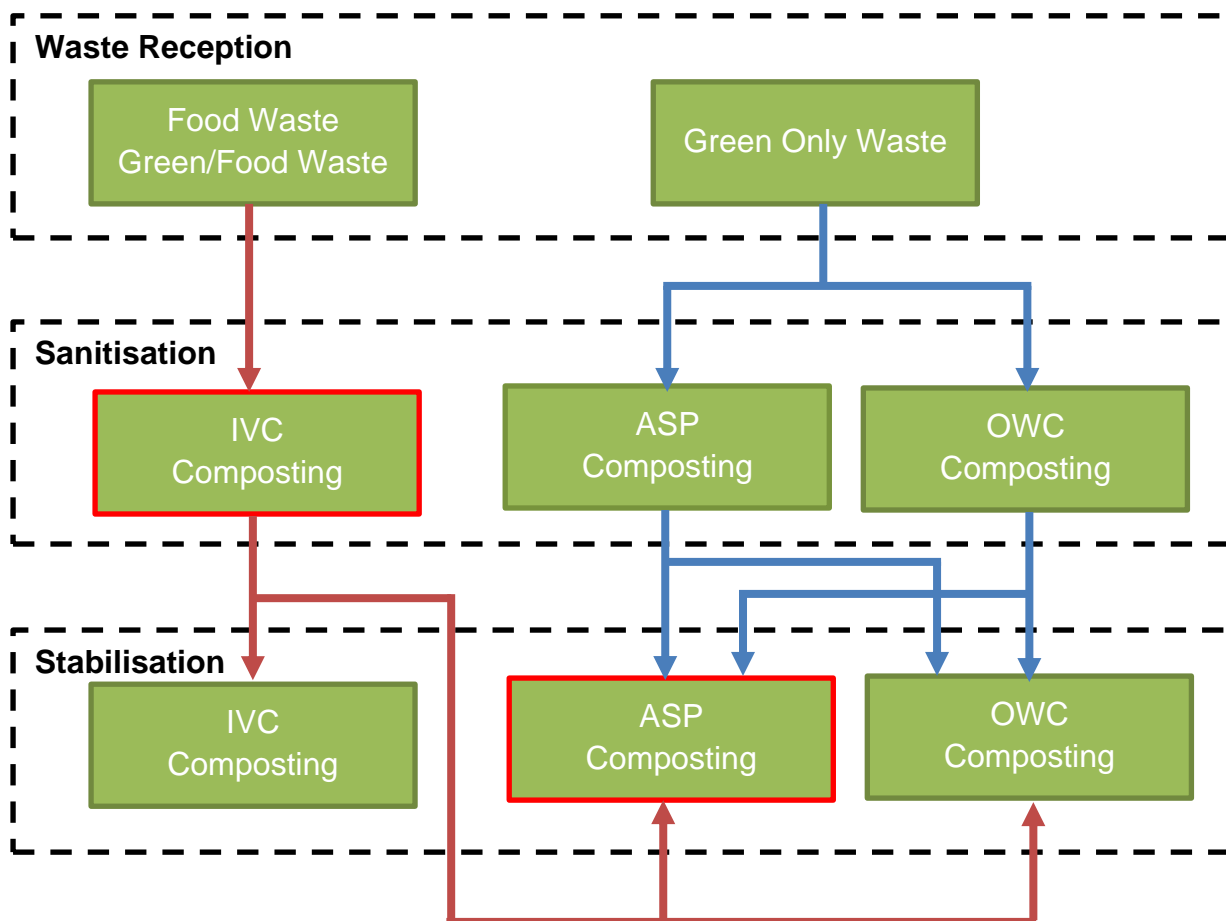


Figure 1 – Process Technique Material Flow Diagram

5.10 In Vessel Sanitisation

Each accepted load shall be assessed for size. Material must be less than 150mm in one plane only, prior to the waste being loaded into the IVC tunnel. For example, a branch may be 300mm long, but if it is less than 150mm thick it will meet the required standard. This can be achieved in one of two ways: through shredding; or through the removal of non-conforming oversized materials. Site operatives in the IVC inspect the waste on receipt and remove any non-conforming waste into the receptacles provided for further processing (i.e. liberating waste in black bin liners or shredding any oversized items).

A loading shovel is used to deposit the blended feedstock into the enclosed tunnels. The tunnels are loaded to a maximum of 315 tonnes. Throughout the sanitisation phase tunnels are actively monitored for temperature and moisture content using an automated data logging system integrated within the GICOM IVC system. The ABP sanitisation process will last a minimum of 2 days, and the total time within the IVC tunnels will typically be between 7 and 10 days. Prior to exit, the material will be flushed with air through the air handling forced aeration system to stabilise the material. After a minimum of 2 days at 60°C in the IVC the material will be transferred to the open windrow composting pad for stabilisation.

The following critical limits are monitored during the IVC sanitisation phase. Exceedance of critical limits will require corrective actions.

Table 4 – IVC Sanitisation Critical Limits

Parameter	Critical Limit	Frequency	Location
Temperature	>60°C	Continuous	4 points per batch 1m below surface
Moisture	40-65%	Continuous	1 point per tunnel at air exit vent
Oxygen	>5%	Continuous	1 point per tunnel at air exit vent

5.11 In Vessel Stabilisation

IVC sanitised waste is removed from the tunnel and reloaded externally by a loading shovel. Throughout the stabilisation phase tunnels are actively monitored for temperature and moisture content using an automated data logging system integrated within the GICOM IVC system.

Table 5 - IVC Stabilisation Critical Limits

Parameter	Stabilisation phase critical limits
Temperature	<55°C
Moisture content	40 - 65 % m/m /Grip test $\frac{3}{4}$
Minimum duration	4 weeks when temperatures and moisture are within the above ranges
Minimum number of turns	N/A

The following corrective actions are implemented when critical limits are not being met as identified by the automated monitoring process.

Table 6 – IVC Corrective Actions

Parameter	Corrective Action
Temperature	Compost is formed into tunnels of adequate size in order to generate required temperatures during active composting phases. Should temperature become elevated above critical limits, tunnels will be flushed with fresh air as soon as possible to fully aerate.
Moisture	The compost tunnels are free draining onto an enclosed drainage system to enable runoff from excessive moisture content. Aeration of tunnels will aid the drying of material to prevent high moisture levels occurring. If elevated moisture levels are encountered, additional air is introduced as soon as possible to fully aerate. If additional moisture is required by monitoring moisture content less than the critical limit, water is added to the tunnels through an overhead sprinkler system.
Oxygen	The composting tunnels include a forced aeration system. If oxygen levels fall below the critical limit then additional fresh air is introduced to the tunnel to fully aerate.

5.12 Open Windrow Sanitisation

Following waste acceptance, the green waste will be shredded to <400mm and formed into batches in open windrows. The dimensions of each windrow shall be approximately 4 metres high, 8 metres wide and 40 metres long. Gaps of suitable width to enable turning/monitoring and litter picking will be left between the windrows.

Throughout the sanitisation phase windrows are actively monitored for temperature and moisture content using a hand held temperature probe and squeeze test on a daily basis. The sanitisation process will last a minimum of 7 days during which period the critical limits must be met, but typically lasts for 2 weeks. During this period a minimum of 1 turn is made to fully incorporate the compost by loading shovel. After meeting the requirements of the sanitisation phase, material will be further treated through the stabilisation phase.

The following critical limits are monitored during the sanitisation phase. Exceedance of critical limits will require corrective actions.

Table 7 – OWC Sanitisation Critical Limits

Parameter	Critical Limit	Frequency	Location
Temperature	45-75°C	Daily	4 points per windrow 1m below surface
Moisture	Grip test 3-4 (40-65%)	Daily	4 points per windrow 1m below surface

The following corrective actions are implemented when critical limits are not being met as identified by routine monitoring.

Table 8 – OWC Sanitisation Critical Limits

Parameter	Corrective Action
Temperature	Compost is formed into windrows of adequate size in order to generate required temperatures during active composting phases. Should temperature become elevated above critical limits, windrows will be turned to incorporate fresh air as soon as possible to fully aerate.
Moisture	The compost windrows are free draining onto a drainage system to enable runoff from excessive moisture content. Aeration of windrows will aid the drying of material to prevent high moisture levels occurring. If elevated moisture levels are encountered, additional air is introduced as soon as possible to fully aerate via turning. Additions of water to compost should be done on a little and often basis. If additional moisture is required by monitoring moisture content less than the critical limit, fresh runoff water is applied directly to the windrow.

5.13 Open Windrow Stabilisation

Once sanitisation is achieved the compost is then further processed to mature to the required finished product quality as prescribed by PAS100/QP. This additional processing includes OWC, ASP and IVC sanitised material. All material streams are matured on the external composting pad through OWC processes. No mixing of the waste streams will take place, materials are held in discrete batches.

Post sanitised batches are formed into windrows approximately 4 metres high, 8 metres wide and 40 metres long. Gaps of suitable width to enable turning/monitoring and litter picking will be left between the windrows. During this period a minimum of 2 turns are made to fully incorporate the compost by loading shovel.

The Batch formation during the open windrow stage will be based on a maximum available batch size of 400 tonnes. Temperature logging is recorded weekly across the minimum 6 week stabilisation period. The following critical limits are monitored during the open windrow stabilisation phase on the stabilisation pad. Exceedance of critical limits will require corrective actions.

Table 9 – Stabilisation Critical Limits

Parameter	Critical Limit	Frequency	Location
Temperature	>55°C	Weekly	4 points per windrow 1m below surface
Moisture	Grip test 3-4 (40-65%)	Weekly	4 points per windrow 1m below surface

The following corrective actions are implemented when critical limits are not being met as identified by routine monitoring.

Table 10 – Stabilisation Corrective Actions

Parameter	Corrective Action
Temperature	Compost is formed into windrows of adequate size in order to generate required temperatures during active composting phases. Should temperature become elevated above critical limits, windrows will be turned as soon as possible to fully aerate.
Moisture	The compost windrows are free draining onto a concrete pad to enable runoff from excessive moisture content. If elevated moisture levels are encountered, windrow is turned as soon as possible to fully aerate. Additions of water to compost should be done on a little and often basis. If additional moisture is required by monitoring moisture content less than the critical limit, clean water is applied directly to the windrow. Too much water should not be added as it will generate excessive runoff onto the composting pad.

5.14 ASP Sanitisation

Following waste acceptance, the green waste will be shredded to <400mm and formed into batches in static piles within an ASP bay. The dimensions of each pile shall be approximately 4 metres high, 30 metres wide and 20 metres long.

Throughout the sanitisation phase the piles are actively monitored for temperature and moisture content using an automated temperature probe and squeeze test on a daily basis. In addition, oxygen levels are monitored within the pile using the automated oxygen sensor within the ASP bay. The sanitisation process will last a minimum of 7 days during which period the critical limits must be met, but typically lasts for 2 weeks. After meeting the requirements of the sanitisation phase, material will be further treated through the stabilisation phase.

The following critical limits are monitored during the sanitisation phase. Exceedance of critical limits will require corrective actions.

Table 11 – ASP Sanitisation Critical Limits

Parameter	Critical Limit	Frequency	Location
Temperature	45-75°C	Continuous	4 points per bay, 1m below surface
Moisture	Grip test 3-4	Daily	4 points per bay, 1m below surface
Oxygen	<5%	Continuous	1 point per bay, 1m below surface

The following corrective actions are implemented when critical limits are not being met as identified by routine monitoring.

Table 12 – ASP Sanitisation Critical Limits

Parameter	Corrective Action
Temperature	Compost is formed into piles of adequate size in order to generate required temperatures during active composting phases. Should temperature become elevated above critical limits, piles will be automatically flushed with fresh air immediately to fully aerate.
Moisture	The compost piles are free draining onto a drainage system to enable runoff from excessive moisture content. Aeration of windrows will aid the drying of material to prevent high moisture levels occurring. If elevated moisture levels are encountered, additional air is introduced as soon as possible to fully aerate. Additions of water to compost should be done on a little and often basis. If additional moisture is required by monitoring moisture content less than the critical limit, fresh runoff water or leachate from the OWC leachate tank is applied directly to the pile.
Oxygen	Compost is formed into piles consisting of appropriate coarse fraction material to enable adequate aeration. Should oxygen levels fall below critical limits, piles will be flushed with fresh air immediately to fully aerate.

5.15 ASP Stabilisation

Once sanitisation is achieved the compost is then further processed to stabilise to the required finished product quality as prescribed by PAS100/QP. This additional processing includes material previously sanitised by either ASP, OWC or IVC. These material streams are stabilised on the ASP bays. No mixing of the waste streams will take place, materials are held in discrete batches.

Post sanitised batches are formed into piles approximately 4 metres high, 30 metres wide and 20 metres long. The batch formation will be based on a maximum available batch size of 1,560 tonnes to progress through to the stabilisation stage of the process. Temperature logging is recorded continuously across the minimum 4-week stabilisation period. The following critical limits are monitored during the ASP stabilisation phase within the ASP bays. Exceedance of critical limits will require corrective actions.

Table 13 – Stabilisation Critical Limits

Parameter	Critical Limit	Frequency	Location
Temperature	>55°C	Continuously	1m below surface, 4 readings per bay
Moisture	Grip test 3-4 (40-65%)	Weekly	1m below surface, 1 reading per 250m ³
Oxygen	<5%	Continuous	1 point per bay, 1m below surface

The following corrective actions are implemented when critical limits are not being met as identified by routine monitoring.

Table 14 – Stabilisation Corrective Actions

Parameter	Corrective Action
Temperature	Compost is formed into piles of adequate size in order to generate required temperatures during active composting phases. Should temperature become elevated above critical limits, piles will be automatically flushed with fresh air immediately to fully aerate.
Moisture	The compost piles are free draining onto a drainage system to enable runoff from excessive moisture content. Aeration of windrows will aid the drying of material to prevent high moisture levels occurring. If elevated moisture levels are encountered, additional air is introduced as soon as possible to fully aerate. Additions of water to compost should be done on a little and often basis. If additional moisture is required by monitoring moisture content less than the critical limit, fresh runoff water or leachate from the OWC leachate tank is applied directly to the pile.
Oxygen	Compost is formed into piles consisting of appropriate coarse fraction material to enable adequate aeration. Should oxygen levels fall below critical limits, piles will be flushed with fresh air immediately to fully aerate.

5.16 Screening

Following the actively managed composting phase, each batch will be screened to the required particle size grade; such as 0-10mm or 0-25m. Any oversize material (e.g. >25mm) will be cleaned up, re-shredded and added to a subsequent batch.

If the oversize material is too heavily contaminated for re-composting, it will be used for on-site restoration works or disposed of to a suitably licensed facility.

The screened compost will be transferred to the appropriate storage area where it will be stored in separate batches for up to 12 months prior to blending, bagging and/or dispatching to end markets. The composting system complies with PAS100 and the Quality Protocol for the production and use of quality compost from source-segregated biodegradable waste. This allows certification of compost produced on site, which can then be deemed a product, and not a waste.

5.17 Testing

Matured compost will be periodically characterised chemically, physically and biologically and all material will be screened to produce a range of products for example for agricultural and horticultural markets and land reclamation. The site is certified to PAS100 and the Compost Quality Protocol, to ensure the manufactured compost is consistent with applicable standards and monitoring regimes.

One batch sample will be sent for analysis per 5,000m³ of each compost grade (or one batch sample per 12 months, whichever occurs sooner) in accordance with the PAS 100 post validation procedures. The sample will be taken within one week of the batch completing the composting process.

5.18 Traceability

A record system shall be maintained connecting sources of wastes with delivery dates and weights. This is achieved via the use of a weighbridge system and the duty of care information collected for every load that arrives. A fully traceable PAS100/QP system is implemented for the OWC, ASP and IVC composting operations.

5.19 Non PAS100 Composting

The wood waste is deposited in the wood reception area and checked by a site operative for levels of contamination. The wood is then shredded prior to transportation to the mixing area of the composting pad. Note this is separate from the green waste PAS100 composting operations.

Other wastes such as woodchip, sawdust and other absorbent materials are deposited into the mixing area to be mixed with the shredded wood. Industrial liquids and sludges are also deposited here to be mixed with the shredded wood, woodchip, sawdust and other absorbent materials. After mixing, the waste is formed into a windrow.

The windrows are turned weekly and monitored for temperature and moisture on a daily basis with the sanitisation phase completing within a typical 14-day period. The stabilisation phase includes the turning of the windrows on a weekly basis as well as monitoring for temperature and moisture on a weekly basis for four weeks.

Active composting is completed after a six-week period where sanitisation and stabilisation parameters are met. After the maximum six weeks of active composting the windrows are screened to the required particle size with any oversize material being re-shredded and added to the start of the next batch starting sanitisation.

After the screening process has taken place the compost is transferred to the appropriate storage area for no longer than 12 months prior to blending and dispatch to end markets.

5.20 Soil Manufacturing/Blending

Inert waste materials are received on site for recycling and to produce a topsoil material. Once the waste has achieved the acceptance criteria, it will be taken to the designated area for processing. On arrival at the designated area, the waste will be stockpiled in the designated area only, to ensure the waste cannot contaminate other materials.

Materials will be inspected and segregated into different waste streams through treatments consisting of manual sorting, separation, screening, bailing, crushing, shredding, pulverising or compaction of non-hazardous wastes into different components for disposal or recovery.

The recovered inert materials are then either onward transferred to a suitably licenced facility or blended with compost materials at the end market required ratio to produce a manufactured topsoil.

Once processed this material will be transferred to the appropriate storage area and stored for no longer than 12 months prior to blending and dispatch to end markets.

5.21 Wood Processing

Wood waste materials are received on site for recycling and recovery. Once the waste has achieved the acceptance criteria, it will be taken to the designated area for processing. On arrival at the designated area, the waste will be stockpiled in the designated area only, to ensure the waste cannot contaminate other materials. Where possible wood is segregated by grade in order to open up recycling markets. The segregation of wood materials is split into categories identified below.

Treated Wood

Wood that is identified as having been treated will be sorted and segregated manually from clean wood and moved to a separate area to ensure it is kept physically separated from clean wood materials.

Treated wood waste would comprise of various types of wood material including (but not limited to) the following:

- MDF;
- MFC (melamine faced chipboard);
- Melamine; and
- Painted windows and door frames.

Having been separated from the wood waste stream, the treated wood is held and litter picked prior to shredding and screening to the required size. The final wood will then be held in the product storage area prior to sale into the wood recycling/chipboard manufacture market or the biomass market as a bulk wood biofuel.

Clean Wood

The remaining wood (non -treated wood) will be taken to a separate holding bay, where it will be held and litter picked. The clean wood waste will be processed as two separate grades according to the waste received as a Grade A or Grade B wood.

Grade A waste wood comprises of virgin soft and hardwoods which have not been treated, painted or added to in any way. These usually arise as off cuttings from hard and soft wood processing mills. Following separation of the Grade A wood, the waste is then shredded and screened into the grade as required by the end market. The end market for Grade A wood is usually as animal bedding sold to the agricultural market or as a feedstock to the composting process.

Grade B waste wood comprises of post-consumer soft and hardwoods which have not been treated, painted or added to in any way. These usually arise as clean palettes, construction waste and packaging wastes. Following separation of the Grade B wood, the waste is then

shredded and screened into the grade as required by the end market. The end market for Grade B wood is usually for sale as feedstock into the chipboard manufacturing market.

6.0 POLLUTION CONTROL

6.1 Plant Maintenance

The site operates a strict maintenance regime and equipment used is of sufficient capacity to allow down time for routine maintenance and servicing as recommended by the manufacturer.

No plant may be operated unless full instructions and training have been given by a person competent to do so. Movement of equipment within the ABP controlled area is strictly controlled with recorded cleaning between areas.

All breakdowns or incidents involving plant or equipment are entered in the site diary. Routine maintenance is recorded, and in addition operator pre-use checks will be completed to assess the general condition of the machines and identify any defects. At the end of each working day any operational plant and machinery will be blown clean if required.

6.2 Housekeeping

In order to minimise odour potential and ensure sanitised conditions for dealing with ABPR waste materials, at the end of each working day the visible floor space in the IVC reception hall will be jet-washed down. Operational plant and equipment will also be cleaned as detailed above.

Wash waters are directed through internal drainage to the leachate management system.

6.3 Meteorological Monitoring

Meteorological conditions are monitored at the site using an electronic weather station. The unit provides a continuous record (every 15 minutes) of wind speed, wind direction, rainfall, relative humidity, barometric pressure and temperature with these parameters being noted on a daily schedule. The weather station downloads data to the site computer.

The purpose of monitoring the meteorological conditions is to provide weather data which could be of immediate use for managing the day to day operational activities. The wind direction data is useful in scheduling operations to assure prevailing wind conditions will not impact on sensitive receptors. The rainfall data is of value in predicting the impact on the leachate holding tank capacity and the likely need for pumping off surplus leachate.

The weather station is serviced at regular intervals and a service report filed in the site office.

6.4 Dust & Bioaerosols

During the active composting process, material will be controlled in terms of moisture content to mitigate dust and bioaerosol release. Turning, movement of material and screening are the operational activities that have greatest potential to generate airborne particles.

A Site Specific Bioaerosols Risk Assessment (BIO06) has concluded that when industry best practice is applied to dust control as is proposed, the operations present no risk to offsite sensitive receptors.

Screening will take into account moisture content, wind direction and wind speed to assure the operation does not present a problem in terms of dust or odour. During screening the wind direction will be monitored to detect shifts in wind direction that may occur during the operation.

The actions which will be taken to prevent or minimise dust emission are (SGN page 70 point 1²):

- During shredding operations, a 10m exclusion zone will be maintained around the shredding equipment to ensure that site operatives and waste vehicle drivers are outside the area where airborne dusts would be concentrated. Operatives needing to work inside this zone will wear an appropriate face mask.
- Composting materials in the stockpiles will be kept at a suitable moisture content, using water sprays when necessary.
- The cabs of mobile plant in the IVC are provided with P111 air filtration and will be kept under positive air pressure.
- The screening operations will be monitored (as per shredding) and if found necessary, water sprays will be provided on the screening equipment.
- Bioaerosol and dust generation attributable to vehicle movements will be controlled by the maintenance and sweeping of the site access road. During dry weather action will be taken to spray the roads using a water bowser or road sweeping vehicle.
- The Site Manager will carry out a daily visual assessment of dust emission within the site and at the downwind site boundaries. In the event of a potential or actual dust nuisance being identified, then appropriate remedial actions will be implemented as soon as practicable, with the most effective action likely to involve additional water spraying of the source of the dust emission.
- The results of the daily inspections and any remedial work will be recorded in the Site Diary. Any complaint, which is received directly, will be reported to the Environment Agency.

6.5 Mud and Debris

The entire working area is surfaced by impermeable concrete or hard-standing. All wastes and process take place on impermeable surfacing with sealed drainage.

Any vehicle leaving the site will be checked to ensure that they are clear of loose material and that waste is secure. Where necessary, vehicles will be cleaned before leaving site.

In the event that mud or debris is deposited onto public areas, by action or inaction, that material will be cleaned as soon as practicable and cause of mud/debris escape investigated and remediated.

6.6 Litter

Waste accepted on site has been pre-segregated at source reducing the risk of contamination from litter. Very little litter is expected within incoming waste, but where present it will be immediately removed to refuse containers, prior to disposal.

Regular checks are made within and around the site for litter which may escape during the waste transfer process between the waste reception building and the composting vessels. The area around the reception building will be kept clean and tidy.

Any materials found will be removed and returned to the waste reception building or stored within the non-permitted waste containers, depending on the nature and origins of the litter.

² Environment Agency. Guidance for the Recovery and Disposal of Hazardous and Non Hazardous Waste. Sector Guidance Note S5.06

6.7 Pests

Measures shall be implemented and maintained throughout the operational life of the site to control and monitor the presence of pests on the site. An inspection of the facility for pest infestations shall be carried out at regular intervals by the site supervisor, and shall be recorded in the site diary.

The site operates a Pests Management Plan (BIO17) for current activities on site. The management plan includes measures for monitoring and management controls for infestations of flies, rats and scavenging birds.

6.8 Spillages

All spillages will be dealt with immediately. All vehicles, plant and equipment used on site will be operated and maintained with the objective of preventing environmentally harmful leaks and spills.

In the event of any potentially environmentally harmful leaks or spillages, control and remediation procedures will be implemented immediately. A record is made of the issue and actions taken.

Any liquid contrary wastes will be immediately isolated and made ready for further disposal. Incidence of liquid contrary wastes will be recorded in the Site Diary. See Waste Rejection procedures.

A spillage kit is available on-site (in the site office) for rapid clean-up and amelioration of spills.

6.9 Odour

Emissions from the activities shall be free from odour levels likely to cause pollution outside the site. All activities taking place at site will be monitored for unusual odour release.

All incoming wastes will be thoroughly checked for the presence of odorous contraries. Any odorous contraries will be immediately segregated and contained, ready for further disposal.

The site has a fully implemented Odour Management Plan (BIO04) to the Environment Agency 'H4 Guidance' standard.

The IVC and ASP systems allow oxygen levels to be continually monitored to maintain aerobic conditions, thus reducing the release of odours. Odour emissions will be mitigated by implementing the following operational procedures:

- Waste reception and pre-processing will take place inside a building to minimise emissions;
- Minimise waste storage time by maintaining volumes at a manageable level;
- Blending of waste materials to produce a homogenous mix will manage the moisture content to help minimise odour production;
- Composting within the IVC units will prevent the direct release of odour;
- Treatment of all air within the reception hall and compost tunnels through a wet scrubbing and biofiltration system;
- Regular cleaning of operational areas to prevent accumulation of potentially odorous material;
- Regular turning of windrows will help minimise odour; and

- All site operatives will undertake routine monitoring and, in the event of identifying malodorous material, will implement mitigation procedures by covering or processing the material at the earliest opportunity.

Odour monitoring will occur daily at the designated monitoring points and an Odour Assessment Report will be filled in.

In the event of odorous problems or a complaint being received, details will be recorded in the Odour Complaint Report Form as per the OMP.

6.10 Noise and Vibration

Emissions from the activities shall be free from noise and vibration levels likely to cause pollution outside the site. This is managed by the Noise and Vibration Management Plan (BIO19).

Suitable measures will be implemented and maintained throughout the operational life of the site to ensure noise emanating from the site is minimised. All equipment used at the site will be appropriately silenced and the shredder and screening equipment will be noise attenuated. All vehicles, equipment and plant will be switched off when not in use. All vehicles, equipment and plant will be maintained with a clear intention to reduce noise and vibration levels.

Any noise monitoring carried out and remedial action taken will be recorded in the Site Diary and will be reported to the Environment Agency.

Waste processing operations will only be carried out during the designated hours as stated in Table 2.

7.0 ACCIDENT MANAGEMENT

The site has implemented a full Accident Management Plan (BIO03) detailing potential accident and emergency situations that could occur on site, control measures to minimise potential occurrence and procedures should accidents occur on site.

7.1 Potential Accidents

See Sector Guidance Note 2.8³ page 76, point 8 which states that there should be an accident plan in place which identifies the likelihood of consequences of accidents as well as identifying actions to prevent accidents and mitigate any consequences.

All near misses are reported as well as identifying corrective actions and follow up, (SGN page 76, point 11). Identified potential accidents include:

- Equipment failure
- Fire
- Severe Weather
- Arson/Vandalism
- Bioaerosols

³ Environment Agency. Guidance for the Recovery and Disposal of Hazardous and Non Hazardous Waste. Sector Guidance Note S5.06

8.0 RECORDS

8.1 Monitoring

Biowise shall undertake the monitoring as shown in the table below. Biowise shall maintain records of all the monitoring required, including records of the taking and analysis of samples, instrument, measurements, calibrations, examinations, tests and surveys and any assessments or evaluations made on the basis of such data.

Table 15 – Site Monitoring Requirements

Parameter	Measurement	Purpose	Operations	Frequency
Temperature	Temperature probe.	Critical limits for composting and biofilter performance.	Sanitisation Stabilisation Biofilter Oversize Storage	Daily Weekly Continuously Weekly
Moisture	Moisture probe or squeeze test.	Critical limits for composting and biofilter performance.	Sanitisation Stabilisation Biofilter	Daily Weekly Continuously
Oxygen	Oxygen sensor.	Critical limits for composting.	IVC Sanitisation ASP Sanitisation ASP Stabilisation	Continuously Continuously Continuously
Odour	Sniff test.	Identify any release of odour from composting operations.	All composting operations.	Daily
Bioaerosols	External Service.	Ensure fugitive releases are not a risk to local sensitive receptors.	All composting operations.	Quarterly

8.2 Site Diary

A Site Diary shall be maintained, and retained in the site office. It shall record visitors, non-routine activities and other incidents. The Site Diary should be checked periodically by the Permit Holder to ensure its correct use. The Site Diary shall be readily available for inspection. Examples of activities recorded in the site diary include:

- Names and times of technically competent managers on site.
- Any accidents resulting in injury.
- Operational details of individual batches
- Any incident of fire.
- Any incident of spillage.
- Any incidents causing pollution to the environment, harm to human health or detriment to the amenities of the locality.
- Any machinery breakdown.
- Any deposit of unsuitable waste at the site.
- Condition of site infrastructure and engineering.
- Incidence of litter, dust, pest, odour and noise problems.
- Results of various inspections for litter, odour, noise, birds, pests etc.
- Environment Agency licence inspection reports.

8.3 Waste Records

Records of all waste entering and the leaving the site shall be recorded. All records will be made as soon as reasonably practicable and retained securely for a minimum of two years. Records will be clear, legible and available for viewing (on site). Records must be kept of all incoming wastes, and all outgoing products and wastes.

The following records will be retained:

- Waste Carriers Licences (where appropriate).
- Tickets/Documents – incoming wastes.
- Bioaerosols monitoring.
- Tickets/Documents – outgoing wastes (including residual wastes).
- Destination of outgoing wastes (including market sector).
- Destination of outgoing material.
- Reject Waste Forms.
- Environment Agency Inspection Reports.
- Design, construction, inspection, maintenance and monitoring of pollution prevention methods.
- Failure records for pollution prevention methods.
- Off-site environmental effects.
- Batch Formation Data (start and finish dates, activities carried out).
- Batch Conditions (Batch Record Sheet).
- Records of sampling.
- Records of corrective actions taken during processes.
- Type of input material, whether the load is rejected or accepted, and if rejected the reason why.
- Stabilisation Start and Finish date.
- Product Preparation Information.
- Duty of Care Records.
- Quarterly Waste Returns.

8.4 Reporting and Notification

Site personnel will notify the Environment Agency “without delay” following the detection of:

- Any malfunction, breakdown or failure of equipment or techniques, accident, or fugitive emission which has caused, is causing or may cause significant pollution.
- The breach of a limit specified in the Permit.
- Any significant adverse environmental and health effects.

Site personnel will notify the Environment Agency within 24 hours:

- Of actual or potential incidents and breaches of emissions limits.

Site personnel will notify the Environment Agency within 14 days:

- Where the Environment Agency has requested in writing that it shall be notified when Biowise is to undertake monitoring and/or spot sampling.
- Of any change in the operator’s trading name, registered names or registered offices addresses.

During normal working hours site personnel will contact the Site Officer or the local Environment Agency Office by telephone. The Environment Agency National Incident Hotline number is: 0800 807 060.

8.5 Training Records

Each person, whose duties affect compost quality shall be trained, instructed and supervised commensurate with those duties, such that he/she is competent. Training records for personnel who affect site procedures, operations and quality shall be maintained.

8.6 Site Waste Returns

Quarterly returns shall be provided and stored at the main office in line with Environment Agency regulations.

8.7 Complaints

Biowise shall decide and implement any necessary action in response to any complaints or concerns expressed by interested parties, including operatives, customers, clients and regulatory authorities about quality or usability of any compost or compost based products.

Biowise shall record the:

- Name and contact details of the person who expressed concern or made a complaint;
- Specific subject(s) of the concern or complaint;
- The source / location of where the complaint comes from;
- Date and time communicated to the producer and name of the person to whom it was communicated;
- Nature and date(s) of any actions and checks and who carried them out;
- Nature and date of any response to the person who expressed a concern or made the complaint; and
- Name of the person who communicated the response.

8.8 Site Processing/Operations

Records should be maintained such that all materials are traceable. The following records will be kept as and when required:

- Process steps e.g. Shredding, screening, blending, storage.
- Dispatch information.

8.9 Calibration

All monitoring equipment will be regularly calibrated (minimum 12 monthly) by an externally verified company. This calibration will include all compost process monitoring probes and the weighbridge.

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