ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) MANUAL

PHOENIX GREEN SOLUTIONS

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1. INTRODUCTION

This Environmental Management System (EMS) Manual provides our staff with guidance on the EMS that enables us to protect the environment and respond to changing environmental conditions in balance with the economic aspects of our business and the need to manage green waste in our local community.

The requirements within the EMS aim to:

- Protect the environment;
- Mitigate against potential adverse effects from the environment such as extreme weather;
- Comply with our environmental obligations including legislation;
- Enhance our environmental performance;
- Consider the way we process green waste, distribute the compost and recycle contaminants such as metals as part of a bigger life cycle;
- Achieve financial and operational benefits as a result of good environmental practice; and
- Keep interested parties updated on relevant environmental information.

Where applicable, most sections include a table at the beginning signposting to the relevant section of the PAS 100 Standard Operating Procedures (PAS 100 SOPs), with the complete and comprehensive table in Annex A: Cross-Referencing to PAS 100 SOPs. This is to ensure there is no duplication of information and to make certain the source document is referred to in the first instance.

Grey-coloured tables are used for any other information in a table format.

2. COMPANY PROFILE

For over fourteen years we have been carrying out composting activities, and started operating the Phoenix Green Solutions (PGS) in-vessel composting site near Yate, North Bristol, eight years ago processing green waste to produce compost of Soil Conditioner Grade 0 to 40 mm.

PGS supply products to the agricultural community to support the growth of crops such as wheat, barley, oilseed rape and forage maize.

The site is operational from 0800 to 1800 hours Monday to Friday and 0800 to 1300 on Saturday. Shredding and screening of the compost is restricted to limited periods of time when the ambient conditions are least likely to cause odours, dusts or bioaerosols to arise from site in such a manner as to cause issues outside the site boundary.

Summary of Composting Processes

The site consists of the following activity areas:

- Feedstock unloading and preparation;
- Active composting and
- Finishing/storage.

Materials for composting are delivered to an impermeable, bunded reception area on site for inspection, storage and shredding. The green waste is stored and shredded on a weekly basis to a particle size of less than 300mm. The shredded material is then mechanically fed directly into long polythene tubes or 'pods' and sealed for the active composting phase which takes place over a period of 10 weeks. During the composting phase air is periodically forced into the composting material via a tube that is laid in the base of the polythene outer bag. This air maintains aerobic conditions within the vessel.

Finally, the compost is screened to separate out any over-size, which is returned to the start of the composting process. The compost product is then removed off-site for agricultural use.

2.1 Technical Information

The geographical and technical scope of the EMS is dictated by the site boundary as laid out in the Environmental Permit.

The site is located on the northern outskirts of Bristol at Mays Hill Industrial Estate, Frampton Cotterell, Bristol, South Gloucestershire, BS36 2NS and is currently permitted under Environmental Permit EPR/ KB3031AV for schedule 1, section 5.4 of the Environmental Permitting Regulations, Part A(1)(b)(i), recovery and disposal of non-hazardous waste involving biological treatment >75 tonnes per day. The total quantity of waste accepted at site is 60,000 tonnes per annum.

The purpose of the facility is the composting of green waste utilising an in-vessel composting system where composting materials are contained within a large polythene tube, known as the AgBag system. This system is designed to reduce odour, bioaerosols and litter and is not accessible by vermin.

The environmental permit allows for the secure storage, physical treatment, composting and maturation of non-hazardous green wastes (household, commercial and industrial/institutional) including paper, card, wood and biodegradable wastes from markets, gardens and parks. These activities are listed in the permit as recovery codes R13 (storage of wastes pending recovery under codes R1 to R12) and R3 (recycling/reclamation of organic substances which are not used as solvents).

A lagoon with a capacity of 1,176m^3 will receive run-off water from the impermeable hardstanding area on site.

The monitoring of bioaerosol emissions from the facility is carried out according to the Industry Standard Protocol and EA guidance for gram-negative bacteria, total bacteria and Aspergillus fumigatus. Temperature of the enclosed composting vessel is monitored daily using a thermocouple probe.

Monitoring results for bioaerosols are submitted to the Environment Agency on a regular basis which ensures we are held accountable for minimising the impact on the environment and human health from our operations.

Shredding and Blending

To be effective the material is shredded before entering the system, with the addition of water if needed. This operation and placing the materials into the Ag-Bag ('pod' windrow) will take place once a week for up to 4 hours.

As the shredded compost is introduced into the packing machine it moves backwards, extruding the bag filled with compost behind it. When the required length of bag is achieved, the operations stops, the ends of the bag are sealed, the air pipe is connected to the pump and sufficient vent holes are made along the length of the bag. Proves are inserted into the material that monitor the activity of the process and activate the fan when oxygen levels drop too low.

Composting Process

Provided with ideal conditions, the natural micro-organisms already present on the materials start the composting process that continues in the bag for a period of 10 weeks. The required temperature regimes to compost the material are achieved inside the bag and are monitored and recorded by the probes ('Tiny Tag' variety).

The fan is activated on a program that supplies sufficient air to the material to keep the aerobic micro-organisms active. Air is only released via the limited number of vents along the tube so release of bioaerosols is very limited during the composting process.

Once the composting process is complete, the bags are opened and the composted material screened to remove any large particles. The compost is piled ready for dispatch to the fields within one week of emptying the bags.

Screening

Once the composting process is complete, the material will be screened. This takes place once a month and removes any residual plastic and oversize pieces that have not been fully composted to the desired size. As the material is intended for spreading on farmland, the screen is set to sort product at 0-20 mm and 20-40 mm particle sizes. Compost product is loaded on trailers for removal to the agricultural land where it is to be spread. A wind-sifter is fitted to the screen to remove any residual plastic.

Oversize material is re-introduced into the beginning of the process, so that it can be shredded and re-composted.

3. THE EMS FRAMEWORK

The EMS is supported by various key documents which include the following:

- Standard Operating Procedures (SOPs) for composting systems operated in accordance with REAL Compost Certification Scheme (REAL CCS SOPs);
- PAS 100 Standard Operating Procedures (PAS 100 SOPs);
- Environmental Risk Assessment (ERA);
- Bioaerosol Risk Assessment (BRA);
- Dust & Emissions Management Plan (DEMP);
- Odour Management Plan (OMP);
- Fire Prevention Plan (FPP);
- Accident Management Plan (AMP); and
- Compliance Register (covering legislation and permit compliance).

The backbone of the EMS is the *Environmental Risk Assessment* (SOL2006PGS01) and the *Environmental Compliance Register Parts 1 & 2* (SOL2007PGS01), which covers environmental legislation and the requirements of our Environmental Permit EPR/KB3031AV.

3.1 Leadership

To lead effectively on the environment we have a hands-on approach; top management work closely with all staff on a regular basis, highlighting environmental responsibilities and accountabilities to ensure support for environmental performance and improvement and enable everyone to do their best in protecting themselves and the environment. Regular strategic and operational meetings include the environment so that it is an intrinsic part of our development.

Our Technically Competent Manager (TCM) is the Site Manager and owner of the company. They ensure that the site is operated in accordance with the Environmental Permit and measure the environmental performance so it can be reported as required to interested parties.

3.2 Environmental Policy

We believe that the protection of the environment is an integral part of good composting practice. We are committed to managing responsibly the way in which our business affects the environment by making the most responsible and efficient use of resources (e.g. use of Tier 4 engines in plant and vehicles to reduce particulate emissions), encouraging re-use and recycling, minimising waste and working towards the principles of sustainable development.

Our principle objectives are:

- To protect the environment and the business through awareness of the impact we could have on the environment and the way in which the site can be affected by drought, floods, fires etc;
- To ensure we maintain compliance with environmental legislation and relevant standards such as PAS 100 Specification for composted materials;
- To enhance our environmental performance so that we continuously improve;
- To control our operations from cradle to grave by consideration of the quality of incoming material, quality of environmental protection during the composting process and the suitability of our compost for those receiving and using it;
- To achieve financial and operational benefits through alignment with environmental improvements that strengthen our market position; and
- To communicate our environmental achievements to staff and interested parties.

We will review the businesses environmental performance on an annual basis to support a continuous improvement environmental culture.

The Environmental Policy is reviewed periodically as part of continuous improvement and our EMS is available to all interested parties.

4. RISKS & OPPORTUNITIES

We aim to give assurance that the environment will be protected during our operations on site, and that we will provide mitigation in the event of the environment impacting on us, such as a flood or extreme weather event.

4.1 Environmental Risk Assessment

The potential for our operations to impact on the environment has been assessed for all activities, products and services and recorded in our *Environmental Risk Assessment* (SOL2005PGS01).

Our site risk factor is 'low' to 'very low' due to containment of the composting and clear risk management processes. Bioaerosols, odour, and dust rate 'low' but in recognition of their nuisance potential full management controls have been put in place, detailed in full in the EMS support documents listed in Section 3 above. All of these factors are considered carefully when determining the significance of our environmental aspects.

Our sensitive receptors are available in detail in our *Odour Management Plan* (SOL2005PGS01) (OMP) and *Dust & Emissions Management Plan* (SOL2005PGS01) (DEMP). Mays Hill Industrial Estate and the residential area on Nibley Lane and at Says Court Farm are the most sensitive areas for impact by bioaerosols, odour or dusts, but the risk of impact is 'medium/low'. The prevailing winds (southwesterlies and, in the spring, northeasterlies) are very well understood and there is a weather station on site so that operations can be mitigated with dust and odour suppression or reduced on days with unfavourable weather conditions. In extreme circumstances, detailed in the OMP and DEMP, the site can cease operations to ensure harm is not caused either to the environment or people.

4.2 Compliance Obligations

Our obligations to comply with the needs and expectations of our customers, environmental legislation and the Environmental Permit are key to the design of our activities, products and services. We have developed an *Environmental Compliance Register* (SOL2007PGS01) which details all our obligations and records the actions we take to ensure that we comply with them. We use an external environmental consultant to provide information regarding the legislation that is relevant to our site and receive regular updates so that we know if there are any changes and can apply them accordingly.

4.3 Environmental Objectives

We carry out environmental planning on site to ensure that consideration of our environmental risks, opportunities and compliance obligations are an integral part of our day to day business. We make sure that the environmental aspect of our business strategy is supported by our environmental policy and the objectives listed within are reviewed annually.

5. SUPPORT

5.1 Competence and Awareness

Operational Document	Section	Title
PAS 100 SOPs	2.2	Contracts/agreements/communications with waste suppliers
	4.1.1	Monitoring system and equipment
	9.1	Compost sampling and testing

It is important to us that employees are adequately trained in order to carry out their duties safely and with the environment in mind, so we are committed to ensuring that our workforce is fully trained.

All Employees & Contractors receive induction training that includes company policies, specific hazards likely to be encountered and steps to be taken to minimise risk, general hazards likely to be found at the workplace and their control and any specific customer requirements. Staff are made aware of the importance of the waste acceptance and rejection criteria including any contractual arrangements and control measures to ensure they are actioned at all times as a priority for maximum environmental protection.

We evaluate training needs on an individual and organisational basis, providing regular and relevant toolbox talks. Evaluation of needs also takes place on the introduction of new equipment, materials or where a new activity is to be performed.

Operatives carrying out compost batch sampling or temperature monitoring are trained in the procedures and use of equipment, such as temperature probes.

Training plans and records are maintained for all staff and recorded in *PGS_TR_Training Record Sheet*. This includes the toolbox talks delivered during the half-hour site operations meeting held most Mondays or Tuesday if it's a bank holiday from 0930-10am. Toolbox talks include topics such as PPE, maintenance, record-keeping and the environmental permit.

The Environmental Permit EPR/KB3031AV and Environmental Policy are made readily available in hard copy and all staff know where to find a copy.

Staff Competency Qualifications:

Staff Role	Qualification	Reference
Operations Manager	Composting Biodegradable Wastes – In Vessel	WAMITAB 4MBTIV6 Cert No. OCC65405 & 5137666
Operations Manager	BTECH: OND Agricultural Engineering from Hartpury College, Gloucestershire	Rejection or acceptance and storage of input materials

Organisational memberships:

Certification/Membership/Registration	Cert No.	Start Date	End Date
PAS 100 for Composted Materials (Compost Quality Protocol) Certificated to: PAS 100 for Soil Improver 00 to 40 mm PGS-MHIS-0040 http://www.qualitycompost.org.uk/producers/309-pr434)	PR434	14/07/2020	13/07/2021

5.2 Communication

Operational Document	Section	Title
PAS 100 SOPs	2.2	Contracts/agreements/communications with waste suppliers
	2.3	Rejection or acceptance and storage of input materials

We consider both internal and external communication as part of our strategy to keep interested parties informed about the environment at Phoenix Green Solutions. We decide what kind of environmental information is relevant for our staff and our customers so that we can focus on making it meaningful and encourage others to engage with us on environmental matters. We are proud of what we achieve and want our staff to be motivated to respond to environmental needs and obligations as a normal part of their daily activities.

5.3 Records and Reporting

Operational Document	Section	Title
PAS 100 SOPs	2.2	Contracts/agreements/communications with waste suppliers
	3.4	Records
	9.1	Compost sampling and testing

We retain all records relevant to our activities for at least six years and where we are the producer of the document we make sure they are legible and produced in good time. If documents from other parties are not legible or freely available we will work with them to replace the original documents with ones that are.

Documents relating to off-site environmental effects or any actions affecting the condition of the land and/or groundwater are retained for the life of the Permit.

Records that must be reported to the Environment Agency, South Gloucestershire Local Authority or any other interested party are sent to the relevant contact and kept on file. Monitoring data is submitted by the deadlines set out in the Environmental Permit.

Notifications arising from significant changes to the company such as a change in trading name, registration, financial matters, or planned but unusual activities on site, the Environment Agency is informed as soon as possible.

Records of breaches of waste acceptance criteria are retained including communications with the waste supplier.

Records required by the PAS 100 process are detailed in the PAS 100 SOPs document.

6. OPERATIONS

6.1 Operational Planning and Control

Operational Document	Section	Title
PAS 100 SOPs	4.2	Sanitisation and stabilisation
	4.2.1	Process validation
	4.2.2	After validation
	6.0	Readiness for product preparation
	8.0	Product preparation and storage
	8.1	Screening
	8.4	Product storage and batch identification
	10.1	Product labelling, distribution and records
	10.2.4	Vehicle cleanliness

The activities on site are carried out in accordance with Environmental Permit EPR/KB3031AV using the techniques and descriptions of activities set out in the following documents:

Document Title	Reference	Date of issue	Version
PAS 100 Standard Operating Procedures	PAS 100 SOPs	05/09/2019	6
Bioaerosol Risk Assessment	BRA	July 2020	0
Environmental Risk Assessment	ERA	Julys 2020	0
Odour Management Plan	OMP	July 2020	0
Dust & Emissions Management Plan	DEMP	July 2020	0
Fire Prevention Plan	FPP	March 2017	4
Accident Management Plan	AMP	July 2020	0
Pre-Acceptance	PGS-E01	July 2020	0
Waste Acceptance	PGS-E02	July 2020	0
Waste Rejection	PGS-E03	July 2020	0

The key issues addressed in the environmental management of the site are emissions to air such as bioaerosols, odour, emissions to water, waste, vermin and flies, noise and vibration and the risk of accidents from the storage and handling of any leachate, oil and fuel.

Processes for readiness for product preparation, screening, storage, sanitization, stabilization and process validation are set out in the *'PAS 100 SOPs'* as listed above with detailed information on batch sampling, monitoring locations and frequencies.

The critical control points and critical limits of the composting process are verified to make sure that the compost quality is consistent and compliant with the quality policy. The site manager checks that the critical control points and critical limits of the composting process continue to be effective for process management. If for any reason they are suspected or known to have become ineffective, the Hazard Analysis and Critical Control Points (HACCP) evaluation and process validation is re-assessed.

Composting resulting from the process is marketed as '0-40 mm Principal grade, agriculture soil improver and soil-grown horticulture'. The labelling and dispatch processes for the compost are carefully controlled according to section 10.0 of the *PAS 100 SOPs* to ensure that the compost is accompanied by information confirming compliance with PAS 100 and the Compost Quality Protocol.

If compost is sent off site as a waste it will be clearly identified as such on dispatch paperwork and accompanied by a waste transfer note as required.

Vehicles are inspected for cleanliness by a site operative prior to leaving site according to section 10.2.4 of the PAS 100 SOPs. If unsuitable for contact with loose or packaged product, the mobile plant and/or transportation vehicle shall be cleaned or not used. If a vehicle is judged to be unclean, a record shall be made of vehicle identification details, the date and actions/outcome in the site diary.

The significant risks, opportunities and obligations highlighted as priorities in our planning process are addressed through the control of our activities on site in our operational procedures listed above.

They include the following areas:

6.2 Resource Efficiency & Climate Change

Emissions from site vehicles and plant are considered for their impact on the atmosphere and climate change. These are detailed in the DEMP.

6.3 Raw Materials & Water Usage

The majority of our raw materials are green waste and quality is of the greatest concern, controlled through the waste procedures. The oils and chemicals used for operations are minimised and carefully controlled. Water usage for dust suppression is specifically addressed in the DEMP.

6.4 Waste Management

Operational Document	Section	Title
PAS 100 SOPs	1.2	General description of the composting process and its outputs
	2.1	Types of input materials
	2.2	Contracts/agreements/communications with waste suppliers
	Table 2	Acceptance Criteria
	2.3	Rejection or acceptance and storage of input materials
	2.4	Traceability of input materials
	3.1	Shredding
	4.1	Batch size and monitoring
	4.2.2	After validation

Waste Acceptance, Management and Rejection

Document Title	Reference	Date of issue	Version
Pre-Acceptance/	PGS-E01	July 2020	0
Waste Acceptance	PGS-E02	July 2020	0
Waste Rejection	PGS-E03	July 2020	0

Refer to the waste procedures listed above. Waste types and quantities are only accepted on site if they are of a type and quantity listed in our Environmental Permit EPR/KB3031AV and they are accompanied by accurate waste transfer notes, weighbridge tickets and any other documentation that describes the waste as supplied by the producer.

No dusts, powders, loose fibres or hazardous wastes are accepted on site.

Wastes accepted on site include green wastes from households, commercial and industrial properties and institutions including Bristol City Council, Bath and North East Somerset Council and landscape gardeners. Waste sources include household waste recycling centres (HWRC) and household kerbside collections. We collect paper, card and wood as long as it has no non-biodegradable coating or preserving substance present. We accept biodegradable wood and plant tissue from gardens, parks and markets only. We are permitted to take in off-specification compost from the aerobic treatment of solid wastes.

All input materials accepted on site go over the site weighbridge and the tonnage, date, time of day and other relevant information is stored on our site information system. Weighbridge tickets and Waste Transfer Notes are retained. Loads are supervised by site operatives and inspected in the storage area prior to processing. Loads are emptied onto the floor and checked for contaminants such as plastics, metal or other non-biodegradable materials. Any rejected material is removed by hand or machine and placed inside a covered, sealed container.

Rejected loads are segregated, contained and disposed of off-site or returned to the supplier where appropriate.

Under normal operation, material will be stored prior to shredding for 1 week (4 weeks maximum) Batch sizes are controlled through the effectiveness of the process which dictates that only a range of 150 – 220 tonnes can be composted in the 'pod' windrow at any one time. A typical composting batch size is 200 tonnes; the maximum expected composting batch size is 970 cubic metres and the minimum expected composting batch size is 830 cubic metres.

The resultant product is then stored within the finished product storage area for 2 weeks before being exported off site.

Contractual arrangements with a waste supplier always include our acceptance and rejection criteria for receipt of material for composting including clear and detailed statements that compost liners, plant pathogens and herbicides must not be delivered to site.

Outgoing Waste

We take measures to ensure that we prevent waste from being generated by our processes where possible, prepare some of our waste for re-use if feasible and recycle what isn't. We only use waste incineration or disposal where absolutely necessary. We regularly review the waste generated on site and make improvements where we can.

6.5 Containment

Incoming compost material is completely contained during transportation to the site.

The yard is partially concreted and suitable for all of the static and dynamic loads imposed by the vehicles, stored materials, machinery and process plant at the composting facility.

The pavement design, construction and maintenance allows for the movements, reversing and tipping of vehicles, the use of unloading areas for storage of waste, the use of mechanical shovels on the floor to move waste, water containing contaminants dripping from vehicles and the washing down of the floor for cleaning purposes. The concrete surface is suitable for pressure jet washing.

6.6 Emissions to air

There are no direct process emissions to air arising from the facility.

Screening can cause dust and bioaerosols, which are controlled so that they are below levels likely to cause pollution outside the site as detailed within the DEMP and BRA. We adhere to our OMP which sets out in detail how risk from odours is managed.

The OMP has been structured in accordance with the EA H4 Odour Management Plan Guidance and developed to clearly define the measures by which odour emissions will be controlled and prevented. It has considered the following aspects of the facility:

To reduce the risk of causing nuisance or harm from air emissions the screening equipment can be operated with the protection of a 'water-curtain' operating downwind of the machine. If possible, screening operations are scheduled for days with low wind strength and cooler temperatures to reduce the risk of airborne matter from the operations.

6.7 Emissions to Water

There are no direct process emissions to controlled water arising from the facility. A lagoon with a capacity of 1,176m^3 receives all run-off water from the impermeable hardstanding area on site.
Any spillages, leaks or incidents arising on site will be effectively contained and captured in accordance with the site's *Spill Response Procedure*.

All bunds are checked periodically and in the unlikely event of spillages, these would be pumped out and disposed of offsite.

The site is on mains water provision.

6.8 Odour

Operational Document	Section	Title
OMP	All	Odour Management Plan

Emissions from the site activities are free from odour at levels likely to cause pollution outside the site. We adhere to our '*Odour Management Plan*' (OMP) which sets out in detail how risk from odours is managed.

The OMP has been structured in accordance with the EA H4 Odour Management Plan Guidance and developed to clearly define the measures by which odour emissions will be controlled and prevented. It has considered the following aspects of the facility:

- Activities that have the potential to produce odour and sources of release;
- Actions to mitigate the effect of odour release (during normal and abnormal operations);
- Details of the sites monitoring regime;
- Details of responsible persons at the installation; and
- Potential outcomes of each failure scenario in respect to odour impact.

The fundamental design of the facility has a hierarchy of odour control and abatement measures to ensure that the potential for odour impacts are minimised.

During placement of the shredded material into the 'pod' windrows, the Ag-Bag machine lays a porous polythene tube inside and down the entire length of the vessel as it is filled. This aerates the material which prevents it from turning anaerobic and causing odours.

6.9 Noise and Vibration

Emissions from the site activities are free from noise and vibration at levels likely to cause pollution outside the site.

6.10 Site Maintenance

Operational Document	Section	Title
PAS 100 SOPs	4.1.1	Monitoring system and equipment

All monitoring equipment is maintained in a functional state by the site manager. It is calibrated at least every twelve months or sooner as required. Dates and outcomes are recorded in the '*Equipment Calibration Record Sheet*' and '*Temperature Monitoring System Calibration Record Sheet*' along with the calibration certificates where applicable.

Vehicle and plant management is detailed and recorded in *PGS_PPM_Vehicle Maintenance*.

6.11 Site Security

The site consists of the following security measures:

- 24/7 security; CCTV monitoring of the site;
- No vehicles or personnel allowed access to the facility without prior authorisation; and
- Electronic gate with an emergency code for site entry.

6.2 Emergency Preparedness and Response

Emergency Preparedness is covered in the AMP and FPP.

The activities have the potential for a low to moderate environmental impact which is effectively mitigated by the design of the plant and the site infrastructure as detailed in the documents referenced above.

We operate using an established suite of procedures for the control and management of all materials and plant in the process. These procedures detail the required actions to be taken in the event of an emergency and should be used in the first instance for any accident and emergency at site.

The key aspects of the *Accident Management Plan* are:

- Considers hazards presented by:
  - Spillages and uncontrolled releases;
  - Loss of containment;
  - Vandalism;
  - Flooding;
  - Fire;
  - Incompatible Feedstock;
  - Operator Error; and
  - Failure of Equipment.
- Identifies events or failures that could damage the environment;
- Assesses the likelihood and the potential environmental consequences from accidents at the site.
- Proposes action to minimise the potential causes and consequences of accidents.

In the event of an environmental incident, the Environment Agency will be immediately informed and necessary measures to limit the environmental impact of the accident will be carried out, as well as measures to prevent further possible accidents.

7. ENVIRONMENTAL PERFORMANCE

7.1 Monitoring and Measurement

Operational Document	Section	Title
PAS 100 SOPs	2.4	Traceability of input materials
	3.4	Records
	4.1	Batch size and monitoring
	4.1.1	Monitoring system and equipment
	4.1.2	Temperature monitoring and records
	4.1.3	Moisture monitoring and records
	4.1.4	Weather monitoring and records
	4.1.5	Monitoring records and corrective actions
	4.2.2	After validation: Table 5a – Monitoring point locations and monitoring frequency for the sanitization phase Table 5b – Monitoring point locations and monitoring frequency for the stabilization phase
	9.0	Compost sampling, testing and evaluation
	9.1	Compost sampling and testing

For each enclosed composting vessel we carry out daily temperature monitoring using a thermocouple probe.

All 'pod' windrow temperatures are monitored daily and recorded in the '*Ecopod Log*' once a week for the sanitisation phase and stabilisation phase. A print-out of the results is attached to the '*Batch Forming and Monitoring Form*'.

Shredded material is tested for moisture using the squeeze test method. The results are recorded in the '*Batch Forming and Monitoring Form*' so that they match up the source and quantity of any water added to the material prior to shredding and the amount of moisture remaining afterwards.

Daily weather conditions are recorded daily in the '*Site Diary*'.

Criteria are set for 'pod' windrow core temperatures and moisture conditions and if these are breached corrective action is taken and recorded on the '*Batch Forming and Monitoring Form*'.

This information is regularly shared with the Environment Agency who carry out checks on our compliance with the Industry Standard Protocol '*Compost: production and use of quality compost from source-segregated biodegradable waste*', and their '*Guidance on the evaluation of bioaerosol risk assessments for composting facilities*'.

To ensure that all inputs are traceable a record system is maintained connecting sources of wastes with delivery dates and weights using an electronic recording system.

The input material quality assessment tests, results and other process details are also recorded on the '*Batch Formation and Monitoring Record Sheet*' with the unique numbers of the batch(es) involved.

Compost sampling and testing is carried out on completion of the composting process, after product preparation (e.g. screening) and before blending with any other wastes, materials, composts, products or additives. The samples are taken according to British Standard EN 12579 within a week of the total composting duration. For each sample sent to the laboratory an archive sample is stored in the site office for at least 6 months. Representative samples are produced for validation and on-going activities according to section 9.1 in the *PAS 100 SOPs*.

7.2 Review

We have a tiered system of review to ensure that the environment is discussed at all levels of site management. Daily management meetings have slots for discussions of relevant environmental factors that may have an impact on the day's operations.

8. INCIDENT MANAGEMENT & NON-CONFORMANCE

Operational Document	Section	Title
PAS 100 SOPs	4.1.5	Monitoring records and corrective actions
	4.2.2	After validation: Table 4a – Validated critical limits of sanitization phase critical control points Table 4b – Validated critical limits of stabilization phase critical control points
	7.0	Dealing with non-conforming batches
	7.1	Batches that do not conform to composting process criteria
	7.2	Sampled and tested batch fails
	8.1	Screening
	8.4	Product storage and batch identification
	9.2	Minimum compost quality and sampled batch evaluation
	10.2.2	Quarantine Policy for sampled and tested batches

8.1 Incident Management

We do all we can to prevent environmental incidents. However, should this ever happen the Environment Agency will be notified without delay if we detect the following on site which may lead to significant pollution, or already has done:

a. Any malfunction or breakdown;
b. Failure of equipment or techniques;
c. Any accident or emission of a substance not controlled by an emission limit;
d. Breach of a permit limit;
e. Any significant adverse environmental effects.

If notification is required, we use the Schedule 5 form available in the Environmental Permit to ensure the full details of the incident are recorded and reported without delay.

8.2 Non-Conformance

Any batch that doesn't completely undergo all applicable critical control points and/or fails to comply with any of the critical limits set in the *PAS 100 SOPs* must go through a series of corrective actions. These are detailed in sections 7.0 and 8.1 of the *PAS 100 SOPs* and include actions for compost that needs re-composting and further evaluation to compost, which has already been dispatched from site

for use or processing elsewhere, in which case the recipient is informed of the non-conformance and it's nature. On the rare occasion it is required, non-conforming compost can be removed from site as a waste to an authorised facility to be appropriately treated depending on the nature of the non-conformance.

Any sampled and tested compost batch or part-batch that has failed to comply with any of the quality criteria set out in the Quality Policy's Table 1 for 0-40 mm grade is dealt with according to the actions laid out in section 9.2 of the *PAS 100 SOPs* and the test results recorded on the '*Test Failure Notification Form.'* Any action taken is recorded on the appropriate record sheets.

Should a tested compost sample fail to meet quality criteria after validation action is taken to investigate the failure, consider improvements to the management system and put the batch through further testing. The certification body will be notified as required and provided with full details of the failure according to section 9.2 of the *PAS 100 SOPs*. The '*Failed Batch Investigation Record Sheet*' is completed without delay.

In the event that compost is stored for 6 months or longer, or exceeds its time-limit for storage, it is re-tested for compliance or dispatched for disposal.

Compost batches and part-batches are quarantined pending the outcome of test results from the laboratory. Should site storage volumes cause an operational issue and the material needs to be removed from site prior to receiving back the test results, it will be dispatched as non-PAS material for disposal.

Corrective actions and outcomes are recorded in the appropriate document according to the details of the non-conformance.

ANNEX A: CROSS-REFERENCING TO PAS 100 SOPs

PAS 100 SOPs Section & Title		EMS Manual Section & Title	
1.0 Identity of composting process and its products			
1.2	General description of the composting process and its outputs	6.1	Operational Control – Waste Management
2.0 Input Materials			
2.1	Types of input materials	6.1	Operational Control – Waste Management
2.2	Contracts/agreements/communications with waste suppliers	5.1	Competence & Awareness
		5.2	Communication
		5.3	Records & Reporting
		6.1	Operational Control – Waste Management
Table 2	Acceptance Criteria	6.1	Operational Control – Waste Management
2.3	Rejection or acceptance and storage of input materials	5.2	Communication
		6.1	Operational Control – Waste Management
2.4	Traceability of input materials	6.1	Operational Control – Waste Management
		7.1	Monitoring & Measurement
3.0 Preparation of Input Materials			
3.1	Shredding	6.1	Operational Control – Waste Management
3.4	Records	5.3	Records & Reporting
		7.1	Monitoring & Measurement
4.0 Composting Activities			
4.1	Batch size and monitoring	6.1	Operational Control – Waste Management
		7.1	Monitoring & Measurement
4.1.1	Monitoring system and equipment	5.1	Competence & Awareness
		6.0	Site Maintenance
		7.1	Monitoring & Measurement
4.1.2	Temperature monitoring and records	7.1	Monitoring & Measurement
4.1.3	Moisture monitoring and records		
4.1.4	Weather monitoring and records		
4.1.5	Monitoring records and corrective actions	7.1	Monitoring & Measurement
		8.0	Incident Management & Non-conformance
4.2	Sanitisation and stabilisation	6.1	Operational Planning & Control
4.2.1	Process validation		
4.2.2	After validation	6.1	Operational Control – Waste Management
		6.1	Operational Planning & Control

PAS 100 SOPs Section & Title		EMS Manual Section & Title	
		8.0	Incident Management & Non-conformance
4.2.2	After validation: Table 5a – Monitoring point locations and monitoring frequency for the sanitization phase Table 5b – Monitoring point locations and monitoring frequency for the stabilization phase	7.1	Monitoring & Measurement
5.0 Maturation			
No maturation period required			
6.0 Readiness for Product Preparation			
6.0	Readiness for product preparation	6.1	Operational Planning & Control
7.0 Dealing with Non-Conforming Batches			
7.0	Dealing with non-conforming batches	8.0	Incident Management & Non-conformance
7.1	Batches that do not conform to composting process criteria		
7.2	Sampled and tested batch fails		
8.0 Product Preparation & Storage			
8.0	Product preparation and storage	6.1	Operational Planning & Control
8.1	Screening	6.1	Operational Planning & Control
		8.0	Incident Management & Non-conformance
8.4	Product storage and batch identification	6.1	Operational Planning & Control
		8.0	Incident Management & Non-conformance
9.0 Compost Sampling, Testing & Evaluation			
9.0	Compost sampling, testing and evaluation	7.1	Monitoring & Measurement
9.1	Compost sampling and testing	5.1	Competence & Awareness
		5.3	Records & Reporting
		7.1	Monitoring & Measurement
9.2	Minimum compost quality and sampled batch evaluation	8.0	Incident Management & Non-conformance
10.0 Product Labelling, Distribution and Records			
10.1	Product labelling, distribution and records	6.1	Operational Planning & Control
10.2.4	Vehicle cleanliness	6.1	Operational Planning & Control
10.2.2	Quarantine Policy for sampled and tested batches	8.0	Incident Management & Non-conformance