

## Standard Operating Procedure for Enclosed Windrow Composting of Green Waste

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## **COMPANY DETAILS AND RESPONSIBLE PERSON**

**1. Company name, address and telephone number**

**Lawrence Landfill Ltd**

**Halfway House**

**Pope Hill**

**Haverfordwest**

**SA62 3NX**

**Tel: 01792 323 762**

**Fax: 01792 321 604**

**2. Composting facility name, address and telephone number**

**Lawrence Landfill ITD**

**Half Way House**

**Pope Hill**

**Haverfordwest**

**SA62 3NX**

**Tel: 01792 323 762**

**3. Person responsible for the site/Certificate of Technical Competence holder**

**Guy Lawrence, General Manager**

**4. Person with overall responsibility for compliance with Compost Quality Protocol**

**Guy Lawrence, General Manager**

## 1. General description of the composting process and its outputs

The sanitisation, stabilisation and maturation phases of this composting process are enclosed, turned windrow aerobic composting process.

Composting is carried out in accordance with a Tier 3 bespoke Environmental Permit that regulates its operation and permitted waste that may be accepted by the facility.

## 2. Input materials

### 2.1 Types of Input materials

The treatment process currently composts the following source-segregated biodegradable waste / material types:

<b>Exclusions:</b>	
<b>Wastes having any of the following characteristics shall not be accepted in;</b>	
<ul style="list-style-type: none"> <li>Wastes containing animal by-products covered by the Animal By-Products Regulations 2005 (SI No. 2347) and/ or the Animals By-Products (Wales) Regulations 2006 (SI No. 1293, W.127);</li> <li>Wastes in liquid form;</li> <li>Wastes consisting solely or mainly of dusts (except sawdust), powders or loose fibres</li> </ul>	
<b>02</b>	<b>WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING</b>
<b>02 01</b>	wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing
<b>02 01 03</b>	plant-tissue waste
<b>02 01 07</b>	wastes from forestry (comprising wood and plant tissue)
<b>03</b>	<b>WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD</b>
<b>03 01</b>	wastes from wood processing and the production of panels and furniture
<b>03 01 01</b>	waste bark and cork
<b>03 01 05</b>	Sawdust, shavings, wood, particle board and veneer other than those containing dangerous substances other than 03 01 04 NO VENEERS OR PRESERVATIVES
<b>03 03</b>	wastes from pulp, paper and cardboard production and processing
<b>03 03 01</b>	waste bark and wood
<b>03 03 10</b>	fibre rejects (not containing hazardous substances)
<b>15</b>	<b>WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED</b>
<b>15 01</b>	packaging (including separately collected municipal packaging waste)
<b>15 01 03</b>	wooden packaging (untreated)
<b>17</b>	<b>CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)</b>
<b>17 02</b>	wood, glass and plastic

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17 02 01	wood (untreated)	
19	<b>WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION/INDUSTRIAL USE</b>	
19 05	wastes from the aerobic treatment of solid wastes	
19 05 03	off-specification compost (only from a process operated according to PAS 100 and QP requirements or another approved standard)	
19 12	wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified	
19 12 07	wood other than wood containing dangerous substances	
20	<b>MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS</b>	
20 01	separately collected fractions (except 15 01)	
20 01 38	wood (other than wood containing dangerous substances) from separately collected fractions of municipal wastes (household waste and similar commercial, industrial and institutional wastes)	
20 02	garden and park wastes (including cemetery waste)	
20 02 01	biodegradable waste (comprising wood and plant tissue)	

## 2.2 Contracts / agreements / communications with waste suppliers

Where a contractual arrangement is made with a waste supplier, it shall include criteria for acceptance / rejection of loads delivered for composting.

With regard to plant pathogens, waste suppliers shall be instructed within written communication records to exclude plant materials known or suspected to contain such plant pathogens. The same criteria apply to plants containing toxins such as rhododendron, yew, ragwort and hemlock.

With regard to herbicides containing active ingredients clopyralid and picloram, Input supplier agreements shall be made with suppliers of grass clippings, crop residues and other plant materials from professionally managed lawns, landscaped areas, or agricultural land that may have been treated with herbicides containing active ingredients clopyralid and picloram. Based on such agreements any input material that is known or suspected to be contaminated with such herbicides shall not be delivered to the composting site.

Regular feedback on the quality of feedstocks delivered to the site shall be provided to each waste supplier.

Whenever criteria specified in table 3 and/or in a contractual arrangement are not met, this shall be clearly communicated to the waste supplier and records of the communication shall be kept.

The staff on site shall be made aware of the acceptance / rejection criteria, any contractual arrangements and control measures.

The site shall cease accepting loads from a particular source if contamination has occurred repeatedly yet the supplier has not attempted corrective action or, in the composter's opinion, the action taken has been ineffective.

## 2.3 Rejection or acceptance and storage of input materials

Each load of biodegradable waste / material delivered for composting shall enter the site via the weighbridge. Details of the waste carrier, waste type, waste code, client/source, quantity

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(tonnes) of waste, delivery date and delivery location on site (storage area) shall be recorded on a Waste Transfer Note or Weighbridge Ticket.

The weighbridge operator shall then notify the driver to proceed to the waste transfer building where a site operative shall ensure the waste carrier takes it to the green waste reception area. Here, the waste carrier will tip the waste so as not to merge / contaminate it with any input materials already being stored.

A site operative shall spread and inspect each load deposited at the waste reception area. The outcome of the inspection is recorded on the **Input Load Inspection Record (CQMS10a)**. A copy of the relevant part(s) **Input Load Inspection Record (CQMS10a)** should be provided once per month to each waste supplier.

Criteria for acceptance / rejection of input loads delivered are specified in Table 3 below, with corrective actions that shall be carried out if the load exceeds the specified criteria.

Hazardous content	Acceptance criteria (critical limit) and load inspection score	Control activity and associated record
Physical contaminants (e.g. plastic bags, non-compostable packaging and plastics, metals, concrete and consolidated mineral fragments (e.g. rocks and stones), etc	<1% e.g. <b>Score 1 = VERY GOOD</b> = load delivered is very clean	Load accepted. Score and action logged on the <b>Input Load Inspection Record (CQMS10a)</b> .
	<3% e.g. <b>Score 2 = GOOD</b> = load delivered has negligible physical contaminant content	Load accepted. Score and action logged on the <b>Input Load Inspection Record (CQMS10a)</b> .
	<5% e.g. <b>Score 3 = MEDIUM</b> = physical contaminant content is quite high, but still below 5 % plastics / packaging items unsuitable for composting evaluated by subjective assessment	Load accepted. Plastic shall be removed as far as practically possible and placed into a 'rejects' container stored on site. The container's contents shall regularly be removed for disposal. Score and action logged on the <b>Input Load Inspection Record (CQMS10a)</b> .
	>5% e.g. <b>Score 4 = POOR</b> = physical contaminant content is above 5% plastics / packaging items unsuitable for composting evaluated by subjective assessment	Load rejected. Score and action logged on the <b>Input Load Inspection Record (CQMS10a)</b> .
Weeds / plant invasive species	>0% (i.e. Japanese Knotweed must be absent from all input loads accepted for composting)	Reject and send any loads that contain it to a licensed landfill. Actions recorded on <b>Input Load Inspection Record (CQMS10a)</b> .
Plants containing toxins (rhododendron, yew, ragwort, hemlock)	>0% (i.e. Rhododendron, yew, ragwort, hemlock must be absent from all input loads accepted for composting)	Reject and send any loads that contain any of the named toxic plant species to a licensed landfill. Actions recorded on <b>Input Load Inspection Record (CQMS10a)</b> .

**Table 3. Acceptance criteria for acceptance / rejection of input loads**

The acceptance criteria specified in table 3 shall be specified in the contractual arrangements or clearly communicated to each relevant input material supplier.

Before removal from the composting site, each load or part-load due rejection shall be kept separate from loads awaiting inspection or those accepted for composting.

Each accepted load shall be assessed to identify the processing requirements and any potential problems. The load will then be transferred to the green waste storage area.

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 Formation and Monitoring Record (CQMS11a)** 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.

The maximum storage duration for input materials prior to shredding shall not exceed 6 weeks

Waste accepted and stored for composting shall not be stockpiled in a quantity that exceeds 3500 tonnes before shredding.

## **2.4 Traceability of input materials**

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, the duty of care information collected for every load that arrives and/or the **Input Load Inspection Record (CQMS10a)**.

Composting batches are created one at a time. Batch formation 'start' and 'finish' dates are recorded in the **Batch Formation and Monitoring Record (CQMS11a)**. All waste loads that arrive at the weighbridge between these two dates therefore have gone into that batch, and thus can be traced back to source.

Each batch shall be given a unique number /code when being formed, clearly identifiable by a post with a marked board, or similar. This stays with the batch during the composting process.

When batch formation is completed, batch monitoring begins and its monitoring start date is recorded on the corresponding **Batch Formation and Monitoring Record (CQMS11a)**.

For each composting batch, the minimum composting process duration stated in these SOPs shall be calculated from the date the monitoring of that batch commences.

## **3. Preparation of input materials**

### **3.1 Shredding**

Any large objects, for example tree trunks and root stocks, over 40 cms in diameter shall be reduced in size, used for biofuel or rejected.

### **3.2. Mixing**

Mixing of green waste with other waste type(s) will be carried out using suitable equipment (such as a front loading shovel or compost turner) to agitate the material until full distribution of material is achieved.

### **3.3 Wetting prior to batch formation**

Moisture evaluation of the shredded material shall be carried out as per section 4.1.3, prior to any moisture addition.

### **3.4 Records connecting delivery notes with shredding dates, mixing and wetting**

The results of the quality of input materials assessment, wetting and mixing activities, and the unique number of any other batches mixed with a batch when being formed (including oversize) shall be recorded on the **Batch Formation and Monitoring Record (CQMS11a)**.

### 3.4 Composting process additives

Composting process additive(s) to confer benefit to the composting process or reduce emissions is/are not used.

## 4. Composting activities – managing, monitoring and evaluating sanitisation and stabilisation

### 4.1 Batch formation and monitoring

After receipt at the reception area, each accepted load will have been spread and litter picked if containing litter, and pre-treated (shredded/mixed/watered) where required, ready for forming into windrows.

The dimensions of each windrow shall be approximately 2.4 metres high and of a width and length determined by the incoming batch sizes and the capability of turning machinery. Gaps of suitable width to enable turning/monitoring/litter picking shall be left between the windrows.

The shredding/loading operative shall ensure that each formed batch is identifiable by inserting a marker that displays its batch code, in a way and location in the batch that is easily visible to operatives moving materials on site.

In the event that batches are combined during the composting process, the 'on-going' batch code(s) shall be recorded on each of the corresponding **Batch Formation and Monitoring Record (CQMS11a)** and the record for one of these batches shall be used as the ongoing record.

If any sanitised windrow is combined with a batch that is only part way through the sanitisation phase, the sanitisation phase for those combined batches shall be restarted.

If any batch becomes separated from its batch code marker, the site manager shall be notified and efforts shall be made to re-identify and re-assign the batch with its correct batch code. If attempts to identify the batch fail, then it shall be re-composted with its own newly assigned batch code or dispatched, as PAS 100 non-compliant material for disposal or use according to waste regulatory controls.

#### 4.1.1 Monitoring equipment

Composting monitoring equipment is as follows:

- <insert name of temperature monitoring equipment>

The monitoring system (including equipment) shall be maintained in a functional state by the site manager.

Calibration checks on the temperature monitoring system / equipment are carried out once per 12 months (or at a frequency consistent with the manufacturer's instructions if less than every 12 months) by the following independent calibration service provider:

- <insert name and contact details of the independent organisation that provides the calibration service>.

Routine checks on the temperature monitoring system / equipment are carried out by the Site manager once per month. Refer to manufacturers guidelines for procedures for checking equipment.

When the calibration service provider or the composter's designated person finds that any part of the temperature monitoring system has caused inaccurate temperature data, immediate corrective action shall be taken and recorded on the **Temperature Monitoring System**

**Calibration Record (CQMS09).** After taking corrective action, the affected part of the system shall be re-checked, evaluated and recorded straight afterwards.

Data obtained during each calibration check on the temperature monitoring system shall be recorded on the **Temperature Monitoring System Calibration Record (CQMS09)** or such records shall be obtained from the independent calibration service provider together with his/her written method statement of how the calibration checks were carried out. Record details shall also be kept of any repairs or adjustments undertaken and the outcome, or replacement of an item / component / part of the system shall also be recorded on the **Temperature Monitoring System Calibration Record (CQMS09).**

#### 4.1.2 Temperature monitoring and records

Temperature during the sanitisation phase is monitored as follows:

- by inserting the hand held temperature probe into the windrow, at a minimum of 0.5 metres below the windrow surface. The temperature detected by the sensor when inserted in the windrow shall be allowed to stabilise before a final reading is recorded.

All temperature monitoring results for the sanitisation phase shall be recorded in the **Batch Formation and Monitoring Record (CQMS11a).**

Temperature during the stabilisation phase is monitored as follows:

- by inserting the hand held temperature probe into the windrow, at a minimum of 0.5 metres below the windrow surface. The temperature detected by the sensor when inserted in the windrow shall be allowed to stabilise before a final reading is recorded.

All temperature monitoring results for the sanitisation phase shall be recorded in the **Batch Formation and Monitoring Record (CQMS11a).**

#### 4.1.3 Moisture monitoring and records

The moisture content of samples of composting materials from each batch shall be assessed by:

- 'squeeze test' (grasping and clenching the sample in a gloved hand for approximately ten seconds, then opening and assessing moisture content using table 4 below), with scores verified regularly by comparison with quantitative results (% mass/mass) obtained using a drying in an oven and calculating the change of mass having weighed sample mass before and after 'drying and cooling of the sample' (see BS EN 13040 and guidance from the Association for Organics Recycling).

Index number	Sample moisture behaviour	Interpretation
1	Water seeps out	Too wet
2	More than one droplet appears	Too wet
3	One droplet appears	OK
4	Compost particles remain packed together and no droplets appear	OK
5	Compost particles fall away from each other	Too dry

**Table 4. Moisture assessment index**

To avoid the re-introduction of pathogens the source(s) of any water sprayed onto input materials, windrows being formed or formed windrows shall be:



- From the leachate lagoon or settlement lagoons/clean water source before a batch has completed its sanitisation phase
- From the settlement lagoons/clean water source only after a batch has completed its sanitisation phase.

The following shall be recorded on the **Batch Formation and Monitoring Record (CQMS11a)**:

- evaluations of moisture content and date carried out;
- date and approximate amount of any water added; and
- source of any water added if different to the above.

#### **4.1.4 Weather monitoring and records**

The following weather conditions shall be monitored and recorded daily:

- temperature;
- description of weather conditions, including any precipitation (drizzle, rain, sleet, hail, snow); and
- wind direction.

#### **4.1.5 Monitoring records and corrective actions**

Monitoring records for each windrow shall be checked daily.

Corrective actions shall be carried out if temperatures monitored move outside of the critical limits specified in Table 5a when the batch is progressing through the sanitisation phase, and Table 5b when the batch is progressing through the stabilisation phase.

Corrective actions shall be carried out if windrow core zone temperature trends move out of the target range or if it takes longer than 48 hours for core zone temperature to return to within the target range after batch turning/mixing.

Corrective action to raise the windrow temperature may include:

- additional or more frequent batch turning/mixing;
- increased batch size;
- water addition if composting conditions have become too dry;
- addition of relatively dry input materials if composting conditions have become too moist; and/or
- alteration of the shape of the batch (cross section profile) to modify moisture addition to / loss from the composting material.

Any corrective action taken to bring windrow core temperatures or moisture conditions within the target ranges shall be recorded on the **Batch Formation and Monitoring Record (CQMS11a)**.

#### **4.2 Sanitisation and stabilisation**

For each batch, the sanitisation phase shall occur during the 2 weeks over which each batch will normally be sanitised.

Sanitisation shall be marked as complete by inserting the completion date on the **Batch Appraisal Record (CQMS12)**, only when the minimum time has been completed and batch temperatures, moisture and turning have been kept within the critical limits for the sanitisation phase (see table 4 below).

For each batch, the stabilisation phase shall occur during the minimum 6 weeks over which each batch will normally be stabilised, before maturation and/or storage begins.

Stabilisation shall be marked as complete by inserting the completion date on the **Batch Appraisal Record (CQMS12)** when this minimum time has been completed and batch temperatures, moisture

and turning have been kept within the critical limits for the stabilisation phase (see tables 4a and b below).

#### 4.2.2 Process validation phase

The process validation phase shall be carried out when first evaluating conformity with BSI PAS 100 and any additional compost quality criteria subscribed to in the quality policy. Process validation shall also be carried out when decided necessary as a result of regular or change-triggered management reviews (refer to the quality policy for information).

The minimum of three batches assessed for process validation shall be:

- composted for the minimum times (as per section 4.2. above and in addition to any minimum maturation applicable to the compost grade stated in section 5),
- appraised against the critical limits specified in table 5, and
- graded and sampled promptly when such composting has been completed.

Each sample of compost grade under assessment shall be representative of the batch from which it is taken and be sent for testing at an AfOR Approved Laboratory within 1 week after the batch has completed its minimum composting period.

Monitoring locations and frequencies of monitoring composting conditions within each batch shall be carried out as stated in table 6a when the batch is undergoing sanitisation and then as stated in table 6b when the batch is undergoing stabilisation (see SOP section 4.4.2).

The responsible person shall ensure the critical control points and critical limits of the composting process (see tables 5a and 5b in section 4.2.2 and details below on screening and maturation for different grades) have been verified to consistently result in compost of the quality subscribed to in the quality policy. This, together with verification that compost test results meet the quality criteria subscribed to in the quality policy, shall constitute process validation. The duration and outcome of process validation shall be recorded (see the **Process Validation Record (CQMS16)**).

#### 4.2.2 After validation phase

After process validation, the critical control points and critical limits of composting during the actively managed composting phase (sanitisation and stabilisation phases) shall remain as those validated specified in tables 5a and b.

The site manager shall ensure 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, a phase of Hazard Analysis and Critical Control Points evaluation and process validation shall be returned to (refer to the Quality Policy for details on compost quality that must be achieved).

During and after validation each batch shall be sanitised and stabilised by the end of the actively managed composting phase, with composting process conditions and management complying with the critical limits stated in tables 5a and b.

Parameter	Sanitisation phase critical limits
Temperature	65 - 80 °C
Moisture content	51 - 65 % m/m
Minimum duration	7 not necessarily consecutive days when temperatures and moisture are within the above ranges
Minimum number of turns	2 turns during the minimum duration above

**Table 5a. Validated critical limits of sanitisation phase critical control points**

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Parameter	Stabilisation phase critical limits
Temperature	45 - 80 °C
Moisture content	40 - 65 % m/m
Minimum duration	6 weeks when temperatures and moisture are within the above ranges (except during and up to 48 hours after each turn, if composting batches are turned during this phase)
Minimum number of turns	6 turns during the minimum duration above

**Table 5b. Validated critical limits of stabilisation phase critical control points**

Parameter & batch zone	Monitoring point locations	Monitoring frequency
Temperature - Surface zone	Not applicable	Not applicable
Temperature - Core zone	0.5 metres below the windrow surface at 10 metre intervals along the windrow within the core zone (minimum 3 measurements per windrow)	Once per working day
Temperature - Base zone	Not applicable	Not applicable
Moisture content	10 metre intervals along the windrow (minimum 3 measurements per windrow)	Once per working day

**Table 6a. Monitoring point locations and monitoring frequency for the sanitisation phase**

Parameter & batch zone	Monitoring point locations	Monitoring frequency
Temperature - Surface zone	Not applicable	Not applicable
Temperature - Core zone	0.5 metres below the windrow surface at 10 metre intervals along the windrow within the core zone (minimum 3 measurements per windrow)	Once per week
Temperature - Base zone	Not applicable	Not applicable
Moisture content	10 metre intervals along the windrow (minimum 3 measurements per windrow)	Once per week

**Table 6b. Monitoring point locations and monitoring frequency for the stabilisation phase**

## 5. Maturation

Following the actively managed composting phase, each batch or part-batch may undergo a maturation phase of at least 6 weeks on the maturation area of the composting site. The need for maturation will be determined by the grade/product type being produced.

The maturation phase shall occur after the actively managed composting phases (sanitisation and stabilisation) and will occur before screening.

If any batches are combined at the start of or during the maturation phase, the corresponding batch codes shall be recorded.

## 6. Readiness for product preparation

Each windrow shall be deemed ready for product preparation (see section 8) when evaluated as having completed the actively managed composting phase (see section 4.2), i.e.

- complied with sanitisation criteria (see section 4.2); and
- complied with stabilisation criteria (see section 4.2).

If maturation is applicable to the grade/product type and carried out before product preparation (e.g. screening), the relevant batches or part-batches shall first complete their maturation phase and comply with any critical limits set (see section 5).

## 7. Dealing with non-conforming batches

### 7.1 Batches that do not conform to composting process criteria

Any batch that does not completely undergo all applicable critical control points and/or fails to comply with any of the critical limits set in these Standard Operating Procedures shall:

- undergo corrective action then be evaluated for conformance to the relevant critical control point and critical limit criteria;
- undergo re-composting then be evaluated for conformance to the relevant critical control point and critical limit criteria;
- be dispatched from the site for use, processing elsewhere or disposal, with notification of PAS 100 non-conformance to the recipient as well as the nature of the non-conformity.

The corrective actions taken and the destiny of each non-conforming batch shall be recorded in the relevant record according to the type of non-conformity and the process step the non-conformity relates to.

### 7.1 Sampled and tested batches that fail to comply with the Quality Policy

Any sampled and tested batch that does not conform to the Quality Policy's Table 1 quality criteria applicable to the compost grade shall:

- undergo corrective action then be sampled and tested in terms of the parameter(s) relevant for evaluating efficacy of the corrective action;
- undergo re-composting with or without addition of further input material as appropriate, then be sampled and tested in terms of the parameter(s) relevant for evaluating the efficacy of the corrective action; or
- be dispatched for use, processing elsewhere or disposal, and the recipient and regulator notified of the nature of its non-conformity with PAS 100.

The actions taken and the destiny of each such batch shall be recorded in the relevant QMS document(s).

## 8. Product preparation, storage and batch identification

### 8.1 Screening

Screening of the compost shall be carried out with a trommel and result in the following compost particle size grade(s):

- 0 – 10 mm, soil improver, certified to PAS 100 or PAS 100 and CQP where necessitated by customer specifications
- 0 – 40 mm, soil improver, certified to PAS 100 or PAS 100 and CQP where necessitated by customer specifications

The date(s) on which each batch is screened and its batch code shall be recorded on the ***Batch Screening, Maturation and Sampling Record (CQMS11b)***.

Oversize material coming off the screen shall only be re-composted if visual assessment confirms that physical contaminants will not adversely affect the composting process or prevent effective control of compost quality (as stated in the quality policy). Addition of oversize material to a windrow shall only be carried out when it is being formed, and this shall be recorded on the ***Batch Formation and Monitoring Record (CQMS11a)*** for the new windrow.

If the oversize material is too heavily contaminated for re-composting, it shall be disposed of. Its destiny shall be recorded in the ***Batch Appraisal Record (CQMS12)***.

The screened compost shall be inspected by a site operative, in particular for physical contaminants. Any windrow or part-windrow known or suspected to fail any of the quality criteria subscribed to in the quality policy (i.e. BSI PAS 100:2011 and any other specification agreed in writing with the compost customer) shall be evaluated by the person responsible for compliance with BSI PAS 100:2011 and the Compost Quality Protocol. If it is decided that the windrow or part-windrow does not comply with the requirements, it shall be subject to one of the options listed in section 7. Actions taken and batch code(s) shall be recorded, as specified in section 7.

### **8.3 Blending**

The compost(s) from this process are not blended with other materials, products or additives.

### **8.3 Bagging**

The compost(s) from this process are not bagged.

### **8.4 Product storage and batch identification**

Products shall be stored outdoors on the compost storage area and may be covered as necessary in wet conditions.

Each product batch shall be identifiable in its storage location by a marker that displays its unique product batch code.

Each product batch shall contain compost from no greater than 6 windrows and may be stored for a maximum of 6 months.

The product batches shall be stored such that access can be gained to each one and that the position of each is known. This helps to ensure stock rotation and that an appropriate amount of the grade/product type ordered, is dispatched to the customer.

Any product batch that exceeds its time limit for storage shall be tested for compliance with the safety-related parameters and upper limits in BSI PAS 100 as well as any other characteristics declared in labelling, before a decision is made on it being dispatched as conforming. Alternatively, it may be dispatched for use with advice that it may no longer conform with quality criteria or dispatched for disposal.

If compost that complies with BSI PAS 100:2011 is included in any blended product(s) being stored (see 8.3), each batch shall carry a marker that identifies the compost batch(es) within it.

## **9.9. Compost sampling and testing, minimum quality, and sampled batch evaluation**

### **9.1 Compost sampling and testing**

Compost shall be sampled and tested:

- when the batch has completed the composting process (including any maturation applicable to the grade/product type);

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- after any product preparation (e.g. screening); and
- before any blending of the compost with other wastes, materials, composts, products or additives.

Samples shall be taken as per The British Standards Institution's BS EN 12579 and should be taken within 1 week after the minimum, total composting duration (sanitisation, stabilisation and, if applicable maturation) has been completed by the batch. Product preparation such as screening should be carried out within the 1 week after the batch due for sampling has completed its minimum, total composting duration.

The minimum frequencies for testing compost batch samples are stated in PAS 100 (section 13, table 2) together with the obligatory test parameters (section 14). The minimum frequency of sampling and testing applies to each individual compost grade for which PAS 100 compliance is claimed, or is intended to be claimed.

Any individual who carries out compost batch sampling shall first be appropriately trained. For each representative batch sample obtained, a **Compost Sampling and Analysis Request Record (CQMS13a-e)**, or equivalent record, shall be completed. A copy of each completed record sheet shall be filed as per the quality policy and the original completed record shall be sent to the laboratory with the sample.

## **9.2 Minimum compost quality and sampled batch evaluation**

Results for each of the tested compost batch samples shall be evaluated against the quality criteria subscribed to in the Quality Policy's Table 1, for the corresponding compost grade.

Any sampled and tested compost batch(es) or part-batch(es) that have failed to comply with any of the quality criteria subscribed to in the Quality Policy's Table 1 for the corresponding compost grade, shall be subject to one of the following options (as appropriate to whether the batch has been quarantined – see the 'Quarantine policy for sampled and tested compost batches' in section 10.2.2 of this SOP):

- undergo corrective action then be sampled and tested in terms of the parameter(s) relevant for evaluating efficacy of the QMS change or the corrective action;
- undergo recomposting with or without addition of further input material as appropriate, then be sampled and tested in terms of the parameter(s) relevant for evaluating efficacy of the corrective action; or
- be dispatched for use, processing elsewhere or disposal, and the recipient and regulator notified of the nature of its non-conformity with PAS 100. Such notification shall be recorded on the **Test failure notification (CQMS 19)** has been provided for this recording purpose.

The action taken shall be recorded on the appropriate QMS record sheet(s).

After validation, if a tested compost sample fails to meet the quality criteria subscribed to in the Quality Policy's Table 1 for the corresponding compost grade, the following actions shall be carried out and recorded on the **Failed Batch Investigation Record (CQMS14)**, without undue delay:

- investigation of why the failure happened;
- decision whether the QMS needs to be changed and if 'yes', the nature of the change;
- the nature of the corrective action undertaken if the QMS is not changed;
- sampling and testing of extra batch(es) produced according to the changed QMS or corrective action taken;
- checking the efficacy of the change to the QMS or corrective action taken by evaluating the laboratory test results of the extra batch(es);
- determining the outcome of the investigation; and
- recording the investigation period (in addition to the above).

## **10. Product labelling, distribution and records**

### **10.1 Product Labelling**

Any compost batch(es) or part-batch shall only be distributed with claim of certified compliance with BSI PAS 100:2011 and the Compost Quality Protocol:

- if the compost is from one or more windrows or a part-windrow that has sanitised, stabilised and, if applicable to the grade/product type, matured (see sections 4.2 and 5);
- if sampled, compost sample test results show compliance with the quality criteria subscribed to in the quality policy; and
- all other requirements in BSI PAS 100:2011 and the Compost Quality Protocol have been complied with.

Similarly, the above requirements apply to compost in any product carrying claim that the compost ingredient complies with BSI PAS 100:2011 and the Compost Quality Protocol.

Information supplied to the customer shall include the obligatory information required by PAS 100:2011 and the Compost Quality Protocol, including declaration of conformance with PAS 100 and the Compost Quality Protocol.

### **10.2 Product Dispatch**

#### **10.2.1 General**

Prior to dispatch, each load shall be checked to ensure information supplied to the recipient and kept on record is correct.

Compost from this composting process is supplied for use in the following markets:

- 0 -10 mm grade, soft landscape market
- 0 - 40 mm grade, agriculture and soil-grown horticulture

#### **10.2.2 Quarantine policy for sampled and tested compost batches**

Any compost batch(es) or part-batch, or portion of product that contains compost that fails to meet the above requirements shall be subject to one of the options specified in SOPs section 7. The information supplied to the recipient shall include the relevant batch code(s), statement of non-conformance with BSI PAS 100:2011 and the nature of the non-conformity.

Prior to dispatch, each load shall be checked to ensure information recorded about and accompanying the consignment is correct.

All product (or waste), which is transported from site, will be weighed and a record kept detailing the following:

- Date and removal of each container/skip;
- Quantity removed; and
- Destination and company removing the material.

#### **10.2.2 Vehicle cleanliness**

The cleanliness of the parts of mobile plant that will be in contact with the compost, or product that contains it, shall be inspected by a site operative. Before product is loaded up, the

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transportation vehicle shall also be inspected for cleanliness, especially the surfaces that will be in contact with the product.

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 dairy.