Standard Operating Procedures (SOPs) for composting systems operated in accordance with REAL Compost Certification Scheme Rules Version 8

This document template aims to guide you through the process of documenting the relevant information for compliance with BSI PAS 100:2018, the Compost Quality Protocol (if applicable) and REAL's Compost Certification Scheme Rules Version 8

Read through this document, insert text where prompted and amend any part of the standard text so that it is appropriate to your inputs materials, composting process and compost outputs. Delete this instruction text and any reference to the Compost Quality Protocol if you seek certification to 'PAS 100 only'.

Contents

N.B.: Unless stated otherwise, all references to PAS 100 in this document relate to the 2018 edition of the British Standards Institution's 'Publicly Available Specification for Composted materials'.

1. Identity of composting process and its products

1.1 Company, site and process details

a) Company name, address and telephone number

Freeland Horticulture Ltd, Rosedale Nursery, College Road, Hextable Kent. 01322 619161

b) Composting facility name, address and telephone number

Freeland Horticulture Ltd. Wroot Road Compost Facility, Wroot Road Quarry, Finningley, Doncaster. DN9 3DU. 01302 770500

c) Composting process that these SOPs refer to:

Open air windrow process for green waste only.

1.2 General description of the composting process and its outputs

The **sanitisation** phase of this composting process is an open-air, turned windrow process.

The **stabilisation** phase of this composting process is an open-air, turned windrow process.

There is no **maturation** phase in this composting process.

Intended use:

<0> to <10> mm compost grade, defined as the Principal Grade, soil improver and horticultural use
<0> to <40> mm compost grade, defined as an Additional Grade, agriculture

This composting process is operated under a:

<Waste Management Licence / Permit > number EPR/EB3208HK/T001, issued on 20/06/2016
EA WML43702

2 Input materials

2.1 Types of input materials

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

Guidance: Insert into table below the waste/material types that will be used to create compost of the quality stated in your Quality Policy, i.e. BSI PAS 100:2018 and any further specification(s) or quality criteria that you have agreed to meet for your compost grade(s).

Table 1. Types of input materials

Waste Code	Waste description	Source of waste	Name of waste supplier organisation
<Insert here EWC code *e.g. 20 02 01*>	<Insert here waste description *e.g. plant matter from household gardens and public park wastes*>	<Insert here the source of waste *e.g. professional landscapers, e.g. civic amenity sites, e.g. household kerbside collections*>	<Insert the name(s) of any associated organisation(s) with which the composting contract(s) is/are held *e.g. Devon County Council*>
02 01 03	**Plant tissue waste**	**Household kerbside collections and civic amenity sites.**	**Barnsley and Doncaster councils**
020107	**Waste from forestry comprising wood and plant tissue**	**Professional landscapers**	
20 02 01	**Biodegradable waste**	**Household kerbside collections and civic amenity sites.**	**Barnsley and Doncaster councils**

Guidance: Please specify in the table whether paper / cardboard wastes are co-mingled with food and / or green waste.

Animal by-products are treated according to the ABP Competent Authority's approval: <insert here Competent Authority's approval reference number>, issued on <insert here date of issue>
Guidance: Delete if animal by-products are not treated.

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.

Feedback on the quality of feedstock delivered to site shall be provided to the suppliers at regular organised meetings.

Whenever criteria specified in table 2 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.

Improved instructions, reminders of the composter's acceptance / rejection criteria, contractual arrangements (if applicable), control measures, and further clarification of any of the above shall be sent to the relevant waste supplier(s) when deemed appropriate by the composter. These shall be recorded on the minutes contract meetings.

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 (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 green waste reception area where a site operative shall ensure the waste carrier takes it to the input materials storage 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 storage area and look for contaminants to be picked out where possible. The outcome of the inspection is recorded on the delivery ticket. A copy of the delivery ticket should be provided to each waste supplier. Rejected loads shall be recorded on the load rejection templates.

Criteria for acceptance / rejection of input loads delivered are specified in Table 2 below, with corrective actions that shall be carried out if the load exceeds the specified criteria.

Table 2. Acceptance criteria for acceptance / rejection of input loads

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 Glass bottles, treated timbers.	**Score 1 = VERY GOOD** = load delivered is very clean	Load accepted, weighbridge informed, and ticket signed
	Score 2 = GOOD = load delivered has negligible physical contaminant content	Load accepted, weighbridge informed, and ticket signed
	Score 3 = MEDIUM = physical contaminant content is quite high, but still below <insert percentage> % plastics / packaging items unsuitable for composting evaluated by subjective assessment	Load accepted, weighbridge informed, and ticket signed
	Score 4 = POOR = physical contaminant content is above insert percentage> 5% plastics / packaging items unsuitable for composting evaluated by subjective assessment	Load rejected and entered onto rejection record form
Weeds / plant invasive species	e.g. Japanese Knotweed absent from all input loads accepted for composting>	Load rejected and entered onto rejection record form

Plants containing toxins (rhododendron, yew, ragwort, hemlock)	e.g. Rhododendron, yew, ragwort, hemlock absent from all input loads accepted for composting>	Load rejected and entered onto rejection form

The acceptance criteria specified in table 2 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.

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.

The maximum storage duration for input materials prior to shredding shall not exceed <5 days>.

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.

Composting batches are created one at a time. Batch formation 'start' and 'finish' dates are recorded in the '*Batch Formation and Monitoring Record Sheet*'. 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 Sheet*'.

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 manually reduced in size before shredding or rejected.

3.2 Mixing

Mixing not applicable.

3.3 Wetting prior to batch formation

Moisture evaluation of the input 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 Sheet'*.

3.5 Composting process additives

Composting process additives are not used.

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

4.1 Batch size and monitoring

The dimensions of each windrow shall be approximately 4 metres high, 10 metres wide and 90 metres long.

The typical batch size is: 900 tonnes, with minimum expected size: 250 tonnes, and maximum expected size: 2000 tonnes. Gaps of suitable width to enable turning / monitoring / litter picking shall be left between the windrows.

Each formed batch is identified by 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 record sheets and the record for one of these batches shall be used as the ongoing record.

If any sanitised batch 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 recomposted 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 system and equipment

The composting monitoring system, including the monitoring equipment, is as follows:

- **Impact technology temperature monitoring equipment.**
- **Thermamite 1 thermometer**

The monitoring system (including equipment) shall be maintained in a functional state by <**Angela Krco**>.

Calibration checks on the temperature monitoring system / equipment are carried out once per 12 months by the following independent calibration service provider:

ETI LTD 01903 202151

Routine checks on the temperature monitoring system / equipment are carried out by **Steve Holding once per month** following the procedures below:

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 Sheet'*. 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 Sheet*' 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 a 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 Sheet*'.

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 Sheet'*.

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 Sheet'*.

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 3 below).

Table 3. Moisture assessment index

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

The source(s) of any water sprayed onto input materials, batches being formed or formed batches shall be liquor from surface water capture tanks, should not be used after a batch has completed its sanitisation phase because this could re-introduce pathogens.
Water from on site ground water lagoons.

The following shall be recorded on the *'Batch Formation and Monitoring Record Sheet'*:

- evaluations of moisture content and date carried out;

- source of any water added if different to the above.

4.1.4 Weather monitoring and records

Guidance: Weather monitoring is recommended rather than required in PAS 100 therefore such activities are optional. Replace text in this section with 'Not applicable' if weather monitoring and recording is not carried out.

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 batch shall be checked
Daily during Sanitisation phase
Weekly during Stabilisation phase

Corrective actions shall be carried out if temperatures monitored move outside of the critical limits specified in Table 4a when the batch is progressing through the sanitisation phase, and Table 4b when the batch is progressing through the stabilisation phase.

It takes approximately six hours normally for core zone temperature to return within the target range after being turned. If it takes longer than normal through the sanitisation time then the corrective actions below can be undertaken.

Corrective action to raise the batch 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 temperatures or moisture conditions within the critical limits shall be recorded on the '*Batch Formation and Monitoring Record Sheet*'.

4.2 Sanitisation and stabilisation

For each batch, the **sanitisation phase** shall occur during the first 4 weeks.

Sanitisation shall be marked as complete by inserting the completion date on the '*Batch Appraisal Record Sheet*', 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 3 below).

For each batch, the **stabilisation phase** shall occur during the 8 weeks

Stabilisation shall be marked as complete by inserting the completion date on the '*Batch Appraisal Record Sheet*' 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).
Guidance: The minimum composting period should be determined by how the compost is intended to be used. For example, 8 weeks of composting is often set as a minimum for soil conditioning compost.

4.2.1 Process validation

The process validation phase shall be carried out when first evaluating conformity with 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 4, 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 a REAL Approved Laboratory within 3 days after the batch has completed its minimum composting period (the latter is a requirement in REAL's Compost Certification Scheme Rules.

Guidance: Batch sampling and testing is carried out promptly after completion of the stated minimum composting regime because this is considered to represent 'worst case scenario' results for most PAS 100 obligatory parameter test results.

Monitoring locations and frequencies of monitoring composting conditions within each batch shall be carried out as stated in table 5a when the batch is undergoing sanitisation and then as stated in table 5b when the batch is undergoing stabilisation (see SOPs section 4.4.2).

The responsible person shall ensure the critical control points and critical limits of the composting process (see tables 4a and 4b 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 Sheet'*).

4.2.2 After validation

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 4a 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 4a and b.

Table 4a. Validated critical limits of sanitisation phase critical control points

Parameter	Sanitisation phase critical limits
Temperature	65 - 80 °C
Moisture content	Index 2 - 4
Minimum duration	7 consecutive days* when temperatures and moisture are within the above ranges OR 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

** Guidance: Refer to PAS 100's Annex B recommendations for sanitisation; the critical limits suggested in table 4a can be modified. Choose the regime that is realistic for your sanitisation phase, taking account of whether temperature and moisture can be kept within critical limit ranges all of the time or whether temperature and moisture will dip below the lower critical limit during composting batch turning.*

Table 4b. Validated critical limits of stabilisation phase critical control points

Parameter	Stabilisation phase critical limits
Temperature	45 - 80 °C
Moisture content	Index 2 - 4
Minimum duration	6 weeks when temperatures and moisture are within the above ranges (except during and up to 24 hours after each turn, if composting batches are turned during this phase)>
Minimum number of turns	2 turns during the minimum duration above

Guidance: Please refer to PAS 100's Annex B for information about the recommendations for stabilisation. The critical limits suggested in table 4b can be modified according to

Typical composting batch size is 2000 cubic metres.
Maximum expected composting batch size is 4000 cubic metres.
Minimum expected composting batch size is 500 cubic metres.

<For each of any composting phases that utilise outdoor turned windrows or uninsulated aerated static piles, insert here a diagram and / or description of the composting batch surface, core and base zones as appropriate to batch size and the phase of the composting process.>

Guidance: If the composting process dues not have an outdoor turned windrow composting or uninsulated aerated static pile phase, delete this guidance text and the paragraph above it about composting batch surface, core and base zones.

Batch size and zones

Composter's QMS to state

- Typical **batch size** (t or m^3) and min and max expected sizes
- If open air turned windrows and uninsultated static piles:
  - Diagram and/or description of composting batch **surface**, **core** and **base zones.**

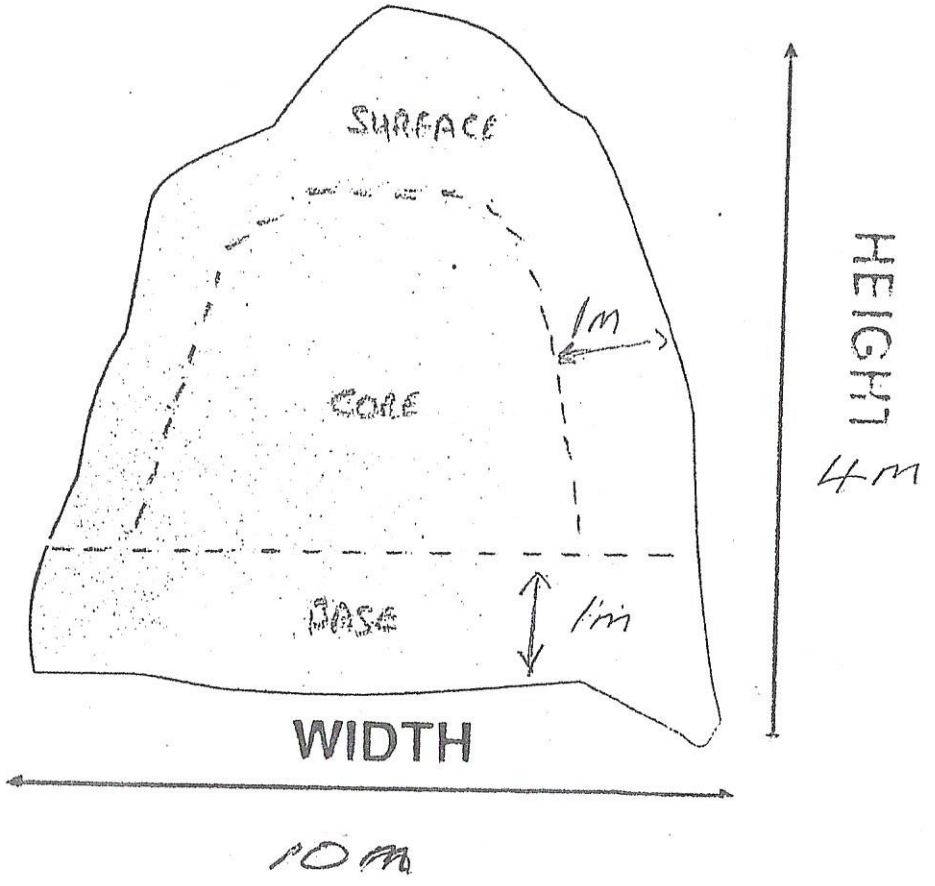

Table 5a. Monitoring point locations and monitoring frequency for the sanitisation phase

Parameter & batch zone	Monitoring point locations	Monitoring frequency
Temperature Surface zone	Not applicable	
Temperature Core zone	At 4 points per windrow at a minimum of 1m below windrow surface	Once per working day
Temperature Base zone	Not applicable.	
Moisture content	At 4 points per windrow at a minimum of 0.5m below windrow surface	Every working day

Guidance: Refer to PAS 100's Table 1 for minimum composting process monitoring requirements, and amend the table appropriately based on the design and operation aspects of your sanitisation phase (taking account of your HACCP plan).

Table 5b. Monitoring point locations and monitoring frequency for the stabilisation phase

Parameter & batch zone	Monitoring point locations	Monitoring frequency
Temperature Surface zone	Not applicable	
Temperature Core zone	At 4 points per windrow at a minimum of 1m below windrow surface	Once per week
Temperature Base zone	Not applicable	
Moisture content	At 4 points per windrow at a minimum of 0.5m below windrow surface	Once per week

Guidance: Refer to PAS 100's Table 1 for minimum composting process monitoring requirements, and amend the table appropriately based on the design and operation aspects of your stabilisation phase (taking account of your HACCP plan).

5. Maturation

Maturation does not apply to this process.

6. Readiness for product preparation

Each 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).

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.

7.2 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 screen and result in the following compost particle size grade(s):

- *0 – 10 mm, soil improver, certified to PAS 100 & CQP*
- *0 – 40 mm, soil improver, certified to PAS 100 & CQP*
-

Guidance: List in the bullet points above all of the compost grades made using this composting process, not only those for which PAS 100 conformance is claimed or intended to be claimed.

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

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 batch of composting material shall only be carried out when it is being formed (see SOPs section 3.4), and this shall be recorded on the '*Batch Screening, Maturation and Sampling Record Sheet*' for the new batch.

If the oversize material is too heavily contaminated for re-composting, it shall be <cleaned and re used>. Its destiny shall be recorded in the <insert name of the record sheet>.

The screened compost shall be inspected by a site operative, in particular for physical contaminants. Any batch or part-batch suspected to fail any of the quality criteria subscribed to in the Quality Policy (i.e. PAS 100 and any other specification agreed in writing with the compost customer) shall be evaluated by the person responsible for compliance with PAS 100. If it is decided that the batch or part-batch 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.

8.2 Blending

No blending is carried out

8.3 Bagging

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

8.4 Product storage and batch identification

Products are stored according to the REAL Certification Scheme Rules on the storage areas outdoors to the top and side of the composting pad.

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 3 batches and may be stored for a maximum of 6 months before dispatch to the customer.

Guidance: The product batch code can be the same as the codes of the batches the product batch contains e.g. if batches 2, 3 and 4 are stored together, the new product batch code is '2,3,4'. If screened to create more than one compost grade, the marker in each product batch of each one should display the grade, e.g. 0 – 15 mm.

The product batches shall be stored such that access can be gained to each one and that the position of each is known.
Guidance: It is better to store product batches separately, but shortage of storage space may result in more than one batch of the same grade/product type being stored together. Some composters store more than 5 batches together but do so in a sequential way so that they can identify the location of each batch.

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

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);
- after the product preparation process (eg 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.
Guidance: After process validation, you should make a generous estimation of, or keep track of, cumulative cubic metre production of each PAS 100 compliant compost grade. This helps to ensure that batch sampling and testing does not fall below the minimum required (i.e. PAS sampling frequencies are based on amount of product you produce). A timetable of sampling can be implemented once you have an understanding of how much product you produce during the year.

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 Sheet'*, 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.
Guidance: REALs templates for Compost Producers include 'Compost Sampling and Analysis Request Record Sheet' templates for Principal and Additional compost grades. These templates already have obligatory parameter boxes ticked and a few additional parameter boxes ticked applicable to labelling and whether the compost grade is intended to be used in agriculture and/or soil-grown horticulture. Review and tick any other parameter boxes on the record sheet for which the 'additional parameter' results are needed by end users.

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 SOPs):

- 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 <insert here the name of the record template / weighbridge system, as applicable>.

Guidance: REAL's template '19_Test_failure_notification_template' 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 Sheet'*, 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 graded compost batch(es) or part-batch shall only be distributed with claim of compliance with PAS 100 and the Compost Quality Protocol:

- if the compost grade is independently certified to PAS 100 and the Compost Quality Protocol (*Guidance: delete the Compost Quality Protocol if it is not applicable);*
- if the compost is from one or more batches or a part-batches that have been produced according to all applicable critical control points and their critical limits set in these Standard Operating Procedures; and
- all other requirements in PAS 100, the Compost Quality Protocol and REAL Compost Certification Scheme Rules have been complied with.

N.B.: ***Before validation, no graded compost batch(es) or part-batch shall be distributed with claim of compliance with PAS 100 and the Compost Quality Protocol.***
Guidance: This restriction also applies to any graded compost batch sampled and tested and found to have complied with the corresponding quality criteria in the Quality Policy's Table 1.

Similarly, the above requirements apply to compost in any product carrying claim that the compost ingredient complies with PAS 100 and the Compost Quality Protocol.
Guidance: REAL's Compost Certification Scheme contains additional criteria for such blended products if they carry it's certification mark.

Information supplied to the customer shall include the obligatory information required by PAS 100 and the Compost Quality Protocol, including declaration of conformance with PAS 100 and the Compost Quality Protocol.
Guidance: REAL provides a template 'Contract of Supply' document covering all obligatory information for each load of compost supplied for use in land restoration, soft landscape operations, agriculture and soil-grown horticulture markets. A template 'Product Information and Dispatch Note' template is also provided covering all obligatory information for each load of compost supplied for use in amateur horticulture (domestic use). Information such as compost grade and batch code(s) may also be included on the corresponding weighbridge ticket, but the ticket is not an acceptable substitute for the 'Contract of Supply'. For further guidance, including requirements applicable to bagged compost, please read REAL's Compost Certification Scheme Rules.

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 by the compost 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, soft landscape market

Guidance: Ensure that the information in the bullet points above matches that written in your Quality Policy's Table 1.

10.2.2 Quarantine policy for sampled and tested compost batches

Guidance: Quarantine of any compost batch that has been sampled and tested is not obligatory according to PAS 100:2011. However, please note that if test results of the batch/es dispatched before their test results are checked fail to comply with any of the Quality Policy's Table 1 criteria applicable to the compost grade, the compost recipient and the regulator must be informed of the failure and the nature of the failure that has occurred. Choose one of the options below, then delete this guidance and the option not chosen.

<No compost batch sampled for testing shall be dispatched before its test results have been evaluated. If it has failed, appropriate action as stated in section 7.2 of the SOPs shall be taken.
OR
After validation, any compost batch that is sampled and tested may be dispatched with claim of conformance to PAS 100 and the Compost Quality Protocol before its test results have been received from the laboratory and evaluated. If any such dispatched batch is subsequently found to have failed to comply with any the Quality Policy's Table 1 quality criteria applicable to the compost grade, the recipient of the compost batch and the regulator shall be notified of the nature of its non-conformity with PAS 100. This paragraph also applies to any product made from a blend of materials that also contained any of the failed compost batch, if its compost ingredient has been claimed to comply with PAS 100 and the Compost Quality Protocol.

10.2.3 Compost use in agriculture and soil-grown horticulture

Compost that is supplied for use in agriculture and soil-grown horticulture shall be dispatched, stored and used according to the Compost Quality Protocol's section 4.4 and Appendices E and H. Those requirements are complied with by using: <choose one of the following methods and delete text referring to rejected method; the '*QP Manager*' (the on-line tool for recording compost use in agriculture and soil-grown horticulture administered by REAL), OR the Excel spreadsheet equivalent to the *'QP Manager'*, record template *'20e_Excel_equivalent_to_QP_Manager'*.
Guidance: Please delete the above if certification the Compost Quality Protocol is not sought or if compost is not supplied to this market segment.

10.2.4 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 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.