Terms and conditions for Approved Laboratories

- **Testing of compost under the Compost Certification Scheme aligned to PAS 100 and the CQP; and**
- **Testing of whole digestate, separated liquor and separated fibre derived from anaerobic digestion under the Biofertiliser Certification Scheme aligned to PAS 110 and the ADQP**

Renewable Energy Assurance Limited

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1 FOREWORD

Renewable Energy Assurance Limited ("REAL") has established these Terms and Conditions (T&Cs) for laboratories approved to undertake testing under the Compost Certification Scheme (CCS) and Biofertiliser Certification Scheme (BCS) (together the "Schemes").

These T&Cs set out the responsibilities of REAL and the Approved Laboratories. Responsibilities of Approved Laboratories include:

- provisions for samples transport, storage, and preparation
- test conditions and reporting of test results
- record maintenance
- performance and compliance criteria
- participation in inter-laboratory trials, spot checks and proficiency testing (PT) programmes

Laboratory Approval Scheme

The Laboratory Approval Scheme framework document is available to download from:

www.qualitycompost.org.uk/information/governance/laboratories

www.biofertiliser.org.uk/certification/laboratory-tests

In the event of a conflict arising between the T&Cs and the Laboratory Approval Scheme framework these T&Cs take precedence.

The T&Cs as in force from time to time shall be incorporated into the letter agreement between REAL and the Approved Laboratory.

A laboratory's appointment will be dependent on the laboratory's compliance with these T&Cs. If REAL (or a certification body) should have evidence that a laboratory has not complied with these T&Cs, its appointment may be terminated by REAL immediately on written notice.

2 INTRODUCTION

The Schemes are administered by REAL. Assessments of compost and biofertiliser producers are carried out by certification bodies on behalf of REAL. REAL is a wholly owned subsidiary company of the Association for Renewable Energy and Clean Technology ("REA").

The CCS provides a set of rules to enable the certification bodies to assess and verify that compost producers conform with:

- the latest edition of the British Standards Institution (BSI)'s Publicly Available Specification (PAS) for Composted Materials (BSI PAS 100)
- the Quality Protocol for the production and use of quality compost from source-segregated biodegradable waste (the 'CQP', adopted in England, Wales and Northern Ireland);
- CCS Scheme Rules (latest version); and
- SEPA's Composting Position Statement (latest version).

The BCS provides a set of rules to enable the certification bodies to assess and verify that biofertiliser producers conform with:

- the latest edition of the British Standards Institution (BSI)'s Publicly Available Specification (PAS) for whole digestate, separated liquor and separated fibre from the anaerobic digestion of source-segregated biodegradable materials (BSI PAS 110)
- the Quality Protocol for the production and use of quality outputs from anaerobic digestion of source-segregated biodegradable waste (the 'ADQP', adopted in England, Wales and Northern Ireland);
- BCS Scheme Rules (latest version); and
- SEPA's Digestate Position Statement (latest version).

The Schemes require that participating biofertiliser and compost producers ("Producers") only send samples for certification purposes to laboratories approved by REAL (Approved Laboratories).

A list of CCS Approved Laboratories can be found on CCS's website at www.qualitycompost.org.uk.

A list of BCS Approved Laboratories can be found on BCS's website at www.biofertiliser.org.uk.

3 INDEPENDENCE

In order to ensure the credibility of the Schemes, an Approved Laboratory is required to be impartial in testing and reporting in respect of the quality of samples.

An Approved Laboratory must declare any commercial or corporate link with a compost or biofertiliser producer (participant in the Schemes) or other conflict of interest and demonstrate how it can guarantee impartiality. If such a commercial or corporate link should arise during the term of appointment the Approved Laboratory must inform REAL as soon as it becomes aware of it.

4 COMMUNICATION

1. Approved Laboratories must identify and share details (address, site telephone number) of locations where analytical testing of samples will be carried out. If an Approved Laboratory decides to use new locations during the time of the appointment, it must inform REAL in advance about the details of this location and the tests/processes that will be carried out at the new location.
2. Approved Laboratories must appoint a staff member as the main point of contact and share their contact details with REAL. The main point of contact shall be a staff member who is familiar with the test procedures required under PAS 100 / PAS 110 and the related workflow at the Approved Laboratory and any subcontractor laboratories used.
3. Approved Laboratories must inform REAL of any changes to contact details so that REAL can promptly update the list.
4. Approved Laboratories must send details to REAL, at the beginning of the 12-month appointment phase, about the locations in which testing of samples under the Schemes take place.
5. Approved Laboratories must inform REAL in advance of any decision to change the testing location or test method approach.
6. An Approved Laboratory must inform REAL of the guide prices it will apply for carrying out each parameter test, for each suite of tests and for the analysis of multiple samples when REAL requests it.
7. REAL may aggregate such information with that from other Approved Laboratories and use it in an anonymised form as the basis of Scheme guidance on typical prices charged by Approved Laboratories for laboratory testing in accordance with PAS 100 and the CQP and PAS 110 and the ADQP.

8. Approved Laboratories must respond to any request or query from REAL within two working days.

5 INITIAL APPOINTMENT AND RENEWAL

The laboratory's initial appointment or appointment renewal is conditional upon demonstrated evidence of compliance with these T&Cs, including the technical and non-technical aspects, and acceptance of compliance by the certification bodies appointed by REAL to provide independent certification services in relation to the Schemes.

5.1 Initial appointment

5.1.1 Laboratories that wish to become an Approved Laboratory to the Schemes must:

i. provide a completed application form (which can be requested from REAL),

ii. in respect of each Scheme that an application is made, provide three sets of test results on compost or biofertiliser products under PAS 100: 2018 and PAS 110:2014 (as applicable) that include all minimum quality and recommended parameters that are:

   a. listed in Tables 3 and 4 of PAS 100:2018 for CCS and/or

   b. listed in Table 1 of PAS 110:2014 for BCS; and

iii. undergo an initial assessment by an independent auditor appointed by REAL.

iv. demonstrate satisfactory performance in relevant proficiency testing programmes

5.1.2 The three full suites of tests must be performed on three different samples that were taken from one or more Producer sites in compliance with the relevant sampling guidance (available on the CCS and BCS websites or upon request from REAL). The test results will be used to populate data records and demonstrate to the auditor how the laboratory complies with these T&Cs.

5.1.3 Laboratories must undergo an initial assessment by an auditor appointed by REAL. The auditor will provide REAL with a report of the initial assessment, and a recommendation on whether the laboratory should be approved.

5.1.4 A laboratory may only become approved when REAL (and the certification bodies) are satisfied that the laboratory has demonstrated they have the capability to deliver testing under the chosen Scheme(s). The initial appointment will be for a period of six months. If continued, the appointment will be renewed on an annual basis subject to passing the full annual audit referred to in clause 5.2, meeting the performance monitoring requirements at clause 6 and compliance with these T&Cs.

Further guidance on the application and appointment process can be found on the Schemes' websites or can be requested from REAL. Contact details for REAL can be found at: http://www.renewableenergyassurance.org.uk/contact.

5.2 Annual Audit

5.2.1 For initial appointment and each 12-month renewal phase thereafter, REAL's assessment of conformance with these T&Cs shall include an independent assessment of the Approved Laboratory. This assessment will include at least one visit to the premises of the Approved Laboratory and of any sub-contractor it may use (unless this is already audited by REAL as an Approved Laboratory).

5.2.2 An audit report will be supplied by the independent auditor to the Approved Laboratory following the independent assessment listing any non-conformances and any other relevant observations/comments. The type of non-conformance assigned against any of these T&Cs shall be based upon evidence and observations made during the evaluation, whether done before the audit, during that visit, or afterwards when corrective action evidence is being evaluated.

5.2.3 If non-conformances are found the Approved Laboratory must supply to the independent auditor a list of corrective actions within a week from receiving the audit report, which will be taken to address any non-conformance and indicate the maximum timescale for the completion of such corrective actions. Non-conformances must be addressed in a timely manner and within a maximum of one month from the audit date.

5.2.4 Depending on the type and nature of the non-conformance the independent auditor may request that the Approved Laboratory takes corrective actions immediately or may establish that one month is not sufficient to complete the required corrective action and therefore extend the maximum allowed timescale.

5.2.5 Depending on the type and nature of the non-conformance and whether this affects the validity of the test results, the independent auditor may contact REAL to discuss the non-conformance and if in agreement, the independent auditor and REAL may suspend testing until the non-conformance has been fully resolved.

5.2.6 Appropriate actions and maximum timescales for completion of such actions may also be identified by the Approved Laboratory or required by the Independent Auditor in relation to observations or comments made by the Independent Auditor that are not reported as non-conformities.

5.3 Sub-contractors

5.3.1 An Approved Laboratory may sub-contract testing of one or more parameters to another laboratory, provided the sub-contracted laboratory complies with all requirements specified in these T&Cs.

5.3.2 Approved Laboratories must require any laboratories they sub-contract with to comply with these T&Cs and this must be an express term of a written service contract. The Approved Laboratory will be responsible for ensuring that these T&Cs are met at all times.

5.3.3 An Approved Laboratory will be responsible for carrying out annual audits at any of its sub-contracted laboratories it uses to ensure that these T&Cs are adhered to. The outcome of such audits must be recorded so as to be available for REAL or an appointed auditor as required.

6 LABORATORY'S PERFORMANCE MONITORING

6.1 Spot check visits

6.1.1 REAL reserves the right to carry out one or more extra audits if these are required to verify that any non-conformance has been addressed by the Approved Laboratory and any sub-contractor it may use. The costs associated with any additional visits carried out shall be borne by the Approved Laboratory but shall be kept as low as reasonably possible.

6.1.2 An Approved Laboratory (and any sub-contractor it may use) must agree to co-operate with any planned or unannounced spot check external audits carried out by REAL or an external organisation appointed by REAL.

6.1.3 REAL reserves the right to carry out an unlimited number of unannounced spot checks at the Approved Laboratory and any laboratory it sub-contracts.

6.2 Proficiency testing programme

6.2.1 An Approved Laboratory or its sub-contracted laboratory shall register and participate in any proficiency testing (PT) programme specified by REAL for all the relevant parameters.

6.2.2 If and when such a new PT programme becomes available, REAL reserves the right to extend this agreement to require Approved Laboratories to participate in that programme.

6.3 Testing for Salmonella spp. and Escherichia coli

6.3.1 The Approved Laboratory or its subcontracted laboratory must participate in the VET QAS PT programme PT0164 for *Salmonella* spp. and *E. coli* (http://apha.defra.gov.uk/apha-scientific/services/vetqas/index.htm, Vetqas@ahvla.gsi.gov.uk). If an Approved Laboratory is removed from the PT0164, it shall notify REAL within 5 working days and will no longer remain approved by REAL to carry out *Salmonella* spp. or *E. coli* testing.

REAL is set by the APHA as a viewer, this is allowed to view the VET QAS PT programme test results and associated reports.

6.3.2 When a VET QAS tabulation of the test results shows that unsatisfactory or incorrect results have been reported by an Approved Laboratory, this laboratory shall carry out an investigation to understand why it happened and apply corrective actions to ensure unsatisfactory/incorrect results are not reported in future distributions. A record of the investigation shall be made and kept by the laboratory and provided to the auditor once the investigation has been completed or to REAL when requested.

The record shall include:

- Reference to the VET QAS sample distribution period;
- The reason for the incorrect reported result; and
- The action/s taken by the laboratory to address the cause of the incorrectly reported result.

6.3.3 Upon request by the Approved Laboratory, the VET QAS will send a repeat set of samples that the laboratory can use to test in order to confirm that corrective actions have been effective.

6.3.4 REAL reserves the right to suspend the lab appointment to carry out *Salmonella* spp. or *E. coli* testing in the event an Approved Laboratory fails to meet the requirements set out above.

6.3.5 REAL reserves the right to require any Approved Laboratories in future to participate in an alternative PT programme, if this is regarded as more suitable than the one specified above.

7 TERMINATION OF APPOINTMENT

1. REAL reserves the right to terminate a Laboratory's approval if the Approved Laboratory is in breach of any of the requirements specified in these T&Cs.

2. If non-conformances are identified during an audit not been addressed within a maximum one month from the audit date, or within the timescales specified by the independent auditor, the Approved Laboratory will be informed by REAL in writing that the appointment will be terminated in 28 days from receipt of the notice letter.
3. REAL will communicate the termination of approval to relevant participants in the Schemes in a timely manner to avoid samples being tested at a non-approved laboratory. REAL will not communicate the specific reason(s) for appointment termination to participants in the Schemes.
4. The laboratory will have the right to re-apply but it would not be readmitted until it could demonstrate that the non-conformances had been adequately addressed.

8 REAL'S RESPONSIBILITIES

8.1 REAL is responsible for:

i. Making a list of Approved Laboratories publicly available and keeping the list up to date.

ii. Carrying out or appointing an independent competent organisation to carry out external audits to ensure the Approved Laboratories comply with all T&Cs in this agreement.

iii. Updating the Approved Laboratories appointed to the Schemes on changes to standards, scheme rules, test methods and associated documentation.

iv. Ensuring that the CCS and BCS are robust and well-maintained in order to ensure market and regulatory confidence.

8.2 Approved Laboratories' list

REAL's public list of Approved Laboratories and their sub-contractors shall be in the format shown below and contains as a minimum the following information:

i. Laboratory's name,

ii. Laboratory's address,

iii. Laboratory's main contact and associated details.

REAL's public list of Approved Laboratories confirms the validity of the appointment, which gives assurance to producers that the Approved Laboratory can be used for testing for certification purposes.

9 FEES FOR APPROVED LABORATORIES

9.1 Annual fees:

REAL will require Approved Laboratories to pay an annual auditing fee and an annual Laboratory Approval Scheme (LAS) administration fee.

These fees will be calculated to cover the costs of:

1. 'Access to market'
    i. management and development of the LAS for the benefit of the Approved Laboratories.
2. Inter-laboratory, ring trials or PT programmes
    i. arranging inter-laboratory/ring trials or PT programmes;
    ii. appointing a suitably qualified contractor to analyse the results of any trial/programme;
    iii. evaluating the results and writing recommendations following the inter-laboratory trial or PT programme;
3. Independent assessment against these T&Cs
    i. appointing an auditor to check the Approved Laboratory's compliance with these T&Cs. This assessment will include at least one visit to the premises of the Approved Laboratory and of any sub-contractor it may use (unless this is already audited as an Approved Laboratory); and
    ii. evaluating the outcome of the auditor's checks and carry out any further checks required to verify that corrective actions have been taken by the Approved Laboratories.

These annual fees will be reviewed annually and notified to the Approved Laboratories before reappointment letters are issued.

9.2 Additional fees

9.2.1 REAL reserves the right to charge Approved Laboratories an extra amount on top of the annual fees to cover the costs of any additional assessment required to check performance of an Approved Laboratory, including any technical and legal advice required.

9.2.2 In the event that a planned inter-laboratory trial shows that results precision, trueness, intra-laboratory repeatability and/or inter-laboratory reproducibility is inadequate, REAL reserves the right to charge an extra fee to cover for any additional assessment required to check the laboratory's performance.

9.2.3 The flat rates of the annual auditing fee and LAS administration fee will be based on the assumption that all PAS 100/PAS 110 test methods are carried out at the Approved

Laboratory. REAL reserves the right to charge an appropriate fee to recover the cost associated with auditing any sub-contracted laboratories, when this is required. Where the Approved Laboratory sub-contracts tests to another Approved Laboratory, a separate audit of the sub-contractor may not be required.

10 Methods of test for compost and digestate samples

10.1 Approved test methods

10.1.1 The test methods used by the Approved Laboratories must be those specified in the latest version of the PAS 100 for CCS and PAS 110 for BCS. Approved Laboratories must follow the instructions specified in the test methods and any additional instructions specified in the laboratory's own validated standard operating procedures.

10.1.2 Certain test methods specified in PAS 100 / PAS 110 are either owned by REAL or fall under REAL's responsibility. The Approved Laboratory must keep a record of when and for what purpose these Scheme specific test methods were used. The information must be made available to REAL on request. It will inform further developments of those test methods.

10.2 Test method deviations

10.2.1 An Approved Laboratory may seek approval for test method deviations by contacting REAL and submitting a method deviation request with information about the proposed deviation and any evidence it may have to support it. A method deviation request shall include:

i. method reference and name,

ii. motivation for changes, proposed changes and expected effects of the changes.

iii. Evidence that support their proposals.

If the laboratory has already conducted an assessment of the effects of the changes before submitting a method deviation request, it shall submit the evidence together with the method deviation request. REAL shall review the request and send a response within 28 working days. REAL may decide to approve, reject or request more evidence to support the case for the method deviation request.

10.2.2 If a method deviation request is accepted and the changes to the method are implemented at the laboratory, re-validation of the method should be carried out (for guidance go to section 11.6).

10.2.3 If REAL requires more evidence to support a method deviation request, it may require the laboratory to undertake an independent assessment of the proposed changes which may include trial tests, risk assessments or any other assessments that are relevant to the nature of the proposed changes. The Approved Laboratory shall bear any costs associated with the independent assessment.

11 QUALITY ASSURANCE AND CONTROL

11.1 Quality Management System

11.1.1 The Approved Laboratory must develop, implement and maintain a Quality Management System (QMS) that fully complies with the requirements in ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*. The QMS must continually improve itself and improve customer service, quality control, and communication.

11.1.2 The QMS shall define and refer to all procedures and systems and consists of documents describing the operation of the QMS. The documentation requirements in ISO/IEC 17025 should be followed and implemented including the documentation of Policies & Objectives, Processes & Procedures, Standard Operating Procedures (SOPs) and Work Instructions, Checklists, Forms, Templates and Records. All routine tasks should be performed to written procedures.

11.1.3 An Approved Laboratory (and any sub-contractors it may use) must have Standard Operating Procedures (SOPs) that do not deviate from the methodologies specified in the relevant PAS (PAS 100 for CCS and PAS 110 for BCS) or methodologies approved by REAL where equivalence to PAS 100 or PAS 110 tests has been demonstrated, or from any other instructions specified by REAL.

11.1.4 In addition to the requirements in ISO/IEC 17025, REAL requires the Approved Laboratory to comply with the additional quality requirements outlined below.

11.2 Complaint procedures

11.2.1 An Approved Laboratory must follow a process to identify if a corrective action is required or not and, if required, implement any necessary corrective action following any complaints or concern expressed by any interested parties, including operatives, customers, clients, certification bodies, the Scheme Owner or regulatory authorities about the quality of their services.

11.2.2 An Approved Laboratory must record:

i. name and contact details of the person who expressed concern or made a complaint;

ii. specific subject(s) of the concern or complaint;

iii. date and time communicated to the lab and name of the person to whom it was communicated;

iv. nature and date(s) of any actions and checks and who carried them out;

v. nature and date of any response to the person who expressed a concern or made the complaint; and

vi. name of the person who communicated the response.

An Approved Laboratory must provide REAL with regular updates on investigations into complaints raised through the REAL laboratory complaints procedures. The Approved Laboratory must also inform REAL of the outcome of the complaint investigation.

11.3 Internal audits

11.3.1 An Approved Laboratory (and any sub-contractors it may use) must conduct and record internal audits at planned intervals, at least annually, or sooner if required, to determine whether:

i. the correct procedures are being followed, relevant to the subject of the audit;

ii. any changes need to be made to procedures in order to improve accuracy, precision, repeatability, reproducibility and equipment performance and efficacy; and

iii. as relevant to the audit, the T&Cs set out in this document are being complied with.

11.3.2 The Approved Laboratory must make records from internal audits available to REAL when requested.

11.4 Technical competence

11.4.1 The staff of an Approved Laboratory must be competent to provide the requisite testing services, to perform the relevant test methods and to produce technically valid data and results. The Approved Laboratory is responsible for the competence and behaviour of its staff, and for the staff of those acting on its behalf. The technical competence of staff should be assured and maintained through a training system which should be defined in the QMS.

11.4.2 Staff members who supervise or carry out PAS 100 or PAS 110 tests must be able to follow the relevant SOP that is based on the relevant test method and carry out the tests without errors while following the procedure.

11.4.3 Staff members who supervise or carry out PAS 100 or PAS 110 tests must be able to understand the context, meaning and consequences of interim and final test results. They must be able to apply the relevant control measures for each test and understand the output from such measures, such as results of quality control samples and interpreting quality control charts, in order to identify errors during the test and prevent the reporting of false results to producers.

11.5 Validation of test methods

11.5.1 Each test method carried out by an Approved Laboratory (and by any of its sub-contracted laboratories) under REAL appointment must be initially validated for the specific test matrix (compost/digestate). The responsibility for validating a test method and using an appropriate validation method lies with the Approved Laboratory.

Validation of standardised methods is typically undertaken on a selection of representative samples which would normally comprise:

i. a blank sample (to facilitate estimation of the method limit of detection),

ii. two standard solutions or samples at the lower and upper range of interest,

iii. a sample and a spiked sample or reference materials to facilitate estimation of recovery and precision on real samples. Typically, an experimental design of 11 batches analysed on a separate occasion in duplicate for each sample is required (DWi, 2012)1. ISO 16140 covers procedures suited to microbiological analysis.

The validation procedure should be documented and made available to REAL when requested at the time of an audit or during the term of appointment. An Approved Laboratory may seek advice from REAL regarding the validation of non-standard methods.

11.6 Re-validation of test methods/procedures

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[1] DWi, Guidance on the Implementation of the Water Supply (Water Quality) Regulations 2000 (as amended) in England, version 1.1, March 2012, Appendix A, Section 3.6-3.9. http://dwi.defra.gov.uk/stakeholders/guidance-and-codes-of-practice/WS(WQ)-regs-england2010.pdf

11.6.1 An Approved Laboratory (and any sub-contractor it may use) must re-validate the specified test methods it uses should there be a change to it (for example, a change to the test method specified in PAS 100 / PAS 110 or an improvement to the test method made by the method owner). The responsibility for validating the test method and using an appropriate validation method lies with the Approved Laboratory. See recommended procedures described in section 11.5.

11.6.2 An Approved Laboratory must inform REAL every time it changes the equipment it uses to carry out a test method and, in such circumstances, it may be required to re-validate the test method.

11.6.3 An Approved Laboratory may be required to take part in inter-laboratory trials as part of the re-validation of the test method or new equipment or, if appropriate, to take part in one or more PT programme testing rounds, as may be defined by REAL from time to time.

12 Sample Management

12.1 Sample transportation and storage

12.1.1 When an Approved Laboratory arranges for the samples to be collected from the producer's premises, the laboratory must provide appropriate containers to facilitate sufficient storage and handling of the sample prior to being received at the lab.

12.1.2 Samples must arrive at the Approved Laboratory within 48 hours from the time of sampling. If a sample is to be tested for pathogens, a courier service that will deliver to the laboratory within 24 hours shall be used – the exception to this being extreme geographical locations where a 48 hour service shall be used with samples dispatched on the same day as sampling.

12.1.3 Samples must be transported under such conditions that minimise any changes in sample characteristics over transit. The container used for transportation must be air-tight and protect the sample from contamination. In addition to this the following requirements need to be met for storage:

a) Biofertiliser samples must be kept at low temperatures (1-5 °C as per BS EN ISO 13040) prior to testing.

b) Compost samples must be kept at low temperatures (1-5 °C as per BS EN ISO 13040) prior to testing.

12.1.4 Any courier transporting ABP derived samples to be tested for *Salmonella* spp. and *E. coli* must be registered AB117 for the transport of ABP material, unless the producer is approved under Article 24 of Regulation (EC) No. 1069/2009 with APHA. (https://www.gov.uk/government/publications/approval-of-sites-using-animal-by-products-registration).

12.1.5 When the laboratory arranges sample collection on behalf of the producer, it shall agree with the producer in writing the timescales for compost/biofertiliser sample collection in compliance with this clause and agree actions in the event the compost/biofertiliser sample collection has been missed or has not taken place within the agreed timescales. Such actions need to be documented in the laboratory's QMS and made available when requested during an audit or requested by REAL during the term of the appointment.

12.2 Sample reception

12.2.1 A SOP must be in place and identified in the QMS that describes the procedure for sample reception, including inspections carried out on the sample at reception. Inspections must cover the documentation, conditions of transportation and quality of the sample.

12.2.2 The Approved Laboratory must ensure that the correct documentation was received with the sample and that the documentation is appropriately completed, in line with the requirements in section 13.3. The documentation must identify the sample correctly and must be confirmed by visual inspection of the sample, for example in the case of compost making sure that the grade size is the same as what is identified on the documentation.

12.2.3 The Approved Laboratory and/or subcontracted laboratory must check upon receipt of the sample that the sample has been transported in the correct conditions and within the maximum specified timescales as specified in section 12.1.2.

12.2.4 If any issues are identified at sample reception e.g. with documentation, sample quality or transport conditions, the Approved Laboratory must contact the customer to inform them about the issues found. If sample quality is potentially affected, e.g. due to broken containers or transportation problems, or the sample cannot be identified e.g. due to missing information or contradicting findings from the visual inspection of the sample and documentation, the Approved Laboratory must stop processing the sample and contact the customer to inform them about the issues.

12.2.5 If issues with a sample are not resolved by contacting the producer, the Approved Laboratory must stop processing the sample and contact REAL and send information about the nature of the issue.

12.2.6 REAL may require the compost/biofertiliser producer to repeat the sampling or independent sampling may be requested. The Approved Laboratory must not test further samples from the affected site until the issues are clarified by REAL. REAL will inform the Approved Laboratory if this situation arises.

12.3 Laboratory sample storage

12.3.1 Samples must be stored in a refrigerator (1-5 °C as per BS EN 13040) or in cool conditions (1-5 °C as per BS EN 13040) in a contained, dark space in order to minimise any changes to the characteristics of the sample prior to preparation and testing. An Approved Laboratory must not freeze samples.

12.3.2 The maximum fresh storage time before testing is defined in section 12.5. If samples are stored for a longer period than the allowed timescales, the Approved Laboratory or its subcontracted laboratory must highlight this on the test report.

12.4 Laboratory sample preparation

12.4.1 Sample preparation for test parameters must be done in accordance with BS EN 13040, Soil improvers and growing media –Sample preparation for chemical and physical tests, determination of dry matter content, moisture content and laboratory compacted bulk density except for microbiological parameters.

12.4.2 Laboratory sub-sampling and sample preparation procedures must ensure that the sample subject to the analytical procedure is representative of the original sample.

12.4.3 The Approved Laboratory's QMS, and that of any sub-contracted laboratory it uses, must describe sub-sampling and sample preparation procedures and demonstrate that these meet the objectives stated above.

12.4.4 An Approved Laboratory must test samples within specific timeframes after arrival for stability, plant response, weed seeds, *E. coli* and *Salmonella* spp. parameters, to ensure that the quality of the sample is not compromised and minimise the effect of storage on the quality of results. Specific timeframes are defined in section 12.5.

12.5 Timescales for testing

12.5.1 *Salmonella* spp. and *E. coli* and microbial pathogens:

Approved Laboratories must ensure that the time between the test samples arriving at the Approved Laboratory and the start of the test procedures does not exceed 48 hours.

12.5.2 All other PAS 100 and PAS110 parameters:

Approved Laboratories shall endeavour to start the test procedures within 48 hours from the time the test samples arrive at the Approved Laboratory. In no circumstances shall the time between the test samples arriving at the Approved Laboratory and the start of the test procedures (at the Approved Laboratory or its subcontracted laboratory) exceed one week.

13 ADDITIONAL REQUIREMENTS FOR APPROVED LABORATORIES

13.1 Accreditation by United Kingdom Accreditation Service ("UKAS")

An Approved Laboratory (and/or relevant subcontract laboratory) must hold UKAS accreditation in line with ISO/IEC 17025:2017 for minimum quality criteria methods i.e. *Escherichia coli*, Salmonella spp. and potentially toxic elements (PTEs) as listed in the PAS standards. UKAS accreditation shall be held for relevant matrices namely compost, growing media, digestate or sludge (depending on the Scheme). Approved Laboratories must have acquired UKAS accreditation no later than 31st December 2020.

13.2 Pre-arranged inter-laboratory trials

13.2.1 REAL reserves the right to carry out inter-laboratory trials at any time to check Approved Laboratories' performance. In particular, inter-laboratory trials will be designed to check systems and/or test result repeatability, reproducibility and trueness. Participation in such trials will be compulsory. An Approved Laboratory is required to bear the following costs:

i. The cost of sampling by a suitable sampling provider approved by REAL;

ii. The cost of testing, reporting and implementing any required corrective actions; and

iii. The cost of the time spent by REAL's staff in setting up and project managing the trial, evaluating results and checking the implementation of any corrective actions.

The above costs are already included in the fees outlined in section 9.

13.2.2 REAL will carry out inter-laboratory trials approximately every two years, unless participation in PT programmes is regarded as sufficient to assess Approved Laboratories' performance.

13.2.3 An Approved Laboratory must implement at its cost and within the prescribed timescales any recommendations or corrective actions identified as a result of inter-laboratory trials. An Approved Laboratory must record any corrective action or improvement made by the laboratory.

13.3 Compost or biofertiliser sampling and analysis requests

13.3.1 Laboratory testing shall not be started unless the sample is accompanied by the relevant Analysis Request Form correctly completed. Approved Laboratories may need to get in contact with the Producer to clarify the information on the Analysis Request Form. Test results must not be reported to the producer unless the sample has got an Analysis Request Form correctly completed.

13.3.2 If the sample was sent for certification purposes, then the producer should be advised to complete the most recent version of the PAS 100 Compost Analysis Request Form or PAS 110 Digestate Analysis Request Form as appropriate. The most recent version is available from the relevant Scheme website.

13.3.3 An Approved Laboratory may occasionally receive spot or independent samples which are accompanied by a clearly identified Independent Sampling and Analysis Request Form or a Spot Sampling Analysis Request Form.

13.3.4 For any clarification on spot or independent samples and associated analysis request forms, the Approved Laboratory should contact REAL. An Approved Laboratory should not seek such clarification or any instructions from the Producer that is the subject of independent sampling or spot sampling.

13.4 Charges for spot samples

An Approved Laboratory will charge the organisation indicated in the spot sampling and request form at the standard rate. This may be either REAL or the compost/biofertiliser producer that was the subject of the spot sampling. Spot samples will normally be tested as a part of an investigation into a complaint concerning the quality of the compost or biofertiliser sampled.

13.5 Testing capacity

An Approved Laboratory is required to keep records of testing capacity throughout the year. These records must document the maximum number of samples that can be tested within a given week, (whether for certification purposes or not), for non-standard methods of plant response, compost stability and residual biogas potential. These records must be provided to REAL and the Independent Auditor on request.

13.6 Re-testing at approved labs and subcontractors

13.6.1 Samples must not be re-tested unless the laboratory is confident that a failure in the analytical procedure has occurred, resulting in an invalid result.

13.6.2 Even when the laboratory is confident that a failure in the analytical procedure has occurred, the sample shall only be re-tested if this has been stored according the conditions and the maximum timescales specified in section 12.5.

13.6.3 Reasons for invalid tests and repeat test runs must be recorded along with any corrective actions that have been made before re-testing. These records shall be made available upon request by REAL or by the auditor during independent audits.

13.7 Laboratory's Quality Control

13.7.1 Appropriate routine procedures for quality assurance and control must be defined in the QMS and be in place and at the Approved Laboratory and any sub-contracted laboratory it uses to ensure the quality of the results.

13.7.2 The number of replicates tested when performing a test method must be as set out in the relevant test method. When the minimum number of replicates is not set out in the test method, in addition to specifying the minimum number of replicates used in the relevant SOP, the laboratory's quality manager must justify the basis on which the number has been chosen and demonstrate how this will ensure that reliable results are obtained.

13.7.3 Quality control measures (QCM) adopted for test methods shall be included and detailed in the SOPs for each test method. The Approved Laboratory must adopt the quality control measures specified in the required test methods unless stated otherwise by REAL. Additional quality control measures may be adopted after consultation with REAL, but the quality control measures specified in the test methods cannot be modified.

13.7.4 The QMS and all quality control measures for test methods must be regularly monitored, audited and acted upon to improve data variability within an expected margin of error.

For the basic principles of quality monitoring refer to 'NS 30 A Manual on Analytical Quality Control for the Water Industry. R.V. Cheeseman and A.L. Wilson. Revised by M.J. Gardner. June 1989'.

14 Reporting

14.1 Reporting to compost/biofertiliser producers and report format

14.1.1 REAL requires each Approved Laboratory to use its 'Analysis Report - Composted Material / Biofertiliser' template document, or to modify its reporting system in such a way that the format and information is presented as shown in the REAL's template. Analytical methods used for testing must be correctly referenced on the reports supplied to compost/biofertiliser producers.

14.1.2 All laboratory data must be reported as soon as the suite of analyses is complete (and payment has been made). Interim reports may be issued to avoid waiting for results from those tests that are carried out over an extended period of time.

14.1.3 An Approved Laboratory must always provide test results in a PDF format alongside any other format requested by the compost/biofertiliser producer or REAL (e.g. '.xls' or '.csv' for inclusion in bespoke databases).

14.1.4 For any parameter test not carried out on a sample but shown on the report template, the report's corresponding result cell should display N/A, meaning 'not analysed'.

14.1.5 For any test that was carried out on a sample but the determinands were below detection limits, the report's corresponding result cell should display the limit of detection at its face value preceded with a less than ('<') sign.

14.1.6 If a problem is identified with any of the tests it must be communicated to the customer as soon as it is identified (e.g. invalid test results).

14.1.7 An Approved Laboratory must retain test reports supplied to producers for a minimum of three years.

14.1.8 Those tests that were subcontracted to another laboratory must be identified on the test report.

14.1.9 If an Approved Laboratory identifies that incorrect results were reported for any of the parameters, it must inform the producer as soon as possible. The laboratory should carry out an investigation to identify the causes of the error and identify corrective actions. The outcome of the investigation and the corrective action must be recorded. If the nature of the error does not require the sample to be retested (e.g. calculation error), the laboratory should implement the corrective action and re-issue the test report as soon as possible. For those errors where a re-test is required, re-tests should only be carried out in accordance with instructions found in section 13.6.

14.2 Reporting test results to REAL

Approved Laboratories must report test results of samples sent for certification purposes to the certification database maintained by REAL. These may include test results obtained for:

i. For initial validation purposes;

ii. On-going testing to verify the continued efficacy of the PAS 100/PAS 110 quality management system and compost/biofertiliser compliance with PAS 100/PAS 110 minimum quality criteria and any other criteria specified and agreed with the customer;

iii. Archive samples that have been tested to verify compliance with PAS 100/PAS 110; and

iv. Re-sample test results that have been tested to verify corrective actions efficacy.

When joining either Scheme, operators agree that the Approved Laboratories may disclose all the above sample results to REAL, their certification bodies, the Environment Agency and such other regulator to which it would be reasonable to disclose the samples (clause 13.2.2 of BCS and CCS Scheme Rules).

14.2.1 Customers who participate in the CCS and BCS must have their results available in the certification database for inspection by their certification bodies. Instructions on reporting to the certification database can be requested from REAL. Reporting to the certification database must happen within a maximum two weeks of reporting of results to the customer (assuming payment has been made) in order to avoid potential delays in the certification process.

14.2.2 If the sample was not sent for certification purposes, then the test results must not be uploaded to the REAL CCS/BCS database.

14.2.3 An Approved Laboratory must always provide test results in a PDF format alongside any other format requested by REAL (e.g. '.csv' or '.xls').