The Research Hub:

Research Project Proposal - shortlisted by the Research Panel

RESEARCH HUB LOGO - *to be finalised*

Title of proposal	Work proposed by
Reducing plastic and other contaminants in compost feedstock	ORG and The Woodhorn Group
Summary	**Primary objective(s)**
Development of guideline input specifications for control of contaminant plastics in biodegradable wastes intended for composting or anaerobic digestion, and guideline methodologies for assessing contaminant plastic concentrations. The most effective way of tackling plastic and contaminants within compost products, which normally falls to the composting facility to bear the cost for extraction and disposal, is to prevent it coming in with feedstock. *Importance or impact of this project:* Reduction of compost contamination is crucial to improving markets for certified composts. The onus must be put on packaging producers and local authorities whom collect the waste. Motivating and educating the public is crucial and there is no better time than the present to do this via communication campaigns, development of layout/signage at collection facilities, provision of marketing materials and the harmonisation of policies, regulations and standards. Additional funding is needed to support LAs and industry to achieve this.	Establish guideline maximum concentrations for contaminant plastics in biodegradable wastes intended for composting, taking account of front-end, back-end and any other process steps that removing them and plastics limits in PAS 100 (for composts) and PAS 110 (for digestates): Develop guideline methodologies for: • suppliers of biodegradable wastes • composting facility operators, and separately for AD facility operators to use for quantifying contaminant plastic concentrations in biodegradable wastes intended for composting and, separately, for anaerobic digestion.

Scheme association
CCS 50% and BCS 50%
Reference # (for REAL purposes)
1 (general)

The Research Hub:

Research Project Proposal – shortlisted by the Research Panel

RESEARCH HUB LOGO - *to be finalised*

Title of proposal	Work proposed by
Sanitation criteria for composting processes (green waste only)	REAL and Zero Waste Scotland
Summary	**Primary objective(s)**
Sanitation criteria for composting green waste is described in Appendix A of PAS100:2018. As it's not part of the main standard it's deemed advisory and has no implications on compliance with PAS100. During recent revision of PAS100 the question was raised about the potential risks associated with Operators not following the recommended set of temperature/moisture regimes. *Importance or impact of this project:* Increase confidence in quality and safety of PAS100 certified green waste composts.	To determine whether the temperature regime wording should be changed to mandatory in Appendix A of PAS100:2018.

Scheme association
100% CCS
Reference # (for REAL purposes)
2 (general)

The Research Hub:

Research Project Proposal - shortlisted by the Research Panel

RESEARCH HUB LOGO - ***to be finalised***

Title of proposal	**Work proposed by**
Impact of storage on the quality of compost and digestate	REAL
Summary	**Primary objective(s)**
Several case studies to investigate any potential changes in compost and digestate characteristics during and after storage. The project would look at changes of minimum quality criteria specified in the relevant standard (PAS100 and PAS110) at the end of the storage period through comparison of analytical test of certified materials. *Importance or impact of this project:* Improve the confidence in quality of certified materials dispatched from sites and provide evidence to a discussion about potential need for retesting at the end of the storage period. Note: A requirement for additional testing following a prolonged storage was considered during recent revision of PAS100.	To determine the impact of storage on the quality of compost and digestate.

Scheme association
50% CCS and 50% BCS
Reference # (for REAL purposes)
4 (general)

The Research Hub:

Research Project Proposal - shortlisted by the Research Panel

RESEARCH HUB LOGO - ***to be finalised***

Title of proposal	**Work proposed by**
What does a PAS100 compost product look like?	RH Research Panel
Summary	**Primary objective(s)**
Case study to examine the visual appearance of PAS100 certified compost when spread to land. The study would involve a comparison of analysis of multiple certified composts and their visual appearance.	To compare PAS100 physical contaminant results with the actual appearance of the batch when spread to agricultural land. The purpose of this would be to provide regulators and stakeholders with a benchmark for the appearance of certified compost spread to land. At present we do not have a reasonably objective view on this.
Importance or impact of this project: Photographic evidence from complaints regarding PAS100 compost suggests to some that the allowable level of physical contamination in PAS100 compost is too high. Defenders of the standard have suggested that these photos do not show a PAS100 compliant compost and are therefore not a true reflection of the allowable limits.	

Scheme association
100% CCS
Reference # (for REAL purposes)
6 (general)

The Research Hub:

Research Project Proposal – shortlisted by the Research Panel

RESEARCH HUB LOGO - *to be finalised*

Title of proposal	Work proposed by
PAS100 plant response testing: options for change	ORG and The Woodhorn Group
Summary	**Primary objective(s)**
Project A: What options are there for alternative plant response test for compost for use in agriculture and land restoration. **Project B**: Investigating specific aspects of the PAS100 specified tomato plant response test, reasons for requiring plant response testing in PAS100 and whether the recommended field bean test for compost intended for use in growing media could substitute it in some or any circumstances. *Importance or impact of this project:* Both projects A and B would affect how PAS100 could be revised in the future.	**Project A:** What justification is there, if any, for PAS100 to require plant response testing of composts that will be applied to soils at *low* application rates in agriculture and land restoration to agricultural after-use? If there is justification, are there any published plant response test methods that could substitute the current PAS100 plant response test where compost is supplied for these uses? Alternatively, would further research be needed before a potential substitute method could be used and if yes, what are the recommended aims and objectives for that research? **Project B**: Taking into account past WRAP-supported research, assess whether the field bean test (recommended for PAS100 compost batches intended for the growing media market) has sufficient potential for substituting the tomato plant response test for all, some or no compost markets/end uses. The range of ways in which PAS100 composts are used as or in products should be included in the assessment. What further research would be needed on this test if it does have sufficient potential?

Scheme association
100% CCS
Reference # (for REAL purposes)
7 (test methods)

The Research Hub:

Research Project Proposal - shortlisted by the Research Panel

RESEARCH HUB LOGO - *to be finalised*

Title of proposal	Work proposed by
PAS100 compost stability: options for the future	ORG and The Woodhorn Group
Summary	**Primary objective(s)**
Should PAS100 composts be tested for stability and if yes, what options are there for how it's tested and should stability limits differ according to compost end use? *Importance or impact of this project:* The outcomes to inform discussions about: Is stability at the point of testing a real indicator of either poor processing or maturity of the compost? Many composters do not move their compost off site until a good few weeks after it has finished PAS 100 active composting, therefore given the opportunity to mature further. Is less stable compost a real concern for end markets? Should a batch with such a small margin of failure over the upper limit signify a failed batch if this is the only parameter to fail?	Review published literature (including research and compost quality standards/specifications in regulations, End of Waste rules and industry voluntary standards) on the relevance of compost stability, methods for testing compost stability, and limits in use (covering different compost markets / product types). Using published literature, evaluate the different approaches used for testing and assessing whether composted material is sufficiently biodegraded for its intended end use / uses (including the approach currently used in PAS 100). Discuss alternative way on how should PAS 100 control risk of compost toxicity (from break-down products arising from biodegradable wastes) to plants.

Scheme association
100% CCS
Reference # (for REAL purposes)
8 (test methods)

The Research Hub:

Research Project Proposal - shortlisted by the Research Panel

RESEARCH HUB LOGO - *to be finalised*

Title of proposal	Work proposed by
Recommending potential changes to PAS100's requirements relevant to *E. coli*	ORG and The Woodhorn Group
Summary	**Primary objective(s)**
Recommendations for use during future review of PAS 100: *Escherichia coli* test methods, the *E. coli* limit and when in the composting process the sample for *E. coli* testing should be taken. Review the *E. coli* test method specified in PAS 100 and this must include evaluation of whether the current version can be used for reporting E. coli results in the same way as they are reported for ABP regulation compliance assessment. If the current version of the method cannot be used in this way, could it be changed to achieve the same E. coli reporting basis as is done in the ABP context and if yes, what changes are needed?	Recommend which methods are suitable for specification in PAS 100 (this can be more than one) in future and if there is a single method that would be the most appropriate, identify it. Recommend the stage or stages in the composting process when the batch sample tested for *E. coli* should be allowed to be taken, for assessing PAS 100 compliance. What changes would be needed in a future version of PAS 100?
Importance or impact of this project: Potential changes to PAS 100's requirements relevant to *E. coli.*	

Scheme association
100% CCS
Reference # (for REAL purposes)
9 (test methods)

The Research Hub:

Research Project Proposal - shortlisted by the Research Panel

RESEARCH HUB LOGO - ***to be finalised***

Title of proposal	**Work proposed by**
Review of physical contaminant test methods specified in PAS100 and PAS110 and appraisal of alternatives	ORG
Summary	**Primary objective(s)**
Review the suitability of the PAS 100 and PAS 110 physical contaminant limits for, respectively, composts and digestates used in agriculture and land restoration to agricultural after-use. Stones are outside the scope of this proposed work. In particular, could testing and reporting distinguish between hard and film/flexible/lightweight plastics, if the PAS plastics limits were split into 'hard' and 'flexible' plastic limits what should those limits be and what should be their units of measure be? *Importance or impact of this project:* Are PAS 100 and PAS 110's physical contaminant limits appropriate for, respectively, compost and digestate use in agriculture and land restoration to agricultural after-use. If they are not appropriate, what should the limits be changed to? The project should take into account stakeholder views on the suitability or unsuitability of macroscopic impurities limits in the revised EU Fertilisers Regulation.	Review test methods specified in PAS 100 and PAS 110 and assess whether alternative test methods would be more appropriate, or changes should be made to the current PAS specified methods, units of measure and/or dimensions of particles that are counted as contaminants. The review should include test methods (as far as they are available at the time of this project) that will be used for assessing samples' compliance with the 'macroscopic impurities' limits in the revised EU Fertilisers Regulation.

Scheme association
50% CCS and 50% BCS
Reference # (for REAL purposes)
10 (test methods)

The Research Hub:

Research Project Proposal - shortlisted by the Research Panel

RESEARCH HUB LOGO - *to be finalised*

Title of proposal	Work proposed by
Production of proficiency test materials to meet the analytical requirements of laboratories operating to PAS100 and PAS110 standards	Fera Science

Summary	Primary objective(s)
The principal objective of the project is to develop the production and verification methods of proficiency test materials in novel matrices. The knowledge gained can then be used to provide proficiency tests for laboratories operating to the PAS 100 and PAS 110 standards. The operation of proficiency tests themselves is not in question; Fapas is fully experienced in this regard and this aspect is business as usual. The research project being proposed here is the development of the materials which could be used in a proficiency test. Since a proficiency test depends entirely on fit-for-purpose materials being sent to the participants, the material production is the critical step in the process. *Importance or impact of this project:* Proficiency testing scheme (PTS) is a tool used to improve consistency of analytical testing between laboratories. Its use may lead to increasing performance of laboratories working under CCS and BCS.	Production of Fit-for-Purpose Proficiency Test Materials and establish criteria for Proficiency Assessment.

Scheme association
100% CCS and 50% BCS

Reference # (for REAL purposes)
12 (test methods)

The Research Hub:

Research Project Proposal – shortlisted by the Research Panel

RESEARCH HUB LOGO - *to be finalised*

Title of proposal	Work proposed by	
Research into the history of each test parameter as specified in PAS100/PAS110	RH Research Panel	
Summary	**Primary objective(s)**	
The test parameters used to ascertain the quality of Compost and Biofertiliser are long established. Whilst the test parameters have been intermittently reviewed, for example during the recent reviews of PAS100, this has principally been in the context of test methods and limits. *Importance or impact of this project:* By examining the history of each test parameter, in particular, how it was initially selected, how the test methods were selected and how limit values have been initially set and if appropriate subsequently amended, it will be possible to evaluate their efficacy and possibly highlight alternative methods of analysis and where appropriate suggest new test parameters.	To ensure that the test parameters chosen to characterise Composts and Biofertilisers are fit for purpose and achieve their objectives of characterising Quality materials.	**Scheme association** 100% CCS and 50% BCS **Reference # (for REAL purposes only)** 13 (test methods)

The Research Hub:

Research Project Proposal - shortlisted by the Research Panel

RESEARCH HUB LOGO - *to be finalised*

Title of proposal	Work proposed by
Development of a research library for the organics recycling industry	REAL Market Development Working Group (MDWG)
Summary	**Primary objective(s)**
Numerous research projects have been conducted during the evolution of the organics recycling industry both within the United Kingdom and around the world. There is undoubtedly a wealth of existing information which could be collated and curated to advance industry knowledge. In developing a library of information, the 'gaps' in existing information can be identified and research goals clearly distinguished. Once developed all new projects could be logged. Permissions may need to be sought in publishing open access information and so legal aspects will also need to be considered by the deliverer of this project. *Importance or impact of this project:* Not only will a valuable resource be available to the whole industry, but research resource will not be wasted due to duplication and repetition of what has gone before.	Develop a library of existing research and undertake a gap analysis to identify potential areas for research. Project deliverables: • Literature review of available information • Library and extract summary. Example of organisation: https://bmcecol.biomedcentral.com/articles Gap analysis to define future research objectives.

Scheme association
50% CCS and 50% BCS
Reference # (for REAL purposes)
5 (general)