





Annual Report 2024

Compost / Biofertiliser Certification Schemes

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Introduction

Renewable Energy Assurance Ltd (REAL) carries out a range of certification and consumer protection activities. All these set and maintain high standards of operating practice, environmental improvement and consumer protection in the renewable energy and circular economy sectors, including in the areas of organics recycling, biogas, and bioenergy.

This report sheds light on the data collected during the course of the year. It also sets out REAL's work during 2024 to manage and develop the Compost Certification Scheme (CCS) and the Biofertiliser Certification Schemes (BCS), and to manage and develop the Research Hub.

Set up in 2006, REAL is a company limited by guarantee with the number 05720606. It is a wholly owned subsidiary of the Association for Renewable Energy and Clean Technology (REA), a leading trade association in the renewable energy and clean tech sector.

REAL works to ensure the schemes are robust and work for all relevant stakeholders, and in so doing, protects consumers of independently certified compost and digestate, and promotes the organics recycling sector.

Data was used from the beginning of January 2025 to reflect the status of the schemes at the end of 2024. The CCS and BCS sections provide an overview of the certified composting and anaerobic digestion processes and a summary of the operational data available to REAL. The Research Hub section provides a summary of the governance and operations, and an overview of the projects selected in 2024. It also showcases details about the projects that commenced in 2024 and updates on ongoing projects, focusing on the impacts of this work.

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A word from our Chief Executive

I have great pleasure in welcoming you to the 2024 Annual Report. Not only does it describe the Team's extensive work in administering the CCS and the BCS (the Schemes), but it also provides a comprehensive analysis of the data collected during the year.

This year the report includes several new datasets. For the first time, we have included a section analysing bagged material, providing insights into the scale and characteristics of this part of the compost market.

On the policy front the team has continued to support the work of the Environment Agency (EA), England's environmental regulator, in updating the Quality Protocols that underpin both the BCS and CCS.

Although, at the time of writing, we are yet to see the final version of the new Resources Framework our detailed discussions have given us an insight into its likely contents. As a result, the team has made good progress in planning the implementation phase for the new Framework which includes updating the Scheme Rules underpinning the Schemes.

Alongside this important work the Team has made improvements to the performance monitoring it carries out in respect of the Certification Bodies and Approved Laboratories. In this way the Team has sought to ensure that the Schemes are as robust and consistent as possible so as to provide a level playing field for all scheme participants and quality assurance for certified digestate and compost users.

Finally, the Research Hub continued to fund important research the outcomes of which ensure that scheme developments are evidence-based and relevant.

My congratulations go to the Team members for all their hard work during the year.

Virginia Graham

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A word from the Chair of CCS and BCS Technical Advisory Committee

Globally, 2024 was the hottest year on record and continued a sequence of years with abnormally high temperatures with the prospect that the Paris 2015 threshold of average temperatures 1.5°C above pre-industrial levels will be breached.

The levels of CO2 in the atmosphere continue to rise and as part of the strategy to manage global carbon budgets there is an increasing emphasis on the need to recycle carbon wherever possible with the concept of a circular economy becoming increasingly important.

A key and achievable component of the circular economy with respect to carbon is the recycling of organic rich waste materials; composting and anaerobic digestion provide two pathways for these carbon rich waste materials to be processed so that they are reused as applications to the soil, providing important carbon and nutrient inputs. The nutrient inputs from the compost and liquid and solid digestate may offset some of the soils requirements for imported, often manufactured nutrients, but of greater significance is the input of carbon to the soil. Soil carbon is important as a significant component of the terrestrial global store of carbon, but it is also recognised as playing a key role in the sustainable functioning of the soil system, having, for example, a major impact on soil structure and the flux of water and air through the soil system, the resilience of soils to environmental change and recognised as increasingly important in influencing the biodiversity of the soil system. The certification systems established under CCS and BCS provide guarantees that the appropriate application to soil of waste derived composts and digestates do not have negative impacts on the soil system.

Whilst remote meetings of the BCS/CCS Technical Advisory Committee have almost become the norm, in 2024 we took the decision that we would endeavour to hold one meeting 'in person'. As a compromise, to avoid excessive travelling, the summer meeting of the Technical Advisory Committee was held 'in person' at two centres, one in London and one in Edinburgh, with members also able to attend by video link (indeed I had Covid, so I chaired the meeting remotely!). The consensus was that this form of meeting offered the opportunity for committee members to meet and the discussion between participants tended to be somewhat broader than the norm during remote meetings. We shall continue the practice of at least one 'in person' meeting in 2025.

A key feature of the Committee discussions in 2024 were the developments in the Resource Framework which are replacing the Quality Protocols in England. The CCS Producers' Forum and BCS Operators' Forum have continued to meet remotely, with strong participation on matters such as interpretation of test results, the nature and quality of wastes received at their sites and developments related to the Resource Framework.

The Research Hub has continued to thrive albeit with a relatively small but very strong set of research proposals submitted in 2024. Reports from two projects were published in 2024; the Residual Biogas Potential project aimed to understand the cause of test-related issues, explore potential improvements to the method, and/or identify suitable alternatives. Whilst not providing the 'silver bullet' of a shorter and possibly cheaper method to determine RBP it produced important conclusion relating to inoculum use and the overall complexity of the method and interpretation of results linked to the diversity of feedstock to anaerobic digestion plants. The project on Carbon Accounting outlined methodologies for assessing the carbon footprint for composting and anaerobic digestion and will be an important contribution as carbon accounting becomes an important requirement for all commercial activities.

The public are increasingly recognising the need to use our resources efficiently and wherever possible to recycle; recycling of organic waste materials is one important component of this trend. It is important therefore that the products resulting from the recycling of organic waste materials through composting and anaerobic digestion are of high quality and fit for purpose. The BCS and CCS schemes ensure that scheme participants consistently produce materials that are of high quality and when applied to land do not cause environmental damage.

Professor Stephen Nortcliff (Chair of the BCS and CCS Technical Advisory Committee)

Glossary of Terms

| АВР | Animal By-Products | | | |
|--------|--------------------------------------|--|--|--|
| ADQP | Anaerobic Digestate Quality Protocol | | | |
| СВ | Certification Body | | | |
| CQP | Compost Quality Protocol | | | |
| EA | Environment Agency | | | |
| GHG | Greenhouse Gas | | | |
| GW+ABP | Green Waste and Animal By-Product | | | |
| IVC | In-Vessel Composting | | | |
| КРІ | Key Performance Indicator | | | |
| PAS | Publicly Available Specification | | | |
| PRT | Plant Response Test | | | |
| РТЕ | Potentially Toxic Elements | | | |
| QP | Quality Protocol | | | |
| REAL | Renewable Energy Assurance Ltd | | | |
| RF | Resource Framework | | | |
| RBP | Residual Biogas Potential | | | |
| SL | Separated Liquor | | | |
| SF | Separated Fibre | | | |
| ТАС | Technical Advisory Committee | | | |
| ТРА | Tonnage Per Annum | | | |
| TWG | Technical Working Group | | | |
| UKAS | United Kingdom Accreditation Service | | | |
| WD | Whole Digestate | | | |





Compost Certification Scheme

This scheme provides assurance to consumers, farmers, food producers, and retailers that quality compost derived from source-segregated biowaste is safe for human, animal, and plant health. Compost improves soil structure and health by increasing organic matter and the soils' ability to retain moisture and nutrients. Certification signifies that the compost was produced using an effective quality management system, providing assurance that the materials have a consistent quality, are safe and reliable to use, and are fit for purpose.

Analysis and breakdown of the CCS processes

Certified composting processes across the UK and Republic of Ireland



Figure 1. A map of the UK and Republic of Ireland with all CCS certified processes



Figure 2. Certified processes by country, as a percentage of total certified processes

By the end of 2024, there were 173 certified composting processes.

Approximately proportional to the number of processes per country is the total input tonnage per annum, with England accounting for 3.3 million of the approximately 4 million tonnes of material processed annually across all sites.



Figure 3. Input tonnage per annum by country, as a percentage of total input tonnage per annum



Figure 4. Scales of process represented as bracketed groups of input tonnage per annum

The most common process scale is 20,001-50,000 tonnes per annum (tpa), accounting for 34% of the total number of certified processes. The least common scale is the \leq 3000 tpa category with only 5% of certified processes within this category. However, all categories have significant representation.

Comparison of certified and non-certified processes in the UK

Data was collected from the environmental regulators on all the permitted/licensed composting sites in each country of the UK to show the proportion of certified permitted sites by the end of 2024. **The total number includes all waste-fed and non-waste fed sites.** The data is shown in the table below:

| Country | Total no. of sites with permits for composting | No. of certified sites with permits for composting | % of certified permitted sites |
|------------------|--|--|--------------------------------|
| Northern Ireland | 11 (3 PPC + 8 WML) | 6 (4 PPC + 2 WML) | 55% |
| Wales | 18 | 13 | 72% |
| England | 230 | 125 | 52% |
| Scotland | 18 (7 PPC + 11 WML) | 14 (7 PPC + 6 WML + 1 with both PPC and WML) | 78% |

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In addition to the certified sites with permits for composting, there were 8 in England and 5 in Scotland, with different types of permits or exemptions.

Process types



Figure 5. Process types as a percentage of all certified processes

A total of 116 out of 173 (67%) composting processes were operated as "open air, turned windrows". This is an increase of 1 percentage point from the previous year with 111 open air, turned windrows. The hybrid "in-vessel then open, air turned windrows" process is the second most common process type, accounting for 34 out of 173 (20%). Collectively, 87% of processes make use of open air, turned windrow processing as a stage during the process or wholly. A further 9% of processes used in-vessel processing, only 3% used "aerated static pile" processing, and 1% used "EcoPods".



Figure 6. Percentage of process types per country

A plurality of process types was present across all countries. However, the overall prevalence of certified open air, turned windrow processes in the UK is also present within its constituent countries; wherein it is either the majority or largest minority in all four other countries.

Feedstock

Compost feedstock varies between sites but is generally comprised of green waste only (GWO) (grass cuttings, flowers, prunings, hedge clippings, and leaves). Permitted industrial and animal by-product (ABP) wastes like food waste are typically processed at in-vessel composting facilities. Feedstock types are categorised as green waste only or green waste mixed with ABP materials.



Figure 7. Percentage of each feedstock type by tonnage

Figure 8. Annual input tonnage per country (millions of tonnes) by category of feedstock material

While three out of the five countries process GW+ABP as the majority materials for their feedstock, the overall majority of annual input tonnage across all certified processes in the UK is GWO due to the significant volumes of GWO processed by sites in England.

Figure 8 shows the input tonnage (in millions of tonnes per annum) of materials that were being processed by certified composting sites in each country on an annual basis by the end of 2024 per feedstock category. The approximate total tonnage per country is also shown below:

| Green waste only | Green waste and ABP |
|---|---|
| Certified processes in England: 2,482,000 tonnes | Certified processes in England: 898,000 tonnes |
| Certified processes in Wales: 130,000 tonnes | Certified processes in Wales: 0 tonnes |
| Certified processes in Scotland: 119,000 tonnes | Certified processes in Scotland: 167,000 tonnes |
| Certified processes in Northern Ireland: 1,000 tonnes | Certified processes in Northern Ireland: 278,000 tonnes |

While certified processes in England handle the largest volume of green waste, making up over twothirds of its total composting feedstock, certified processes in Wales exclusively process green waste with no ABP input. Certified processes in Scotland manage a more balanced mix of both feedstock types, while certified processes in Northern Ireland rely more heavily on green waste and ABP. Certified processes in the Republic of Ireland handle a relatively small volume, limited to ABP-inclusive material.





Open air, windrows accounted for the majority of GWO processes, while in-vessel processing (in-vessel only or combined with other processing techniques) accounted for nearly 90% of all GW+ABP processes. Aerated static piles (without in-vessel) are used exclusively for processing GWO feedstock.



Output, Products, and Markets



Output

Output tonnage (millions of tonnes)



England accounted for over 1.5 million tonnes of the total 2 million tonnes of certified compost that was being produced annually under CCS; representing approximately 80% of all output. Scotland produced approximately 120,000 tonnes of certified compost annually, accounting for 9% of the total output. Northern Ireland produced approximately 180,000 tonnes, equivalent to 8% of total output. Wales produced approximately 2% with 62,000 tonnes annually.

Products

| Product types | Principal output by product type | Additional outputs by product type |
|---------------------------------|-------------------------------------|---------------------------------------|
| Landscape Blend | 1 | 0 |
| Manufactured topsoil ingredient | 1 | 0 |
| Mulch | 3 | 2 |
| Soil conditioner | 168 | 88 |
| Grand Total | 173 | 90 |

Figure 13. Product type frequency across principal and additional grades

Soil conditioner accounted for over 97% of all compost products within the principal grade, only dropping by 1 percentage point from 2023 within the additional grades. Mulch is the second most common product type, but only accounts for 1.5% and 3% of principal and additional grades respectively. While growing medium ingredient is another recognised category of output product, no outputs were recorded under this classification, and thus it was not represented in the data.



Figure 14. Scheme processes by number of outputs

Of the 173 processes on the CCS, 93 (53.8%) have only one certified output, 68 (39.3%) have two certified outputs, and 11 (6.4%) have three certified outputs. The principal output grade—the first output grade, and the only grade in cases where there is only one certified output—is typically a smaller grade size.

Markets

The end market sectors for all certified compost were recorded throughout 2024. Markets are categorised as follows: "Agriculture and soil-grown horticulture", "Domestic or professional horticulture", "Land restoration and soft landscape operations" and "Forestry".



Figure 15. The number of products supplied to each market sector per product type as a percentage of the total number

Across the 173 processes on the CCS, there were 299 certified outputs, each assigned a designated end market. This graph illustrates the distribution of these outputs across different markets, showing how many outputs supply each sector. Some outputs are designated for multiple end markets, meaning the total count of outputs supplying markets exceeds the overall number of outputs. The most common end market is agriculture and soil-grown horticulture, followed by land restoration. Domestic or professional horticulture and forestry receive far fewer outputs overall.

Despite the significant difference in scale between the number of mulch and soil conditioner outputs, the proportions of markets they supply are quite similar, with both primarily serving agriculture, land restoration, and domestic or professional horticulture in comparable ratios.





This graph illustrates the number of certified outputs in each UK nation, categorised by the end market they supply, expressed as a percentage of all outputs. Agriculture and soil-grown horticulture is the dominant market across all regions, accounting for around half or more of all certified outputs. Domestic or professional horticulture is the second most common market, particularly in England and Scotland, while land restoration features more prominently in England than in the devolved nations. Forestry is a minor market, with only a small presence in Scotland and England. Northern Ireland has the smallest number of processes overall, with outputs primarily directed towards agriculture and domestic or professional horticulture



Figure 17. The number of certified processes supplying to each market sector per processing type, as a percentage of the total

Eco pods supplied to the smallest range of markets, supplying to only one market sector. This is followed by In-vessel composting (IVC), and IVC then aerated static piles which both supplied to three different market sectors. Open air, turned windrows and aerated static piles were the only processing types that supplied compost to all four market sectors (agriculture, land, forestry, and domestic). Figure 16 suggests that the processing technique employed to produce certified compost does not dictate which market sector that compost will be supplied to, as all process types supplied to at least three markets (apart from Eco Pods which are a statistical anomaly).

Bagged material

As shown in the market section of this report, the primary market for compost is agriculture and fieldgrown horticulture. Bagged material is more commonly associated with amateur horticulture and smallerscale agricultural operations, as well as third party suppliers of material.



Figure 23. Comparison between bagged and unbagged output material

By the end of 2024, 94% of annual output tonnage was unbagged. This most likely reflects the primary market for compost, which is dominated by large-scale agricultural applications where bulk material is preferred.

Bagged compost is typically associated with amateur horticulture, small-scale farming, and retail markets, where packaging facilitates distribution and sale to end users. The relatively small proportion of bagged output suggests that while there is demand for pre-packaged compost, it remains a niche compared to bulk sales. However, bagging performed by third-party distributors is not recorded as the material being "bagged" at the point of output. As a result, the true share of bagged compost in the supply chain may be higher than the recorded figure suggests.



Figure 24. Tonnage of bagged and unbagged compost output by country.

In England, the vast majority of compost produced annually remained unbagged, with approximately 3 million tonnes processed in bulk and only around 230,000 tonnes bagged, representing 9% of total annual tonnage output.

In Wales, a significantly higher proportion of compost was bagged relative to total output. Out of approximately 130,000 tonnes produced, 32,000 tonnes were bagged, equating to approximately 25% of total annual output tonnage.

Meanwhile, processes in Scotland and Northern Ireland report zero bagged tonnage, with 286,000 tonnes and 350,000 annual tonnes respectively, all appearing to be processed as unbagged bulk material.

While unbagged compost dominates across all nations, Wales stands out with a more diversified output.

Only compost produced from green waste–only (GWO) feedstock is being bagged, while no compost from processes using green waste and ABPs materials is bagged.

Biofertiliser Certification Scheme

This scheme provides assurance to consumers, farmers, food producers, and retailers that 'biofertiliser' produced from certified anaerobic digestion processes is safe for human, animal, and plant health. Biofertiliser is the name adopted for the digestate certified under the Biofertiliser Certification Scheme.

Digestate is a nutrient-rich organic fertiliser that can be spread to land to confer agronomic benefit to soil and improve its physical quality. Certification signifies that it was produced using an effective quality management system, which provides assurance that the materials are of a consistent high quality and are safe and reliable to use.

By the end of 2024, there were 107 certified BCS processes. The processes are distributed as follows:

and and a contract

- England: 79
- Scotland: 12
- Wales: 8
- Northern Ireland: 8



Analysis and breakdown of the CCS processes

Certified anaerobic digestion processes across the UK



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Figure 1. All certified AD operators in the UK by the end of 2024



Comparison of certified and non-certified processes in the UK

Data was collected from the environmental regulators on all the permitted/licensed composting sites in each country of the UK to show the proportion of certified permitted sites by the end of 2024. **The total number includes all waste-fed and non-waste fed sites.** The data is shown in the table below:

| Country | Total no. of sites with permits AD/biogas | No. of certified sites with permits for AD/biogas | % of certified permitted sites |
|------------------|---|---|--------------------------------|
| Northern Ireland | 47 (5 PPC + 42 WML) | 8 (3 PPC + 5 WML) | 17% |
| Wales | 21 | 8 | 38% |
| England | 220 | 68 | 31% |
| Scotland | 30 (16 PPC + 14 WML) | 9 (8 PPC + 1 WML) | 30% |

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In addition to the certified sites for AD/biogas, there were 10 other certified sites in England and 3 in Scotland, with different types of permits or exemptions.

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Input



Certified processes were receiving a collective **6.0 million tonnes** of input materials per annum, representing an 11% increase over last year's **5.4 million tonnes** of input material.

Figure 2. Annual input tonnage by country as a percentage of total input

Figure 3. Processes per country as a percentage of total number of processes

There is a strong relationship between the total number of certified processes in a country and the tonnage of certified digestate output processed. In 2024, Most processes were located in England (74%), which was also where most input material were processed (79%). This trend follows every country.



Figure 4. Scales of process represented as bracketed groups of input tonnage per annum

The distribution of anaerobic digestion processes by input tonnage highlights the significant variation in operational scales across facilities. The majority of plants fall within the two brackets that represent the 25,001 to 75,000-tonne range, collectively representing 61% of all certified sites; with plants processing 50,001 – 75,000 tonnes accounting for the largest share (34%), underscoring the prevalence of mid-to-large-scale operations within the scheme.

Larger facilities handling >75,000 tonnes make up 16%. In contrast, smaller operations remain less common, with only 11% of facilities processing \leq 15,000 tonnes annually.

Feedstock

Feedstock materials processed by certified AD plants vary. Operators accept input materials from agricultural, municipal, commercial, and industrial sources. They also accept a combination of ABP and non-ABP materials, products, co-products, wastes, and residues. A combination of these input materials is common.



Figure 5. Percentage of plants in each feedstock type category

AD plants are categorised under the scheme as 'farm', 'waste' or 'other', based on the input materials they process. Farm-fed plants are those processing over 50% agricultural feedstock e.g., manures and crops. Waste-fed plants are those processing over 50% waste feedstock e.g., food waste. Plants in the 'other' category are those processing over 50% nonwaste/agricultural feedstock e.g., distillery by-products.

By the end of 2024, 86 plants fell in the 'waste' category, 16 in 'farm', and 5 in the 'other' category.



"Waste" is either the dominant or sole feedstock type for every country, with "Farm" plants taking up a significant minority across all countries apart from Wales. Plants in the "Other" feedstock category show the most irregular usage, occurring almost exclusively in Scotland where they account for >20% of the processes in Scotland. This may be because a significant part of plants comprising the "other" category are distillery by-product processing plants, and Scotland has a much higher concentration of distilleries compared to the rest of the UK¹.



Figure 7 shows the total annual input per country, broken down by feedstock type. In total, approximately 260,000 tonnes of organic waste materials were processed annually by certified plants in Wales, 930,000 tonnes in Scotland, 220,000 tonnes in Northern Ireland, and 4.22 million tonnes in England. England and Northern Ireland's feedstocks are predominantly waste, while Wales relies entirely on waste feedstocks. Scotland stands out for its more balanced use of waste and farm feedstocks, though the majority of its plants fall into the "other" feedstock category.While all countries show a relatively similar distribution of processes by feedstock type and input tonnage by feedstock type, Scotland stands out as an exception. In Scotland, only a small number of processes handle "other" feedstocks, yet these account for the majority of the total input tonnage for Scottish certified AD processes. Conversely, the "waste" category represents the majority of Scottish AD processes but contributes only a small minority of the overall input tonnage. This suggests that Scotland's "other" feedstock processes operate at a significantly larger scale than those processing waste, making its feedstock distribution notably different from the rest of the UK.

¹ Office for National Statistics (2023) Distilleries in the UK, March 2023. Available at: Distilleries in the UK - Office for National Statistics. According to the report, Scotland has 360 distilleries, while England has 625. However, when adjusted for population, Scotland has approximately 66.7 distilleries per million people, compared to England's 11.2 per million.

Output and Markets



Figure 8. Annual output tonnage by certified digestate output type, as a percentage of the total annual output

Total digestate output across all countries was approximately 5.0 million tonnes per annum. Whole digestate is the most common output and, as expected, accounts for the highest tonnage. The lower tonnage of separated fibre can be attributed to its significantly lower water content compared to whole digestate (WD) and separated liquor (SL), which contain far more moisture, increasing their overall weight.



Figure 10. Annual output tonnage by country and feedstock type as a percentage of the total annual output tonnage

Waste is the predominant feedstock across England, Wales, and Northern Ireland, and it remains the largest contributor to digestate output.



Figure 11. The number of output types supplied to each end market sector

Whole digestate is the most widely supplied product, primarily directed to agriculture, with smaller contributions to land restoration and forestry. Separated liquor follows a similar pattern, though with a slightly higher proportion reaching non-agricultural markets. Separated fibre has the most concentrated supply to agriculture, with limited but present distribution to other sectors. It is important to note that some outputs are supplied to multiple markets, meaning the total number of distribution channels between output types and end markets exceeds the total number of outputs produced.



Figure 12. End market by output type

Each market sector receives all three types of digestate output, though in varying proportions.

Agriculture and forestry see a relatively even split, with whole digestate comprising the largest share, followed by separated liquor then separated fibre. Land restoration relies more heavily on separated liquor. These findings highlight the versatility of digestate products across different land applications, ensuring nutrient recycling benefits are optimally utilised in each sector.

Resource Framework

The Schemes were in regular contact with the Environment Agency regarding the development of the Resource Frameworks and remained committed to supporting a robust end-of-waste framework for CCS and BCS, ensuring the revisions balance environmental protection with <u>practical implementation</u>.

Along with the PAS documents, the Quality Protocols are foundational documents for their respective schemes in England, Wales, and Northern Ireland. The replacement of the Compost and Anaerobic Digestate Quality Protocols with the new Resource Frameworks aligns with the Environment Agency's commitment to continuous improvement.



Scheme and Sector Developments

CB Performance Monitoring

REAL conducted our annual review of CB performance, incorporating feedback from scheme participants, producer representatives, and internal monitoring data. The newly developed CB KPIs have been used to assess performance, ensuring the continued delivery of high-quality certification services. All CBs were found to be performing to a high standard, offering a robust service to scheme participants and REAL and will continue to work with the schemes in 2025.

Laboratory Performance Monitoring

The 2024 laboratory audit round was conducted by SJB Quality Consulting, introducing a fresh approach to auditing. All three Approved Laboratories were audited as part of this process, with a specific methodology applied to enhance scrutiny and consistency. Alongside the audits, the laboratory Terms & Conditions were reviewed, consulted on, and subsequently updated to include new requirements such as mandatory participation in proficiency testing schemes for potentially toxic elements (PTEs). Certification Bodies were actively involved in the decision-making process regarding laboratory reappointment, ensuring a robust and transparent evaluation. Participation in proficiency testing schemes ensures that laboratories demonstrate competence in performing critical analyses that underpin the quality and safety of certified compost and digestate. Alongside this, UKAS accreditation remains a cornerstone of laboratory quality assurance, offering formal recognition that a laboratory operates to internationally recognised standards. These requirements safeguard the validity of testing outcomes and reinforce the integrity of the Compost and Biofertiliser Certification Schemes, ensuring confidence among producers, regulators, and consumers alike.

Laboratory Reporting Templates

Following consultations with the TAC and Approved Laboratories, REAL successfully tested and finalised the PAS 100 and PAS 110 reporting templates earlier in the year. These templates, which clarified plastic limit specifications, were prepared for implementation alongside the publication of the Resource Framework. The successful testing of the reporting templates is a crucial part of the Schemes' efforts to make the transition from Quality Protocol to Resource Framework as smooth as possible for all relevant stakeholders of the schemes. With the laboratory Research

About the Research Hub

Who we are

The Research Hub provides research to support the organics sector and contribute to the development of the Schemes, Standards, and Policy Frameworks.

What we do

We fund research to support the following objectives:

- Maintain and improve the robustness of the Schemes (CCS and BCS) and related Standards (PAS 100 and PAS 110);
- Reinforce confidence in the compost and anaerobic digestion markets; and
- Contribute to development of new markets, including identifying barriers

How it works

Each year, we source research ideas via an open Call for Proposals. CCS and BCS participants are invited to feedback on proposals. Proposals are then evaluated by an appointed 'Research Panel' of organics sector professionals, considering industry feedback. We announce selected projects and appoint a contractor to deliver each project.

Research Hub funding is provided by CCS and BCS participants. Governance is provided by REAL.

New Project Selected

We kicked 2024 off with the annual Call for Proposals from January to the end of February and were delighted to receive eight fascinating proposals which covered a range of topical and interesting subject areas.

In May we held a webinar to present the proposals to Scheme Participants and encouraged them to share their views on the proposals, which would later be considered in the formal evaluation and selection process.

The Research Panel met in May to shortlist the proposals and again in June to decide which of the shortlisted project(s) would be funded. After active discussion and careful consideration of each proposal, the Research Panel selected the following proposals:

1.'Appraisal of the Impact on digestate quality with a final screening step, from introduction of a smaller screen size.'

This project aims to allow operators to select the best technology for reducing plastic contaminants whilst retaining the nutrient content of final digestate products, and to determine if small changes in screen size impact significantly on digestate quality factors other than physical contaminants. This may help to determine, if an operator reduces screen size, which parameters, other than physical contaminants, may need to be re-evaluated.

2. 'End of waste case information for digestate derived products.'

This project aims to enable the inclusion of a broader range of end-products and their designated market scope in the Environment Agency's AD Resource Framework. To fulfil this aim, the project's key objective is to research and compile information on a range of digestate derived products in terms of how they can be used, the demand for them and how each of them compares to a suitable non-waste comparator.

3. 'Alternative control growing media for REAL CCS plant response tests'

This project aims to provide evidence to inform potential updates to the methodologies and quality control criteria in the Compost Certification Scheme's plant response test (tomato and field bean).

Projects Commenced

Alongside the selection of these new projects, we commenced work on one new project selected the previous year (2023):

1 *Risk assessments updates for compost and digestate to inform Compost Quality Protocol and AD Quality Protocol revision*

This project has gone out to tender and has received a lot of interest. The project started with the Hazard Analysis, the foundation of the Risk Assessment updates, which was reviewed by WSP to ensure it accounted for all existing and potential new hazards in compost and digestate. This review has been signed off by the Environment Agency meaning that the Risk Assessment can now go ahead. The intention is for the Risk Assessment update work to commence in the first Quarter of 2025.

To recap, the Risk Assessment project is intended to support the revision of the Environment Agency's End-of-Waste frameworks ('Quality Protocols') for compost and digestate, which is currently ongoing. As a component of the revision process, the EA has specified that the Risk Assessments for compost and digestate (last revised in 2019) shall be reviewed and updated to inform the revision of the Quality Protocol frameworks.

Continuing Projects

In addition to the new and recently commenced projects, 2024 saw the continuation of more long-term projects:

1. Organics Recycling Research Library

We enjoyed another year working with NNFCC and Vital to keep our virtual Organics Recycling Research Library up to date with new information. The Research Library was launched in January 2021 and has continued to grow ever since. At the end of 2023, the Research Library contained more than 400 articles on composting and anaerobic digestion.

To access this valuable repository of knowledge and research on organics, please visit www. realresearchlibrary.org.uk.

2. Investigating performance of the UK Tomato Plant Response Test and German Spring Barley Test on CCS compost

Our project on Plant Response Test Interpretation and Comparison aims to address questions related to the Plant Response Test (PRT) specified under PAS100. The current PRT uses the tomato plant's response to screen finished composts. This project will gather data on both the spring barley PRT and the tomato PRT, and the resulting datasets will be compared to understand more fully the reasons for plant performance.

This project was originally tendered in 2020 and 2021 but received no bids. In response, a working group was set up by REAL to consider a different approach to the PRT, and it was determined that the project would be divided into sections which would be carried out separately. Initially, project specification and method development was conducted by Solidsense. The project specification was finalised in December 2023, with the scope and test method for the UK spring barley response test and the lab trial method issued in November 2024.

Subsequently, in 2024 Earthcare Technical began work on the technical co-ordination phase of the project, and laboratory testing was commenced by STC and Eurofins. The data analysis phase of the project will be taken forward in 2025.

Completed Projects

The Research Hub was thrilled to sign off a number of completed projects in 2024:

RBP Test Improvements and Alternatives (Evaluation of the potential for the improvement of the Residual Biogas Potential test and investigation of alternative test procedures for PAS110 biofertilisers)

This project aimed to understand the cause of test-related failures and invalid results, explore potential improvements to the method, and/or identify suitable alternatives. Aqua Enviro conducted in-house testing of novel digestate samples as well as historical data analysis, modelling, and desk-based study to assess several potential approaches to mitigate testing-related issues.

Final project report for this project was published in March 2024 and can be found in the <u>Research Library</u>.

Plastic Test Method Assessment (Plastic contamination method assessment: Evaluating current mass-based method and possible alternative methods of assessment for plastics in compost and digestate.)

This project aims to investigate whether the current methods for determining physical contaminants are fit for purpose and to explore the efficacy of alternative plastic assessment methods for potential adoption and to inform future limits under PAS100 and PAS110.

SolidSense conducted this project through analysis of CCS and BCS certified compost and digestate respectively. The final report was published in September 2024 and can be found in the <u>Research Library</u>.

Developing a carbon accounting methodology for compost and digestate under the Green Gas Protocol (How the benefits of applying compost and digestate to soils can be accounted for

under the Greenhouse Gas (GHG) Protocol)

The project, contracted out to AECOM, aimed to evaluate the carbon accounting benefits associated with producing and applying compost and digestate to land. Further, the project endeavours to develop guidance to account for these benefits under the Greenhouse Gas Protocol.

This outcome of the project was a methodology designed to enable compost and digestate producers to conduct their own carbon footprint assessment using established carbon accounting principles and frameworks. Furthermore, to ensure the project would be useful to industry, we ran a series of webinars alongside AECOM on this project in November 2024 to introduce the project and collect composters' and AD operators' perspectives and questions about carbon accounting.

These views and queries were later incorporated into the methodology report. The final methodology was published in April 2024 and can be found in the Research Library.

Research Funds

Funding for the Hub is generated through the Research Fee paid annually by CCS and BCS participants. The Research Fee is calculated according to the annual input tonnage (tpa) of each process. The funds are ring-fenced.

More information about the Hub's operations, objectives, and funding can be found at <u>www.realresearchhub.org.uk/about</u>

To learn more about the Research Hub's work, please visit our website at <u>www.realresearchhub.org.uk.</u> To request access to any of our research resources, or if you have any queries, please email <u>info@realschemes.org.uk.</u>



In 2019 REAL achieved certification of its Quality Management System to the ISO 9001:2015 standard.

The ISO 9001:2015 standard is based on a number of quality management principles including a strong customer focus, the motivation and implication of top management, the process approach and continual improvement. Using ISO 9001 helps ensure that customers get consistent, good-quality products and services, which in turn brings many business benefits.

The seven quality management principles are:

- customer focus
- leadership
- engagement of people
- process approach
- improvement
- evidence-based decision making
- relationship management.









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