Quality Protocol

Anaerobic digestate

End of waste criteria for the production and use of quality outputs from anaerobic digestion of source-segregated biodegradable waste

This Quality Protocol was funded by Defra, the Welsh Government and the Northern Ireland Environment Agency (NIEA) as a business resource efficiency activity. It was developed by the Environment Agency and WRAP (Waste & Resources Action Programme) in consultation with Defra, the Welsh Government, NIEA, industry and other regulatory stakeholders. The Quality Protocol is applicable in England, Wales and Northern Ireland. It sets out criteria for the production and use of quality outputs from anaerobic digestion of source-segregated biodegradable waste.

Contents

Foreword

Background

Uncertainty over the point at which waste has been fully recovered and ceases to be waste within the meaning of Article 1(1)(a) of the EU Waste Framework Directive (WFD) (2006/12/EC) has inhibited the development and marketing of materials produced from waste which could be used beneficially without damaging human health and the environment. In some cases, this uncertainty has also inhibited the recovery and recycling of waste and its diversion from landfill.

Interpretation of EU legislation is ultimately a matter for the Courts and there is now a substantial body of case law on the interpretation of the definition of waste in Article 1(1)(a) of the Waste Framework Directive. Drawing on the principles established in this case law, it is possible to identify the point at which certain wastes cease to be waste and thus when the Waste Framework Directive's waste management controls no longer apply.

What is a Quality Protocol?

A Quality Protocol sets out criteria for the production of a product from a specific waste type. Compliance with these criteria is considered sufficient to ensure that the

1. Introduction

1.1.2 The Quality Protocol sets out criteria for the production of *quality outputs from anaerobic digestion* of material that is source-segregated biodegradable waste (*biowaste*). Quality outputs from *anaerobic digestion* include the *whole digestate*, the separated fibre fraction and the separated liquor. If these criteria are met, quality outputs from anaerobic digestion will normally be regarded as having been fully recovered and to have ceased to be waste.[1]

[1] Where the only waste feedstock to an anaerobic digestion plant is agricultural manure and slurry or where non-waste feedstocks such as crops grown specifically for anaerobic digestion are used with the manure or slurry, the digestate output is not waste if it is used in the same way that undigested manure and slurry would normally be used i.e. spread as a fertiliser on agricultural land.

1.3.6 Digestate (whole digestate, separated fibre or separated liquor) can be used in compost as an input material or process additive. If the compost being produced is to meet the requirements of the Compost Quality Protocol[2] the digestate does not need to be certified as compliant with this Quality Protocol, but must be derived only from input materials specified in Appendix B of this Quality Protocol. If the digestate is produced from other input materials, the compost to which it is added will normally be considered to be a waste.

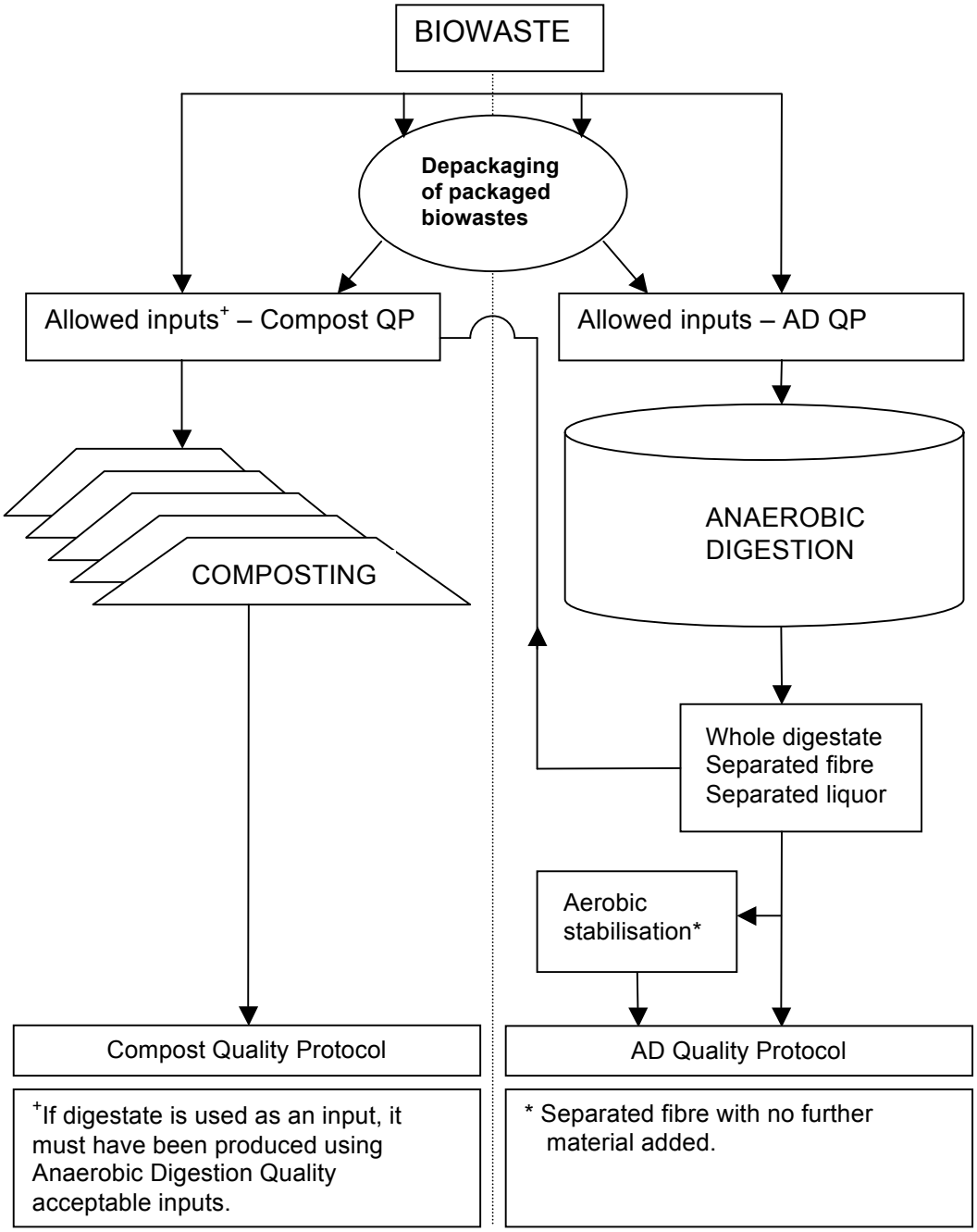
1.4.1 Where this Quality Protocol is not complied with, for example the digestate does not meet an approved standard or the producer cannot demonstrate evidence of compliance, the digestate produced will normally be considered to be waste. In such circumstances, the producer/user must comply with the

[2] The Quality Protocol for the production and use of quality compost from source segregated biodegradable waste, Environment Agency and WRAP.

appropriate waste management controls[3] for the transportation, storage and use of the digestate and will be committing an offence if they do not do so.

[3] For example, in compliance with Article 11 of the WFD the user might need to register an exemption/apply for a permit with the Environment Agency (England and Wales). In Northern Ireland the user might need to apply to NIEA for a Waste Management License or exemption from waste management licensing.

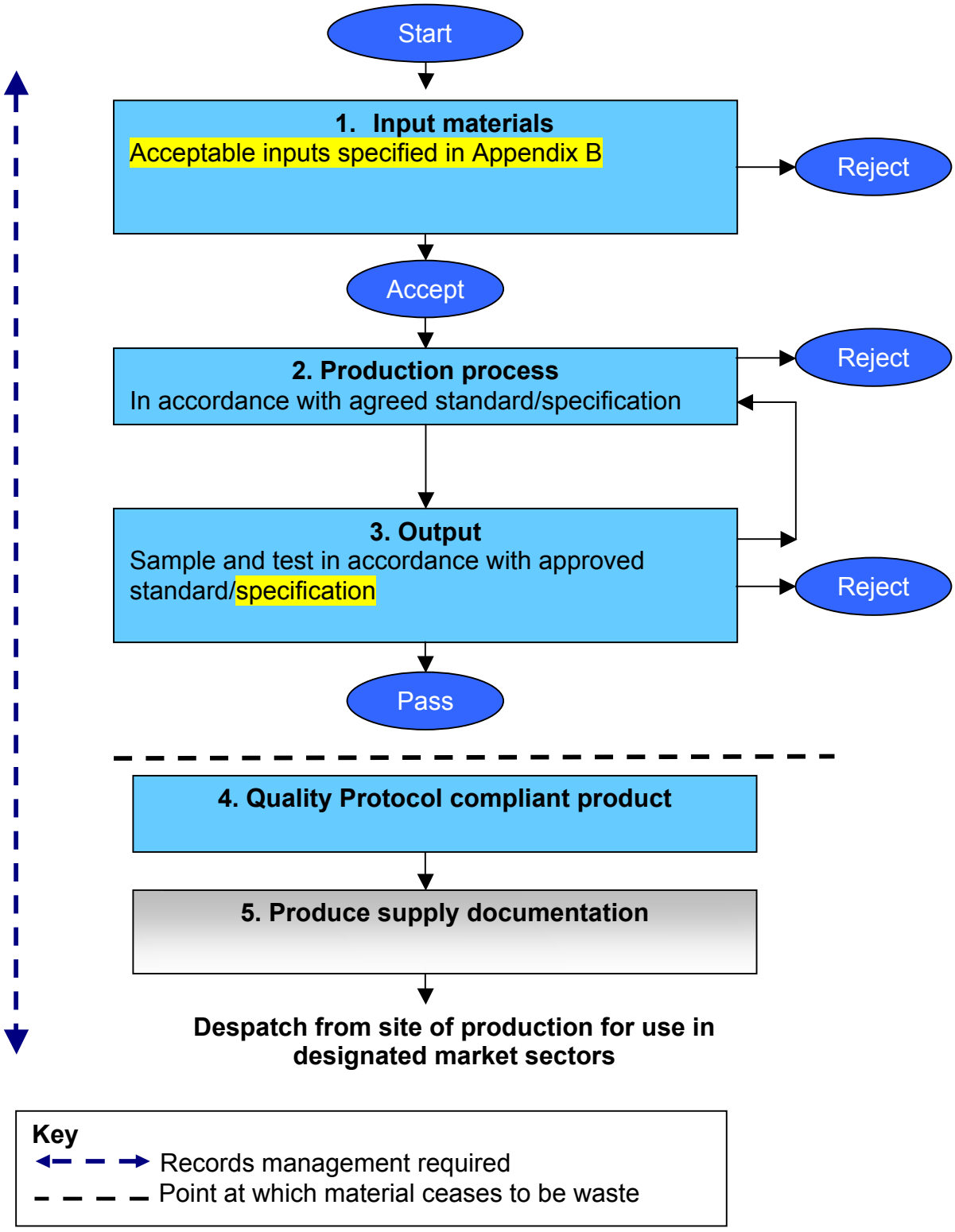
Figure 1 Showing relationships between the two Quality Protocols



1.5.4 This Quality Protocol will be adopted as a technical regulation under *Technical Standards and Regulations Directive 98/34/EC* as amended[4]. We recognise that there may be codes of practice or standards which apply in *European Economic Area* (EEA) States other than the UK setting out requirements for the production and use of quality digestate. We accept that quality digestate may cease to be waste provided it has been produced in compliance with:

[4] The Technical Standards and Regulations Directive 98/34/EC seeks to ensure the transparency of technical regulations and is intended to help avoid the creation of new technical barriers to trade within the European Community.

Figure 2 Main stages and control mechanisms of the Quality Protocol



2. Producing quality digestate from anaerobic digestion of source-segregated biodegradable materials

iii. The transformation of any waste types listed in Appendix B that are classified as *animal by-products* must be carried out in accordance with animal by-products controls.[5].

[5] Animal by-products are subject to the requirements and controls in Regulation (EC) 1069/2009 and its corresponding implementing Regulation (EC) 142/2011 (as amended). These are enforced through The Animal By-Products (Enforcement) (England) Regulations 2011 No. 881, The Animal By-Products (Enforcement) (No2) (Wales) Regulations 2011 No. 600 (W.88) and The Animal By-Products Regulations (Northern Ireland) 2011 No. 124. Further information on the controls relating to animal by-products can be found on Defra's website and Animal Health and Veterinary Laboratories Agency's (AHVLA) website.

.

3. Providing evidence that quality digestate has been produced

3.2.1 Producers must demonstrate that quality digestate is destined for appropriate use in a designated market sector by providing the customer with supply documentation for each sale or supply of quality digestate and keeping a copy of this documentation.[6]

[6] Supply documentation is not required for each delivery, only for each application/project.

4. Application and use of quality digestate

Appendix A Definitions

	A third party, independent of any producer of

	digested materials, accredited by the United Kingdom Accreditation Service for operating a product certification scheme aligned to the requirements of this Quality Protocol. *Note: These requirements include conformance to a standard/specification approved by the Environment Agency for inclusion in this Quality Protocol.*
	Third-party attestation related to products, processes, systems or persons[7].
	The EEA States consist of the members of the EU (Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands,

[7] EN ISO/IEC 17000: 2004 Conformity assessment. Vocabulary and general principles.

	Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the UK) together with Iceland, Lichtenstein, Norway and Switzerland. Although the Channel Islands and the Isle of Man are part of the UK, they are not part of the EU and businesses registered there are subject to different licensing legislation.
	The person responsible for the exploitation of the agricultural land concerned, on his or her account, directly and/or through the use of agents

	or contractors.
Quality management system	A system used to direct and control an

(QMS)	organisation with regard to quality. *Note: In the context of anaerobic digestion, it is a system for planning, achieving and demonstrating effective control of all operations and associated quality management activities necessary to achieve digested materials that are fit-for-purpose. Where specific controls are applied, they must be monitored and recorded, and their efficacy evaluated both during and after process validation. Corrective actions must be defined.*
	Material added to soil in situ primarily to maintain or improve its physical properties, and which may improve its chemical or biological properties or activity[8].

[8] PD CR 13456: 1999 Soil improvers and growing media. Labelling, specifications and product schedules.

Appendix B Biowaste types acceptable for the production of quality digestate

B.2 Animal by-products - some inputs listed in Appendix B are animal by-products. The handling and treatment of animal by-products in the anaerobic digestion is subject to both environmental permitting controls and animal by-products controls.[9] Not all animal by-products can be used as a feedstock for anaerobic digestion plants. Anaerobic digestion plants can treat category 3 animal by-products and category 2 animal by-products provided they have been pressure rendered. Some category 2 materials such as manure, digestive contract, milk and milk products, eggs and egg products can be used as feedstock for anaerobic digestion plants without prior treatment unless there is a risk of spreading any serious transmissible disease.[10]

	EWC code[11]

[9] Animal by-products are subject to the requirements and controls in Regulation (EC) 1069/2009 and its corresponding implementing Regulation (EC) 142/2011 (as amended). These are enforced through The Animal By-Products (Enforcement) (England) Regulations 2011, The Animal By-Products (Enforcement) (No2) (Wales) Regulations 2011 and The Animal By-Products Regulations (Northern Ireland) 2011.

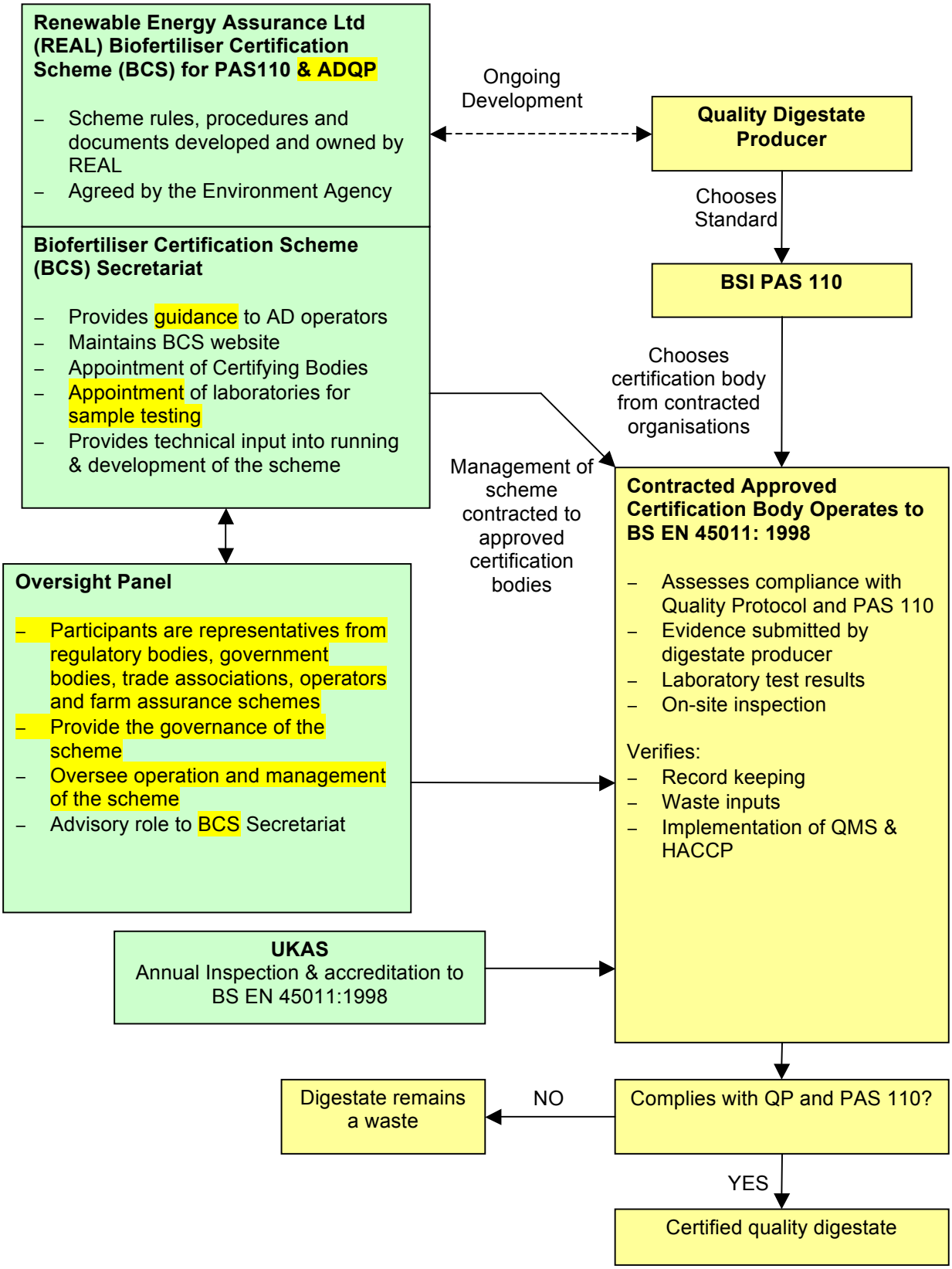
[10] Further information on the controls relating to animal by-products can be found on Defra's website and

Acceptable only if derived solely from input types allowed by this Quality Protocol and

remains segregated from, and uncontaminated by, any other waste type.	

Appendix C Standards and specifications to which this Quality Protocol applies

Appendix E Certification and accreditation diagram



Appendix F Records to be kept by the quality digestate producer for certification purposes

Appendix G Supply documentation

Appendix H Good practice guidance

- Follow the joint Environment Agency/Fertilisers Manufacturers Association (FMA) guidance, *Protect the environment: the essential guide for storing solid and liquid fertilisers,*[12] to ensure the digestate is stored in a manner that protects the environment.

- Handle the digestate as described in the FMA's *Code of practice for the prevention of water pollution from the storage and handling of solid fertilisers*[13] to ensure that its storage and handling does not cause harm to human health or the environment.

- Seek advice on suitable applications for quality digestate from an advisor qualified under the Fertiliser Advisers Certification and Training Scheme (FACTS)[14].

- Ensure any application of quality digestate conforms to the principles set out in *Code of Good Agricultural Practice to Protect Water, Soil and Air Quality* (CoGAP)[15] (or subsequent guidance). This covers all aspects of agricultural activities including nutrient use. In particular, do not spread compost on frozen, snow-covered or waterlogged ground, or within 10 metres of a watercourse.

- Match quality digestate applications to crop nutrient requirement, growth stage and prevailing weather conditions. Apply in accordance with a Nutrient Management Plan for the farm; see *Fertiliser Recommendations for Agricultural and Horticultural Crops* (RB209)[16] (or subsequent guidance).

- Adhere to the maximum permissible annual rate of PTE addition over a 10 year period as per the C*ode of Practice for the Agricultural Use of Sewage Sludge* (the 'Sludge Code')[17].

- Follow Animal Health and Veterinary Laboratories Agency guidance on digesting animal by-products[18] and the use of animal by-product derived organic fertilisers and soil improvers.[19]

- Where quality digestate that includes animal manures are applied to land on which ready-to-eat crops are to be grown, follow the Food Standards Agency (FSA) guidance given in *Managing Farm Manures for Food Safety: Guidelines for Growers to Reduce the Risks of Microbiological Contamination of Ready-to-eat Crops*[20]. In primary food production, comply with the Food Hygiene (England) Regulations 2006 (SI 2006 No. 14) and Food Hygiene Regulations (Northern Ireland) 2006 (SR 2006 No 3); while not requiring a formal HACCP assessment, these regulations place an obligation on food producers to prevent contamination of food they produce. Following the FSA guidelines will help them to achieve this.

- Ensure all chemical analysis is carried out by laboratories using appropriate methods that are accredited by UKAS to ISO/IEC 17025 for the Environment Agency's *MCERTS* performance standard for the chemical testing of soil[21].

- The quality digestate producer should arrange for the digestate to be analysed, and the land manager if in England or Wales, or the controller of the land if in Northern Ireland, should arrange for the receiving soil to be analysed for PTEs (lead, cadmium, chromium, mercury, copper, zinc, nickel) to ensure that the limit values given by the Sludge Code[22] are not exceeded for the receiving soil.