



## UKWIR Project SL12 INTEGRATED WASTE MANAGEMENT

### Background

Within the UK, and the wider world, there is increasing pressure being placed on both industry and government to decrease the amounts of waste being sent to landfill. This in turn is increasing the quantities of materials which are now being considered suitable to be either re-used or recycled.

Defra's Vision Statement identifies anaerobic digestion as making "a significant and measurable contribution to climate change and wider environmental objectives...in diverting organic waste, especially food waste, from landfill". Notably, the Water Industry is identified as being "at the hub of a national anaerobic digestion infrastructure".

The increased production of digestate will potentially have a large impact on the landbank; the effect of this needs to be quantified so that the Water Industry can plan its future strategy in possession of the best and most up to date information.

### Water Industry Role

The Water Industry is ideally placed to lead an Integrated Waste Management (IWM) strategy (e.g. via co-digestion), having an enviable record of successfully managing, treating and recycling biosolids (i.e. treated sewage sludge) to land for many years. Therefore, building upon its vast experience, there are various options available to the Water Industry to take IWM forward. Co-digestion, for example, would involve using the existing Water Industry infrastructure to not only treat sewage sludge, but also additional organic materials (e.g. kitchen and catering, food processing, abattoir wastes etc.) to produce digestate. It has been estimated that 12-20 million tonnes of food waste is produced in the UK per year.

In planning an IWM strategy it is critical to consider present, and possibly future, regulatory boundaries. Currently, the application of biosolids to agricultural land is governed separately from other organic materials that are recycled to land. If co-digestion is identified as an option which would assist with IWM, then the impact that this will have on the current legislative

framework needs to be understood. Working with regulators to review and amend, where necessary, the legal framework which currently governs the recycling of organic materials to land will be key to the success of any future IWM strategy.



### Project Objectives

- To understand the impact of competition and increased scrutiny/concern on recycling of biosolids to agriculture, due to an increase in other organic materials being considered for recycling in this manner.
- To identify the opportunities and restrictions for the Water Industry in accepting other organic waste streams at its wastewater (and sludge) treatment plants to the benefit of UK plc.

To achieve these objectives the project will build upon previous UKWIR and Government funded studies to inform the five tasks listed below:

#### Task 1. Literature review.

Increasingly, large volumes of organic materials are being produced, with a view to these being recycled to land, be it agricultural land or to restoration/remediation land. The literature review will determine the volumes, types and quality of organic materials that are currently recycled to land (e.g. compost, paper crumble etc.). Additionally, likely future



trends and changes will be assessed (e.g. the recycling of BioCompost from mechanical and biological treatment plants etc.).

#### Task 2. Market analysis.

This task will be split into three sections:

- *Assessing the potential markets for digestate:* Market place analysis will be undertaken, both within the Water Industry, and within the agriculture, landscaping and growing media industries, to determine which of the current markets, or any markets currently not exploited, are most suited for the recycling of digestate.
- *The suitability of the Water Industries existing assets:* This assessment will consider, in addition to conventional Anaerobic Digestion (AD), the application of pre-treatment to AD. Such processes not only provide a route to the production of a material that currently satisfies the requirements of enhanced treatment within the definitions of the “Safe Sludge Matrix”, but also allows for significantly higher digester loadings, thereby increasing the capacity of existing assets. Additionally ‘non-traditional’ mixed waste treatments will be examined.
- *Opportunities arising from using digestate:* Co-digested materials could have an important role to play within the market place, with the beneficial qualities of differing organic materials combined to create products, which are highly desirable to end users, and open up a larger landbank.

#### Task 3. Stakeholder consultation.

The opinions of stakeholders about the acceptance of digestate, both legally and as a result of market place perceptions, are of great importance. There would be no point in the Water Industry producing a digestate if either legislation or key stakeholders deemed the product unsuitable. The project will engage with as broad a range of stakeholders as possible to address:

- *Any regulatory barriers to co-digestion and use of digestate outputs on land:* In this context, Economic Regulators and Government will be key partners in developing an IWM approach for the Water Industry. The project will seek to

identify potential solutions to any legislative barriers that may hinder the development of an IWM approach to the overall benefit to UK plc.

- *Any concerns over the use of digestate:* Do users (e.g. farmers, land owners) need or want a digestate product, and will it be acceptable to their buyers? If there are any reservations about the use of digestate on land then these need to be understood.

#### Task 4. Impact of digestate on the agricultural landbank.

The effect that digestate production will have on the available landbank will be investigated using the “Agricultural Landbank and Organic ‘Waste’: A National Capacity Estimator” (ALLOWANCE) software.

#### Task 5. Assessment of the potential benefits to the Water Industry of an Integrated Waste Management approach.

This task will specifically address five issues:

- Providing consistent standards of treatment and management across the industry.
- Increasing biogas production.
- The effect on volumes taken to land as a result of digestion.
- Carbon footprint reductions.
- UK climate change and landfill diversion targets.

#### **Project Benefits**

This project will benefit UK plc by moving forward the debate on co-digestion of organic materials and the recycling of digestate to land. Also, the study will inform discussions at both a national and EU level.

#### **Project Team**

The project is being undertaken by a consortium led by ADAS, including Atkins, Grieve Strategic and Manocher Assadi.

UKWIR’s Project Manager is Dr Ted Thairs, who is supported by an expert steering group drawn from UK Water Companies.