Written evidence from Severn Trent Water Limited (STW) (MET0024)

Introduction

Severn Trent Water Limited (STW) welcome the opportunity to provide evidence on current progress to quantify and reduce methane emissions as they relate to our wastewater business.

STW serve 4.8 million customers and generates methane from our wastewater and bioresource treatment processes. Methane currently represents 27% of our direct emissions, equivalent to 105kt CO2e per annum. With forecast population growth of 12% in our region by 2050 these emissions could be expected to grow without additional investment. While methane from water and wastewater treatment only represents 3.1% of national emissions, we believe there are affordable and credible solutions to make significant improvements in methane emissions reduction and utilisation.

Response to questions

8) What is the status of methane accounting, monitoring and reporting in the UK at present and how does it compare internationally? Is UK accounting and reporting considered to be accurate and robust? What improvements, if any, are possible and what benefits would these deliver?

While we have no recommendations to improve current emissions factors used for methane from wastewater treatment (5D1) in the national Greenhouse Gas Inventory (GHGI), we do support the development of Tier 2 (national level) and Tier 3 (facility level) reporting methods as outlined in the recent Defra[1] and UKWIR (UK Water Industry Research) research[2].

We are supportive of the establishment of a national monitoring campaign to gather this data and have already begun developing monitoring and reporting methods as outlined in our response to question 9. We believe moving to Tier 2 and 3 reporting would allow the GHGI to better reflect the benefits of mitigation activities being undertaken and proposed (as described in our response to questions 13 and 14) and would be more representative of the variances between different treatment processes used in the sector and the deployment of these in the UK.

[1] A review of the measures to reduce GHG emissions from the wastewater treatment sector, including the benefits and costs. Defra (2023) Project Number WT15130

[2] Quantifying and reducing direct greenhouse gas emissions from wastewater treatment processes - Phase 2 (ukwir.org)

9) What progress is being made on methane monitoring and data collection in the UK using technologies such as satellite data and drones?

We have developed a leak detection and repair (LDAR) programme that uses drone-based methane sensors. It is a major step to reducing methane emissions, and we now use it to regularly survey all our bioresources sites.

Like water leaks, pressurised gas seeks out the next weakest point to escape. The sensor works by helping us to locate methane leaks quickly and safely and then plan and complete repairs to reduce methane losses. To date, all our digester sites have been surveyed with the drone methane sensor to detect fugitive leaks, followed by investigations using a handheld optical gas imaging ('OGI') camera.

Our live dashboard shows the status of leaks and repairs. This connects to a central log that categorises and records all leaks and works to quantify the methane emissions. Throughout the year, the drone is used to revisit sites to check the success of repairs.

We have recently installed fixed methane monitoring light detection and ranging (LIDAR) systems at three of our large sites, so they now have a 24/7 CCTV-like system that alerts us to any leaks. These have already helped us to identify certain assets that are intermittently emitting methane, which could have been missed during the drone scan. The programme supports the work of health and safety teams on sites as well as compliance requirements for fugitive emissions from the Environmental Agency.

In addition to this we have also partnered with Cranfield University to sponsor research aimed at creating a monitoring framework which combines the drone-based methane measurements and a mass balance type approach to quantify emissions. We believe this type of collaboration with academic and supply chain partners helps to accelerate improvements and eventually emissions mitigation.

13) Which sectors are most promising for achieving further methane emissions reductions? And which are likely to be at least relative cost? And 14) Are there sources that could be mitigated quickly and easily in the short term, and which would take longer or be more complex?

We believe that the water sector has the potential to significantly reduce its emissions and increase the utilisation of captured methane if funded to implement identified technologies. While the sector has already made

progress on reducing emissions and increasing utilisation, we believe there is more to be done. Current and ongoing improvements include:

- Investment in thermal hydrolysis to increase gas capture in our anaerobic digestion (AD) process
- Investment in biomethane upgrading to supply captured methane into the gas network
- Upgrades to digesters to change roof configuration to minimise fugitive emissions
- Establishing and rolling out leak detection and repair (LDAR) backed by onsite monitoring at our largest sites

We have recently submitted our business plan for 2025-2030[3] and this includes an ambitious plan for additional funding worth £430m and supported by our customers to deliver net zero. The technologies and opportunities we have identified related to methane are:

- Active gas capture from AD
- Vacuum degassing of digestate post AD
- Methane leakage find and fix
- Covering secondary sludge tanks
- Process optimisation

We are currently investing £40m in our Net Zero Hub[4] which we believe will be world leading in low carbon wastewater treatment and is the first site to deploy a number of these solutions in combination at scale.

We believe these solutions are cost efficient per tonne of methane captured and if funded can be rolled out at scale by 2030 at our priority sites leaving smaller sites and residual emissions for the longer term. For more information on the specific technologies, please see:

Our net zero investment case - sve34-03-net-zero-investments.pdf (stwater.co.uk)

OFWAT net zero technology review - Net Zero Technology Review - Ofwat

15) To what extent is there existing regulation in each emitting sector to mitigate methane emissions, and how well is this working?

Wastewater treatment and anaerobic digestion of sewage sludge is not currently regulated for methane emissions, but this is due to change with the introduction of Industrial Emissions Directive (IED) permits from 2025 at around 120 sewage sludge AD sites nationally. This will introduce the ability to impose LDAR requirements on AD facilities and the obligation to

[3] sve34-03-net-zero-investments.pdf (stwater.co.uk)
[4] https://www.stwater.co.uk/news/news-releases/world-first--net-zero-hub--to-be-created-in-staffordshire--/

reduce fugitive methane emissions related to sludge treatment as set out in the recent Environment Agency Methane Action Plan[5]. We are supportive of these changes and working with our regulators to ensure sufficient funding is made available to drive the necessary asset investment in our 2025-2030 business plan period, this is mainly related to covering storage tanks. As outlined in our response to Question 9 we have already made considerable progress on voluntarily developing a LDAR programme.

[5] Environment Agency Methane Action Plan 2024 to 2026 - GOV.UK (www.gov.uk)