Situation and Compliance Report on the Disposal of Urban Wastewater and Sludge in Scotland 2018

September 2025

Scottish Government
Riaghaltas na h-Alba

1. Purpose

The Urban Wastewater Treatment (Scotland) Regulations 1994 (UWWTR) implement the European Union Urban Waste Water Treatment Directive (91/271/EEC) (the Directive). This publication fulfils the requirement under Regulation 12A of the UWWTR which requires Scottish Ministers (every two years) to:

- Prepare and publish a situation report on the disposal of urban wastewater and sludge in Scotland
- Review and assess compliance with the UWWTR in each agglomeration (each area where wastewater is collected to be treated and discharged)
- Publish a report on the level of that compliance, the reasons for non-compliance (where applicable) and proposed measures to achieve compliance with the UWWTR.

This report summarises the data collated by the Scottish Environmental Protection Agency (SEPA) on the implementation of the UWWTR from 1 January 2018 to 31 December 2018.

Prior to leaving the European Union in 2020, the UK was required to submit biennial monitoring returns to the European Commission (EC) to substantiate their compliance with the Directive. SEPA submitted the final data for Scotland to DEFRA in August 2020 and the data was subsequently included in the data reported by the UK to the EC[1]. This report covers the same period (2018) as was covered in the data sent to the EC in August 2020.

2. Background

Urban wastewater is produced by households, businesses and industry. It includes sewage from toilets, greywater from sinks and showers and runoff from roads and urban surfaces. If left untreated, this wastewater would pose serious risks to human health and the environment.

The main purpose of the UWWTR is to protect the environment and public health by ensuring wastewater is properly collected and treated before being discharged.

The main requirements of the UWWTR are:

- The establishment of systems to collect wastewater from urban agglomerations
- The secondary treatment of collected wastewater
- The identification of sensitive areas
- More stringent treatment of wastewater discharged to sensitive areas

3. Monitoring Compliance

Monitoring of public Wastewater Treatment Works (WwTW) is included in SEPA's Annual Monitoring Plan (AMP) which is delivered by Scottish Water (or companies that operate public WwTW under Private Finance Initiative (PFI) contracts) under Operator Self-Monitoring (OSM) in accordance with the Measurement Assurance

[1] The data reported by the UK was then included in the 11th technical assessment on UWWTD implementation produced by the EC in May 2022

and Certification Scotland (MACS) scheme. This is a quality assurance scheme designed to ensure that operator monitoring is fit for regulatory assessment. It includes minimum standards for data quality and links to sample frequency defined in the agreed AMP. Under this programme of work, influent and/or final effluent samples are taken and analysed to assess compliance with discharge quality limits set out in the licence.

Where non-compliance is identified, root cause analysis investigations are initiated to identify the reason(s) for non-compliance and the actions required to secure compliance. Actions required and the timescales for resolution depend on the scale and complexity of the work required. These will also identify where work is already planned or underway.

Scottish Water also completes regular site-specific scheduled tasks which include checks on discharge quality and any breaches of threshold limits (typically set at 70% of the licensed discharge quality limits). These are reviewed daily by the wastewater operational leadership team.

Another type of action to ensure compliance with licence conditions is the planned, and prioritised if necessary, emptying of sludge holding tanks so that bioresources are transferred to treatment centres in a timely manner, removing solids from the WwTW and reducing the risk of adversely affecting the discharge quality[2].

SEPA has undertaken data validation processes and limited verification of the data provided by Scottish Water (or companies that operate public WwTW under PFI contracts) for public wastewater treatment sites. Compliance is assessed based on available samples taken at public WwTW and SEPA data for private wastewater treatment sites in 2018. This data forms the basis of this report.

The data is provided in the form of an Excel spreadsheet as a supporting document accompanying this publication.

4. Compliance with the UWWTR

Compliance with the main requirements of the UWWTR is assessed per agglomeration. Three requirements are needed for full compliance, namely:

1. Collection of wastewater (as required by Regulation 4) for agglomerations with a population equivalent[3] (p.e.) of 2,000 or more
2. Secondary treatment of the collected wastewater, i.e. adequate treatment level and treatment performance (as required by Regulation 5(1)); generally applicable to agglomerations with a p.e. of 10,000 or more, or agglomerations

[2] Relevant SEPA regulatory methods and supporting guidance include: SEPA Regulatory Method - Assessment of Numeric Discharge Quality Conditions (for CAR, UWWTD and PPC Compliance) (WAT-RM-40 v5.1) (October 2017) and SEPA Supporting Guidance – Communications Protocol for compliance sampling between Scottish Water and SEPA (WAT-SG-42 v3.2), (February 2020)

[3] A measurement of organic biodegradable load, and a population equivalent of 1 (1 p.e.) is the organic biodegradable load having a five-day biochemical oxygen demand (BOD5) of 60g of oxygen per day, the load being calculated on the basis of the maximum average weekly load entering the treatment plant during the year, excluding unusual situations such as those due to heavy rain.

with a p.e. of between 2,000 and 10,000 that discharge to freshwaters or estuaries

3. More stringent treatment than secondary treatment, i.e. adequate treatment level and treatment performance (as required by Regulation 5(2)); generally applicable to agglomerations with a p.e. of more than 10,000 discharging into sensitive areas (Regulations 6, 7 and 8)

An agglomeration will only be categorised as fully compliant if these three requirements are met. This approach to monitor and assess compliance is consistent with the approach adopted by the European Commission[4].

5. Collection of Wastewater

As of 31 December 2018, Scotland had a total of 184 agglomerations with a generated load of around 6.36 million p.e.[5] within the scope of the UWWTR, i.e. agglomerations with a p.e. of 2,000 or more.

All these agglomerations were served by WwTW (including four private wastewater systems) to which collecting systems were connected, as required by Regulation 4.

Some of the wastewater entering collecting systems will overflow to the environment via overflows before it undergoes full treatment.

Overflows are an integral part of Scotland's sewer networks, ensuring sewers do not back up and flood homes, streets and sewage works during periods of heavy rainfall. Normally, wastewater from overflows has been highly diluted by rainwater.

Overflows associated with WwTW and sewer network licences are licensed by SEPA, and any unsatisfactory discharges are identified so that Scottish Water can invest to reduce the environmental impact. Scottish Water's Improving Urban Waters Routemap sets out how it is investing to increase monitoring and reporting of overflow events, reduce overflow events, improve water quality and reduce sewer related debris in the environment.

Rather than permanent monitoring of all overflows, Scottish Water has carried out comprehensive modelling, in partnership with SEPA, to assess the impacts of its assets on water quality during the 2015 to 2021 investment period. The computer models Scottish Water developed allow it to understand when overflows will operate, under what rainfall conditions and the impact they will have on the environment. This allows Scottish Water to target its investments accordingly.

Scottish Water makes the data it collects on overflow events from overflows available in near real time via its Overflow Map. Annual overflow event data, including that required as part of its annual regulatory reporting to SEPA, is available from its website.

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[4] See UWWTD National Summary Chapter 2018, The United Kingdom, Section 3: Legal Compliance

[5] It should be noted that this includes the load generated by households and businesses, hence why the generated load, which relates to only agglomerations with a p.e. of 2,000 or more and, therefore, within the scope of the UWWTR, is greater than Scotland's population.

6. Secondary Treatment

183 agglomerations had a p.e. of 10,000 or more, or a p.e. of between 2,000 and 10,000 and discharge to freshwaters or estuaries. Therefore, these agglomerations were within the scope of Regulation 5(1)[6] which requires secondary treatment. These agglomerations had a generated load of around 6.35 million p.e..

179 (97.8%) of these 183 agglomerations complied with the requirements for secondary treatment under Regulation 5(1). Details of the four agglomerations that did not comply along with the reasons (as required by Regulation 12A(2)(b)) and proposed measures to achieve compliance (as required by Regulation 12A(2)(c))) are provided in Annex A.

The 179 agglomerations compliant with requirements for secondary treatment under Regulation 5(1) generated a load of around 6.06 million p.e., meaning that 95.4% of the generated load was compliant.

7. Nutrient Removal

34 agglomerations had a p.e. of more than 10,000 and discharged into nutrient sensitive areas, or into the relevant catchment areas of sensitive areas where the discharges contribute to the eutrophication[7] of these areas (or the risk of eutrophication). Therefore, these agglomerations were within the scope of Regulation 5(2)[8] which requires more stringent treatment than secondary treatment to remove nutrients. These agglomerations had a generated load of around 1.38 million p.e..

33 (97.1%) of these 34 agglomerations complied with the requirements for more stringent treatment than secondary treatment to remove nutrients under Regulation 5(2). Details of the agglomeration that did not comply along with the reason (as required by Regulation 12A(2)(b)) and proposed measures to achieve compliance (as required by Regulation 12A(2)(c))) are provided in Annex A.

The 33 agglomerations compliant with requirements for more stringent treatment than secondary treatment to remove nutrients under Regulation 5(2) generated a load of around 1.37 million p.e., meaning that 99.4% of the generated load was compliant.

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[6] Regulation 5(1) details the requirement for treatment plants to provide secondary treatment (or equivalent) for all agglomerations with 10,000 or more or agglomerations with a p.e. of 10,000 or more or agglomerations with a p.e. of between 2,000 and 10,000 that discharge to freshwaters or estuaries. Schedule 3 details the requirement for Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) sampling and associated concentration limits.

[7] The enrichment of water by nutrients, especially compounds of nitrogen and/or phosphorus, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned.

[8] Regulation 5(2) details the requirement for more stringent treatment for discharges from agglomerations with a population equivalent of more than 10,000 into sensitive areas, or into the relevant catchment areas of sensitive areas where the discharges contribute to the pollution of these areas. Schedule 3 details the requirement for Total phosphorus and Total nitrogen sampling and associated concentration limits.

8. Overall Compliance

179 (97.3%) of the 184 agglomerations within the scope of the UWWTR, i.e. agglomerations with a p.e. of 2,000 or more, were compliant with the requirements around the collection of wastewater under Regulation 4, for secondary treatment under Regulation 5(1) and, where applicable, more stringent treatment than secondary treatment to remove nutrients under Regulation 5(2).

These 179 agglomerations generated a load of around 6.06 million p.e., meaning that 95.3% of the generated load was compliant with the requirements under Regulation 4, Regulation 5(1) and, where applicable, Regulation 5(2).

9. Disposal of Sludge

For the reference year 2018, Scotland reported the reuse and disposal of 112,587 tonnes of sewage sludge. The sludge was mainly re-used in soil management and agriculture (44,199 tonnes), disposed of by incineration (37,904 tonnes), or re-used for other purposes including composting and land reclamation (30,082 tonnes). The remainder (402 tonnes) was disposed of by landfill.

10. Annex A – Failures against requirements of Regulation 5

Agglomeration	Reason for failure	Comments	Proposed Measures
Aberfeldy	Regulation 5(1) (Secondary treatment) - Bad Performance	Fully compliant in 2019	N/A
Motherwell	Regulation 5(2) (Nutrient removal) - Bad Design	Dosing in place to secure compliance from 1st of April 2019 and the annual average of the samples taken between April 2019 and March 2020 was less than the 2mg/l required standard.	N/A
Dalmarnock	Regulation 5(1) (Secondary treatment) - Bad Performance	Fully compliant in 2019	N/A
Kinneil Kerse (Grangemouth)	Regulation 5(1) (Secondary treatment) - Bad Performance	Fully compliant in 2019	N/A
Melrose	Regulation 5(1) (Secondary treatment) - Bad Performance	Fully compliant in 2019	N/A

Reasons for non-compliance must be identified as required by Regulation 12A(2)(b) and proposed measures to achieve compliance must be identified, as per Regulation 12A(2)(c). In all instances, the measures to achieve compliance in 2018 are noted as N/A as non-compliance is rectified the following year.

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