

Case Study

Bromsgrove STW, Worcestershire

SDS Flow Control Chambers support major wastewater treatment works upgrade



SDS Systems

SDS Flow Control Chambers.

SDS Customer

JN Bentley.

Client

Severn Trent Water.

Project

Bromsgrove Sewage Treatment Works Upgrade.

Purpose

To future-proof wastewater treatment provision for a growing customer base while supporting long-term environmental compliance.

Brief to SDS

To deliver an alternative to the concrete kiosks traditionally constructed on site through the supply of off-site manufactured HDPE Flow Control Chambers.

Timing

Installation was completed in April 2026.

Project Background Information

Bromsgrove Sewage Treatment Works, located approximately 2.5km south of Bromsgrove town centre, is undergoing a significant upgrade as part of Severn Trent Water's AMP8 investment programme. The facility treats wastewater from the local catchment and forms an important part of the wider Bromsgrove treatment network, which also includes combined sewer overflows (CSOs) at Leach Heath Lane and New Road.

The scheme forms part of a wider £42 million investment designed to increase treatment capacity and improve the quality of treated effluent discharged to local watercourses, including the River Salwarpe. The improvements will help ensure the works can accommodate future growth in wastewater flows while meeting increasingly stringent environmental standards.

Located within an area identified as Flood Zone 2/3, the site plays an important role in managing wastewater and stormwater flows across the catchment, helping to reduce the risk of pollution incidents and flooding during periods of heavy rainfall.

Project Objectives

To address increasing wastewater treatment demand and stricter environmental regulations by upgrading Bromsgrove Sewage Treatment Works to support future growth and enhance the quality of treated wastewater discharged to the River Salwarpe and the wider catchment.

Project Requirements

The project required the design and manufacture of several large and complex SDS Flow Control Chambers to fulfil specific process functions within the treatment works. These included Return Activated Sludge (RAS) and Surplus Activated Sludge (SAS) collection systems, which manage the recycling of biological sludge back into the treatment process and the removal of excess sludge from the system.

The scope also included Activated Sludge Plant (ASP) mixing and distribution chambers, which support the main biological treatment stage where oxygen is introduced to help microorganisms break down organic pollutants in the wastewater.

In addition, the works required Primary Settlement Tank (PST) bellmouth chambers, where incoming flows are carefully controlled and distributed into the settlement tanks to allow solids to settle out, as well as Final Settlement Tank (FST) distribution chambers, which manage the flow of partially treated water through the final clarification stage before discharge or further treatment.

A key requirement was to minimise installation and commissioning time on site while ensuring all structures met the operational and hydraulic demands of the treatment process. The solution also needed to accommodate complex geometries and connections that would traditionally be formed using reinforced concrete construction methods and which can require extensive formwork, multiple construction stages and longer on-site build programmes.

SDS Product Features

A series of bespoke SDS Flow Control Chambers were designed and fabricated to meet the specific requirements of each process structure. Manufactured from high-performance Weholite HDPE, the chambers offer excellent resistance to corrosion and chemicals, making them particularly suitable for use within wastewater treatment environments.

The structures range in size up to 3.5 metres in diameter and 6.8 metres in height, demonstrating the flexibility of the SDS Flow Control Chamber system in

delivering large, and complex, geometries. Each unit was prefabricated off site, with inlet and outlet connections, internal features and structural elements incorporated during the manufacturing process.

This approach significantly reduced the need for on-site construction activities while ensuring a high level of quality control under factory manufacturing conditions. The relatively lightweight nature of the HDPE construction, compared with traditional concrete, also reduced lifting requirements and simplified installation, contributing to improved site safety and efficiency.

Close collaboration between SDS engineering and fabrication teams ensured that all aspects of the design were manufactured to the required specifications, with several iterations undertaken to refine details and ensure all welding and assembly operations were achievable within the factory environment.

Issues Overcome

The primary challenge associated with the project was translating complex, concrete-based designs into prefabricated HDPE Flow Control Chambers. This required close collaboration between all parties to ensure that performance requirements were met without compromising manufacturability.

Multiple design options were reviewed and refined to optimise the solution while ensuring all structural, hydraulic and fabrication requirements were achieved. The direct involvement of experienced SDS fabrication personnel was instrumental in resolving technical challenges and delivering a solution that could be manufactured efficiently and cost-effectively.

The adoption of an off-site manufactured solution also reduced the risks associated with large-scale in-situ concrete works, including extended construction programmes, curing times and increased on-site labour requirements.

Results

The use of off-site manufactured SDS HDPE Flow Control Chambers enabled a more efficient construction process, reducing on-site installation time and improving overall health and safety performance.

Off-site fabrication ensured consistent quality across all units while simplifying installation and commissioning activities. The lightweight HDPE construction also reduced lifting requirements and provided a practical, durable alternative to traditional in-situ concrete structures, supporting the successful delivery of this key infrastructure upgrade.

Andrew Macdonnell, National Sales Manager – AMP, SDS, said: *“By working closely with JN Bentley, SDS was able to develop a solution that addressed the complexity of the required structures while delivering clear programme and safety benefits. The use of prefabricated SDS Flow Control Chambers enabled a more efficient approach to construction, without compromising on performance.”*