

Structural Drainage

Reservoir Base Uplift, Deckdrain, Rushmoor STW, Telford, UK



Project Description

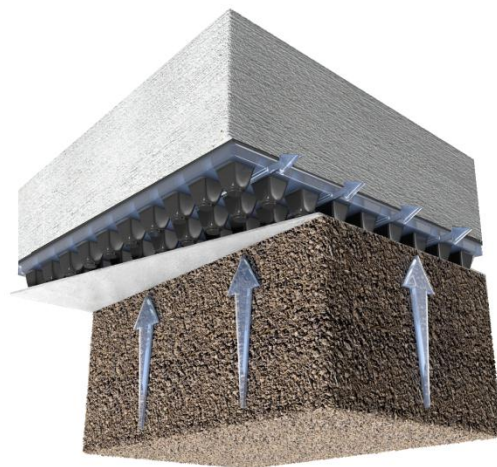
Serving Telford from its rural setting, Rushmoor STW is approximately a mile west of the town and forms part of the Shropshire Area Sludge Strategy, and is a strategic centre for sludge digestion, dewatering and cake storage. The project is part of Severn Trent Water's e5 (efficiency 5) Major Projects Programme, an alliance formed between four framework contractors and Severn Trent Water to deliver eleven major wastewater non-infrastructure projects. Collaborative working and innovation have been at the core of the delivery; maximising efficiencies to drive results for both the client and alliance partners alike, facilitating the One Supply Chain (OSC) ideology and driving the success of Severn Trent Water's AMP5 Capital Programme. Between 2008 and 2026, the Rushmoor STW catchment (population equivalent) is expected to grow by nearly 100%. If Rushmoor STW is to effectively treat the flows and loads derived from the expected growth, the site's existing primary settlement tanks (PSTs) would need refurbishment and additional secondary treatment capacity provided.

The Challenge

The area around the site has a high water table. This provides a particular challenge to the stability of below-ground water storage structures which have treatment operations with constantly changing water levels within the tanks. When empty, the tanks suffer considerable uplift pressures. A simple solution is to create thick, heavy and costly sealed concrete base slabs. In addition, a 500mm thick underslab stone drainage layer is required. Encouraged by the e5 programme theme of innovation, a novel solution was proposed.

Project Information

Client	Severn Trent Water
Contractor	JN Bentley
Consultant	Mott MacDonald
Products	Deckdrain 700S/NW8
Quantity	1,200m ²
Benefits	<ul style="list-style-type: none">• Eliminates stone requirement saving on material costs• Easy to install and joint• Acts as a lost shutter and keys in to the concrete



ABG Deckdrain 700S

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The Solution

ABG Deckdrain 700S/NW8 was proposed to perform the dual function of uplift pressure relief and under-slab drainage. The virtually impermeable cusped core of **Deckdrain** is supplied thermally bonded to a filtration geotextile to prevent soil fines from blocking the drainage path. **Deckdrain** is placed facing down and an initial screed layer is poured in to the cusps. The cusps are filled with the screed, bonding it to the underside of the slab and enhancing the compressive strength. **Deckdrain's** open core structure far exceeds the drainage capacity of a 500mm stone. Removal of the stone provided significant savings in excavation, and the import and placement of costly granular materials. Non-return valves were placed at intervals across the floor slab to relieve groundwater pressure when the tanks are empty thus avoiding uplift pressures and allowing the minimum practical concrete floor slab thickness.



The finished floor slab with non-return valves for groundwater pressure relief when the tanks are empty

The ABG Service

ABG provided calculations to show equivalency of flow to stone drainage and gave installation guidance on site.



Placing Deckdrain with its geotextile facing down and the impermeable cusped face up ready to receive poured concrete



Reinforced floor slab preparation showing a valve position

Contact ABG today to discuss your project specific requirements and discover how ABG past experience and innovative products can help on your project.