



Penybont Wastewater Treatment Works Bridgend County Borough, Wales

Imagery courtesy of Dŵr Cymru/Welsh Water

PENYBONT WATER TREATMENT WORKS PROJECT MINI CASE STUDY



Project Overview

In operation since 1976, Penybont Wastewater Treatment Works is located near Ogmores beach in the Vale of Glamorgan, and is operated by Dŵr Cymru Welsh Water (DCWW). The site helps treat wastewater services to around 160,000 customers in the Bridgend catchment area. In 2017 DCWW announced a £6m investment to improve wastewater treatment works in Ogmores-by-Sea. It was hoped the upgrade will help protect the environment, reduce flooding and improve river and bathing water quality in the area for future decades. The pre-treatment screening system had also reached the end of its service life. Equipment would be installed to monitor waste and ultra violet technology implemented to treat wastewater before it's returned to the environment.

Investigations between 2022 & 2023 would identify further investment was required in the premises infrastructure, and specifically multiple concrete structures, to ensure no cross-contamination of water. Concrete specialists, Beton Bauen were invited to conduct a series of intrusive and non-intrusive investigations, by the main contractor, IPS, which would evolve into a series of trials. Subsequent findings identified a number of repairs were needed in the water containment areas, as well as a series of fundamental errors by a previous contractor/s that would jeopardise the integrity of the structures. Over the course of 2024 and into 2025, Beton Bauen worked to diagnose the problems, design solutions, and carry out long-term repairs that would keep the works functioning properly and help meet environmental standards.

Project Details

Project Title:	Penybont Wastewater Treatment Works
Sector:	Water Treatment / Utilities
Overall Project Value:	Approx. £500,000
Project Duration:	2024-2025
Our Client:	Industrial Pipework Services (IPS)
On Behalf of:	Dŵr Cymru/Welsh Water
Other Partners:	Resapol; Natural Cement





SERVICES DELIVERED DURING THIS PROJECT

SURVEYS & TESTING
(INC. CONFINED SPACE INVESTIGATION)

CONCRETE TRIALS

CONCRETE REPAIR
(JOINT INFILLS & CRACK SEALING)

PATCH PINNING

RESIN INJECTION
(SLAB RE-BONDING & VOID FILLING)

Project Description

Beton Bauen Surveys & Investigations

Having become involved in the project via business partner Industrial Pipework Services (IPS), Beton Bauen were quickly able to establish (through a series of 'Hammer' tests, confined space investigations, and structural surveys) that significant concrete repairs were required, including joint infills and crack sealing. More significantly, in 2023 surveys, engineers were able to conclude that some of the water retaining structures had hollow concrete slabs, and the initial concrete repairs highlighted the fact that there was a 'floating' slab, which had effectively de-bonded. The initial survey highlighted the fact that the original building contractor had made the structure too low, causing the de-bonding. Unsuccessfully, this contractor had then put a 70mm concrete topping onto the structures' base, in an attempt to heighten it.

Solution Methods & Methodology

Beton Bauen advised specifically on the use of a *NatCEM* product by Natural Cement for joint infills, due mainly to its safety record and attributes when used in water containment. Similarly a project plan to repair the de-bonded slab/s would specify use of an RBS crack injection resin by *Resapol*®. The *Resapol*® low viscosity (LV) resin would be injected carefully to re-bond the slab and fill the void. Prior to this process, precautions were made to manage containment of the resin before crack sealing to avoid water leakage and ensure that voids were correctly filled. In turn this aimed to prevent 'sump' and any subsequent (dirty water) contamination. Beton Bauen concrete technicians deployed a PatchPin solution to act as an anchoring system whilst the resin was injected, to ensure that the slab did not lift further, and also to assist in the bonding process.

Issues Encountered

Once Beton Bauen successfully identified fundamental solutions for repairs and slab re-bonding, from a technical perspective, there were few issues. However, the size, timescale and weather/coastal conditions would all make managing this project somewhat challenging. Delivery of the works required close collaboration, not only with IPS (main contractor) but also with DCWW's engineering and environmental teams, ensuring that all interventions aligned with operational requirements and regulatory standards.

Project Summary

The number of site staff required to complete concrete repairs at Penybont Wastewater Treatment Works, over a prolonged period of time would prove a difficult project to manage, but one handled professionally by Beton Bauen representatives.

Professional concrete repair using products specifically suited to this industry should mean that the water containment, concrete structures are protected for the foreseeable future, helping the client (DCWW) to avoid any future contamination.

“The water containment units at Penybont Wastewater Treatment Works are working structures. In effect, they have been out of service for two years and undermine efficient operations at the site. Whilst there was pressure to get the water containment repaired as soon as possible, Beton Bauen identified underlying issues with the original build that should be addressed to prevent long term problems.

Arthur Dacey,
Beton Bauen Contracts Manager

