

Prestatyn & Llanasa Scheme

new WwTW in constrained site will serve two catchments

by

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The existing Prestatyn catchment currently receives preliminary treatment with discharge to sea via a long outfall. The existing Llanasa catchment receives full biological treatment, though this works has now reached the end of its design life. The Prestatyn and Llanasa Scheme provides an agglomeration of the existing catchments at a new treatment works at Llanasa. The scheme is designed to comply with the UWWTD and enable the beach at Prestatyn to meet the guideline standard of the Bathing Water Directive. Discharge from the new wastewater treatment works on the Dee Estuary must also combine with the Shellfish Directive and existing unsatisfactory combined storm overflows in the catchment will also be addressed.



Aerial view of Llanasa WwTW (photo:Roger Brown: courtesy EC Harris)

At Llanasa Wastewater Treatment Works site the new works is being built off line, where possible existing assets are being refurbished. For example, the existing final tanks will be refurbished and used as storm tanks. At Prestatyn a 2400m³ storm tank will be provided to meet the 3 spills per bathing season criteria of the Bathing Water Directive. A new combined storm overflow will also be provided.

The existing Prestatyn sea outfall will be abandoned and the existing surge tower will be demolished. The latter is located

within the Gronant Dunes and Talacre Warren Site of Special Scientific Interest.

To link the new pumping station at the Prestatyn Storm tank to the existing Llanasa Wastewater Treatment Works a 5.4km long pipeline will be constructed.

This pipeline is constrained by – the main Holyhead to London railway line, the A548 Coast Road, two sites of Special Scientific Interest, a wildlife site and a number of local caravan parks and



New storm tank under construction at headworks (courtesy E C Harris).

residential areas. These constraints have been taken into account in determining the final pipeline route.

Treatment process

Pumped and gravity influents discharge to a new inlet works, handling flows from both Llanasa and Prestatyn. Mechanical screening is provided comprising of two band 6mm screens with a bypass screen channel. Grit removal will be by a grit separation and classification plant.

Storm water will gravitate to two existing re-utilised tanks of 940m³ capacity. The tanks will use existing scrapers to facilitate

the removal of settled solids into the storm return flow. From here, the storm return pumps will discharge into the inlet works and outlet chamber.

SBR plant

Biological treatment of the wastewater to secondary treatment standards will be by a sequential batch reactor activated sludge system. The SBR plant will be equipped with a membrane fine bubble aeration system, three aeration blowers and control system. The SBR has four basins with a stainless steel mechanically driven decanter to control effluent overflow from each basin.

Surplus sludge from the SBR will be pumped to an existing refurbished tank utilised for SAS storage, providing eight hours storage of surplus sludge at 0.5 – 0.8 per cent dry solid content. From here the SAS will be pumped to the duty/standby sludge thickeners and then to an existing sludge storage tank for later removal from site.

Provision of disinfection of the final effluent will be via a UV disinfection plant prior to entering the final effluent pumping station.

Procurement process

The scheme was let as a part of the Holyhead and Prestatyn Design and Build Contract and was won in open tender by the Galliford Consortium, which consisted of Galliford Northern, ITT Sanitaire and Bullen Consultants. The form of contract used is the New Engineering Contract Option 'C'; Target Cost with Activity Schedule. During the selection process it had been emphasised that the successful Consortium would need to adopt a proactive



Access shaft for tunnel under railway line (courtesy E C Harris)

manner to ensure success of the project. Dwr Cymru Welsh Water were keen to adopt a collaborative approach.

Partnering team

Having awarded the contract, DCWW and the Galliford Consortium established the partnering team which consisted of Galliford Northern, ITT Sanitaire, Bullen Consultants, DCWW, MWH and EC Harris.

Although the scheme was won outside DCWW's AMP3 Strategic Alliance (see footnote) it was decided at an early stage that to progress the works, the ethos and best practice of the Strategic Alliance would be adopted. The utilisation, by the team, of established procedures helped to bring to the contract many of the attributes of partnering, including standardisation, collaboration, and supply chain management.

Project constraints

The scheme had a long planning history which culminated in the final award of planning permission for the small footprint solution. This final solution had been developed with the benefit of the whole team reassessing the planning application details. Having obtained planning permission there were further constraints on the project. Not least of all were the Environmental Constraints imposed owing to the fact that the WwTW was surrounded by Dee Estuary SSSI. Additionally, the pipeline would have to cross this SSSI as well as the Gronant Dunes and the Talacre Warren SSSI.

Prior to establishing the site compound, which was located behind the existing WwTW on land owned by DCWW, permission had to be obtained from the Countryside Council for Wales. The route of the pipeline had to be agreed and approved with CCW prior to work commencing within the SSSI.

To mitigate impact on the SSSI, this involved a route through Prestatyn Golf Course and along the verge of the A548. Other mitigation methods involved the erection of anti newt fencing and programming the construction activity in a manner that prevented disruption to over wintering birds. Additional works were also carried out which would directly benefit the environment. These works included construction of a natterjack toad hibernaculum and propagation of a Black Poplar tree, which is a notable species.

These environmental constraints had to be balanced against the other project constraints imposed by various statutory bodies including, Railtrack, Utility Companies and County Council Highways departments (the scheme crossed a county boundary). In part, due to the historical opposition to the scheme and the fact that some disruption to the general public was inevitable, there was a major PR interface to manage.

Key element in dealing with all stakeholders was an open and collaborative approach, consequently regular liaison meetings were set up with key parties. This dialogue was maintained at all times ensuring that when problems arose with specific aspects of the scheme all parties were aware of the status and contributed to the solution. Crossing of the main Holyhead to London railway line was a critical area for the scheme. Success in achieving this crossing was based on this collaborative approach. ■

Footnote: The Welsh Water Alliance is a group of strategic partners working with Dwr Cymru Welsh Water to improve their infrastructure.

Note: *This article has been compiled from a number of sources of information including DCWW, Galliford, Montgomery Watson Harza to whom the author, W.Pitt of EC Harris extends grateful thanks.*
