

Morfa Bychan WwTW

new wastewater treatment works on site of existing headworks

Morfa Bychan WwTW serves a predominantly seasonal coastal catchment with a population equivalent of some 4,503 during the summer period and 806 in the winter months. In order to comply with the Urban Wastewater Treatment Directive and because of the importance of maintaining the Blue Flag status of the local beach, Dwr Cymru Welsh Water determined a need to build a new wastewater treatment works on the site of the existing headworks at Morfa Bychan.



Completed work at the new Morfa Bychan WwTW

courtesy Dwr Cymru Welsh Water

Design flows for the catchment are;

- * Dry Weather Flow = 8.7 l/s;
- * Average flow = 10.9 l/s;
- * 3DWF Final Flow to Treatment = 24.1 l/s;
- * 6DWF = 47.2 l/s.

Existing works

Previously, the existing headwork pumps discharged 52 l/s of flow through a long sea outfall, 2,400 metres long into Tremadoc Bay. The existing works could not meet the required discharge consent of 60mg/l Suspended Solids and 40 mg/l Biological Oxygen demand. To satisfy legislative requirements of the Urban Wastewater Treatment Directive (UWWTD), the incoming sewage required appropriate secondary treatment prior to discharge. In addition, properties in the catchment were subject to flooding as a consequence of the under capacity of the sewerage network. The scheme included works to alleviate the flooding issues.

Welsh Water invested £3.7m in the scheme to replace the existing works with one featuring the latest technology. This significant investment has delivered environmental improvements to the surrounding area and maintained the local bathing water quality.

The completed works has also ensured the catchment's wastewater network is able to operate effectively when increased demands are placed upon it during periods of exceptionally heavy rainfall. The headworks can receive 110 l/s during storm conditions. All 110 l/s are screened with 24.1 l/s passed forward for full treatment and 85.9 l/s sent to the newly constructed storm tank. The long sea outfall can now discharge a new maximum of 68 l/s.

All of the work was constructed within the boundaries of the existing Welsh Water land and was completed early summer 2007.

Background

The scheme overcame some planning objections and Local Authority planning permission was granted with particular design conditions. These included lowering of the structures, odour control/mitigation, noise mitigation, and ensuring that the local environment was not adversely affected. There was also a requirement for landscaping plans to be developed to reduce the visual impact and meet the local community's concerns.

During and after the planning stages of the scene an extensive environmental impact survey and conservation surveys were carried

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out to ensure there was no adverse effect on local wildlife. This included a reptile survey to check on slow worms, adders and common lizards, which inhabit the locality.

The survey, carried out by experts found reptiles on the site which had to be re-located to adjacent habitats.

A public exhibition was held to show local residents the work involved in the scheme and the benefits it would deliver. This provided a forum to allow residents the opportunity to raise questions and concerns.

The project

Construction of the new works included a new inlet works feed pumping station, a new grit removal plant, fine screening, aeration process, storm storage, final settlement and sludge processing holding facility. A new back-up generator, transformer, bund with an acoustic fence, access road and junction were also constructed .

Sludge is now thickened on site and transported to a sludge processing facility. A new control building has been provided to accommodate a control panel and house the sludge thickener. The scheme also included an upgrade of the long sea outfall pumps to meet the increased demands of the catchment.

The long sea outfall has been hydraulically tested to 75l/s, This is acceptable to accommodate the proposed maximum flow of 68 l/s,

The partners

Partners working on the AMP4 scheme included *Costain* as the Civil Partner, *Imtech Process*, the M & E Partner and *EC Harris*, the Cost Consultants. ■

Note: *The Editor & Publishers wish to thank Imtech Process for preparing the above article.*

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