

# Croyde Sewage Treatment Works

## £5.5m new works to meet UWWTD

**S**outh West Water is required to provide sewage treatment at Croyde, a holiday resort situated in a beautiful area of North Devon, well known for surfing and many other seasonal coastal events including the ‘Gold Coast Ocean Feste’. Although the outfall is adjacent to a bathing water, the mandatory standard for bathing water compliance was already being met without the STW, but sewage treatment was required to meet the the Urban Wastewater Treatment Directive.



Croyde STW (Copyright: Still Imaging, Chudleigh, Devon; courtesy SW Water).

Improvements to the wastewater treatment facilities proved a challenge for the ‘Team’ made up of *OTVB, Interserve and Babbie* selected by South West Water to work with them under a partnering arrangement. The first objective was to identify a suitable location in this picturesque setting whilst at the same time overcoming a number of other issues.

### Location

Many locations for siting the new works were investigated with the existing pumping station proving the most suitable. To enable construction outside the present boundary onto land owned by the National Trust, it was necessary to produce an aesthetic layout acceptable to all parties, including three residential properties adjacent to the proposed new works. The site is at the bottom of a hill with a footpath starting at the top of the hill overlooking the proposed works. Layout and construction of the treatment works are to represent a small farm dwelling. Initial rejection at planning resulted in modifications to the profile of the ‘farm’ outbuildings. Other issues forming part of the planning consent are noise and odour control.

Existing facilities consist of a pumping station receiving flow from the town, local caravan park and the storm facilities discharge. Two types of Screenings Plant have been installed, both operating at peak load. Screenings, grit (2mm to 6mm) and grease discharge into 120 litre wheelie bins for disposal. The outfall pumps are installed in a dry well which is in the basement of the MCC room. The pumps discharge into a rising main after which flow gravitates to sea.

### Construction

Construction of Croyde STW started in mid May 2002. Advanced accommodation works included the provision of a new footpath and passing bay were constructed in May. An amphibian barrier was erected around the site perimeter to prevent the resident toad colony from accessing the site during its annual migration from the spawning ponds to Middleborough Hill. Main structure within the site comprises a 19m diameter, 5.5m deep circular Activated Sludge Tank.

A sheet piled cofferdam was installed at the temporary works; this was necessary to enable excavation and construction of the tank,

which utilised traditional in situ reinforced concrete methods. Around the perimeter of the main tank are several ancillary structures. These include the Sludge Storage Tanks, Ultra Violet Channel, Control Building, Grit and Grease Chamber, Odour Control Unit and Inlet Works. Excavation for and laying of buried ductile pipework and ducts is currently ongoing. The works will be screened by a combination of random natural stone walling and slate roofing.

The scheme at Croyde included the extension and partial replacement of the existing sea outfall which is located off Baggy Point in a designated area of Special Scientific Interest.

A modular 'jack-up' platform was mobilised to undertake these works from the sea, with all plant and machinery transferred by boat from Appledore. These works, which included tidal work and the use of divers, was completed during the summer of 2002.

Improvements to the treatment facilities were required to achieve the new discharge consents of 60mg/l TSS and 40mg/l BOD at full flow to treatment of 31.4 l/s. Population equivalent ranges from 5890, including tourists in the summer to 1450 residents in the winter.

**New works**

Croyde WwTW comprises a new works to biologically treat sewage from the catchment area and disinfect the treated effluent using Ultra Violet lamps prior to discharge to sea via the extended outfall facilities at Baggy Point. The biological treatment stage is direct aeration of the screened, de-greased and de-gritted sewage. The flow, which receives this treatment is up to the Full Flow to Treatment (FFT) of 34.0 l/s, storm flows in excess of this quantity up to 70.0 l/s will be pumped to the new screen and separated after screening. Screened storm flow will be returned directly to the outfall pump station for discharge to sea, together with the disinfected treated effluent from the new works.

Being a remote site the plant operates automatically, with occasional operator attendance. The debris removed from the process stream (screening and grit) is stored, short term at site and removed weekly by SW Water's waste disposal contractor. The sludge produced by the aeration process is thickened and stored on site for short periods, prior to removal to the regional sludge treatment centre for further processing. Grease removed from the screened crude sewage is blended with this thickened sludge for removal from site.

**Solutions**

To minimise the footprint size of the treatment works a number of process solutions and layouts were reviewed. In considering these options the final selection resulted in the aeration tanks forming an annular ring around the outside of the final settling tank. The aeration and final tank are concrete construction and partially

buried in the ground to avoid visual presence from outside the complex. Key items of plant are covered so that odours can be contained, extracted and treated by the *Alizair* biological odour control unit.


Partners in the project were: *South West Water Services (Client); OTVB, (Process, M & E); Interserve (Civil); Babtie (Consultant).*

The plant is on target with first flows being taken to the plant in early 2003. ■

**Note:** *This article was written by Nick Gough, Programme Leader South West Water, with John Billingham of OTVB, Andy Pritchard of Interserve and Simon Brown of Babtie.*

NICHOLAS PEARSON ASSOCIATES


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We are pleased to have prepared the Environmental Statements for the successful approval of the Croyde and Lynmouth Waste Water Treatment Works for South West Water.

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<b>HEAD OFFICE</b>	<b>TIVERTON</b>	<b>BELFAST</b>
30 Brock Street Bath BA1 2LN	1 St Paul Street Tiverton Devon EX16 5HT	250 Ravenhill Road Belfast Northern Ireland BT6 8GJ
tel 01225 445548	tel 01884 243037	tel 02890 452225
fax 01225 312387	fax 01884 243038	fax 02890 452228
info@npaconsult.co.uk	tiverton@npaconsult.co.uk	belfast@npaconsult.co.uk

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Alex Macdonald, Babtie Group, 95 Bothwell Street, Glasgow G2 7HX  
Tel: 0141 204 2511 Fax: 0141 226 3109 [www.babtie.com](http://www.babtie.com)