

Dunoon WwTW

£18m scheme aids SW's operational & environmental objectives

by
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As part of its current capital investment programme (Quality and Standards Two), Scottish Water (SW) has identified the coastal communities of Dunoon and Sandbank, located on the Firth of Clyde, as requiring new waste water collection, transfer and treatment facilities in order to comply with the requirements of the Urban Waste Water Treatment Directive (UWWTD) (Scotland) Regulations 1994. This scheme is the largest waste water treatment project in the current investment programme.



Dunoon WwTW part of £18m scheme with environmental objectives

courtesy: Biwater Leslie JV & Scottish Water Solutions

Preferred option selection

Preliminary design and optioneering exercises identified a site at Bullwood Quarry for the treatment works to be the most cost effective solution. Part of the optioneering exercise included value engineering and risk assessment components, carried out by the fully integrated partnership between *Scottish Water Solutions* and *Biwater Leslie JV* (the Joint Venture of *Biwater Treatment Ltd* and *George Leslie Ltd*).

Among the scenarios considered were different locations for the treatment works (plant footprint issues) and different process plant & equipment,.

However, land procurement, excessive footprint and plant costs raised concerns about the feasibility of the total scheme.

Benefits of recommended option

SWS project manager Brian Martins explained that the new collection and transfer scheme and treatment works will ensure that SW complies with UWWTD and will ensure that final effluent conforms to SEPA's mandatory standard for discharges into the designated receiving waters.

Contract scope & cost

The contract for implementing the entire project was awarded to *Biwater Leslie JV*. It encompasses the manufacture, delivery, erection, installation, commissioning and testing of all processes, mechanical, civil, electrical, instrumentation and control plant. Contract conditions are in accordance with New Engineering Contract Option C, with agreed pain/gain mechanism.

The scheme has been designed to meet the following asset management needs.

- * assurance of legal compliance with discharge consent standards;
- * appropriate treatment for the current population equivalent (PE) of 13, 334.

Project description

A series of 18 existing raw public outfalls in the Dunoon catchment are to be intercepted by the new collection and transfer system. The majority of existing public outfalls will become redundant.

The new collection and transfer system will be constructed, comprising of a combination of new gravity sewers, HPPE rising

mains and six pumping stations and CSOs, each containing storm overflow screenings facilities and utilising existing and/or new sea outfalls for overflow discharges.

Combined flows of 7.7Ml/day Full Flow Treatment (FFT) will then be forwarded to a new primary and secondary treatment works constructed at a redundant quarry, located on the A815 coastal road.

During storm conditions flows in excess of FFT will be stored in line with SEPA guidelines within the new collection and transfer system before being passed on to the works for treatment.

Due to the length of the collection and transfer system (approx 10km) there is the potential for sewage to become septic, particularly during warm weather and/or at times of low flow. In order to minimise this problem, the scheme includes for chemical dosing at two of the proposed pumping stations.

The main wastewater treatment works, situated within the disused quarry, will include inlet screening comprising of 6mm perforated screens, combined, grit and grease removal system and screenings washing/dewatering.

Primary treatment settlement will be provided by two lamella settlement tanks, comprising of two RC structures, each containing two submerged lamella plate packs, scum and sludge pumping.

Secondary treatment utilising BAFF (Bio bead) comprising of five RC reactor cells containing media and one dirty backwash water

cell, secondary sludge and wash water pumping, combined sludge storage, sampling, wash water system, service water storage, chemical storage, safety shower and eyebath, works pump station and odour control system. Final effluent will be discharged via the works pump station, utilising a new sea outfall terminating below MLWS.

The main primary treatment elements, with the exception of the combined sludge holding tank, will be housed within a single treatment building. The majority of the process units will be covered and directly connected to a dedicated odour control system. The treatment building will use wall mounted extractor fans for providing air changes within the treatment building.

The site will be predominantly automated, however it will receive regular maintenance visits by Scottish Water Operations. A series of welfare facilities will be included to provide a base for operational SW staff within the Argyll and Bute area.

Progress

Construction work got underway on the collection and transfer scheme in January 2005, with the treatment works programmed to start in August 2005, once statutory stakeholder's consultation periods are complete and planning has been granted. Current forecast at the time of writing (May/05) is to complete the £18m project late in 2006. ■

Note on the author: *Phil Sheridan is Programme Manager, Bewater Treatment Limited.*



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