

Stanborough Service Reservoir

to boost existing water supply during peak periods

by
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In recent years there have been a number of interruptions in water supply to customers, due to power failures at the Littlehempston Water Treatment Works (WTW) as a result of high summer seasonal demands. This has resulted in incidents where major service reservoirs supplying the area have been drawn down to unacceptably low levels. In the Avon Dam licence agreement, the Environment Agency identified an option to claim 6 Ml/d compensation water for the area during the Summer months. In order to comply with this agreement the output from Avon Water Treatment Works will be reduced during the summer months peak demand, thereby further compounding the supply problems.



Stanborough: Inside the service reservoir

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In September 2003, *Atkins* produced the 'South Devon Strategy' for South West Water Ltd, in light of concerns for the capability of the existing water supply system to meet peak demands.

The 'South Devon Strategy' identified a number of options for consideration - one of them being the construction of an additional Service Reservoir with a storage capacity of 6.6Ml/d. The optimum location for this reservoir was at the Stanborough site, where there is an existing 2.2Ml reservoir - and the space to build a new reservoir on land already owned by South West Water.

Location

Stanborough is located in a rural location on the A381 Totnes to Kingsbridge road near Halwell, Devon. The current reservoir serves Asprington, Dartmouth, Stoke Fleming and Slapton, plus many more small villages within the South Hams area. This amounts to about 8300 properties, which in turn cater for approximately 30,000 people.

Gleeson Construction Services were appointed as principal contractors on the project with *Faber Maunsell* as Design consultants. The project started in April 2005 and was programmed to last 48 weeks with a capital value of approximately £1.7 million.

The new reservoir

Stanborough service reservoir has been designed to BS 8007:1987 'Design of Concrete Structures for Retaining Aqueous Liquids'. The reservoir is a single compartment design with internal hypalon baffle curtains. The fall across the roof and base slab is generally 1:150 - the fall is provided to the floor slab to facilitate cleaning and to the roof for drainage purposes.

The walls and base slabs have been designed with full contraction joints spaced at 6.25m, allowing some of the daily and seasonal movement to be accommodated at the joints. The walls have been designed as simple cantilever walls with a sliding roof joint to accommodate differential temperature movements both in the



Stanborough: Service reservoir under construction

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temporary and permanent states. This type of modular design is both simple to construct and easy to design, and has been used successfully on numerous service reservoirs in the South West over the past 20 years. Security also played a key role in design of the reservoir; anti terrorism vent and access covers were specified, as there was strong opposition from local residents to the erection of a high security fence.

Before construction of the reservoir got underway, two 400mm inlet mains were diverted as they fell within the footprint of the new reservoir. The two inlet mains - one from Littlehempston WTW and the other from Avon WTW - supply the existing reservoir and ultimately supply the new reservoir.

Carefully planned operation

As this operation was carried out during the summer months, when demand for water was high, careful planning was required to ensure that the existing reservoir did not run dry. This involved early morning working and diverting each main separately, so that one main could still supply the reservoir whilst works were being carried out.

Access to the site was restricted through narrow country lanes. To enable a crawler crane onto the site, permission had to be obtained from a local farmer who owned an adjacent field. This also required approval from English Nature and Devon County Council, as the field contained a buried archaeological monument.

As the reservoir was being built in a rural area within close proximity of local residents, it was in everyone's interest to minimise any disturbance in terms of noise, dust and dirt. The project also entered the Considerate Constructors Scheme, and has obtained very high marks to date.

Concrete and reinforcement works were carried out by Richard Medlins contracts. The reservoir was constructed, leaving a 10-

metre working strip in the middle of the reservoir for access (see photo). The roof slab was poured in three parts to allow enough reach for a crawler crane and a concrete pump, as access around the perimeter of the reservoir was restricted.

Other works carried out as part of the project were:

- * Installation of 4 new altitude valves replacing the existing ball valves;
- * Installation of 5 new meters;
- * Installation of 2 new eccentric plug valves;
- * Installation of a new chlorine dosing unit to replace existing unit.

All the above will allow both the new and the old reservoirs to be controlled remotely via SWW Control Room, based in Peninsula House (Headquarters), Exeter, considerably reducing the amount of visits to the site in the future.

Upon testing and chlorination of the reservoir there were many concerns for the quality of water being discharged, as the outfall pipe leads to Slapton Ley, a Site of Significant Scientific Interest (SSSI). A consultation meeting was held with the Environment Agency and sufficient control measures for the discharged water were approved.

Anticipated completion date for the reservoir was 31st March 2006. All major works are substantially complete and, at the time of writing, the project is on programme and coming in approximately £30,000 under budget. ■

Note: The author of this article Andy Garvin, is Gleeson Construction Services Section Engineer. His submission was checked and edited by Phil Thomas, SWW Water Project Leader.