Hindhead Reservoir

new 5Ml service reservoir in an Area of Outstanding Beauty to maintain supplies to 12,500 customers in the Hindhead, Grayshott and Bramshott

by Richard Myerscough, Paul Bentley and Dan O'Kelly

Hindhead is a town 10 miles south west of Guildford, Surrey, and boasts the site of the Devil's Punchbowl, an Area of Outstanding Natural Beauty with a dramatic landscape covered in mixed woodland and heath. Owned by the National Trust it is environmentally highly prized with much flora and fauna including protected species such as the Dartford Warbler, as well as reptile populations such as adders and slow worms. Over the years, Hindhead has been home to several literary figures including Sir Arthur Conan Doyle, Alfred Lord Tennyson and George Bernard Shaw. More recently Hindhead's profile has been raised being the location of the UK's longest non-estuarial tunnel, recently opened in July 2011. The tunnel will divert many thousands of vehicles per day away from Hindhead, restoring some peace to the town and the environmental heritage.

Inside the "water cathedral" *Courtesy of South East Water*

History

In the early 1900s Wey Valley Water Company started supplying water to the area from groundwater sources to the north at Tilford. A 3.4Ml brick-built part-buried service reservoir was constructed close to the Devil's Punchbowl, with gravity mains feeding the town. In the 1950s supply to the reservoir was supplemented by more local groundwater sources, leading to the construction of a water treatment facility on the site.

Following steady population growth and a need to maintain water quality, South East Water (SEW), Wey Valley's successors, has initiated a scheme to replace the existing storage and treatment works with a new 5Ml service reservoir and treatment facility. This new facility will enable a larger volume of treated drinking water to be stored at the site and will maintain supply to its 12,500 customers in the Hindhead, Grayshott and Bramshott areas.

Environment & planning

Whilst SEW has undertaken all of this work under its statutory permitted development rights, close liaison with the various environmental and local stakeholders (ie. National Trust and Natural England) helped facilitate the timely development of the site.

Following detailed reptile surveys undertaken during 2007 the site was found to be exceptional for reptiles. A reptile exclusion fence was erected, and a programme of trapping and removal on site was undertaken throughout summer/autumn 2010. A hibernaculum was constructed within the Devil's Punchbowl, and all of the reptiles relocated to this new habitat. Grass was then strimmed short prior to construction to prevent re-establishment of a suitable reptile habitat. It is anticipated that the reptiles will naturally re-colonise the site on completion of the works and removal of the exclusion fence.

Building the hibernaculum at the Devil's Punchbowl
Courtesy of South East Water

The ecologists trapping for Reptiles
Courtesy of South East Water

Other environmental aspects included surveys for bats and nesting birds at the site, particularly in the existing Operations building, and prior to felling of trees. Archaeological mitigation consisted of investigation and recording of the site by a qualified archaeologist as topsoil and subsoil was stripped.

Local residents were kept closely informed during the works, which at one stage involved fitting a satellite dish for disrupted television signals due to interference caused by the tower crane, and helping neighbours to dig their cars out of the snow!

The close proximity of the Devil's Punchbowl required the visual impact of any new construction to be minimised wherever possible. As with the old reservoir, the new reservoir was therefore constructed part-buried and surrounded entirely by grass embankments.

A completion event at the site is planned to thank the local people for their support and to show them the finished project and highlight the benefits it brings to the Hindhead area.

Procurement

Beyond the Hindhead scheme, SEW is procuring other service reservoirs in this fifth Asset Management Plan (AMP5). The SEW delivery team therefore worked with the supply chain to identify efficiencies which could be accessed by bundling the reservoirs into a single contract. These are summarised below, and were estimated to total circa £1m across the four reservoirs:

- Less preliminaries through shorter overall programme.
- Implementation of modular walls and standard designs.
- Purchase rather than hire of formwork.
- Forward programme visibility to the Contractor.

In order to best access these efficiencies, the reservoirs would need to be bundled in a single contract, with fixed programme and scope. Unfortunately project life is never quite that simple, in that the reservoirs were all at different stages of development. Those reservoirs located on Crown or MoD land required land purchase and planning permission before the schemes could be meaningfully tendered.

An alternative approach was therefore devised which guaranteed a single contractor the opportunity to build the four reservoirs, without fixing the programme and scope, or compromising the immediate delivery of Hindhead Reservoir. This approach is described as follows:

Reservoir Framework: A tender process was initiated which would award the successful Contractor a NEC 3 Framework consisting of all of the AMP5 reservoirs.

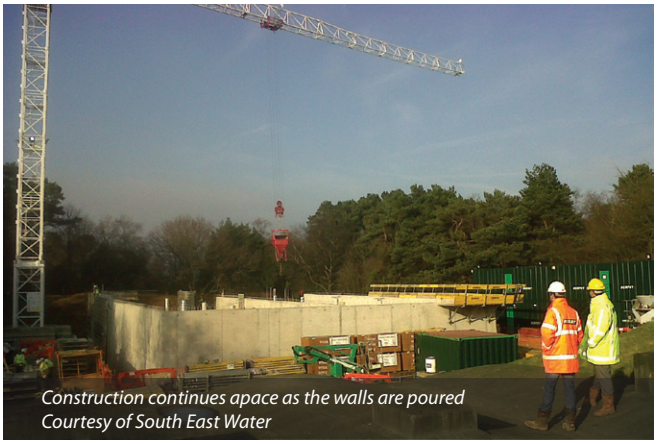
A secondary Contractor would also be appointed to the Framework, and would have the opportunity to price for works packages if the primary (successful) Contractor were not to achieve SEW's affordability and performance criteria.

Award based on Initial Target Cost (ITC) for Hindhead: Award of the Framework was based on the successful tender for Hindhead Reservoir. The tendered rates would then form the basis for developing the subsequent target costs

Efficiency Enablers: SEW confirmed a willingness within the Hindhead ITC to pay for those efficiency enablers, which would release efficiencies on the later reservoirs; examples would be the purchase of shutters, precast elements and the modular designs.

Advantages: This approach enabled:

- Robust Hindhead Target Cost:
  - < Tendering Contractors were able to price Hindhead reservoir on the assumption that they would build the other reservoirs.



Construction continues apace as the walls are poured
Courtesy of South East Water

The first half of the base slab is poured
Courtesy off South East Water

The corner shuttering is fixed ready for the first wall pour
Courtesy of South East Water

Pouring the roof of the reservoir in one single pour
Courtesy of South East Water

  - < More realistic estimation of efficiencies that can be achieved, and immediate application of lessons learned.
  - < Less risk included within Initial Target Cost as only the first reservoir was being priced (ie. limiting the effect of changing price indices).
- Remaining reservoir awards to be based on affordability and performance of the primary Contractor.
- The opportunity to the primary Contractor to drive incentivisation and efficiencies through the supply chain.
- Reduced time to procurement for Hindhead Reservoir, and forward programme visibility to the tendering contractors on the subsequent reservoirs.

Key Performance Indicators (KPIs): Given the environmental sensitivity on this scheme, and the need for timely completion, SEW chose to financially incentivise good performance. As such a mechanism was derived whereby the Contractor would be rewarded on a monthly basis, based largely on their environmental and programme performance.

SEW also encouraged the delivery Contractor to identify innovative ways of encouraging and rewarding good Health and Safety performance. This resulted in monthly jackpots being instigated for Contractor staff for every month in which there was no H&S incident. These proved highly effective in engaging staff in the Health & Safety culture.

Delivery

For AMP5, South East Water set up an integrated delivery approach where Jacobs form part of the in-house delivery team. Following the tender process described above, SEW subsequently appointed J. Murphy & Sons Limited to be the primary Contractor on the service reservoir framework. The construction of the reservoir was completed on programme despite some seasonally poor weather, which has enabled the second service reservoir to commence, using the same staff and approach within both the SEW integrated delivery team, and by the Contractor. This in itself has enabled efficiencies to be mobilised, to the benefit of the customers, the stakeholders, and to the overall programme.

The editor and publishers wish to thank Richard Myerscough, Project Manager, Paul Bentley, Senior Civil Engineer, and Dan O'Kelly, Environmental Engineer, all with the South East Water/ Jacobs Integrated Team for preparing the above article for publication.