Frankley WTW

quality water for Birmingham delivered through teamwork

by
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For more than 100 years Frankley Water Treatment Works in south west Birmingham has been supplying quality water to Severn Trent Water customers in Birmingham. Rain water captured in the Elan Valley reservoirs in mid Wales gravitates for over 72 miles via the Elan Valley Aqueduct (EVA) to Frankley Water Treatment Works for treatment and distribution into water supply. A truly remarkable feat of Victorian engineering!

Construction of Portal Frame steelwork around GAC Cell Structure and process pipework *Courtesy of Severn Trent Water*

In response to the challenges of environment change and the need to provide a secure water supply to its customers, Severn Trent Water is developing and enhancing existing assets at Trimpley and Frankley Water Treatment Works to provide a supplementary water supply to Frankley WTWs, which in the future will allow more water to be stored in the Elan Valley reservoirs during periods of high rain fall for release during periods of prolonged hot weather. In addition, future maintenance work on the Elan Valley Aqueduct (EVA) can be carried out with water supplies to Frankley being supplemented with River Severn water from Trimpley WTWs.

Since the spring of 2007, Morgan Est has been working on a £31 million contract at Frankley Water Treatment Works to design, construct and commission a new Granular Activated Carbon (GAC) plant. The GAC will enable water abstracted from the River Severn at Trimpley to be pumped to and treated at Frankley Water Treatment Works, where the GAC will remove organics, including pesticides and herbicides that are present in river water.

The Frankley GAC project forms part of a £60 million project due to be completed in AMP4 and includes an upgrade to the pump stations at Trimpley Water Treatment Works and refurbishment and rerouting of the Severn Aqueduct which now links Trimpley to Frankley Water Treatment Works.

Connections to existing works - team photograph *Courtesy of Severn Trent Water*

Ensuring that customer water quality and supply is maintained throughout the construction and commissioning phases of this project has proven to be one of the greatest challenges for Morgan Est and Severn Trent Water. The GAC plant has been successfully incorporated into an existing 'live' works process stream. This has been achieved by Morgan Est and Severn Trent Water working together in a collaborative environment, with the emphasis on team work to manage risk at all stages of the project.

It has been this working relationship and the implementation of Morgan Est's H&S initiative – Work Safe, Home Safe, which has helped achieve an impressive safety record on the project, leading to no reportable accidents in more than 500,000 million hours worked.

The Work Safe, Home Safe initiative was promoted across the site and included a behavioural-based safety campaign, personal influencing of safety, monthly safety themes, positive interventions and a safety watch.

The engineering design for this project was carried out by a Severn Trent Water design team working with consultant engineers Pick Everard. The GAC plant, process and hydraulic design was also undertaken by Severn Trent Water with mechanical and electrical design undertaken by Morgan Est.

Three dimensional modelling of GAC plant by GHA Livigunn during the early design phase of the project enabled the operational and maintenance teams to 'walk through' the complex plant, identifying and removing potential safety hazards prior to construction commencing, reducing costs and delays associated with redesign.

The GAC project includes the provision of an inter-stage pumping station, a 16 cell GAC plant and pipeline connections to dosing and mixing chambers. The GAC treatment plant is designed to treat up to

3D Model (left) and As Built (right) views of the Interstage Pumping station

Courtesy of Severn Trent Water

240 ML/D of blended EVA and River Severn flow.

Working on an operational site has required extensive and detailed planning for all construction, testing and commissioning activities. Morgan Est have managed this activity on site and have developed detailed programmes incorporating both construction and operational activities to manage the interfaces between these two areas of site activity.

Final testing and commissioning of the overall Trimpley / Severn Aqueduct / Frankley system is due to be undertaken in late 2009 with the project currently ahead of the scheduled March 2010 completion date.

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