

Frankley WTW

quality water for Birmingham delivered through teamwork

by
Jay Standen and Derek James

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.

ABC Stainless Limited

Manufacturers of the unique "Q" Pipe System

"approved for use in public water supplies"

*Developed to reduce manufacturing and site
installation costs, unique in its concept*

- Taft Ends formed directly onto pipework - any length
 - No Tacking, welding or brazing necessary
 - All rotary backing flange options available
- Weldless branch connections formed as standard
 - Pressure tested and certification available

*We welcome enquiries for Weir Plates, Baffles,
Pressure Vessels, Storage and Process Tanks, Process
Equipment, Lift out Grids or one off projects.*



Empson Road, Eastern Industry,
Peterborough PE1 5UP
Telephone: +44 (0) 1733 314515
Facsimile: +44 (0) 1733 315273
Email:
graham.groves@abcstainless.co.uk
website: www.abcstainless.co.uk

*Since 1995,
we are pleased to be
associated with the
Water Industry's
Principal Contractors,
undertaking
stainless steel
pipework manufacture
and installation
at WTW's and
STW's sites throughout
the country.*



Saviour ENGINEERING

Unit A3, Langham Park
Lows Lane, Stanton-by-Dale
Derbyshire, DE7 4RJ

Tel: 0115 944 4400 Fax: 0115 944 4404
sales@saviouengineering.co.uk www.saviouengineering.co.uk

**Mechanical Services Contractor to
the Water and Wastewater Industries.**

Pipework Solutions:

Ductile Iron • Stainless Steel •
Mild Steel • Copper • PVCU •
Carbon Steel (Scotchkoted) •
ABS •

Installers of:

Filtration, oxidation and dosing
equipment, aeration systems,
RAS/SAS pumping systems,
penstocks, bridge scrapers,
pipework, CHP generation
sets, centrifuges and much
more

Pipework Installation



Sewage Treatment Plants



Water Treatment Plants



Mini-Crane
Hire

www.saviouengineering.co.uk



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.

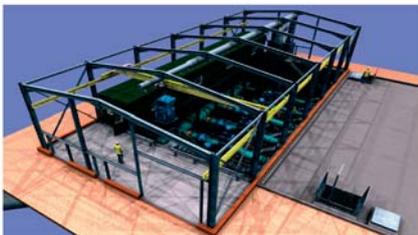
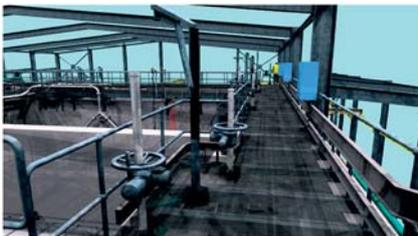
The Work Safe, Home Safe initiative was promoted across the site and included a behavioural-based safety campaign, personal influencing of safety, monthly safety themes, positive interventions and a safety watch.

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

Passionate about People



- Process
- Mechanical
- Electrical
- Instrumentation
- Civil
- Structural
- Geotechnical

Confident about Challenges



GHA Livigunn at the forefront of engineering design in the water industry

www.ghalivigunn.com

Cheadle
0161 491 4600

Frodsham
01928 734777

Leeds
0113 261 0022



Water Treatment and Supply



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

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.



Courtesy of Severn Trent Water

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.

Note: The Editor & Publishers wish to thank Jay Standen, Project Manager with Morgan Est Plc and Derek James, Delivery Manager with Severn Trent Water, for preparing the above article. ■