

# Calder Vale WwTW

## a test case for a new procurement model

by Russell Saxton BEng, CEng, MICE and Edoardo Piano MEng, PhD, CEng, C.WEM, CEnv, MCIWEM, AMIMechE

Calder Vale WwTW serves the bulk of metropolitan Wakefield in West Yorkshire, with a population projected to increase to roughly 110,000, against a background of fairly stable industrial activity. During AMP5, the works is being upgraded to meet a new consent of 3mg/l ammonia as a result of the Freshwater Fisheries Directive. In parallel with this obligation, Yorkshire Water (YW) has developed a sludge strategy which has identified opportunities in refurbishing and expanding renewable energy production at a number of regional anaerobic digestion sites.



New Final and Primary Tanks

Courtesy of Arup

The Calder Vale WwTW scheme has been used as a test bed for a new procurement model focused on early contractor involvement, greater scrutiny of the business risks being resolved, better investigation of potential risks during project delivery, and as usual, tight competitive costing. In addition, this project and a concurrent one at Acomb Landing WTW were used as part of the selection process for selecting Yorkshire Water's Large Scheme Framework Partners. Support through seconded staff was provided to cover the technical and commercial aspects by Arup and Turner & Townsend.

The procurement process chosen by YW can be roughly split into two phases: the investigation phase and the delivery phase.

### Investigation phase

The aim of the investigation phase is to enable a solution to be identified and priced by negotiation or competitive tendering. In order to do this, the bidding partners were asked to specify what tasks would be necessary to understand the problems on site and condition of the assets, to take early actions to reduce the risk profile by obtaining early information on topics such as ground conditions and third party issues, and in general, to gather enough information to enable optioneering to take place.

In true partnering spirit, all six bidders agreed a common scope and split the work amongst themselves, and then shared information back with each other. The optioneering, preferred option development, and pricing, were carried out individually to enable each bidder's individual potential to be assessed and to maximise competitiveness.

Following assessment of the tenders, YWS appointed ETM (Earth Tech Morrison) as preferred contractor for the delivery phase of the project.

### Delivery phase

A change in the delivery phase of the contract from the AMP4 delivery process has been the use of Asset Standards, or in effect, detailed Client specifications for the most common process units typically installed. This approach enables greater consistency across schemes, but most importantly perhaps, the capture of all those detailed design considerations learnt through experience over the years, which enable a plant to operate better and be maintained more easily.

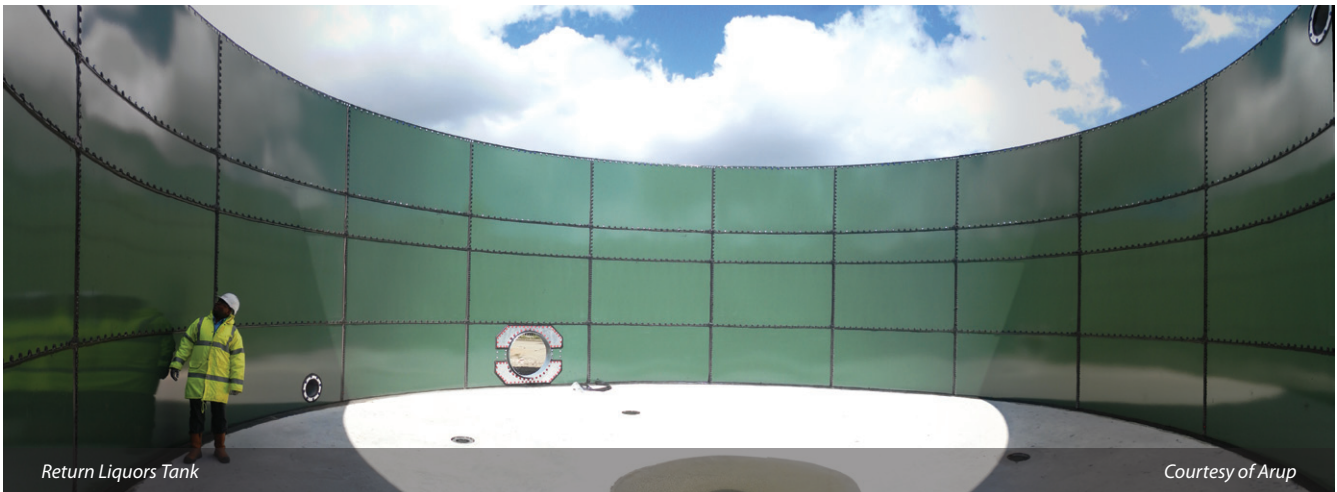
The solution being delivered at Calder Vale includes a series of modifications on both the sewage treatment and sludge sides. On the liquid side, the scheme consists:

- A new inlet works
- 3 (No.) new 30m primary tanks
- An expanded Activated Sludge Plant
- An extra final settlement tank



Drum Thickeners

Courtesy of Arup



Return Liquors Tank

Courtesy of Arup

The sludge works include:

- A modified imported sludge facility
- New SAS thickening
- GBTs converted to primary sludge duty
- Refurbished digesters including a new CHP, new boiler, gas mixing and other control/ancillary items

Perhaps, amongst what may be considered as a fairly conventional scheme in terms of technologies being employed, it is worth noting the extensive attention and detail that has gone into the development of the inlet works design, with its two-stage screening and grit detritors. Best practice guidelines were used to give sufficient straight runs ahead of each screen, and alternative baffle arrangements were proposed on the feed to each detritor. A physical hydraulic model was then commissioned to be carried out by CRM of Bolton, and this provided information to further refine

penstock positions, channel lengths and benching arrangements.

At the time of writing this paper, the civil works on the inlet works and primary tanks are nearing completion, with no reportable incidents.

#### Key project participants

Client: Yorkshire Water Services Ltd  
 Principle Contractor / Designer: ETM  
 Technical Consultant: Arup  
 Commercial Consultant: Turner & Townsend

*The Editor and Publishers wish to thank Russell Saxton, Yorkshire Water Project Manager, and Edoardo Piano, Senior Engineer with Arup, for preparing the above article. Both are members of Yorkshire Water's Asset Delivery Unit.*



## INDUSTRIAL VALVES SERVICES

### HELPING INDUSTRY TO FLOW SMOOTHLY

Since 1981 Industrial Valves has been at the forefront of valve renovation, maintenance and repair both on site and in our comprehensive Workshop.

Valve failure is the cause of millions of pounds worth of lost revenue every year, planned maintenance can virtually eliminate this, however sudden breakdowns will always occur.

I.V.S. can offer 24 hour cover and will work round the clock both on and off site.

Our quality standard is audited to BS EN ISO 9001-2000

#### **(SW) INDUSTRIAL VALVES SERVICES LTD.**

(SW) Industrial Valves Services Ltd. Queensway Swansea West Industrial Park, Swansea SA5 4DH

Telephone: 01792 580260 Fax: 01792 579685

E-mail: [ivs.co.uk](mailto:ivs.co.uk) Web: [www.ivs.co.uk](http://www.ivs.co.uk)