

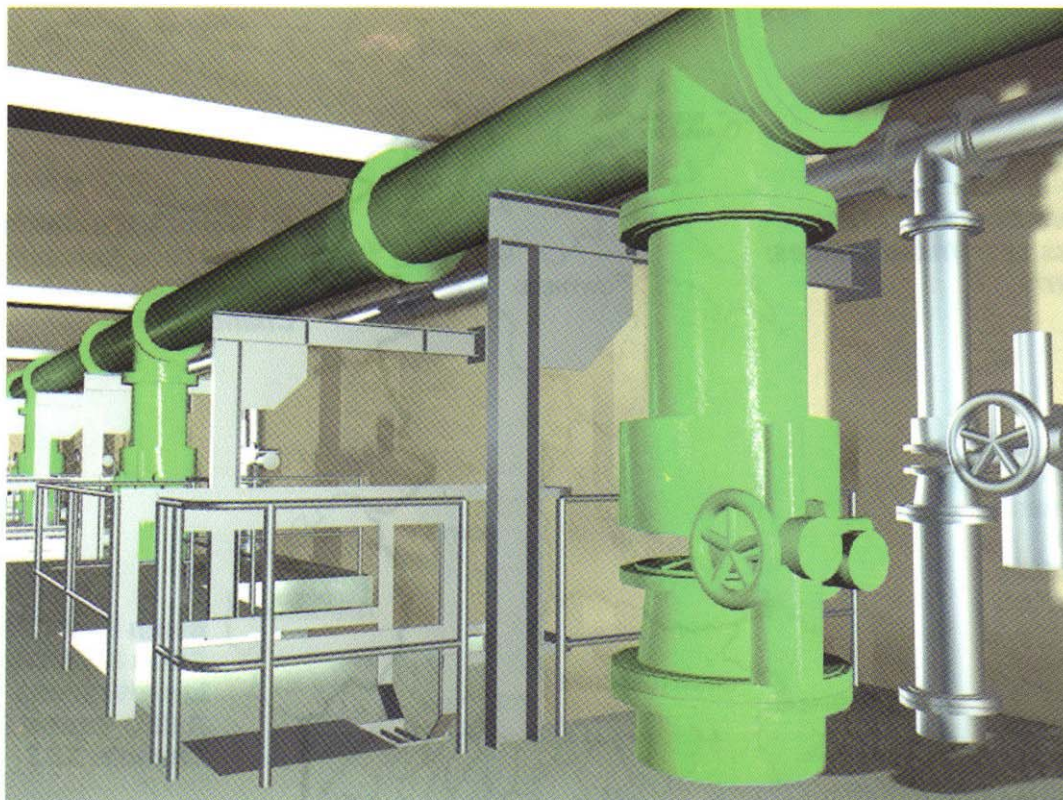
Broomy Hill WTW

extensive upgrade provides essentially new asset

INNOVATION

CASE STUDY

Broomy Hill Water Treatment Works (WTW) supplies drinking water to 110,000 people in the City of Hereford and an extensive rural area including Ledbury and Leominster. The scheme will upgrade existing equipment at the works and filters will be installed to improve the water treatment processes and the taste and odour of the treated water. All the work will be carried out within the perimeters of the existing WTW, but will provide an essentially new asset for DCWW, replacing the existing works that was largely built in the 1970s



The design for this £15m project has been developed using 3D software. The benefits are:

- * reduction in otherwise unforeseen design errors due to pipe clashes avoiding extra construction costs;
- * more efficient and accurate drawing production because all views are simply taken from a single model;
- * visualisation and 'aerial' views of the proposed works, making discussions with Planning Authorities more practical;
- * the use of 3D design will facilitate early design involvement by all partners working on the scheme by providing a clear visual perception of the proposed plant. This will ensure that the collective experience of all partners can be harnessed to provide a plant that is safer and easier to operate and maintain;
- * the final model can be used as a virtual tool in the 'operating and maintenance manual, as well as for training of operators;
- * the use of 3D draughting is becoming standard on all Paterson Candy projects and is already in use at Binnie Black and Veatch.

The project comprises major refurbishment of some parts of the works and dosing facilities, whilst the majority of the scheme will be focused on construction of three key stages of treatment:

1. Flocculation and clarification using Paterson Candy's Flat Bottom Clarifier design. These will provide the additional contact time needed to reduce taste and odour problems in the treated water, as well as providing a buffering capacity to deal with the increasingly variable quality of the raw water extracted from the River Wye.

2. Rapid Gravity Filtration using robust and up-to-date technology to ensure reliable and effective water treatment, whilst employing industry standard techniques to minimise the risk of *cryptosporidium* entering the potable water supply.

3. Granular Activated Carbon contactors, which are required to remove the pesticides that are increasingly featuring in raw water.

The arrangement of these structures has been designed to make best use of the contours of Broomy Hill, thus minimising the amount of pumping required.

In addition to these processes the handling of sludge and wastewater produced by treatment will be improved to make best use of the abstracted water, thus reducing the power consumed by the plant. The work on the raw and treated water pumps also includes installation of new, efficient drive systems that will

Special Feature

significantly reduce the electrical consumption of the works, producing benefit to DCWW, its customers and the environment.

The works is situated close to the centre of historic Hereford, as well as being adjacent to the Wye. Environmental issues have been uppermost in the designers' plans, and extensive research has been carried out to ensure that the project has no discernible impact on the local environment. This has included surveys of possible badger activity, designing around stands of protected trees and tree planting where removal of existing vegetation has been unavoidable. Additionally, Broomy Hill's Victorian water tower is one of the city's most visible landmarks and consideration is being taken in the design to ensure that this will be safeguarded.

Being in the city, the works is surrounded by residential land and

liaison with the neighbours has been ongoing since the inception of the project. Newsletter, mail drops, individual meetings and site visits will continue throughout the programme to ensure that maximum information and minimum nuisance is given to the residents.

Construction is already underway to meet tight deadlines. The scheme is being operated as a partnership between all stakeholders and the main contractors are engaged in a single target cost which incentivises benefits to the project rather than to individual. ■

Strategic Partners; *Paterson Candy Ltd; Laing Utilities; United Utilities; Dwr Cymru Welsh Water (DCWW); EC Harris; Chandler KBS & Binnie Black & Veatch. 4 of the partners worked together in a similar partnership on the successful Felindre WTW scheme in Amp2. Broomy Hill builds on this success with ECH and BBV.*

Programme of works: *Water Treatment Works. Region: Hereford.*
