

Llanwrin Water Treatment Works

replacement disinfection scheme

As part of their 5 year AMP4 framework with Severn Trent Water, Norwest Holst have carried out the full replacement of the disinfection scheme at Llanwrin Water Treatment Works. The works is located on the side of the River Dovey valley, about half a mile from Llanwrin Powys. The site is only accessible by minor roads, and solving logistical problems was a key feature of the works when considering the delivery of materials and plant. The works consisted of the installation of new chlorine and sulphur dioxide dosing systems, a new contact main and pumping station and recommissioning of the whole works. The project took place between January and August 2006 and 2006 and the team achieved water into supply earlier than programmed.



Llwrin WTW: Contact main

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The existing chlorine and sulphur dioxide disinfections assets had generally reached the end of their useful asset life and the installation did not comply with current design requirements.

Scope of works

- * site survey;
- * structural steel work design;
- * M & E Design;
- * civil construction
- * electrical & mechanical installation;
- * process commissioning, O&Ms and training.

Purpose of scheme

The plant is designed to treat 2.5Ml/d with a chlorine dose rate to achieve 1.0mg/l free chlorine and sulphur dioxide rate to achieve 0.4mg/l free chlorine.

The team

The works were undertaken by Norwest Holst, as main contractor, with Carl Bro as design consultants working for Severn Trent Water. The installation of the Chlorination equipment was sub-contracted to Whitewater Services and the contact main was manufactured and installed by FreeFlow Pipesystems, Birmingham. In addition to this, the chlorination equipment was supplied by Severn Trent Services as part of their materials framework with the client.

Design & Innovation

The original concept required a small concrete contact tank, but after the design team had considered the health, safety and operational requirements, a 1 metre diameter by 90 metre long Scotch-koted steel main was designed and installed. The main consists of six lengths, each 15 metres long and laid above ground in three wide by two high formation. The pipes then feed into a new concrete pumping station. Transporting the new installation via narrow country lanes to the remote site required working closely with the Severn Trent operations and local farmers, so as to cause minimum disruption to the local community. The whole contact main is supported on three reinforced concrete plinths and was installed using a 30 ton mobile crane.

The disinfection equipment was installed in three separate rooms - Gas store, dry room for chlorinators and control panels and a wet room for analysers and motive water pumps. All of the equipment and pipework in the gas store, dry and wet rooms was replaced and the internal walls were treated to neutralise the effects of previous leakages.

Conclusions

The team achieved water into supply earlier than programmed and this small, but complex project proved that a collaborative team approach can work on all types of projects, with all parties working together to find the best solution. ■