

Stanton by Bridge

treated water and chlorination AMP4 improvements

by
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The pumping station at Stanton by Bridge was constructed by Long Eaton Urban District Council in 1892. The building is an excellent example of late Victorian Architecture and when constructed comprised the pump room housing a steam pump, a boiler house with a characteristic chimney, and a detached works superintendents house. At Stanton by Bridge there were four boreholes, approximately 20m deep in which the water levels remained constant under all conditions, and these were supplemented by nine tunnels driven into the surrounding hillside. The water was pumped by steam pumps to a reservoir at Castle Donnington from where it was gravity fed to Long Eaton. In 1961, the South Derbyshire Water Board was formed and began the task of coordinating supplies over a wide area. During this period the steam pump was replaced by electric pumps and the chimney removed.



Stanton-by-Bridge Pumping Station first constructed in 1892 & now modernised

courtesy: Norwest Holst Ltd & Severn Trent Water PLC

In 1961 South Derbyshire Water Board took water from the Derwent reservoirs in north Derbyshire. This “soft” water was stored at Castle Donnington reservoir from where the old mains circuit was reversed and “soft” water was gravity fed to Stanton by Bridge, where it was mixed with the local “hard” water to produce a water supply of consistent quality. The water was pumped to Scaddows reservoir situated on the high ground above Ticknall from where supplies are back fed to Melbourne and the surrounding villages of Ticknall, Smisby, Hartshorne and Woodville.

The three electric pumps, two operational and one on standby, remained in service until 2006. Stanton by Bridge is generally unmanned, control being effected from Severn Trent Water’s COSC at Coventry.

The scope of the contract, defined by Severn Trent Water and undertaken by *Norwest Holst Ltd.*, in association with *Pick Everard* as designers, was to replace the treated water pumps and install an onsite sodium hypochlorite generating plant.

The works included:

- * replacement of the existing 3No. fixed speed pumps with 2 No. Weir Pumps variable speed *Duoglide* treated water pumps;
- * installation of new control panel supplied by *Boultings Group Plc.*
- * replacement of all electrical installations and equipment by *Incontrol Ltd;*
- * removal of redundant chlorination equipment & the installation of a *Clortec MCT 12* rig supplied by Severn Trent Services;
- * installation of a new gantry hoist system by *Hoistquip Ltd;*
- * construction of new inspection chambers to accommodate new by-pass pipework, valves, flowmeter and hypochlorite dosing lances;
- * removal of existing entrance steps and installation of a new fabricated steel loading platform.



courtesy: Norwest Holst Ltd & Severn Trent Water PLC



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During construction work the booster station was required to remain operational at all times, with two pumps available, one in service and one on standby. Prior to commencing on site, shutdowns of the supply mains were planned and booked to enable changes and modifications to pipework and the installation of the new valves to be carried out with minimal disruption to supply. This allowed further pipework modifications above the valves, removal of existing pumps and the installation of the new pumps to be carried out during normal working hours.

Work commenced on site in July 2006 with the removal of the existing entrance steps, and the installation of a new fabricated steel loading platform enabling redundant equipment to be removed from the building and the new plant to be installed.

The original chlorination equipment was removed, allowing scaffolding to be erected, enabling building modifications to be carried out to provide a gas tight room for the *Clortec* plant. The proposed system produces as a by-product, hydrogen gas, which is

managed by venting to atmosphere and includes an integrated hydrogen leak detector and auto shutdown system. The new *Clortec* plant was supplied, installed and commissioned by Severn Trent Services. The new control panel was installed and commissioned by *Boultings Group PLC*, and *Incontrol Ltd* commenced the electrical fit out, maintaining all existing live circuits and equipment.

A new overhead lifting gantry system was installed by *Hoistquip* to facilitate maintenance work and, as necessary, pump removal..

Prior to the first shutdown, the existing non-operational pump was removed and excavation work was carried out to expose the incoming main. During the shutdown, new valves and pipework to accommodate the new pump was fitted. The existing main was cut and the new flowmeter, dosing lances, valves and by-pass pipework were installed.

Following the successful seven day performance testing of the first pump, the second existing pump was isolated and removed prior to shutdown, thus enabling the duration of shutdown working to be reduced to less than two hours, during which the redundant pipework was removed and the new valves and pipework were installed. The new pump base was constructed and the pump installed during normal working. The third pump was removed and the existing base broken out during normal hours. During the third shutdown the existing valves and pipework were removed and the main was capped below floor level.

Following successful performance testing, commissioning of the new equipment, and training of operational and maintenance staff was completed during February and the booster station was handed back to Severn Trent Water in March 2007. ■

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