

Malmesbury STW

new parallel process stream increases treatment capacity

by
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Malmesbury STW serves a connected population of almost 13,000 and significant growth in the catchment, combined with a tightening of effluent and storm consents, led to the need to provide significant extensions to the works. Treated effluent from the STW discharges close to the source of the River Avon in an area where significant income is raised through tourism; summer populations are therefore somewhat higher than the connected winter population.



Malmesbury: Construction work underway on new process stream

courtesy Wessex Water

Existing works

The original secondary treatment comprised mineral media percolating filters of varying diameters, arranged in three streams. Storm flows were fine screened prior to discharge and both indigenous and imported sludges were thickened to a cake in a belt press. The site was also equipped with a mobile generator of sufficient size to power the whole of the existing works.

Consent

The AmmN consent for Malmesbury STW was due to be tightened from 15mg/l to 9mg/l. This enhancement, coupled with a 45% increase in the flow to full treatment, a new 2mg/l phosphorous consent and new development within the catchment, indicated that significant extensions to the existing STW were required.

Brief

A brief was issued to Wessex Engineering and Construction Services (WECS) to improve the existing works to current standards together with the construction of a parallel process stream on new land to increase treatment capacity. Provision was also required for a new storm tank, ferric dosing for phosphorous removal and additional

sludge storage to accommodate greater quantities of imported sludge.

Construction

It was recognised that successful project delivery would depend on the quality of liaison with and response to the site operators. For this reason the majority of construction works were carried out by WECS in-house construction division as Principal Contractor. Due to the significant liaison necessary whilst working on an operational STW, including planning and phasing of works, the use of WECS lent itself perfectly to the project and enabled rapid and cost effective decision making when foreseen or unforeseen risk events occurred. Such events included protracted land purchase negotiations and procurement of certain M & E equipment.

Due to the limited space available on the site, it was necessary to demolish the existing rectangular storm tank and in its place construct a new 15m dia radial flow tank. During this period, temporary storm storage was provided in one of the new sludge holding tanks, completed earlier in the construction phase with the use of suitable over-pumping arrangements.

Auto de-sludging was retrofitted to the existing primary settlement tank to overcome historic problems of rising sludge.

Modifications were carried out on the old primary distribution chamber to direct flows to the new PST. A new 10 metre diameter radial flow primary settlement tank was built, sized to accommodate 36% of the flow over the full 20 year design horizon.

A high rate filter of 19m diameter and 4 metres depth was installed within a glass coated steel tank, with plastic modular media to receive all the flows from the new primary tank.

An in-situ concrete humus tank, of 12 metre diameter was built to receive flow from the new filter.

One of Wessex Water's framework suppliers Michael Smith Systems - a division of Gee & Company, was engaged to provide a phosphorous dosing plant. This plant, modular in design and installation, was housed in a new kiosk outside of which was a bund, built to contain the ferric in the event of a spill during delivery.

Health & Safety

WECS employs a rigorous approach to driving H & S standards ever higher. A dedicated H & S compliance team undertook regular audits of site plans, programmes and activities. An incentive scheme for individuals to spot and report non-compliance activities was begun on site, and each submission was entered into a prize draw for a holiday in Malaysia. These initiatives, together with a highly skilled and motivated workforce led to an accident frequency ratio significantly better than the industry norm.

A new generator, dedicated to Malmesbury was provided by *Addicott Electrics Ltd*. This generator was required to make available the older mobile generator in the event of a power shortage at one of the nearby STWs.

The construction activities and commissioning of the new works were completed ahead of time and the effluent was fully compliant by the regulatory date. ■

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