

Chilthorne Domer 'Halfway House' STW

construction of package sewage treatment works to eliminate unconsented discharge to highway watercourse

by Bruce McAuslane

Chilthorne Domer is a village of 39 properties (including a public house with touring facilities) in Somerset, located approximately 3 miles north-west of Yeovil on the main A37 Ilchester Road. The properties are served by a combination of individual septic tanks, public sewers, private and public sewage treatment facilities. Thirteen of the properties drained via a 100mm diameter foul sewer, to a septic tank located in grounds to the rear of The Halfway House Inn. The septic tank was recognised as a Wessex Water asset in 2006. The liquors from the septic tank then drained to a highway ditch alongside the A37. This discharge was unconsented and deemed unacceptable by the Environment Agency.



Completed installation - Courtesy of WECS

Background

Several options to transfer flows from the 13 properties to other treatment facilities within the catchment had been considered, but stalled due to the practicalities and associated costs involved with securing third party permissions and upgrading the existing works.

In March 2010 Wessex Water received an approach from the owner of the Halfway House Inn, offering to provide some land for a treatment plant, which in addition to the 13 original properties, could also be sized to receive and treat sewage from the Halfway House Inn and touring site. This would be mutually beneficial, as it would enable both Wessex Water and the owner of the pub to abandon existing failing treatment facilities.

Undertakings

Wessex Engineering and Construction Services (WECS) was tasked with providing a treatment solution to enable the existing septic tank to be abandoned. Optioneering was to be undertaken in-house by WECS, with Atkins PLC undertaking the detailed design and site-support. Construction was to be carried out by WECS, supported by Northavon Mechanical & Electrical Services. The client target date for the project was 30 September 2012 with project takeover to be completed by 31 December 2012.

Due to the limited land available for the new works, it was quickly established during the optioneering phase that package treatment units would have to be utilised. It was originally envisaged that a



Typical temporary works for major process items - Courtesy of WECS



Placing of primary tank - Courtesy of WECS



SAF tank contract lift - Courtesy of WECS



Breaking out humus tank mudstone - Courtesy of WECS

single unit incorporating primary settlement zone, aeration zone and humus zone would provide sufficient treatment capacity. However, when taking into consideration the seasonal loading from the pub's touring business, and future potential to divert other catchments to Chilthorne Domes, individual treatment units would have to be specified.

Investigations

A key issue during the design phase was understanding how much surface water was connected to the existing system, as this would potentially have an impact on the size of treatment units or require the incorporation of a combined sewer overflow.

Extensive investigations involving CCTV, dye-tracing and detailed connectivity surveys to map all the private drainage systems were undertaken, which confirmed a minor amount of surface water was connected. However, the volume was considered insignificant and would have no impact on the design or selection of treatment units.

The design progressed on the basis of package primary and SAF tanks to be supplied by WPL, and an upward flow humus tank to be supplied by Production Glass Fibre (PGF).

Environmental assessments

A detailed environmental assessment was undertaken of the areas to be affected by the works, which identified the potential presence of great crested newts and water voles. This was a major concern to the project team, as the procedures and licencing requirements to mitigate the presence of newts and water voles are lengthy, and would have a significant impact on the project programme putting the client target date at risk.

Further detailed surveys were undertaken to understand the exact populations of newts and water voles and neither species were found and no further action was necessary.

Construction

The full scheme consisting primarily of primary tank, SAF tank, humus tank, control panel/kiosk, wash-water tank, outfall/headwall and upstream sewer diversions, was approved by Wessex Water in June 2012 to a value of £786k. Construction was programmed to commence on 2 July 2012, with WECS acting as principal contractor and CDM coordinator, and a construction period of 14 weeks.

Following consideration of the site investigation information, WECS concluded that traditional sheet and framing would be suitable for the ground conditions, while excavating to formation depth levels of up to 5m for the major process items. MGF was tasked with providing the design and necessary plant for the temporary support.

Primary plant used on site included 18T, 7T and 5T slews, a 9T dumper, and a 55T all-terrain crane hired-in to undertake the contract lift of the main process units. Three gangs undertook the works, with one gang working on the STW site, another on the outfall, and the third undertaking the upstream drainage diversions.

Despite extensive site investigations indicating favourable ground conditions, excavation for the humus tank proved surprisingly difficult, ultimately leading to having to use a breaker to remove well compacted mudstone.

Handover

The works were commissioned on 26 September 2012, with the installation formally handed over to the client on 28 November 2012.

The Editor & Publishers would like to thank Bruce McAuslane, Project Manager with Wessex Water for providing the above article for publication.

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