

Holt and Gaunts Common Sewerage Schemes

first time sewerage for 300 properties in Dorset

by
Steve Lanzon, Tim King and Andy Fry

Holt and Gaunts Common are two villages located north of Poole in Dorset, each home to approximately 150 houses. Wessex Water was subject to Section 101A application for new sewerage services from East Dorset District Council and this case study describes the viability studies, design and construction stages resulting from the recent commissioning of new sewerage infrastructure schemes to service the villages to alleviate pollution from old and improper functioning septic tanks.



Pond Head in Holt Village

Courtesy of the Holt and Gaunts Common project team

The implementation of the schemes has been promoted and managed by Wessex Water with Mott MacDonald as lead designer and Mildren Construction as principal contractor. Many other organisations have been part of the implementation, as described in the case study.

Viability stage

The viability assessment carried out by Wessex Water assessed the number of polluting properties via a scoring system that considered the pollution risk to potable water quality, public health and local watercourses.

Other factors considered included the aesthetic risk to local amenities and whether previous attempts to take pollution prevention enforcement actions had been successful. The assessment then looked at the local conditions (such as geology, water table, topography) and finally the community perception of the need of a new sewerage solution.

With the scale and extent of the project, environmental impact and local conditions all better known, the viability assessments

concluded that both the Holt and Gaunts Common schemes were viable. They became part of Wessex Water's overall £890 million AMP4 capital investment programme running between 2005 and 2010.

Optioneering design

Design work began in August 2006 and comprised three standard phases of optioneering, outline design and detailed design. Both villages are elongated rather than centralised and there were many possible options for locating the new sewerage treatment works, or indeed aiming for a combined new treatment works that would serve both villages.

Consultations with the Environment Agency over the effluent discharge consents to the local watercourses looked at four potential sites for the new Holt sewage treatment work, three potential sites for Gaunts Common and one possible combined site. Environmental impact assessments for all locations were produced and significant environmental concerns arose with potential sites bounding a National Nature Reserve (NNR) and being close to the West Moor Heath site of special scientific interest (SSSI).



Bussons Corner pumping station in Holt Village

Courtesy of the Holt and Gaunts Common project team

The optioneering exercise had to consider the general willingness of landowners to sell land to Wessex Water and the District Council's agreement to the adoption of an existing sewage treatment works site serving approximately 40% of Holt (and needing to be redeveloped). All these elements, along with capital cost and operational cost estimates, were then used to populate a decision matrix for the selection of the preferred treatment and pumping station sites and, once selected, outline design work began in January 2007.

Outline design

With pumping station and treatment site locations fixed, work began to establish the new sewer route corridors with more detailed topographical assessment and assessment of individual property septic tank locations to determine whether the new sewer runs would be best located in front or behind properties. Assessments of waste



Holt Vale pumping station in Holt Village

Courtesy of the Holt and Gaunts Common project team

pipe depths within each household and of required pipe gradients led to a better understanding of main sewer depths, and the process of refining proposed line and level began.

A key part of the outline design work for each pumping station site was to minimise land take, but this had to be balanced with the operational needs of providing access and turning provisions for large tankering lorries.

A vital part of the project was the planning application process for the eight pumping station sites and two treatment works sites. The submissions needed to show in detail the exact dimensions and levels for all at-ground and above-ground new structures. While in programming terms the planning applications needed to be submitted at an early stage, in a detailed sense they needed to contain significant accuracy in design detailing. There were also a few environmental challenges concerning highway accesses and the protection of the many oak trees in the area.

Running in parallel with the planning applications were the ongoing negotiations with landowners over land purchase by Wessex Water where the policy was to complete this under agreement, in addition to consultations with the Environment Agency for emergency and storm overflow consents.

Completed outline design proposals were subjected to Wessex Water's formal review procedures to confirm all scoping and third party issues, and the schemes passed into the detailed design stage in April 2007.

Detailed design

The detailed design work required the production of more than 670 engineering drawings for the new property connection laterals, new main gravity sewers, new pumped rising mains, pumping station facilities and treatment works units. Land access plans, hedgerow removal notices, traffic management plans and stream crossings drawings were also all required. The table below show some of the scheme numbers:

Components	Holt scheme	Gaunts Common scheme
Lengths of new gravity sewers	2,840m	3,498m
Lengths of new pumping rising mains	2,360m	2,134m
Number of new lateral connections	85	105
Number of new manholes	59	66
New pumping stations	4	4
New treatment works	1	1
Number of detailed design drawings	312	358

In carrying out the design work a significant amount of time was dedicated to stakeholder and third-party engagement. Consultations with local home-owners were wide-ranging and generated a number of interesting challenges for the engineering team to overcome.

The design of the new treatment works was based on the process design completed by Wessex Water's in-house team of process engineers, comprising a single primary settlement tank followed by

two parallel SAF units (designed by WPL Ltd) then a final single humus tank (again, designed by WPL Ltd). FFT is 8 l/s at both sites. Other treatment works units included an inlet balancing tank, flow splitter chambers, sludge return pumps, vee-notch flow measurement chambers, a storm overflow storage tank and sack screens (all designed by Mott MacDonald).

Tender documents were completed in August 2007 and Mildren Construction was appointed in November 2007.

Construction and commissioning stages

Construction work on the Holt scheme (£2m capex) was programmed three months ahead of the Gaunts Common scheme so that overall resourcing could be smoothed out and implementation lessons from Holt captured for the benefit of the works at Gaunts Common (again, £2m capex). Mildren Construction was principal contractor undertaking all civil works, with Greenacre Pumps acting as mechanical and electrical sub-contractor and all principal items of plant equipment being purchased by Wessex Water and free-issued.

Traffic management and road closure programmes were key to determining the pipe laying activities along the region's narrow lanes and the work was undertaken in close liaison with Dorset County Council Highways Team. Public relations was another key issue with information disseminated to the local community via letter drops, email campaigns and public notice boards. Mildren Construction undertook a number of long directional drill sections to limit disruption to tree roots and private gardens.

The new treatment plant at Holt was commissioned in December 2008, some 13 months after the contract, award and households are currently being connected to the new sewerage network; approximately 30 connections have already been made, representing around 30% of the anticipated total.

The Gaunts Common scheme was commissioned in March 2009 in line with Wessex Water's completion obligations. Again, customer connections are progressing well and the project continues on target.

Note: The Editor & Publishers thank Steve Lanzon, Project Manager with Wessex Water, Tim King, Project Manager with Mott MacDonald and Andy Fry, Project Manager with Mildren Construction. ■



Gaunts Common STW Courtesy of the Holt and Gaunts Common project team

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