



## Bedford Pumps can reach over the White Cliffs of Dover

Bedford Pumps have successfully engineered a solution to an ongoing problem for Southern Water's wastewater treatment works near Dover.

The initial project, part of an £120 million wastewater scheme for Southern Water Services, was the second largest scheme to the Channel Tunnel at the time of its construction. As part of EU Directives Southern Water required new wastewater treatment facilities for Dover and Folkestone. Pumping stations were constructed in Folkestone and Dover to facilitate the transfer of wastewater to a new treatment plant at Broomfield Bank near Dover.

Under the old scheme wastewater from Folkestone was discharged directly into the sea via a short sea outfall at Copt Point. Now untreated wastewater from Folkestone and Dover is transported to the treatment works and then after treatment discharged via a marine outfall. Additionally, during periods of heavy rainfall, stormwater can be transferred to a third outfall at Stade.

Bedford Pumps worked in conjunction with consultants Mott MacDonald and associate firm McDowells in the construction of two of the three new pumping stations, Folkestone Junction and Elizabeth Street in Dover.

The pumping station at Folkestone was previously a disused railway yard (i.e. Folkestone Junction). It was chosen as a suitable site by its location in relation to the existing sewers and the Stade site. The single storey structure visible at ground level actually houses five subterranean levels with 6 sumps in the one shaft. Bedford Pumps installed 35 pumps in total to this site and the two further Dover sites, Elizabeth Street and Stade, over 15 years ago.

At the time of the installation the pumping requirements were unique in Europe in so far as raw sewage had to be discharged at a rate of 500l/s to a total head of 155m. This was achieved by installing two pumps in series using a wet well submersible first stage discharging into a dry well second stage.

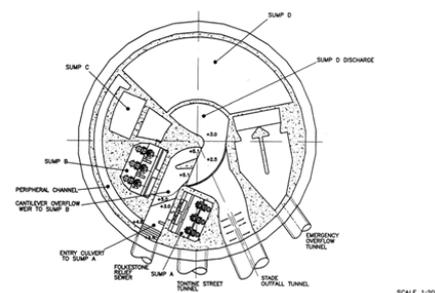
Since that time Bedford Pumps have developed a new range of sewage pumps which include frames with particular high head capabilities. In 2007 they installed six new, higher capacity pumps at Folkestone Junction and are currently in the process of replacing 3 more pumps in sump 2A which have larger solids handling capability. The initial six replacement pumps, part of a £3.5 million scheme were put into Sumps 1 A & B. These pumps discharge up to Sump 2A where the 3 new pumps are currently being installed. The pumps are required to develop a combined head of 155m (i.e. to the top of the White Cliffs of Dover!).



**Fig 1. The White Cliffs of Dover**



**Fig 2. Folkestone Junction Railway Station closed in 1965, now the site of Folkestone P.S.**



**Fig 3. Model of the shaft at Folkestone P.S.**



## (continued)

Bedford Pumps used Submersible Volute Pumps in the lower intake sumps. These are ideally suited to handling raw and foul water containing solids. The design features an advanced motor oil cooling jacket to maintain cool motor operation when used in dry well or, as in this case, exposed wet well environments (under “snoke” conditions). The pumps are raised and lowered into the sump via guide rails or wires. A docking flange facilitates automatic coupling of the pump to the discharge pipe-work.

The pumps in Sump 1A maintain a flow of 291 l/s at a head of 29m. The impeller is a high efficiency shrouded design of cast construction and has been improved to pass solids of 130mm diameter. Sump 1B’s pumps operate under storm conditions and have a duty of 39m with a flow of 525 l/s.

The new pumps currently being installed are for Sumps 2A at Folkestone and 5A at Dover. These pumps are to replace the existing ones and have a oil cooling jacket fitted to enable the water levels to be dropped regularly to effect snoring. In addition they have a higher solids handling capability in order to minimise blockage issues and extend maintenance intervals

The Pumping Station at Folkestone Junction currently delivers approximately 45 million litres of wastewater every day from the surrounding catchment area to Broomfield Banks Water Treatment Works.

Bedford Pumps Ltd, part of the Hidrostral group of companies, is one of Europe’s leading manufacturers of large submersible and conventional pumps to the water and waste water industry. Their pumps range from 100 to 12,000 litres per second, at 3m to 100m head.

Based in Bedford, England, the company was established in 1987 by members of the Pump Department of NEI (W H Allen); when NEI closed their manufacturing plant within the town. W H Allen was founded in London in 1880 and moved to Bedford in 1894 and as Allen Gwynne Pumps had a worldwide reputation for delivering high quality pumping plant to the world market.

Bedford Pumps offer the complete “Engineered Solution”. With a state of the art design studio and a specialist test bay, they also undertake complete project management and installation. Their involvement doesn’t end there, a complete service and refurbishment package is also part of their remit and they can test pumps supplied by other manufacturers as part of a routine service contract.



*Fig 4. The 169ft shaft*



*Fig 5. Pump being lowered into the shaft*