

Friston to Folkington Mains Transfer Scheme

securing supply to 40,000 residents in East Sussex

by Jon Keyworth

During the dry winter of 2011-2012, South East Water's surface water reservoirs were at record low levels, and were predicted to begin impacting customer supplies by the end of Summer 2012. To ensure that customers continued to receive a high quality service, South East Water accelerated significant capital investment to secure water supplies for the drought period, and for the future. The highest priority scheme identified was the Friston to Folkington Mains Transfer Scheme. This would enable the transfer of water from underground sources at Friston WTW to the Folkington Reservoir, a key supply for Eastbourne which is also supplied by Arlington Surface Water Reservoir.



Friston Forest - By JCPA, courtesy of South East Water

Needs case

During the winter of 2011-2012, it became evident that this was proving to be a second dry winter, with record low rainfall. With the prospect of a third dry winter ahead South East Water (SEW) put in place measures to ensure its customers would continue to receive a high quality service whatever the weather. One such measure was to implement the Friston to Folkington Mains Transfer Scheme.

The scheme comprised of the construction of a new pumping station along with 6.4km of 400mm diameter pipeline delivered through the South Downs National Park. Significant environmental issues including unexploded ordnance (UXO) and archaeological interests, protected chalk grassland and working within a SSSI were overcome through close working relationships between the delivery partners to successfully install and commission the pipeline to an extremely challenging delivery target.

Scheme drivers

Folkington Service Reservoir is located near Eastbourne in East Sussex. It holds 25ML of water and provides security of supply to some 40,000 customers daily, as well as providing emergency storage in the event of an outage at the water treatment works.

Folkington Service Reservoir received its water from a single source of supply, Arlington WTW, which treats water from Arlington Reservoir, a 3,546m³ surface water reservoir some 5km to the northwest. Arlington is a critical water resource for the southern region of East Sussex.

In a normal year the water level at Arlington will drop to 2,000m³, however, by the end of November 2011 it had dropped to 834m³, 23% of capacity. Something was urgently needed to protect those customers whom it supplied.

The decision to supplement the Arlington supply to Folkington Reservoir with water abstracted from below ground aquifers at Friston WTW was the answer. To achieve this, a new pumping station was built at Friston WTW as well as a new 6.4km long 400mm diameter pipeline.

Land issues

The entire pipeline route is contained within the South Downs National Park (SDNP), a key consultee of the East Sussex planning authority and charged with the protection of the natural environment in their area, which included agreement of a detailed calcareous grassland reinstatement methodology. Approximately 3km of the route was to be laid within the Friston Forest, including the existing Friston WTW and the location of the new proposed pumping station. Stewardship of the Forest is with the Forestry Commission (FC). Land entry negotiations were undertaken to minimise the impact on the FC, and other users of the land, such as walkers, mountain bikers and horse riders.

The remaining 3.4km was laid across private land, up to the connection point at Folkington Service Reservoir, which is South East Water property, but designated as a SSSI due to the presence of a number of plant species of national importance, including the Hairy Mallow and the Scarlet Pimpernel.

South East Water's Environmental Team was key to preparing the legally required Natural England Assent, enabling works to take place within the SSSI. This included methodology of reinstatement, minimisation of impact of the works, dealing with protected species and undertaking environmental surveys. South East Water was able to mobilise a team of willing volunteers to collect grass seed from the local area to allow the grassland to be improved during reinstatement.

Further to the environmental considerations an archaeological watching brief was undertaken due to the ancient and historic nature of the area. A team of experts mobilised at short notice and worked through weekends and holidays to ensure that their finds, which included a Saxon Village, were fully documented and did not impinge on the extremely short construction programme.

In addition to the environmental and archaeological issue a UXO watching brief was undertaken during the excavation of the pipeline, due to the presence of a First World War firing range and a Second World War target zone.

Procurement and contractual arrangements

A challenging but important target of the end of July 2012 necessitated the need to approach South East Water's supply chain to divert resources, such as pumps and pipework, from other less critical schemes. Any short fall in materials were purchased directly by SEW as a priority order and free issued to the contractor once the commercial arrangement were finalised.

This had the benefit of mitigating material supply issues whilst allowing South East Water to secure an advantageous rate from the framework supplier.

Two principal contractors were engaged; Clancy Docwra for the pipelaying works on an NEC option 'C' contract, and EPS (Enisca) for the new pumping station works under an NEC Option 'A' contract. Both contracts were let by South East Water under existing Framework Agreements and reflected the fact that the scope of the above ground works was far more clearly defined than the pipeline scheme.

Separation of the two sites and coordination of the two principal contractors was a key success factor to the job. Regular coordination meetings were held on site involving all parties, and this proved essential for managing the above/below ground interface points.



Installation of the new pipeline - By JCPA, courtesy of South East Water

Due to the urgent business requirement for the new transfer capability, the delivery programme was accelerated, which resulted in increased resource and liaison requirement ahead of the site construction works, and also resulted in pressure on the contractors programme for procurement and construction.

This pressure drove behaviours throughout the project delivery team, and programme efficiencies and challenge were sought in all areas, and the team reported directly to the Head of Engineering and the Executive Committee each week to report progress against schedule.

The site staff from both Principal Contractors worked well alongside one another, and the whole project team remained focused on the delivery target, working incredibly hard to ensure that any issues were identified and resolved quickly and efficiently.

Construction period

Ironically for a drought scheme, once construction was due to commence, the heavens opened, and turned out to be one of the wettest summers on record. However, the weather did not dampen the project teams resolve to achieve the original project schedule, which still had to be met in case the rain ceased and a third dry winter happened.

Wet weather did threaten to cause delay to the start of construction work when, due to the volume of water that had fallen onto the steep slopes, it proved extremely difficult to mobilise the site to establish the working area. The rain did eventually stop and during the construction period, the contractor worked extended hours employing a trencher to recover time against the programme when working through the open chalk grassland.

The construction of both the pipeline and pumping station went well, and according to the programme, due to the excellent

communication between all parties, and the commitment to achieving South East Water's delivery requirements.

Fast track design

The pipeline construction was started prior to the full completion of the design of the connections arrangements as well as the thrust block designs. Each element of the design was programmed to be completed as the contractor required them based on their accepted construction programme. Due to the regular bi-monthly meeting the design team was kept appraised of progress and ensured that the design priorities were amended to suit.

Health & safety

Commitment to safety is a key principal for South East Water and the safety of staff, contractors, visitors and the public is of primary concern. South East Water has in place a system that encourages everyone attending site to raise a report of every site visit of any kind through to a central system known as Site Observation Record, or SOR. In total over 200 SORs were returned by site staff and visitors, which resulted in site safety and environmental issues being picked up before they manifested.

The contractors managed to achieve working 25,000 hours without any recordable injury which is always the intention of any scheme, but a particular achievement considering the pressure of programme, extended working hours and having a number of work fronts open at one time.

Being a good neighbour

Keeping the local community informed at every stage helped the smooth delivery of the project. As well as working with the landowners, SEW were conscious of the need to explain the benefits of the project to our neighbours, and ensure we minimised disruption to visitors to the area – a popular walking spot which included the end part of the South Downs Way.

Activities included regular letter drops, staff briefings, leaflets distribution and information signs. A dedicated webpage was set up providing the latest information, as well as press releases and a feature in newspapers, were all part of the company's PR activities. Coordinating footpath closures with the local authority was also important. These efforts resulted in no complaints during the work, and in fact praise was received for the '*extremely courteous men*'.

Commissioning

The commissioning of the pipeline would prove complex due to the length of the pipe installed and the profile of the new main, running as it does over two large hills. Constant communication between the design, construction and commissioning teams allowed water to flow into Folkington Service Reservoir without incident. The final installed costs for the scheme were within the allocated budget, and completion of the construction works were achieved by the key date at the 31 July 2012.

Summary

In spite of all these constraints, pipeline construction was complete on schedule and now supplies to 40,000 residents are secured. Throughout the project the local community felt no effect on their water supply. The works have been carried out through exceptionally sensitive environmental areas, without incident.

A testament to the hard work of the delivery team and the high regard in which they hold their customers and the natural environment, the project and the team involved received a *Highly Commended Award* at the Institution of Civil Engineers 2013 Engineering Excellence Awards.

The Editor & Publishers would like to thank Jon Keyworth, Project Manager with South East Water, for providing the above article for publication.



The new water pipe strung out ready to be placed in the trench
By JCPA, courtesy of South East Water