

Private Drain & Sewers (PDaS) Adoption Programme

delivering upgrades to pumping stations in preparation for legislation change in 2016

by Mark Rands

Severn Trent Water's Private Drains and Sewer (PDaS) programme of work is in preparation for the revised legislation transferring the ownership of all private pumping stations that serve two or more properties to the statutory water and sewerage companies by the 1st October 2016. Under the legislation, the statutory water companies are required to ensure that the pumping stations are brought up to a minimum standard. This will ensure they are reliable, safe to maintain and pose no risk to the public. Whilst the water companies are not legally obliged to undertake any works until this point, STW have been greatly proactive and have taken the initiative to ensure they are not behind programme in 2016 when the legislation takes effect.



New cover installation - Courtesy of MMB



New panel installation in residential location - Courtesy of MMB

Undertakings

Design and build contractor Mott MacDonald Bentley (MMB) is delivering a sub-programme of PDaS schemes for Severn Trent Water. In order to deliver the programme on time with the best financial outcome, MMB has worked very closely alongside STW and their customers, producing innovative and value-engineered solutions suitable to enable work to be undertaken in very restricted locations. Effective communication within the team and with STW's customers, smart value engineered solutions and a fantastic working partnership have been fundamental to our approach and success.

The works have included sinking shafts, installing rising mains, building valve chambers and pipe jacking in gardens, drives and private property. MMB managed to achieve STW's highest customer approval rating to date across their business which demonstrates the success of not only our exemplary partnership, but also the quality of communication.

Pilot scheme

During the trial adoption period, MMB in collaboration with client STW, identified solutions for four differing scenarios, ensuring a consistent approach when bringing all sites up to a safe and maintainable standard.

MMB was initially tasked with delivering a pilot scheme, studying and delivering civil engineering improvements at fifty-five pumping station sites in logistically challenging locations, including in areas of restricted access, on customers' land, in highways and in confined spaces.

Schemes were batched by complexity and released by Severn Trent Water as three separate work orders. During the trial, MMB identified solutions for four different scenarios to ensure a consistent approach when bringing all sites up to a safe and serviceable standard in accordance with the client's RAG assessment of the sites, these included:



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As customer requirements evolved, so the CEMA Group was formed to meet those needs by expanding their existing resources and skillsets, and by acquiring and developing complementary businesses.

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- **Type 1 or low risk sites:** Minor modification works including the retrofit of a telemetry outstation to the existing MCC control panel.
- **Type 2 or medium risk sites:** Replacement or refurbishment of pumps and/or MCC panel within a wet well that is in a reasonable and functional state of repair, taking into consideration access, lifting and electrical safety requirements.
- **Type 3 or high risk sites:** Full rebuild due to the wet well either leaking or being partially/wholly collapsed; and
- new connections or developer sites: Minor refurbishment works to new sites for compliance.

Collaborative engineering solutions

Early discussions with Severn Trent Water ensured that MMB gained a complete understanding of their aims and expectations. Customer service, effective communication management, off-line production and factory thinking formed the basis of the approach taken to successfully deliver a large number of sites in a very short timeframe.

The PDaS production line included scoping and surveying the sites identified as eligible for adoption to understand the level of works required, solutioneering using productisation to produce off-the-shelf designs, logistics management that allowed MMB to palletise the materials and equipment and effectively manage resource, so the pumping stations could be upgraded in a shorter period of time.

It was necessary to ensure that solutions fit with the production-line approach, so with regard to the construction of shafts and pumping stations value engineering workshops were set up. As a result of the output from these MMB was able to slim down the equipment and materials needed to build them without compromising safety or quality.

As an example, larger diameter precast rings were used for the permanent works which also acted as the temporary works. This removed the need for additional shoring and equipment, and created more working space on site. By removing unnecessary work activities the programme was further accelerated and reduced the impact on the customer.

Innovations

When MMB started working on the trial, not only was it necessary to understand the work and the delivery methodologies, but it was also required to bring about efficiencies in the region of 15 - 20%. At this stage STW had designed and developed a version of the type 1/type 2 pumping station control panels for use at the PDaS sites.

Following engagement with the supply chain, it was suggested that the existing panels may be over specified and too large for their purpose, therefore offering opportunities to make savings and achieve the efficiency targets. Add to this the instances where MMB felt the existing panel was sufficient, £2,000-£3,000 a site would be saved which would otherwise be spent upgrading and installing telemetry outstations.

Where outstations were being added to the existing panels, this offered a number of complications at extra expense; furthermore the panel became a lot larger and as a result would often require a larger kiosk within which it would be housed. This would often lead to planning consent requirements and so the problems and costs escalated furthermore.

It was felt that by simply reducing the size and the cost of a new panel to a point where any new panel could be housed within the existing kiosks, and supplied for less than the refurbishment costs of an existing panel, then all round the future-proofed panel would be a more efficient result for all stakeholders. MMB and their suppliers have worked with STW's Communities of Practice Groups



PCC shaft construction with new pipework - Courtesy of MMB

to gain approval on a new MCC panel with integrated outstation, leading to efficiencies in delivery and minimising impact on STW's customers.

Following the trial, STW decided to fit the new panels on each job across the board, with no refurbishments, no planning problems, no new kiosks, no residual risks of refurbished panels needing replacing short term and a unilateral solution that is the same at every site making maintenance straightforward.

The end result was that not only did this help STW future-proof the panels, but also saved them approximately £1,000 on every site where a new PDaS panel was installed. Across the trial this saved £30,000, with a minimum saving of £75,000 the following year, and over AMP6 is estimated to save a minimum of £600,000. This product has also been adopted by several other teams within STW on non-PDaS schemes.

Although the individual schemes are all relatively small in value (<£50k), batching has enabled MMB to invest in innovation for wider programme benefit. For example, MMB developed a tablet computer application to assist in capturing and transferring survey information more efficiently. In agreement with local merchants, hubs stocking regularly used materials have been developed, minimising the area required for compound laydown as materials can be supplied 'just in time' to site.

Streamlining of the pump purchasing process by identifying six commonly used pumps required across the programme has also occurred. MMB's in-house procurement team have agreed discounted rates based on economies of scale. The pumps can then be efficiently called-off negating the need for further procurement input.

Customer engagement

MMB's PDaS team has been bringing private pumping stations up to a safe and serviceable standard in preparation for adoption by Severn Trent, with significant customer interaction. Working with the public has become a day-to-day scenario for the delivery teams on site and the challenges that come with it.

The key to the success was the ability to get on site, on time and with the approval of the customer. MMB worked with Severn Trent Water to set up a 'Red Lorry, Yellow Lorry' communication pack for the customers, which explained what was to be done, when, and most importantly, the significant benefits it would offer them.

Customer engagement sessions were initiated and visits arranged to every customer to ensure MMB could clarify any information, allay any concerns and provide them with a single point of contact. This played a huge part in ensuring customers concerns or objections were dealt with effectively allowing the tight programme to be met.

As a measure of MMB's efforts, operatives involved on one particular site were sent a personal Christmas card from a resident at a completed site, more than 6 months after the works had been completed. This goes to show that by establishing good customer relations, even on a programme of work consisting of hundreds of sites, the local community will be vastly appreciative thereby creating a positive image for involved.

The fact that the residents remembered the good work the operatives did, let alone their names, after so much time just proves how going above and beyond what is expected of you can have a larger impact on the people affected than you may think.

The teams' continuous dedication to customer satisfaction and good communication has not gone unnoticed by the residents affected by the work which proves that doing that little bit extra is always appreciated.



Working in close proximity to residential properties - Courtesy of MMB



Completion works with new concrete bollards - Courtesy of MMB



Engaging with local residents during works - Courtesy of MMB

Conclusion

In terms of success this was very easy to measure. In 2013 MMB completed an average of 4 sites per month at an average cost of £35k from start to finish, compared to 9 sites per month in 2014 at an average cost of £24k per site, delivering value engineered efficiencies in excess of £1m.

This has been and will continue to be one of the most challenging engineering projects undertaken by MMB, given then multiple interfaces that have to be carefully managed and the constraints the scale of works provided.

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