

# Sewage Pumping Station Programme

## upgrading of 21 sewage pumping stations by a collaborative team working to embrace the knowledge base and proactively manage risks.

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Severn Trent Water (STW) identified 21 sewage pumping stations (SPS) throughout the counties of Derbyshire, Nottinghamshire and Leicestershire which required refurbishment or replacement to bring them up to current standards. Work on these pumping stations was prioritised in accordance with the Severn Trent Water Wastewater Strategies "Protocol for Sewage Pumping Station and other Sewerage Non-infrastructure Capital Maintenance". This prioritisation considers (i) environmental impact vs. consent compliance (ii) operational risk management (iii) asset life of the civil structure, mechanical and electrical equipment (iv) rising main assessment and (v) storm/emergency storage provision. The £8m programme has been split into 3 batches of work completing in August 2013 (batch 1), June 2014 (batch 2), and June 2015 (batch 3).



Ironville SPS - Courtesy of NMCNomenca



Stoke Golding SPS - Courtesy of NMCNomenca

### Scope of works

The team identified that the development of the solutions by batching would identify and lock-in innovation and efficiency targets for the project from the start. Adopting a partnership approach facilitated better engagement with all affected parties and encourage the development of key relationships. This has enabled the project team to develop solutions that embodies the best aspects of construction efficiency and buildability.

This has included the standardisation and off-site construction of the valve chamber. The concrete chamber is constructed at the mechanical installer's premises allowing all the pipework to be completed before delivery to site as a single 12t unit saving both programme time and reduction in health, safety and environmental risks.

The project team have meaningfully engaged with stakeholders from the outset, allowing detailed construction plans to be developed and key risks to be mitigated earlier, drawing on the

support and knowledge of previous schemes carried out within the STW programme on individual projects.

### Leadership and team structure

The seamless team, averaging 12 members, including Asset Creation (AC), Service Delivery (SD), Sewerage Management Plan (SMP) and NMCNomenca have pooled their combined knowledge to build on previous experience and embrace innovative technology to provide Severn Trent Water (STW) with cost effective solutions tailored to specific site needs.

NMCNomenca set about building a team involving both internal staff and suppliers and sub-contractors to form a true 'One Supply Chain'. The leadership is provided by NMCNomenca who are responsible for:

- Programme and project management.
- Safety, Health, Environmental and Quality performance.
- Regulatory and Legislative outputs.



Belton, Beltoft SPS - Courtesy of NMCNomenca



Quorn, Barrow Road SPS - Courtesy of NMCNomenca

- Customer/client satisfaction and reporting.
- Commercial outputs.
- Continual improvement.

The team has been built on a neutral platform ethos and cross company interaction and offline dialogue to drive efficiency is encouraged. We have deliberately abandoned the typical hierarchical team structure and adopted a more collaborative delivery methodology which to date has provided various demonstrable outputs as described further on in this submission.

#### Planning & communication

The team has then been able to focus and use its collective knowledge base to proactively manage the risks. This in turn has maximised STW serviceability and KPI benefits for the capital investment made. The team work with multiple different SD managers within Derbyshire, Nottinghamshire and Leicestershire and have developed programme maturity whilst collaborating with the SD Risk Manager.

As communication is a key part of ensuring the success of the project and inter-team relationships, NMCNomenca engage the supply chain by utilising their involvement in the following:

- **Co-location:** The team members are all co-located within STW Derby office offering the best possible form of communication and interaction.
- **Communication cells:** These are bi-weekly, 30 minute meetings around a standardised display board that covers high level elements of the project such as programme, finance, health and safety performance, concerns, quality and resource.
- **Quarterly review meetings:** These meetings collate data from the previous quarter to provide feedback to the supply chain on performance and future planning topics. These forums also offer an opportunity for all parties to discuss current issues and innovations.
- **Training:** All of the supply chain partners have worked closely with NMCNomenca to ensure that the skills of the people working on the project are targeted to provide the team with a robust platform for success. The areas that have currently been covered are:
  - ▲ EUSR Passport to Safety.
  - ▲ Defects avoidance.
  - ▲ Delivering community and customer excellence.

#### Resource management and motivation

The team has challenged processes previously geared towards single project delivery and do the right thing by approaching the works at a true programme level to create efficiencies. Including experienced and junior members from both NMCNomenca and AC, enhanced by SD, they have provided up-skilling opportunities

whilst ensuring that everyone plays their part. Solutions have been both traditional and innovative embracing the collaborative knowledge and optioneering through peer assist reviews. Junior members, in particular, have challenged the solutions by using their inexperience to ask the obvious whilst specialist experience throughout the team has probed to focus on the root cause.

#### Continual improvement

Using tools including 3C and 7S they have carried out root cause analysis to ensure that the solution is clearly defined. The team was set improvement targets to drive efficiencies in both outturn cost and programme. It has delivered on both counts and more besides including operational efficiencies and scope clarification. Using a combined target price for the 7 individual sites a financial target for a 6% saving over the batch was set. The current outturn is 5% below the project approval.

This was delivered through collaborative initiatives, buying efficiencies from project batching and input from NMCNomenca supply chain partners. Project benefits have been delivered on time, reducing the programme by six months. All the indications are that quality requirements will also be achieved and a plan is in place to continually review these.

By ensuring a clear understanding of the original issues raised and using the specialist knowledge that the team could collectively embrace there has been a reduction in power consumption on affected sites of 5-10%.

The team is currently working on both batch 2 and 3 with further stretch targets being set. SD have embraced the benefits of working as part of the team from initial feasibility right through to project completion and their additional knowledge and experience has further enhanced the team's capabilities.

#### Issue resolution

The value stream within this programme is through identifying and eliminating waste in all its form which in the context of this scheme is by going to site with a single solution with all materials and resource in place known to us as a "Full Kit Point". It is evident that by allowing time within the programme for design and issue resolution that as a team, we can drive home the right first time mentality and reduce the amount of issues raised from site level.

#### Team delivery

By batching sites the team has been able to take a holistic approach to the programme and work with the supply chain to ensure resources are used to their full potential and remove the 'peaks and troughs' for delivery.

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