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2020 AWARD FOR SIGNIFICANT CONTRIBUTION TO UTILITY PIPELINE PROJECT

Entry Form

Entry Deadline: Friday, 17th April 2020

1. **Brief title of entry:** **Heading underground - upgrading Thanet's sewers**

2. **Company name:** **TPMD and Southern Water**

3. **Precis of your entry for inclusion in the Awards Lunch booklet (50 words):**

The sewers beneath Ramsgate and Broadstairs are unique; constructed more than a 100-years' ago, and up to 28 meters below the surface, pipes rest at the bottom hand-dug chalk tunnels. Southern Water is investing more than £30m upgrading this ageing network, ensuring it's fit for future generations.

4. **Summary of entry:**

In the early 1900s Thanet was thriving, the railway had brought hundreds of visitors looking to benefit from the healing properties of seabathing. Up to 28-meters below the busy streets, miners were digging tunnels through the chalk; this subterranean labyrinth became Thanet's sewer network, with pipes resting at the bottom of tunnels carrying away the wastewater. Over 100-years later, this unique network is still in use. Each tunnel is different, matching the stature of those that created them – some tall and thin, some wide and stout – but all showing their age.

As part of its Water Quality Programme, Southern Water (SW) have committed £100m across three AMPs (Asset Management Programme) to rehabilitate and the restore the integrity of this ageing sewer network. Representing an investment of £34m, phase two started on site in the summer of 2018, with a regulatory completion date at the end of AMP6 – March 2020. Formed to deliver this complex and unique project, joint-venture TPMD brought together the specialist skills needed to deliver a scope based on a dynamic hydraulic model:

- 7km of CIPP tunnel lining
- 4.6km of new CIPP sewer liner and 249 patch repairs
- 2km of new pipework
- 1.6km of upsized pipework
- 7km of tunnel preparation (cleaning, lateral realignment, timber heading support, concrete foundations)
- 334 tunnels to seal
- 155 existing manholes demolished and rebuilt
- 72 new manholes (up to 28m deep) and 84 rehabilitated manholes
- Two large storage tanks

The programme comprised of work in more than 170 streets across Ramsgate and Broadstairs, over two summer seasons, and with up to 15 live construction sites at any one time, the project would impact significantly on those who live, work or visit these bustling seaside towns. Collaboration across several key partners and proactive engagement was essential to the successful delivery of this project.

Work was planned in sequence to remove the need to return to sites with different teams. Existing manholes were used for access, minimising site footprints and flexible working adopted to minimise disruption, with some elements being undertaken at night, weekends and during school holidays. Regular meetings with Kent County Council Highways, and flexibility in the programme, kept the roads of the towns moving. A dedicated project liaison team managed proactive community engagement. Boasting an impeccable health and safety record, almost 300,000 manhours have been worked, with no major accidents or lost time incidents.

5. **Signed:** *M Stoneman*

6. **Date:** **14/04/2020**

7. **Company contact name:** **Madeline Stoneman**

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Detailed Description of Entry

(Entry restricted to normal type face and font size on this form plus one page A4 drawings or photograph)

Heading underground – rehabilitating Thanet sewers

In late Victorian Thanet, miners were busy digging tunnels through the chalk up to 28-metres below the streets of Ramsgate and Broadstairs. This subterranean labyrinth became Thanet's sewer network, with pipes resting at the bottom of tunnels carrying away wastewater. Over a hundred years later, this unique network is still in use and modern-day miners are back underground, working to deliver a £34m upgrade, ensuring the network is fit for future generations.

Formed to deliver this complex and unique project, joint-venture TPMD brought together the skills and capabilities to complete all stages of the work, removing the need for multiple subcontractors. With surveys, design and procurement overlapping, several design iterations supported the procurement process. An integrated design team was established post contract award; man-entry and CCTV surveys were carried out by TPMD, with the results feeding directly into SW's hydraulic model, which in turn updated the scope of works. As a result of this cyclical process and evolving project scope, proactive planning and close co-ordination with Kent County Council Highways (KCCH) became essential for the successful delivery of this project.

TPMD started on site in mid-2018, work was planned in sequence to remove the need to return to sites with different teams. Existing manholes were used for access to minimise site footprints. The close partnership between SW and TPMD also allowed for an agile approach to delivery, feedback from surveys and working sites could be added into the hydraulic model, which in turn feed into project scope. Regular client liaison quickly dealt with arising technical queries and, with up to 15 live sites active at one time, weekly meetings with KCCH ensured the road networks of the towns were kept moving. With other utility companies working in the area, the strong working relationship with KCCH, and flexibility in the work programme, made sure work was not delayed while waiting for road access permits – quite an achievement with a programme covering more than 300 individual work sites.

As specialist contractors, TPMD took advantage of several innovative techniques to provide the smooth delivery of the project, increasing efficiency and minimising disruption. Using a 360-degree panoramic camera, 3D models of some manholes were created, allowing surveys to be carried out from a desktop; saving almost 100 hours of high-risk confined space entry. A bespoke digging grab was fabricated to facilitate excavation from ground level when constructing deep, small diameter manholes, which again reduced number of manhours required to be worked in confined spaces.

Following on from work completed in 2015, the project further developed the idea of using standalone Cured-in-place-pipe (CIPP) liners within the tunnels above the sewer pipes to maximise storage capabilities and minimise the amount of work needed at street level. The liner's design also minimised environmental impact by removing the need for a grout surround. With tunnels measured for the UV-cured liners once repairs and preparation work is completed, each of the tailored-made CIPP liners fits neatly into the non-uniformed tunnels and contains any discharge; preventing groundwater from entering the chalk aquifer below. Initial surveys showed several smaller tunnels that initially appeared unsuited to lining. Value engineering sessions were held between SW and TPMD to rationalise the design assumptions. The exercise was able to increase the length of tunnels to be lined, reducing the number of storage tanks required.

Through a collaborative and agile approach to delivery, this complex and unique project is on-time and budget. With an 80-strong workforce, some working in tunnels up to 28m below the surface with multiple vertical and horizontal crossings and access through existing manholes, the project has an impeccable health and safety record. More than 300,000 manhours have been worked, with no major accidents or lost time incidents.

Impacting on the daily lives of those who live and work across the seaside towns, with up to 15 live construction sites at any one time and a programme covering 170 streets the project was always going to be unpopular. With a combined project team from SW and TPMD committed to delivering this complex engineering scheme with consideration to those impacted, a dedicated liaison team managed proactive engagement. Each site followed a customer journey focused on providing proactive, regular and informative communications to. For any questions, a freephone number was available, manned by those closest to the work – the project team. Flexible working was adopted, with some elements being undertaken at night, weekends and during school holidays. Since summer 2018, more than 30,000 proactive letters have been issued, with the project receiving 272 contacts, of which less than 100 were complaints.

A local Councillor recognised the efforts made by the project, saying: "I have had works directly outside my house. The guys on the job were excellent, they were polite, friendly and showed consideration keeping disruption to a minimum."