

Coningswath Road (Carlton) Flood Alleviation

£2.3m project to alleviate foul and surface water sewer flooding

by Chris Jones EngTech TMICE

The hydraulic incapacity of the foul and surface water sewers serving Coningswath Road in Carlton, Nottingham, resulted in the frequent flooding of homes, gardens and highways during periods of heavy rainfall. In July 2014, Severn Trent Water (STW) commenced a £2.3m project to remove 9 internal and external floodings to properties on Coningswath Road and 3 properties on Elmhurst Avenue from the STW FLOODS register. Undertaken by NMCNomenca, the scheme also addressed highway flooding in Coningswath Road. The project team was committed to achieving a cost beneficial, long term solution, and adopted an approach involving the appraisal of the wider environment and evaluating and exploiting innate opportunities within the catchment.



Open cut installation of large diameter storage pipes within recreational space at Huckerby's Field - Courtesy of NMCNomenca

Project background

After many months of detailed feasibility work, which included complex hydraulic modeling of the existing sewerage system, coupled with CCTV surveys of existing pipework, topographical surveys and trial holes, a solution to the foul/combined and surface water flooding issues was formulated.

The scheme involved the installation of approximately 1,700m of new sewer pipework, installed by a combination of open-cut and no-dig techniques, together with on-line storage pipework of up to 2,800mm in diameter and 5.5m in depth. In order to construct this work, a phased closure of nearly 1.5km of public highway was required, the majority of which was located in Coningswath Road, an arterial route that links the neighbouring communities to the Carlton Academy School and the leisure centre with adjoining sports fields.

Communication strategy

The project team recognised the need to develop and implement a comprehensive communication initiative to deliver customer and community excellence (DCCE), an essential requirement for all Severn Trent Capital Schemes. To succeed, the initiative would need to provide an opportunity for a 2-way dialogue between the project

team and customers, and also reach a wide and unidentifiable customer base. It would need to be maintained throughout the lifetime of the project, providing regular updates on progress and the constantly changing traffic management arrangements affecting access to customer's workplace, their properties and businesses. It would also need to inform customers of changes to bus services unable to use normal routes on Coningswath Road.

Customer care has been essential to keep the community and town users informed. Prior to works starting a letter drop was done to neighbouring properties, and a public exhibition held in the Richard Herrod Centre providing essential information to concerned residents, advising where and when works are taking place. Liaison with the site owners, the Carlton Academy School, bus companies and the customers via regular customer communications and drop in events was key to successful stakeholder engagement and delivery of the scheme.

Throughout the construction period, the team arranged regular update meetings with representatives from the local business community, which provided a forum to raise issues affecting their businesses, and suggest improvements to information signage, site fencing and traffic management arrangements to encourage trade.

The construction of the tank sewers within Huckerby's Field was the most intrusive part of the works owing to its visual impact on the immediately adjacent properties and neighbouring school. Within a shared use sports field, storm storage was provided in the form of large diameter pipes.

Approximately 235m of 2,200mm diameter HPPE pipe provided the necessary 900m³ of surface water storage that sat alongside 1,300m³ of foul water storage in the form of 210m of 2,800mm diameter pipes.

Project delivery

To facilitate customer access to domestic residences and business premises, a phased programme of construction works was employed involving multiple gang operations to expedite completion of the more sensitive sections of the project. Where possible the team adopted no-dig construction techniques to reduce access restrictions to neighbouring properties.

The Coningswath Road closure affected local public transport arrangements for a considerable length of the bus network, presenting a real problem for residents with limited mobility and unable to cope with the increased distance to the nearest available stop. The team devised an innovative solution for these customers by arranging a free service with a local taxi operator, requiring a password to use the service.

The team paid particular attention to Carlton Academy School whose access fronted the working area. The site team adjusted the works sequence to ensure this section of work was completed during the school's summer break, minimising disruption to pupils, parents and staff. Following the pupil's return to school, the team then worked with the staff and gave presentations to explain how the work fitted within the natural water cycle, and supervised groups of pupils to the worksite to show them how works were carried out, reinforcing the dangers associated with unauthorised entry to construction sites.

Project benefits

This large scale initiative of advance customer communication and stakeholder management resulted in many favourable comments

from customers who were asked to return questionnaires rating the team's performance.

The scheme was enrolled into the ICE's 'This is Civil Engineering' initiative which helped to help raise awareness of the industry and provide opportunities for budding engineers to find out more about a career in civil engineering. This was extremely prevalent owing to the neighbouring Academy School.

In addition, the scheme was enrolled with the Considerate Constructors. Over the two planned audits the scheme achieved a certificate of *performance beyond compliance*. Both audits recorded exceptional scores in both *respecting the community* and *securing everyone's safety*.

Innovation

NMCNomenca were concurrently working closely with Asset International to further enhance the current design template for large diameter HDPE pipes, complete with an integrated manifold systems, for use on multiple schemes.

Plastic Weholite pipes from Asset International were used to limit size of deliveries and to enable easy handling in restricted working areas. The storage tanks were designed utilising two different pipe sizes, 2,800mm and 2,200mm diameter enabling one pipe to be nested within the other, reducing the amount of site deliveries.

Building upon previous knowledge, joint design development was undertaken with the client team, the NMCNomenca design team and knowledge managers and the key supply chain.

Summary

This was a challenging scheme but by adopting a 'can do' attitude and ensuring that the key stakeholders and supply chain partners were involved from the outset enabled the team to develop a solution that achieved consent and was sympathetic to the local environment.

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Open cut installation of large diameter storage pipes, with bespoke manifold sections in place - Courtesy of NMCNomenca