

Emergency Relief Structure – North Western Sewer

Date

December 2009 to April 2010

Location

Afton Street Conservation Reserve, Maribyrnong

Project Value

\$2.4M

Awards

Honourable Mention – 2010 Civil Contractors Federation Earth Awards

Project Overview

This project involved the design and construction of an Emergency Relief Structure (ERS) for the North Western Sewer (NWS). Its function is to mitigate backing-up effects and stop uncontrolled sewage spills, give protection to homes in low lying areas from sewerage spills, and to protect the sewer network from overload or damage during periods of extremely high demand.

Risks & Management

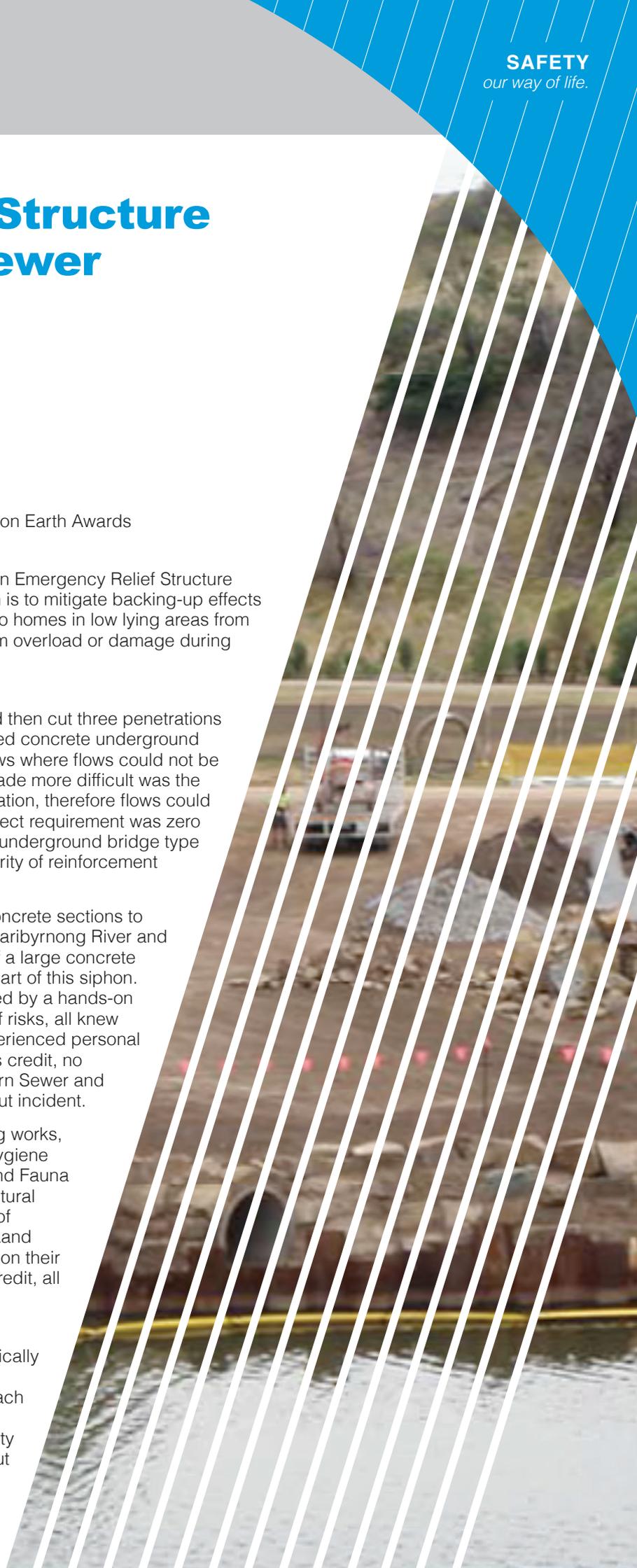
The Team was required to provide a methodology and then cut three penetrations 1500mm square and 830mm deep through a reinforced concrete underground bridge type structure. Working over live sewerage flows where flows could not be stopped required careful management in all areas. Made more difficult was the fact that there were no penstocks upstream of the location, therefore flows could not be stopped under any circumstance. A major project requirement was zero concrete overcut due to the sewer constructed as an underground bridge type structure and the need to maintain the structural integrity of reinforcement outside the areas of the penetrations.

During concrete cutting, there was the potential for concrete sections to drop into the sewer. A siphon structure beneath the Maribyrnong River and only 10 metres down stream could become blocked if a large concrete section were to fall and became lodged in the lower part of this siphon. Our care and thorough methodology detailing, followed by a hands-on approach to supervision ensured all were full aware of risks, all knew their rolls, responsibilities and had the support of experienced personal through every part of each critical stage. To the teams credit, no concrete sections were dropped into the North Western Sewer and this critical task was completed as detailed and without incident.

Additional items of major consideration included piling works, necessary within 1.5 metres of the sewer structure. Hygiene and safety for personal, Works on waterways, Flora and Fauna (General, Terrestrial, Aquatic or Species specific), Cultural Heritage and management due to this being an area of significance, Acid Sulphate Soils and Contaminated Land were also items the team had to oversee and draw upon their experience in facilitation of the works. To the teams' credit, all works were completed without incident.

Project Planning & Design

The North Western Sewer involved a number of technically complex issues that required a proactive approach during both design and construction. JAYDO's approach ensured these items were identified early and giving opportunity for refinement. Testament to JAYDO's ability is the success of the project and its completion without incident or interruption to the day-to-day operation of the network.



Although design of an ERS is traditionally a straightforward process, in this instance the team was constrained by several site-specific limitations. These included limited construction height above the floodplain, weir height, spill levels, discharge velocity and into a waterway, geological conditions, and the requirement that the structure did not operate during a 1 in 50yr storm event, and connection to an underground bridge structure. Our expertise provided inputs that directly lead to this design fulfilling all functional requirements, a safer environment for operators, constructors, and reduced the overall environmental footprint of the works as a whole. The client has praised the team for its outstanding efforts.

Approval & Stakeholder Management

Melbourne Water had not constructed an emergency relief structure within its network for over 25 years. With our assistance, designs and requirements were navigated through functional and detail design, and done to encompass EPA and other regulatory authority's requirements. The construction of this project had a potentially unfavourable taste with stakeholders. Our assistance and input directly contributed to the project receiving an independent stakeholder satisfaction survey of 93%. Credit to all participating in the project.

Environmental Management

The site was within the Maribyrnong River flood zone. Maintaining a tidy site along with efficient materials handling techniques used as a regular part of our day-to-day practices ensured feedback was well above the standard that the client would typically expect.

During the project a major rain event occurred while the client held a meeting on site. Notifications were received through a process put in place for works with a flood zone and evacuation procedures were initiated. The Teams' swift response and professionalism earned outstanding praise from the client. This praise was in-turn passed forward to the frontline personal who initiated all necessary responses.

Major Lessons Learned

The Teams' input during the design phase provided essential expertise leading directly to the successful outcomes of the project. The Team has had the opportunity to provide feedback to personal on other projects, which in-turn has driven more positive outcomes on other projects.

Client References

Client Representative for Melbourne Water – Robert Fisher



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