



Water

Project Experience

Client

Sydney Water Corporation

Location

Sydney, Australia

The program has delivered outstanding performance outcomes coming in under budget and meeting all non-cost requirements for Safety, Operations Impact, Plant Quality and Community/Environment.

Bondi Sewage Treatment Reliability Improvement and Modernisation Program New South Wales

CH2M HILL was the co-designer and one of the Alliance Participants for the \$95 million Bondi Sewage Treatment Plant (STP), Reliability Improvement and Modernisation Program (RIAMP). Based on outstanding performance managing the delivery of the concept design report, in July 2002, we were appointed one of the key designers. We also held the Alliance Project Manager position for all of the design phase of the project and a portion of the construction and commissioning phases.

The RIAMP project is a comprehensive, holistic renewals program to address immediate operational risks. It has increase the reliability of operations, improved hydraulic performance, provided increased levels of automation, reduced OH&S risks and created better working conditions for Bondi plant staff.

A joint venture between CH2M HILL and SKM was engaged to develop the concept design and detailed Project Delivery Plan for the RIAMP work. The RIAMP project addressed all facets of the plant including:

- collection, handling and disposal of grit and screenings,
- wastewater flow control implementation'
- sludge and scum removal'
- solids handling systems including recuperative thickening'
- plant automation and,
- improvements to the plant work environment including ventilation, lighting, plant aesthetics and water systems.

The key focus of RIAMP project was to renew and modernise existing assets, provide automation to substantially reduce the past high level of manual work (in often antiquated and unpleasant working conditions); and deliver improvements to reduce OH&S risks and create better working conditions.

The RIAMP project has modernised the Bondi STP to protect beach water quality and ensure continued reliable plant performance. Bondi STP is Sydney Water's third largest ocean treatment plant, serving approximately 500,000 people. The plant has the significant task of protecting one of Australia's most famous icons, Bondi Beach. It must treat incoming sewage consistently and without fail to prevent adverse affects on water quality.

Much of the STP is housed 40 to 50 m underground in chambers cut from sandstone. It was built in the 1950s. In the late 1980s a deep ocean outfall tunnel and seabed diffuser system was constructed to take treated effluent 2.2 km off shore and disperse it with high initial dilution into deep water.

The majority of the work environment is located in limited spaces with restricted access, amongst operating equipment and flowing raw sewage. The STP is a 24/7 operation and it continued to operate during the RIAMP program, which involved demolition and construction whilst continuing operation.

The project also involved identifying and working with operating and redundant equipment in order to integrate new and refurbished equipment and processes.

The following were innovations to the construction process:

- Abseiling techniques used to repair digester roofs at height, in lieu of expensive scaffolding
- Divers worked in the sewer as an alternative to installing costly coffer dams
- Removal of valve bonnets to repair critical pump discharge valves in the effluent pump station, in lieu of valve replacement
- Investigation and repairs to digester roofs in lieu of costly and unnecessary replacement.

The project was delivered close to \$4.5 million under the Target Cost Estimate which under the Alliance style contract provided benefits to both the client and the commercial participants. The project also performed very well in the non-cost 'Key performance indicators' with 'outstanding' results in the four Key Result Areas of Safety, Operations Impact, Plant Quality and Community / Environment.
