

WSP helps City of Cape Town bring emergency desalination plant online

Cape Town, 07 May 2018 - WSP - one of the largest multi-disciplinary engineering consultancies on the continent - played a crucial role in the fast-tracked development of the [City of Cape Town V&A desalination plant](#), feeding 2.0 megalitres of fresh water into the city's network per day.

Located at the V&A Waterfront, this desalination plant forms part of a series of emergency water supply projects the City of Cape Town Municipality is implementing to supplement critically low water resource levels in the district. Quality Filtration Systems (QFS), along with Osmoflo, were awarded the work as the main contractor – to build, own and operate the plant, as well as to decommission the plant at the end of the contract term. WSP tendered as sub-consultants to QFS, where the company provided design engineering and site supervision services.

According to [Marthinus](#) Retief, Principal Associate: Coastal, at WSP Maritime Africa: “Given the state of emergency of the water crisis in the region, this was a rapid execution, top priority project for all parties involved.”

Retief confirms that the project was awarded to QFS in January 2018. WSP, as sub-consultants, immediately started working on the designs, drawings and specifications for the plant's ancillary components. Practical completion of these components was reached within two months and the plant is currently finalising overall commissioning.

“We provided concept to detailed designs, as well as construction drawings and specifications for the desalination plant's ancillary works. As this project was fast-tracked, significant focus was placed on where we could save time, but not compromise on quality of design or constructability. We also designed the ancillary works in such a way that the system can be upgraded by up to 50% in terms of production, if required,” adds Retief.

The three main components that make up the ancillary works include the marine intake pipeline and seawater pumping system, the brine discharge system and the injection system to convey the fresh water to the localised water infrastructure network. WSP provided the marine, civil and mechanical design of these components. The desalination process itself is owned and operated by QFS, along with Osmoflo.

“The seawater abstraction system is located close to the entrance to the V&A basins, but designed for optimised water quality and rapid construction. The desalination process separates the salts from the seawater and produces brine, which is then discharged back into the ocean – and the fresh water is fed into the City of Cape Town's infrastructure networks. Care was taken to discharge the brine in an environmentally acceptable manner,” says Retief.

WSP also provided project management services, as well as site supervision for quality assurance and quick decision-making on site during construction.

“There was always a member from our team on site, working closely with QFS and Southern Oceaneering (the contractor) to ensure that everything was done according to the design and for quality control purposes. This also enabled the project team, collectively, to collaborate better and ensure that any queries from site could be addressed and decisions executed rapidly.”

Rethinking the norm

WSP designed the brine discharge system to operate under gravity, rather than a pumping system as envisaged within the tender document. By changing the hydraulics WSP was able

to optimise this process, which saved the client capital and operational costs on the project.

Together with Southern Oceaneering, WSP designed a geotextile bag weighting system to provide stability for the marine intake pipeline. This enabled the contractor to more easily install the pipeline onto the existing revetment slope and down to the required depth on the seabed. The bags were concrete filled after installation to provide the required stability against wave action. Being an alternative solution to conventional pre-cast concrete weight collars, it saved time on construction, while also reducing risk during pipeline installation. WSP worked closely with the contractor to ensure that the solution was constructible and optimised.

“The professional work and value added by WSP on the City of Cape Town V&A desalination plant played an integral role in timely and professional delivery of the project under extreme pressure. The engineering and project management skills showcased by WSP during the project planning and implementation phases were impressive and made the project for QFS so much easier to deliver according to specifications,” says Herman Smit, Managing Director, Quality Filtration Systems (QFS).

“To ensure the project deadline could be met, we leveraged on the world class expertise of our team of Coastal and Civil engineers to find solutions that were workable from a design perspective and quick to implement from a construction perspective. Working on a high-profile project with such a tight turnaround time truly shows the strength of your project team, and the importance of collaborating towards the same end goal. Thanks to the team! We are very proud of our contribution to this project,” concludes Retief.

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