



The problem

TradeCoast Central's location was almost undevelopable due to high water table conditions making it impossible to install a conventional gravity sewer system. It is a very large (120ha), and flat (only 1m of fall across the length) site. A conventional sewer would require deep excavation to achieve the correct gradient of the mains or the installation of conventional package pumping stations every 250m or so. The TradeCoast Central estate targeted Green Development solutions and sought a sewer system that would have minimum impact on the council sewer system. There was a general agreement with Brisbane Water and the developers that a pressure sewerage system would be the best option to allow TradeCoast Central to be developed.

However, as TradeCoast Central was zoned for industrial development this created a further problem. This being the pressure sewer pumping units that were currently on the market were of the positive displacement type featuring small flow rates and with an average life of 1000 hours for the wearing parts in the pump. Due to the size of the buildings and number of tenements this meant that some individual sites had up to 8 pumps running almost continuously resulting in the pump needing replacement parts every 2-3 months. This is not what the owners of the development had in mind for their valued tenants.

The Aquatec solution

Aquatec worked with the owners of the development and were able to offer the best possible solution. Aquatec's expertise allowed them to provide greater flexibility in packages, combining different sized tanks with numerous pumps to cope with higher peak flows and various flow rates of each lot ranging from 1,000 to 30,000l/day. Aquatec had just released the next generation OGP 2-stage centrifugal pressure sewer pump which due to the unique design of the vortex impellers, has far less wear than a positive displacement pump and can operate for much longer periods with little or no effect on wearing parts. Also, the OGP next generation pump generates more flow than the positive displacement alternatives and therefore requires fewer pumps per site. This greatly reduced the upfront costs of the pumping systems to the developers and also dramatically reduced the ongoing service costs to the tenants. Aquatec carried out the design of the pressure sewerage system and were also able to offer larger fibreglass emergency storage vessels and pump chambers to accommodate the higher incoming flows.

Results

TradeCoast Development has flourished since the sewerage and drainage issues were resolved with state of the art buildings now being erected. "Using the Aquatec Pressure Sewer System allowed for minimum excavation and eliminated the need for pumps to be installed on the mains. The use of a low pressure sewer has little or no impact on the environment due to leakage from the pipework into the ground. Also, it will not let rainwater infiltrate the system in heavy periods as conventional gravity systems do, reducing the peak wet weather flow at the receiving council treatment plant."

"The key advantage of the Aquatec Pressure Sewer System is reducing the overall effect on downstream infrastructure. The ultimate peak discharge is controlled through pipe sizing and pump specifications, to ensure not more than 8 pumps run simultaneously throughout the entire estate of over 120 hectare estate."

"This integrated network has reduced peak demands on the council's treatment plant by 75% compared to conventional gravity systems."

Cassie Eivers, TradeCoast Central