

Innovative wastewater management

Lanseria Airport has commissioned and developed an expert WWTW, which has also attracted the participation of Lanseria Corporate Estate, Gauteng's newest upmarket industrial property development.

Forming part of Lanseria Corporate Estate's large-scale R200 million investment in infrastructure, the new wastewater treatment works (WWTW) is one of the plants in Gauteng that complies with the City of Johannesburg's new and extensive wastewater management regulations. In addition to many other advantages, this green awareness solution sees treated domestic sewage being reused to irrigate both the airport and Lanseria Corporate Estate, reducing demand on otherwise potable water supplies.

Lanseria Corporate Estate is a joint venture by an investment consortium including Efcon Capital and New Property Ventures. It is marketed by Montagu Property Group and Property Logic.

Industrial property developer Jurgen Erhart of Efcon Capital believes this environmentally focused wastewater solution delivers significant benefits for the estate's growing numbers of investors that include many top corporates.

The joint wastewater treatment project started when the original ponds that received wastewater across the greater Lanseria International Airport area required relocation owing to runway expansion requirements, effluent requirements and current capacity limitations. At the same time, the bordering Lanseria Corporate Estate was in its planning stages.

According to Erhart, "This presented an ideal opportunity to maximise synergies and create a world-class wastewater treatment solution that would benefit both the airport and Lanseria Corporate Estate. Given Lanseria Corporate Estate's commitment to safeguarding the environment, we also felt strongly that this was a sustainable option that would serve longer-term interests."

Wastewater specialist Tecrover was approached to develop the best solution to meet Johannesburg Water's specifications and other future requirements. This resulted in a dedicated mechanical biological wastewater application, implemented over

three phases. The consultant appointed was Virtual Buro and the civil contractor was Infracore, while the process design, civil geometrical design and mechanical equipment were provided by Tecrover.

"Tecrover provides a turnkey solution to WWTWs, with our focus aligned to provide clean water for future generations, thus every plant is a tailor-made solution to fit the client's specific needs," says Zack van den Berg, managing director of Tecrover.

Based on the worldwide accepted activated sludge principle, the biological process includes key technology features that deliver an efficient and cost-effective solution to reduce organic carbon and nitrogen compounds to environmentally acceptable levels. This helps to protect the surrounding environment further.

PATENTED TECHNOLOGY

Tecrover's patented horizontal aerators transfer oxygen into the biomass for access by the aerobic-dependant microorganisms and mix wastewater to ensure contact



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between the microorganisms and the substrate (food). The high-volume, low-lift aeration pump used automatically adjusts the aeration proportional to flow: this optimises power consumption and no over-aeration takes place.

The unique pumping feature eliminates the need for two pump sets to transfer biomass to the secondary settling tank and the return activated sludge required from the underflow of the secondary settling tank. The aeration and pumping programmes are preset, reducing operational input while simplifying maintenance inputs.

“We believe we have embarked on the best possible approach for our wastewater management and treatment. The technology application from Tecrover requires less capital investment, since fewer mechanical components are used and the civil infrastructure requirement is reduced. This means a reduced energy cost, less maintenance and it’s easy to operate,” notes Erhart.

With direct access to the busy Malibongwe Drive and in the hub of the thriving Lanseria node, the 90 ha Lanseria

Corporate Estate, with its 160 stands, is fast gaining new investors who want to benefit from the location and the many advantages offered by the upmarket industrial corporate estate.

“Our investors are discerning and they want the best when it comes to what a modern office and industrial environment should ideally offer. Long-term sustainability and the effective use of resources, with due respect to the environment, is key and it is these principles that Lanseria Corporate Estate embodies. Our WWTW is only one of the ways in which the estate provides leading service delivery that makes sound economic and environmental sense,” concludes Erhart.

PROJECT PHASES

The first phase comprised several features, including inlet works, manually raked bar screens, de-gritting channels, a flow meter and a primary anaerobic pond and oxidation ponds.

The second phase, which has a hydraulic capacity of 500 kℓ /d, includes a balancing tank with mixers and recirculation pumps



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(these were converted from the anaerobic tank of phase 1), an aerobic/anoxic reactor with horizontal brush aeration, a secondary sedimentation tank, chlorine contact tank and chlorine tablet dispenser.

Phase 3 comprises an extension to inlet works and the construction of an additional activated sludge aerobic/anoxic reactor, as well as the upgrading of the disinfection stage to an automatically controlled chlorine gas application. **35**

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