

## Sustainable Waste Water Treatment: Membrane Bio Reactor ( MBR ) Plant : Sedgefield, South Africa

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Future Development in Sedgefield has been halted due to insufficient water availability. Rezoning applications as small as single sub-divisions is being deferred by Council. There is a similar, almost as critical, limitation in capacity to treat the wastewater generated by planned developments, at the Sedgefield wastewater treatment works (WWTW).

The Sedgefield WWTW is in close proximity to the pristine Groenvlei Lake and within 200 meters of the formalized township of Smutsville. The works has a nominal capacity of 750 cubic meters per day and operates as a Sequential Batch Reactor (SBR). Final effluent is discharged in to a holding pond and empties by percolating into the sand dunes. The works is situated in a narrow dune valley and extension to the work is limited.

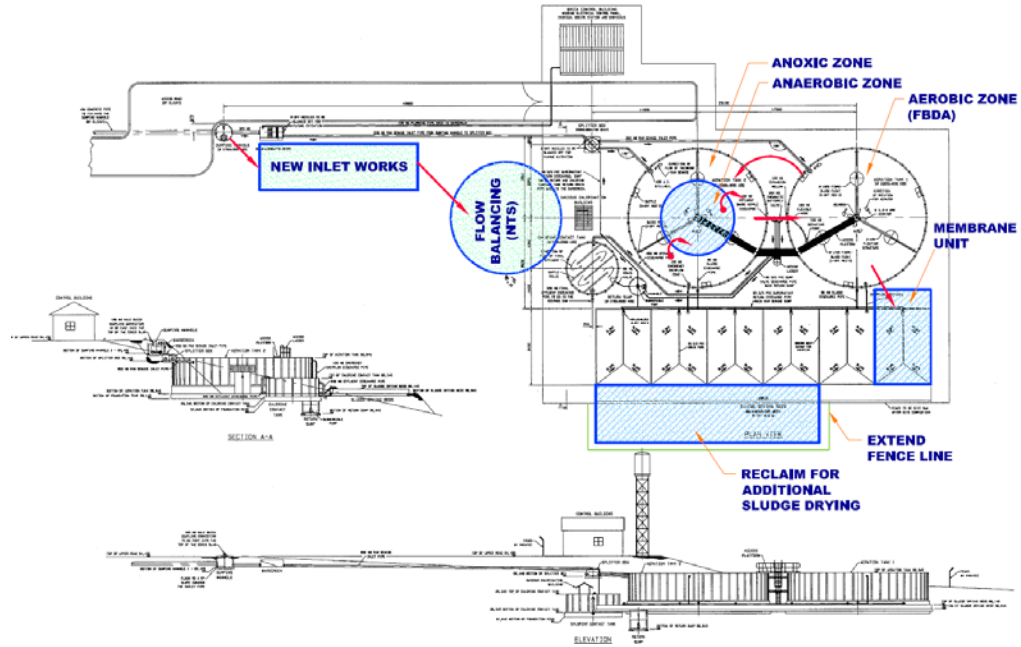
Sedgefield's water demand peaks in holiday periods and to meet demand water supply from the Karatara River is augmented from a number of boreholes in Sedgefield. Department of Water Affairs requires that the WWTW be upgraded to Special Limit Values and that the final effluent used for irrigation.

SSI and DHV have completed a feasibility report to upgrade the works to a capacity of 2 mega-litres per day. Membrane technology is proposed as a basis in the design to meet the following challenges:

1. Footprint limitations
2. Special Limit Values on final effluent (biological phosphate and nitrate removal)
3. Potential Re-use of final effluent by artificial recharge
4. Capacity limitations

Attached please find schematics showing changes required modifying the process from a SBR plant to a MBR and the indirect re-use water cycle through artificial recharge of the aquifer.

Sedgefield WWTW – MBR upgrade



PROPOSED SEDGEFIELD WATER RE-USE SCHEME

