

Orbal® Biological Nutrient Removal System Warrington, UK WWTP

Biological Nutrient Removal Excellence

99% BOD removal
96% TSS removal
97% NH₃-N removal

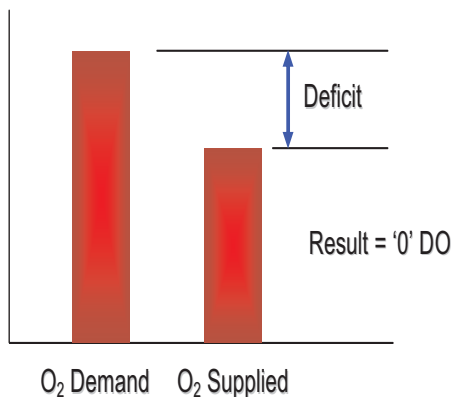
Design Criteria

Average Daily Flow: 45,000 CMD
BOD: 250 mg/l
TSS: 200 mg/l
NH₃-N: 20 mg/l

The Orbal® process was selected to treat the municipal wastewater of the City of Warrington, UK. The plant started up in 1998.

The Orbal® design for this project consists of two basins each has three concentric channels, with wastewater passing through the channels in series. Dissolved Oxygen levels in each channel are controlled by varying aerator speed and/or disc immersion. The outer channel is maintained under

aerated anoxic conditions to provide simultaneous nitrification/denitrification conditions while the inner channel is maintained at aerobic conditions. Oxygen recovered by denitrification in the outer channel results in power savings.



O₂ Supplied < 75% of O₂ Demand
Aerated Anoxic Process is a reactor maintained at oxygen deficit

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