

# HYBACS<sup>®</sup>

## Municipal Sewage: Botleng, South Africa

### Background

The Botleng Wastewater Treatment Plant (WWTP) is one of two serving the town of Delmas in the Mpumalanga Province of South Africa. Delmas lies 60 km east of Johannesburg and has a population of approximately 92,000. Both the Botleng and Delmas Town WWTPs have to produce effluents that comply with local authority specifications, especially with regard to nutrient removal.

The plants had become increasingly overloaded and were in urgent need of additional capacity. As such, the local municipality made sewage treatment expansion a top priority, against a context of continued population growth and its commitment to providing quality sanitation services to the community.

Bluewater Bio's patented HYBRid ACTivated Sludge (HYBACS<sup>®</sup>) wastewater treatment process was proposed as a solution to provide the additional treatment capacity needed by its South African licensee, Headstream Water Holdings.

### Solution

In June 2011 Bluewater Bio completed the much needed upgrade, having installed HYBACS<sup>®</sup> capacity to treat 3500m<sup>3</sup> per day of wastewater, alongside the existing Botleng plant.

The HYBACS<sup>®</sup> process, with its high-quality treatment capability and lower energy consumption, was an ideal solution for the upgrade, ensuring compliance with treatment standards.

HYBACS<sup>®</sup> is a two-stage process: the first deploys Bluewater Bio's SMART<sup>™</sup> units, with attached biomass; the second is an activated sludge process, with suspended biomass. It can produce effluents with qualities compliant to the most stringent European nutrient removal standards, and is well suited for modular scale up scenarios such as that at Botleng.

#### Applications include:

- municipal and domestic wastewater from cities and residential developments;
- upgrading of existing wastewater treatment plants to meet more demanding regulations and legislation;
- wastewater reuse, for irrigation, landscaping, and 'greening' initiatives;
- beverage wastewater from brewers and drink manufacturers;
- food processing wastewater, e.g. abattoirs, confectionery plants;
- landfill leachate.



# HYBACS<sup>®</sup>

A BLUEWATER BIO TECHNOLOGY

## Performance

Botleng's nutrient removal plant treats municipal wastewater with Chemical Oxygen Demand (COD), ammonia and Total Phosphorus (TP) concentrations of around 600mg/l, 45 mg/l and 6 mg/l respectively.

Sampling from the new HYBACS® plant indicates that it is performing well within the stringent discharge standards required, and that the treated effluent is of a very high quality:

- COD is less than 30mg/l
- Ammonia concentration is less than 1 mg/l
- Nitrate concentration is less than 4mg/l
- TP removal currently exceeds 90%.



## Conclusion

The first phase of Bluewater Bio's HYBACS® upgrade at Botleng was commissioned in 2011 and within weeks it was producing a very high quality effluent.

The success at Botleng helped to secure a further South African HYBACS® order at Swartruggens, a town about 170 km North West of Johannesburg, which was commissioned in April 2012, and at Haartbeesfontein in 2013.



**Moedi, the municipality's consulting engineers, reported:**  
*"We are very impressed with the treatment performance shown so far by HYBACS at the Botleng plant. As the town of Delmas grows we believe that HYBACS will continue to present an ideal solution."*

**To find out more about HYBACS® call:**

**London Office**  
Winchester House,  
259-269 Old Marylebone Road,  
London, NW1 5RA  
Tel: +44 (0)845 519 5800  
Enquiries@bluewaterbio.com

**BLUEWATER BIO**

