

## Case Study: Olifantsfontein Resource Centre

Off-grid Sustainable Waste Management Meets Eco-Irrigation.

### Overview

The Olifantsfontein Resource Facility, a leading Waste Management Facility in Olifantsfontein, Midrand, required a customised wastewater treatment solution.

Calcamite was tasked with the design and supply of a system that not only treats wastewater but also repurposes it to water the facility's gardens, reflecting the company's commitment to environmental sustainability.

### Requirements/On-site challenges

The facility, equipped with on-site ablutions and a kitchen, lacked a connection to municipal sewer services. A new, environmentally friendly wastewater treatment plant (WWTP) was needed to manage the facility's waste output.

### Solution

Calcamite implemented a comprehensive WWTP featuring septic tanks sized for the necessary retention time and a Bio-reactor with fixed film media.

This setup provided a surface for biomass attachment and aeration, allowing aerobic bacteria to break down the organic matter.

The final disinfection stage, using chlorine, ensured the treated effluent was free from pathogenic bacteria, making it safe for irrigation use.

### Client information

The Olifantsfontein Resource Centre operates a sand quarry with a commendable focus on the eco-friendly disposal of building rubble.

The centre is renowned for its sustainable waste management practices, including the innovative use of treated effluent for garden irrigation, thereby conserving fresh water.



#### Location

Olifantsfontein, Midrand, Gauteng Province



#### Industry

Mining



#### Plant size

5 000L per day



#### Project date


Commissioning: 06 Nov 2020  
Installation: 17 Sep 2021

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## Results

The treated effluent consistently meets the General Authorisation Limits for effluent quality, demonstrating the system's efficacy and reliability.




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**sanas**  
Testing Laboratory  
T0391

**CERTIFICATE OF ANALYSES**

**GENERAL WATER QUALITY PARAMETERS**

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**Date received:** 2023-02-02      **Report number:** 117357      **Date completed:** 2023-02-17  
**Project number:** 1000      **Order number:**


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Analyses in mg/l (Unless specified otherwise)	UOM %	Method ID	Wastewater Discharge Limits *		Sample Identification	
			General Limits*	Special Limits*	Olifantsfontein Resource	
Sample Number					183924	
Date/Time Sampled					N/A	
pH - Value @ 25 °C	A	7.7	WLAB065	5.5-9.5	5.5 -7.5	6.6
Electrical Conductivity in mS/m @ 25°C	A	7.0	WLAB065	**	***	50.5
Suspended Solids at 105°C	A	8.6	WLAB004	<25	<10	6.7
Nitrate as N	A	4.8	WLAB046	#	##	25
Ortho Phosphate as P	A	14	WLAB046	<10	****	5.8
Chemical Oxygen Demand as O <sub>2</sub> (Total)	A	5.6	WLAB018	<75	<30	28
Oil & Grease	A	---	WLAB034	<2.5	0	2
Free and Saline Ammonia as N	A	10	WLAB046	<6	<2	4.9

\* = Revision of general authorizations in terms of section 39 of the national water act, 1998 (act. No. 36 of 1998). Special limits apply in certain specific catchment areas.  
\*\* = Not more than 70 mS/m increase above intake to a maximum of 150 mS/m  
\*\*\* = Not more than 50 mS/m increase above intake to a maximum of 100 mS/m  
\*\*\*\* = <1 mg/l (median); <2.5 mg/l (maximum)  
# = General limit for combined nitrate and nitrite of <15




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**A. van de Wetering - Chemical Technical Signatory**

A = Accredited N = Not Accredited S = Subcontracted UoM=Uncertainty Of Measurement  
Tests marked "Not SANAS Accredited" in this report are not included in the SANAS Scope of Accreditation for this Laboratory.  
Results marked "Subcontracted Test" in this report are not included in the SANAS Scope of Accreditation for this Laboratory.

Sample condition acceptable unless specified on the report.  
Microbiological standards dictate that zero cannot be reported in cases where no growth is observed. The requirement is to then report as <1cfu/g or ml. A result of <1 implies the absence of the specific test organism and is the lowest reportable result where no growth was detected.

The information contained in this report is relevant only to the sample/samples supplied to WATERLAB (Pty) Ltd. This report, or any parts of this report, shall not be reproduced by any means, except with the written approval of the Board of WATERLAB (Pty) Ltd. Details of sample conducted by Waterlab (PTY) Ltd according to WLAB/Sampling Plan and Procedures/SOP are available on request.

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## Case Study: Olifantsfontein Resource Centre

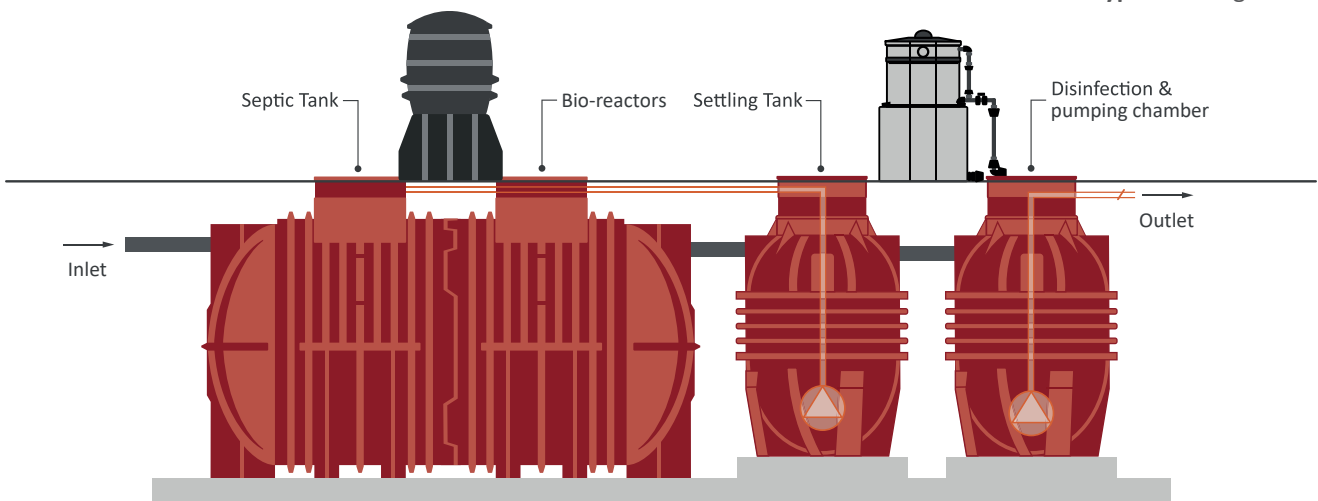
Off-grid Sustainable Waste Management Meets Eco-Irrigation.

### Plant specifications

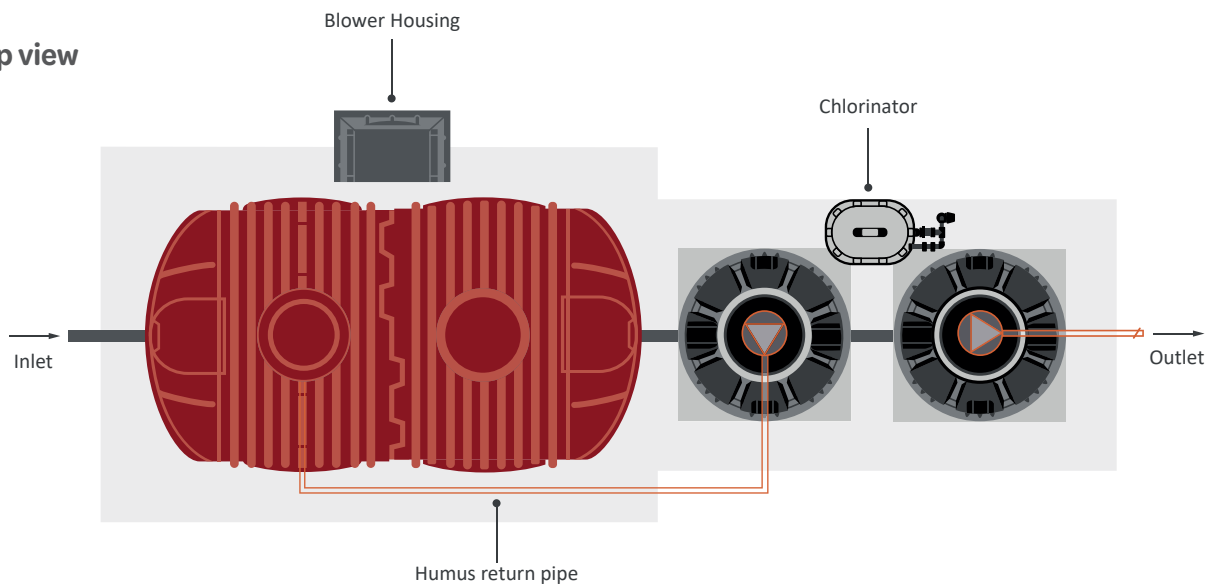
#### Side view

ADWF: 5m<sup>3</sup>/day

Plant type: Below ground



#### Top view



#### Conclusion

At Olifantsfontein Resource Centre, Calcamite's tailored wastewater treatment system has set a precedent for waste management facilities. By transforming wastewater into a resource for irrigation, the centre epitomizes the synergy between industrial activity and ecological conservation. The project not only aligns with the centre's green ethos but also represents a vital step in preserving our most precious resource - water.