

# Opportunities for water innovators in water engineering services

12 September 2019



**MARISWE**

IMPROVING LIVES  
ENGINEERING SOLUTIONS

# Introduction

- Louis Uys Head of Water and Sanitation Division at Mariswe
- Mariswe as a company
- Opportunities for water innovators in water engineering services

# Mariswe as a company



# Mariswe as a company

- Multi discipline civil engineering consultancy
- Established in 1972
- Provide services in water, sanitation, transportation, structures, infrastructure planning and construction management
- 100% employee owned
- 10 offices in South Africa
- Offices in Lesotho, Zambia, Tanzania and Ghana

# Mariswe as a company

## OWNERSHIP

# Level 1

BEE Contribution level on the DTI's Construction Sector Codes of Good Practice.

Improved performance in employment equity and preferential procurement.



# Opportunities for water innovators in water engineering services

- On site sanitation / “limited water” sanitation solutions for schools and backlogged communities
- Development of decentralized water re-use
- Design for climate change
- Technology developments w.r.t. drones / communication / data collection, - analysis, reporting and “action”
- Combinations energy sources

# On site sanitation / “limited water” sanitation solutions for schools and backlogged communities

- This is a problem in SA throughout Africa, South America and ...
- Currently VIP toilets are being utilized extensively in South Africa. This is not an ideal solution for congested areas due to the contamination of ground water and resulting health risks
- This solution:
  - Implemented in highly congested areas
  - Safe with no health or pollution risks
  - Ideally should be desirable as a solution, even if sufficient water is available

# Development of decentralized water re-use

- Current solutions are **mostly** larger and centralized
- Smaller decentralized solutions that can be implemented for a smaller group of users that are financially and technically (practically) feasible and sustainable



# Design for climate change

- We do not know where we are going and how this will impact on us.
- Current designs is based on historic data
- Changes in climate could result in:
  - Higher temperatures => higher evaporation => how does this impact on water security?
  - Higher/lower flood peaks => how do we adjust/utilise exiting infrastructure

# Technology developments w.r.t. drones / communication / data collection, analysis, reporting and “action”

- Most developments in the water and sanitation sector will be in development of material “technology”, data collection, analysis, reporting and actions (4<sup>th</sup> industrial revolution)
- Leak detection through distributed acoustic sensing
- Installation of smart flow meters and pressure sensing –
  - real time information to be utilized to throttle supply to allow priority users to obtain water at the correct pressure
  - Water tariff management system to be adjusted to impact peak usage stages?

# Combination of energy sources

- Inclusion of on-site green energy with battery banks
- Solar powered purification works – this is currently very expensive and further development should be done to drive prices down
- The gas to energy solutions at waste water treatment works are currently not being utilized optimally. Solutions must be robust and easy to operate