

VACUUM SEWER SYSTEM GHANZI, BOTSWANA



SITUATION

Ghanzi is a town in the middle of the Kalahari Desert the western part of Botswana. The land surface mainly consists of gently undulating sandveld with depth from 5m to 200m. It is 1230meters above sea level with the average slope of 0.08%. There is an existing gravity sewer system which posed a lot of threats to human and animals lives during its construction and was expensive to construct due to:

- Deep trenches on collapsible soils
- The need for regular lift station due to the flat terrain (power supply was also needed in every lift station)
- Blockages due to failing pumps at lifting stations and power cuts

SOLUTION

To reduce installation and maintenance costs, BHC decided to build a Roediger Vacuum Sewer System in their houses. Construction costs were reduced by:

- Excavating trench depths limited to an average of 1.5m, meaning the need for heavy plant and excavation time were reduced and posing no danger to the people.
- Small diameter pipe network reduced network costs and installation time.
- Overall construction time was reduced to 8-months.

The Roediger Vacuum system reduced the need for 10 lift stations and additional flush vessels to just one vacuum station and a network of small-bore pipes and 350 chambers.

TECHNICAL DATA

NETWORK

No. of inhabitants: 864 people equivalents.

Vacuum pipeline network: 2.6 km

House connections: 75 collection chambers with 65mm vacuum valve units

Commissioning: Sep/Oct 2012

VACUUM STATION

Vessel – 2 x 20m³ steel vacuum tank horizontally installed

Vacuum pumps - 2 x Busch R5, 7.5kW, 302m³ per hour each

Discharge pumps 2 x 4kW Pumps

Biofilter: rectangular, approximately 6m³

Construction time: 8 Months



20m³ steel vacuum tank



two vacuum pumps