

UVAL

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POTABLE WATER SYSTEM REPORT

RADISSON SAFARI LODGE DEVELOPMENT

THE KRUGER NATIONAL PARK



1. Background:

Malelane Safari Resort Investments (Pty) Ltd. is developing a 120-key tented lodge/hotel close to Malelane in the Kruger National Park. The hotel will be managed by a world class hotel operator with construction expected to start in 2015 on completion of the EIA, building design, construction planning and financial close.

The proposed hotel boasts a truly unique location in the Kruger National Park with the Crocodile River bordering the concession.

The developers would like to enhance the environmental sustainability of the property and highlight its "green credentials" as these will play a significant role in positioning the venue in the market place. Consequently, the developers will design and manage the hotel with these objectives in mind: Energy and water supply will be operated at world class efficiency levels while the use of renewable energy – to the largest extent possible - will be given priority over thermal resources.

The purpose of this memo is to outline what Utility Value Engineering believes is the optimal Potable Water solution for the project in terms of system design, operational performance, overall sustainability and cost.

Project brief

Main Water Infrastructure:

Design load: 100kL per 24h

Daily load: Average 60kL per 24h

Boreholes 2x capacity of 2L/sec: 7 000L/h for 8h

Raw water reservoir: 100kL

Main water meter + pulse counter to drive water treatment and dosing plant, size and spec to be based on borehole lab test result.

Water treatment plant to deliver WHO quality water to main reservoir, size to be agreed,

Approx. 4 day reserve: 300kL

Booster pump set with energy saving feature and constant pressure in distribution systems (Grundfos Multi Hydro).

Manifold with sub metering to serve as management information system and easy leak monitoring.

Field pipe lines in Class 12 uPVC or similar HDPE material.

Design of field pipes to depend on string peak load and distance.

Note: 40% of 24h load take place over 2h in the morning and other 40% 2h in the evening.

The system terminates with a stop cock and non-return swing check valve in ground box or at the technical space at each facility.

Position	Qty.	Description	Single Price
	1	<p>HYDRO MULTI-E 2 CRE15-03</p>  <p>Note! Product picture may differ from actual product</p> <p>Product No.: 98486807</p> <p>GRUNDFOS Hydro Multi-E booster sets are designed for the transfer and pressure boosting of clean water in waterworks, blocks of flats, hotels, industry, hospitals, schools, etc.</p> <p>GRUNDFOS Hydro Multi-E booster set consists of 2 to 4 CRE pumps coupled in parallel and mounted on a common base frame provided with all the necessary fittings.</p> <p>Hydro Multi-E is mounted on a common base frame made of stainless steel (DIN W.-Nr. 1.4301).</p> <p>On the suction side are fitted a suction manifold (DIN W.-Nr. 1.4401 or DIN W.-Nr. 1.4571), a pressure switch and an isolating valve. On the discharge side of the pumps are fitted a non-return valve, an isolating valve, a pressure gauge, a pressure transmitter mounted on a drainable valve, a diaphragm tank and a stainless steel discharge manifold (DIN W.-Nr. 1.4401 or DIN W.-Nr. 1.4571).</p> <p>The Hydro Multi-E is fitted with an on/off-switch for the supply voltage.</p> <p>The Hydro Multi-E is designed for maintaining a constant pressure regardless of flow changes and fluctuation.</p> <p>The internal PI-controller regulates the number of running pumps and the speed of the pumps according to the required flow.</p> <p>The system can be operated directly on the panel of any of the pumps or via Grundfos GO (available as accessory)</p> <p>When delivered, the GRUNDFOS Hydro Multi-E booster set is factory tested and ready for operation.</p> <p>Liquid: Pumped liquid: Water Liquid temperature range: 5 .. 60 °C Liquid temp: 20 °C Density: 998.2 kg/m³</p> <p>Materials: Pump housing: Cast iron</p> <p>Installation: Maximum operating pressure: 10 bar Maximum inlet pressure: PN10 bar Flange standard: DIN ISO 7/1 Manifold inlet: DN 80 Manifold outlet: DN 80</p> <p>Electrical data: IE Efficiency class: IE3 Power (P2) main pump: 4 kW Mains frequency: 50 Hz Rated voltage: 3 x 380/415 V Start. method: electronically Rated current: 14.4 A Enclosure class (IEC 34-5): IP54</p>	