

**heron banks**  
GOLF AND RIVER ESTATE

**GEOTECHNICAL SURVEY  
MARCH 2005**

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## 1 DESCRIPTION OF SITE

The site of ± 120 ha is located next to the Vaal River on the Free State side and on the northern side of Vaalpark, all within the municipal area of Sasolburg, as indicated on the locality plan. The property is located on the Farms Grootfontein 328 and De Rust 370.

## 2 GEOLOGICAL FORMATIONS

The prevailing geological formations in accordance with the geological maps comprise Hekpoort Andesites of the Transvaal Sequence.

## 3 INVESTIGATION

Thirteen trial holes were dug on the site as indicated on the layout drawing. The trial holes were dug with a TLB to a depth of 3,0 m. The trial hole profiles are indicated in the annexures. No groundwater was encountered at any of the trial holes notwithstanding the recent heavy rainfall period.

## 4 SOIL TEST RESULTS

The soil test results of the identified trial hole profile layers are indicated in the annexures. The soil profiles at all the holes are similar, except for trial hole A4, which is located within a wetland area. The general profile comprises sand and sandy soil layers with no or limited PI. The soil formations are not expansive, but have a limited potential for collapsing taking into consideration the grading profile. It is also evident that the soil layers are well drained. The average test results are as follows (Hole A4 excluded):

TEST	MIN	MAX
GM	0,81	2,16
PI	NP	6
Liquid Limit	0	46
Linear Shrinkage	0	10
CBR 90	9	19
CBR 95	15	62
CBR 100	24	108

Potential expansiveness	:	Low
Collapsing potential	:	Moderate
Classification:		
TRH14	:	G6
TRB	:	A-2 – 4(0)
NHBRC	:	C1
Safe bearing capacity (90 % mod AASHTO) density	:	140 Kpa

## 5 RECOMMENDATIONS

### 5.1 Foundations for residential stands

- (a) 1000 mm soil raft comprising 60 % insitu material and 40 % Sasol I Ash (G5 material) compacted to 96 % Mod AASHTO density. Raft to extend 1000 mm beyond foundation.
- (b) Lightly reinforced conventional strip foundations.
- (c) Paving around structures to divert water away from foundations.
- (d) Expansion joints at  $\pm 10,0$  m distances and between one and two storey sections.
- (e) Brickforce in every second layer in foundation walls and every layer above window level.

### 5.2 Multi-storey structures

On site detail geotechnical survey.

### 5.3 Services

- (a) No or very little hard material is expected.
- (b) Insitu material is suitable for bedding material and road construction material in combination with imported material such as Sasol I-ash.
- (c) Excavation side stability measures should be taken at trench excavations deeper than 1,2 m.
- (d) Although no groundwater was encountered the provision of sub-soil drains should be considered at critical areas to accommodate stormwater seepage water.

## 6 ANNEXURES

- 6.1 Locality Plan
- 6.2 Trial hole layout plan
- 6.3 Trial hole profiles
- 6.4 Laboratory test results