A GEOTECHNICAL REPORT
(GFSH-2 PHASE 1)
TO VALUMAX ON
PTN 183 OLIFANTSFONTEIN 410 IR

IR1252

INTRACONSULT cc
P.O. BOX 604
FOURWAYS
2055

TEL : (011) 469 0854
FAX : (011) 469 0961
email: intrac@mweb.co.za

JULY 2014

Consulting Engineering Geologists

Intraconsult

Intraconsult cc
Registration Number CK/86/12311/23

P.O. Box 604,
Fourways
2055
Gauteng

Telephone : (011) 469 0854

Email: intrac@mweb.co.za

VALUMAX
P O BOX 78772
SANDTON
2145

ATTENTION: MR H SLABBERT

Your reference	Our reference	Date
	IR1252	JULY 2014

A GEOTECHNICAL REPORT (GFSH – 2 PHASE 1) TO VALUMAX ON PORTION 183 OLIFANTSFONTEIN 410 IR

EXECUTIVE SUMMARY

This report presents and comments on the results and observations of additional geotechnical investigations carried out on Portion 183 Olifantsfontein 410 IR, a total area of approximately 273 ha.

This study has involved the assimilation and evaluation of available geotechnical and geological data and additional field and laboratory investigations. These investigations involved the profiling and sampling of open trial holes in order to gather further information on the general engineering geological conditions that exist beneath the designated site area. The laboratory test results have been analysed and the soil profiles assessed in order to confirm the perspectives formulated in the field concerning the geotechnical characteristics of the soils occurring across the site.

Based on these geotechnical investigations, the site has been sub-divided into (soil) Site Class Sub-Areas. These Sub-Areas are designated in terms of the S.A. Code of Practice into composite Site class (i.e. the 'H', 'C' and 'S' series), R to denote rock near surface conditions, and E to indicate sub-areas covered in solid and organic waste deposits.

Geotechnical evaluations are provided for the development of this site together with broad recommendations for building foundations.

A GEOTECHNICAL REPORT (GFSH – 2 PHASE 1) TO VALUMAX ON PORTION 183 OLIFANTSFONTEIN 410IR

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1. INTRODUCTION AND TERMS OF REFERENCE

This report presents and comments on the results and observations of geotechnical investigations carried out for project planning purposes for the (demarcated) area known as Portion 183 Olifantsfontein 410IR.

The terms of reference and scope of the work to be undertaken were discussed with Helgardt Slabbert of Valumax and outlined in the Intraconsult cc proposal reference IR1252p (Revised) dated 26 June 2014.

Intraconsult was instructed to proceed with these investigations by Valumax by email (25 June 2014).

2. INFORMATION USED IN THIS STUDY

The following information has been used in the investigation and assessment of the site:

- Geological Map issued by the Director of Geological Survey :2526 and 2528 (Scale 1:250 000).
- Various google images of the site.
- Guidelines for engineering geological investigation on non dolomitic areas for the purpose of township development – TPA Department of Local Government.
- Home Builders Manual February 1999. National Home Builders Registration Council (NHBRC).
- National Dept. of Housing Generic Spec. GFSH-2 Sept. 2002.
- Contoured drawing provided by Messrs Valumax which serves as the base plan for the IR1252/S soil map.

3. SITE DESCRIPTION

The proposed township is to be established on portions of the farm Olifantsfontein 410IR. The township is located west of Glen Austin Agricultural Holdings Ext.1 and North of Kaalfontein Ext 23.

A locality map is provided in Figure 1.

Natural vegetation consists of veld grasses. There are areas of medium hard rock and hard rock and sub-outcrop in sectors of this site which lies immediately north of the Glen Austin fault belt.

The approximate extent and nature of near surface features observed on this site are shown on Figures 3 to 6.

- Figure 3 shows sub-areas of the site mantled by solid and organic waste materials which will require removal before developments are started in these sections of the site (see Plate 8).
- Figure 4 shows sub-areas of the site where hard rock (r3) or boulder medium

and hard rock (r1, r2, r4 and r5) were observed during this survey. *It should be noted that other areas of rock outcrop could occur firstly below the waste area (shown on Figure 3) and secondly in other areas of the site currently covered by veld grasses.*

- Figure 5 delineates pans and other sub-areas of the site potentially impacted during rainy seasons. In our experience, stormwaters seep through the (leached-out) surface hillwash soils and run downslope on top of (typically) shallowly underlying pedocretes (see Plates 1 and 4). Such poor natural drainage can result in practically impassible conditions for wheeled vehicles after heavy rains.
- Figure 6 shows the general directions of natural surface drainage across this site.

Our broad recommendations for dealing with these near surface features for the proposed township development are given in Section 8 below.

Photographs depicting aspects of the general area proposed for development are given in Appendix 3.

4. NATURE OF INVESTIGATIONS

These investigations have involved the review and analysis of the available data listed in Section 2 including:-

- Trial Hole Profiles and
- Laboratory Test Data.

A series of soil profiles, together with soil samples for laboratory testing, have been taken from the trial holes opened across this site in general accordance with the GFSH-2 Phase 1 requirements.

Trial Holes were opened across the site using a 75 kw TLB/backhole machine. Each trial hole was entered and inspected by a geospecialist who also described the soil profiles using the visual tactile procedures advocated by Jennings et al (1973). Detailed descriptions of the trial hole profiles from this investigation are provided in Appendix 1 and their positions shown on Drawing IR1252/S.

Particle size distributions and Atterberg limit tests have been carried out on disturbed samples recovered from the various soil units uncovered during these investigations for accurate classification and identification purposes. Soil unit samples were also selected and tested for moisture content and soil chemistry. Where practically possible, undisturbed samples were taken to check the potential collapse and compressibility characteristics of these soils.

5. SITE GEOLOGY AND GROUNDWATER CONDITIONS

The site us underlain by granite-gneiss bedrock of the Johannesburg-Pretoria granite inlier. The residual soils of these Basement Complex granites are typically silty and clayey sands and sandy silts frequently open-textured and having collapse potential: **Sub-angular joint blocks and weathered core-stores are also a common feature in Basement Complex granites.**

The surficial colluvial materials contain thin horizons of hardpan ferricrete. Degrees of ferruginisation are also present in the underlying residual silty and clayey sands that originate from decomposition of the granite-gneiss bedrock. Extensive areas of rock sub outcrop, a characteristic of the bedrock underlying this site, see Table 1 and Figure 4.

Perched seasonal groundwater conditions should be anticipated to develop on horizons of reworked residual granite and ferricrete soil units on this site. The seasonal nature of these shallow groundwater regimes should be recognised.

The groundwater under the sites lies in an unconfined aquifer, that is the groundwater will be generally contained in a variety of secondary structures within the bedrock such as joints, cracks, fissures and faults. The bedrock in this area are (generally) poor yielders of water and would be classed as 'minor' aquifers. However, any containment liquids entering the bedrock structures are likely to flow comparatively rapidly through the secondary features with hardly any attenuation of pollutants.

6. GEOTECHNICAL EVALUATION

This Geotechnical Evaluation is based on our interpretation of field scouting, geology, the soil profiles and the laboratory test results.

6.1 Engineering and Materials Characteristics

- **Evaluation of the Collapse Potential of soils within 1,0 m from natural ground level.**

  Significant 'collapse' settlement should be anticipated in the soil profiles on the site based on our field assessments and also the laboratory oedometer test results. These results and analyses are discussed fully in Section 7.

- **Evaluation of the activity (heave/shrink) of soils within 3,0m from natural ground level.**

  Analyses carried out on disturbed samples of the soils types uncovered in the trial holes confirm 'normal' (H) potential heave/shrink soil conditions. These results and analyses are discussed fully in Section 7, below.

- **Evaluation of the potentially compressible soils within 1.0m from natural ground surface.**

  Oedometer grained and low permeability soil units indicate that compressibility is unlikely to be problematic on this site once the 'collapse' potential has been removed.

  These tests results are summarised in Table 3 and fully discussed in Section 7 below.

- **Evaluation of surficial materials for roads construction** :

  Disturbed samples of the transported and residual soils uncovered in the

opened trenches across this site were subjected to particle size and Atterberg Limit tests. These test results are summarised in Table 1. Our evaluation of these natural insitu materials for potential use in pavement subgrade design is provided as follows:-

Soil Unit	Estimated TRH4 code	Grading Modulus	Workability Rating
Hillwash	G6-G7	0.73-1.27	poor to good
Lacustine	G7	1.1	fair
Gully Wash	G7	1.1	fair
Pebble Marker	G5	2.16	excellent
Nod. Ferricrete	G6	1.43	good
res. Granite	G5-G6	0.9-1.8	fair to excellent
Leached Res. Granite	G5	1.31	good
Residual Granite	G6-G7	0.72-1.66	fair to excellent

- **Evaluation of surficial materials for possible use for pipe bedding: (SABS 1200 DB & LB)**

  (i) Select Granular Bedding – i.e. naturally occurring non-cohesive singularly graded gravel-soils between 0.6 and 19.0 mm are not available on this site and will need to be imported.

  (ii) Select Fill – i.e. the laboratory tests results confirm that natural soils with a PI less than 6 are generally not available on this site and will need to be imported.

  (iii) General fill: materials recovered from trench excavation works may be considered for General Fill purposes after removal of all the larger cobble and boulder size fractions.

- **Evaluation of Potential aggressiveness of interparticulate groundwaters**:

  Disturbed samples of the reworked and residual soils encountered in the opened trenches across this site were subjected to chemical tests. Our assessment of these values is as follows:-

Material	pH	Comment	Resistivity ohm.m (range)	Comment[1]
Hillwash	5.6	neutral	111-207	generally not
Lacustrine	5.7	neutral	77	mildly
Gully wash	7.0	neutral	60	mildly
Pebble Marker	5.5	neutral	100	generally not
Nod. Ferricrete	6.3	neutral	114	generally not
Leached Res. Granite	6.4	neutral	167	generally not
Residual Granite	5.8-6.5	neutral	94-333	generally not
[1]Comment : ref. Messrs. ARMCO 1977				

  The results indicate that the near-surface soils do not have a tendency to be corrosive to any ferrous materials placed in them.

- **Illegal dumping of refuse**: Dumped refuse and unconsolidated fill should be anticipated as a general hazard potentially influencing housing

foundations.

- **Evaluation of Potential erosion and piping (dispersive soils) when soils types are subjected to a hydraulic gradient:**

  Sodium-based clay minerals are prone to rapid dispersion in water and are susceptible to erosion or piping in the soil profile. The electrical conductivity of the soil paste provides an indicator of the salinity and likely dispersive behaviour.

  Our assessment of these values is as follows:

Material	Conductivity S.m.	Dispersive characteristic[1]
Hillwash	0.01	non-associated
Lacustrine	0.01	non-associated
Gullywash	0.02	non-associated
Pebble Marker	0.01	non-associated
Nod.ferricrete	0.01	non-associated
Leached res. Granite	0.01	non-associated
Residual granite	0.01	non-associated

[1] note: conductivities in excess of 0.5 S.m. may be associated with dispersive characteristics.

- **Evaluation of perched and seepage groundwater conditions noted in open trial holes:**

  Perched groundwater conditions can occur on the pedocrete/ferricrete horizons and also on shallow bedrock. Such soil profiles could be impacted by 'rising damp' in service: in general, special attention to membrane/dampcourse measures is required when building on this site.

6.2 Slope Stability and Erosion

With an approximate average site gradient around 5-12 per cent, slope stability should not present a major problem with regard to erven development on this site. However, the fine nature of many of the soil types that will be exposed after the removal of the natural vegetation cover will present a potential erosion problem during periods of heavy rain and also dust removal by high winds in the dry season.

6.3 Excavation Classification with respect to Services

Many of the opened trial holes uncovered boulder 'intermediate' and 'hard rock' excavation materials (SABS 1200D) in the lower sections of the ground surface to minus 1.5m profile see Table 1. Our evaluation is that such materials generally could be removed by a more powerful (tracked) type of excavator or (more locally) with the use of explosives before removal by a machine capable of removing the loosened material.

6.4 Impact of Geotechnical Character of the Site on Urban Developments

The procedures utilised in this report for the *broad* geotechnical zonation of the site are derived from the modification and integration of various classification systems and follow the SAIEG's "Guidelines for Urban Geological Investigations" with appropriate adaptations. Based on the geological, geohydrological, hydrological, geomorphological and soils information gathered

during geotechnical investigations, sites may be divided into three primary Geotechnical Sub-Areas. These Sub-Areas broadly reflect the development potential of sites and delineate Sub-Areas of similar characteristics (such as wet areas and terrain) and do not necessarily reflect a typical (singular) soil profile overlying the bedrock.

These broad geotechnical Sub-Areas are defined below:-

Geotechnical Sub-Area	Definition
1 (or prefix "1")	The geotechnical conditions are such that urban development can take place without any special precautionary/remedial measures for geotechnical conditions.
2 (or prefix "2")	Geotechnical conditions are such that the area may be developed for urban use but appropriate remedial and/or precautionary measures are required in the context of the geotechnical constraints.
3 (or prefix "3")	Geotechnical conditions are such that urban development is not recommended.

Based on our evaluation of the available geotechnical data, the site area has been delineated into broad Sub-Areas.

These broad Sub-Areas are shown on the Soil Map IR1252/S, as follows:

- Sub-area prefixed "3" considered to be undevelopable
- Sub-Areas prefixed "2"
  Development permitted with precautions.
- 2/3 W: Sub-areas prefixed "2/3W" pan and potential seepage zones requiring special treatment/rehabilitation measures.
- 2/3 E: Sub-areas prefixed "2/3E" mantled by solid and organic waste materials (requiring removal prior to development).

7. SITE CLASSIFICATION (IN TERMS OF THE NHBRC GUIDELINES)

The broad geotechnical characteristics of the primary geotechnical Sub-Area outlined in Section 6.4 are further described in terms of several 'geotechnical category designations' defined below:

GEOTECHNICAL CATEGORY AND SITE CLASS DESIGNATION	GEOTECHNICAL CHARACTERISTICS
Inundated areas w	Wet area, drainage line, seepage zone.
Active soils (heave/shrink) H H1 H2 H3	Expected range of total movements at surface: < 7.5 mm 7.5 – 15 mm 15 – 30mm > 30 mm
Collapsible soils C C1 C2	Expected range of total movement at surface: < 5mm 5 – 10mm > 10mm
Compressible soils S S1 S2	Expected range of total movement at surface: < 10 mm 10 – 20 mm > 20 mm
Excavation E	Abandoned borrow areas, dump rock, waste sites, exploration

GEOTECHNICAL CATEGORY AND SITE CLASS DESIGNATION	GEOTECHNICAL CHARACTERISTICS
	pits or adits.
Steep slope T	> 15 degrees
P	Unconsolidated fill.
R R1 R2 R3	Rock Outcrop Scattered outcrop Sub-outcrop (i.e. pre-development ground surface to minus 1.5m)

These designations are added to the selected primary Geotechnical Sub-Areas in order to describe the generalised geotechnical conditions that lead to that particular characterisation.

The 'H'. 'C' and 'S' designations tabulated in the NHBRC Guidelines imply that a quantitative approach is required when analysing each open trial hole profile and before allocating it to a selected (soil) Site Class Sub-Area. A broad overview of the assumptions made and the analytical processes adopted regarding potential in-service soil behaviour beneath NHBRC shallow foundations is presented below. Most importantly, potential soil behaviour in the Trial Holes has been evaluated and characterised when abstractly subjected to loading and moisture conditions beneath a structure where bearing pressures do not exceed 50 kPa and rest on 0.5m wide strip footings (see NHBRC Guidelines). In practical terms and for stress related behaviour (the 'C' and 'S' Flags) only the top 1 metre of profiled materials has been considered, while for the moisture-related behaviour (the 'H' Flag) only the top 3 metres.

(i) Soils uncovered that can change in volume with changes in moisture conditions – potentially active soils (i.e., NHBRC Site Class H/H1/H2/H3).

Seasonal variations in the moisture condition of fine and very fine soils can induce volume changes which would translate into vertical 'movement' under the foundations of houses placed on these particular soil profiles. In an attempt to quantify these movements for this report, our experience with similar soils, together with Weston's empirical per cent swell equation, has been adapted to provide an indication of the *swell difference* between the projected 'driest' and 'wettest' moisture conditions anticipated in the field, see Footnote[2].

The laboratory testing of soil samples taken across the site provides average liquid limit (whole) values for the various soil units. These values, together with the potential volume changes (swell difference between the presumed 'driest' and 'wettest' field moisture conditions) are tabulated below :-

SOIL UNIT	AVERAGE L.L. WHOLE	MOISTURE CONTENT %		SWELL DIFF. VOL. CHANGE %
		'DRIEST'	'WETTEST'	
Hillwash	18.5	8.0	16.0	0.1
Lacustrine	21.0	8.4	16.8	0.2
Gullywash	14.0	5.6	11.2	<0.1
Pebble Marker	8.0	3.2	6.4	<0.1
Nod.ferricrete	17.0	6.8	13.6	0.1
Ferrug.res.granite	15.5	6.2	12.4	<0.1
Leached res. Granite	10.0	4.0	8.0	<0.1
Residual granite	20.0	8.0	16.0	0.2

Footnote 2: Weston's swell per cent = $0{,}000411L^{+4{,}17} \times p^{-0{,}386} \times Wi^{-2{,}33}$
where L = Liquid Limit (whole) (ie. Liquid Limit x % passing 425 microns)
P = overburden pressure (10kPa adopted for this report)
Wi = initial moisture content.
From CSIR research experience (for 'red' soils), the 'driest' field moisture condition has been taken as 0,4 L, and the 'wettest' field moisture condition as 0,8 L : For the 'dark grey' and 'black' soils 'driest' and 'wettest' conditions have been taken at 0,2L and 0,7L respectively.

(ii) Soils uncovered that could rapidly reduce in volume when loaded and wetted – potential 'collapsible' soils (i.e. NHBRC Site Classes C/C1/C2).

Thicknesses of open-textured (and/or 'loose') hillwash and residual granite soil units were uncovered in the trial holes opened and profiled on this site. The CP_{200} test results on select samples indicate 'severe trouble' to 'trouble' with these soils. A 2 percent collapse in profile has been adopted in the assessment of these materials.

(iii) Very moist and fine grained soils uncovered that could (slowly) reduce in volume when loaded – potentially 'compressible' soils (i.e. NHBRC Site Classes S/S1/S2).

Sections of the site are occupied by varying thicknesses of moist, very fine grained open textured soil units. The Laboratory consolidometer tests on undisturbed samples taken from these materials and reported in Table 3 and indicates only small amounts of compressibility once these soils have been compacted.

Once analysed according to the assumptions and data provided, the individual profile designations have been transferred onto the site plan provided and reviewed in conjunction with other geotechnical information including the (solid) geology, engineering judgement and the results of field scouting.

A Soil Map (Drawings IR1252/S) has been compiled reflecting this total conceptual Site Class Sub-Area characterisation. Our characterisation of the near surface conditions for the Sub-Areas shown on the Soil Map is as follows:-

Sub Area	Commentary
(3R)	• Solid hard rock granite outcrop – most probably an un-developable sub-area[1].
2/3 W (R3) (H/C-C1/S)	• Seepage sub-areas (requiring special drainage design) masked by solid and organic waste materials. Pockets of difficult excavation conditions in 0.0m to 1.5m profile and below. • Potentially collapsible (C-C1) near surface soil conditions.
2/3 E (H/C-C1/S)	• Natural soils masked by solid and organic waste. • Potentially collapsible (C-C1) near surface soil conditions
2/3 E (R3) (H/C2/S)	• Natural soils masked by solid and organic waste. • Pockets of difficult excavation conditions in 0.0 to 1.5m profile and below, otherwise – • Thick layers of potentially collapsible near surface soils (C2) in these sub-areas of the site.
2(R3) (H/C2/S)	• Pockets of difficult excavation conditions in 0.0 to 1.5m profile and below, otherwise- • Thick layers of potentially collapsible near surface soils (C2) in these sub-areas of the site.

2(R3) (H/C-C1/S)	• Pockets of difficult excavation conditions in 0.0 to 1.5m profile and below, otherwise- • Potentially collapsible near surface soils (C-C1) in these sub-areas of the site.
2(R2-R3) H/C/S	Scattered outcrop and sub-outcrop of medium and hard rock boulder conditions in these sub-areas of the site.

[1]Note: Additional (patches) of solid hard rock granite may be present across this site (These being hidden by long grasses and spoil at the time of these investigations, May/ June 2014).

8. RECOMMENDATIONS

8.1 Foundation Recommendations and Solutions

These investigations have confirmed that potentially problematic soils mantle the bedrocks over the site area. The locality of these soils and their anticipated in-service behaviour has been analysed and broad zonation provided on the soil maps, Drawing IR1252/S.

Possible foundation solutions are further complicated by the possible presence of 'hard' and 'soft' materials immediately beneath individual footprints as a consequence of local rock sub outcrop. It is recommended that all soils are precompacted below foundation works.

Recommended alternate foundation design solutions for single storey masonry structures are provided in the NHBRC 'Standards and Guidelines'. However, as many of these erven are likely to be developed with double storey structures. It is recommended that engineered rationally designed foundations are adopted on this site.

Notes:

- Site Specific Investigations must be conducted on all erven planned for major structures prior to design finalisation and construction.

8.2. Drainage

Signs of potential seepage and perched water tables were noted in many of the opened trial holes and are probably associated with the impermeable nature of the underlying pedocrete soils and bedrock across this site (see Figure 5, sub-areas W1, W2, W3, W4 & W5).

These seepage zones (prefixed 2/3W) require particular attention. The following comments and recommendations apply:

- The subsurface profile typically consists of a thin horizon of hillwash, overlying hardpan ferricrete grading into soft and hard rock granite.
- During the rainy season ground water accumulation and lateral seepage occurs within the soils horizons, on the soil-ferricrete/granite interface. This water gathers upslope of the seepage zone and migrates downslope until it is forced to "daylight" by the outcropping or dramatic shallowing of the granite or ferricrete.

- Our opinion is that these sub-areas can be developed from a geotechnical perspective provided certain precautionary measures are implemented, including:
  - Use of cutoff drains topographically immediately above the delineated area and also the side drains in appropriately designed roads networks.
  - Subsurface drains located strategically to capture the groundwater seepage e.g. below the sewer pipeline in sewer trenches. These drains could remove the water and discharge it downslope possibly into road side drains.
  - Using spoil (from sub-areas shown on Figure 3) to backfill the deeper pan areas – later to be planned as POS.
  - All structures and walls will need to have adequate freeboard and appropriate damp proofing, to preclude rising damp.

8.3 Special Precautionary Measures

Careful stormwater management will be required across this entire site in order to remove stormwater in a speedy and efficient manner and to prevent any accumulation of surface water against or near buildings.

Special care will be required for the design (and drainage) of services in close proximity to any of the existing natural drainage paths that occupy sectors of this site, as spring/seepage conditions may be expected to occur in such locations during periods of heavy or continuous rain.

8.4 General Site Clearance/Preparatory Works

Provision should be made to remove the areas of unconsolidated solid and organic waste fill uncovered during these investigations (see Figure 3).

8.5 Foundation Works

Broad recommendations are provided in Section 8. Site specific investigations must be conducted on any sites planned for major structures.

8.6 Road Construction and Installation of Underground Services.

Most sections of the site are underlain by soils with a general (i.e. TRH4 code) assessment of 'fair' to 'good' as natural sub-grade materials.

'Intermediate' excavation (SABS 1200D) conditions should be anticipated in sections of the site as well as some degree of hard rock where outcrop conditions exist.

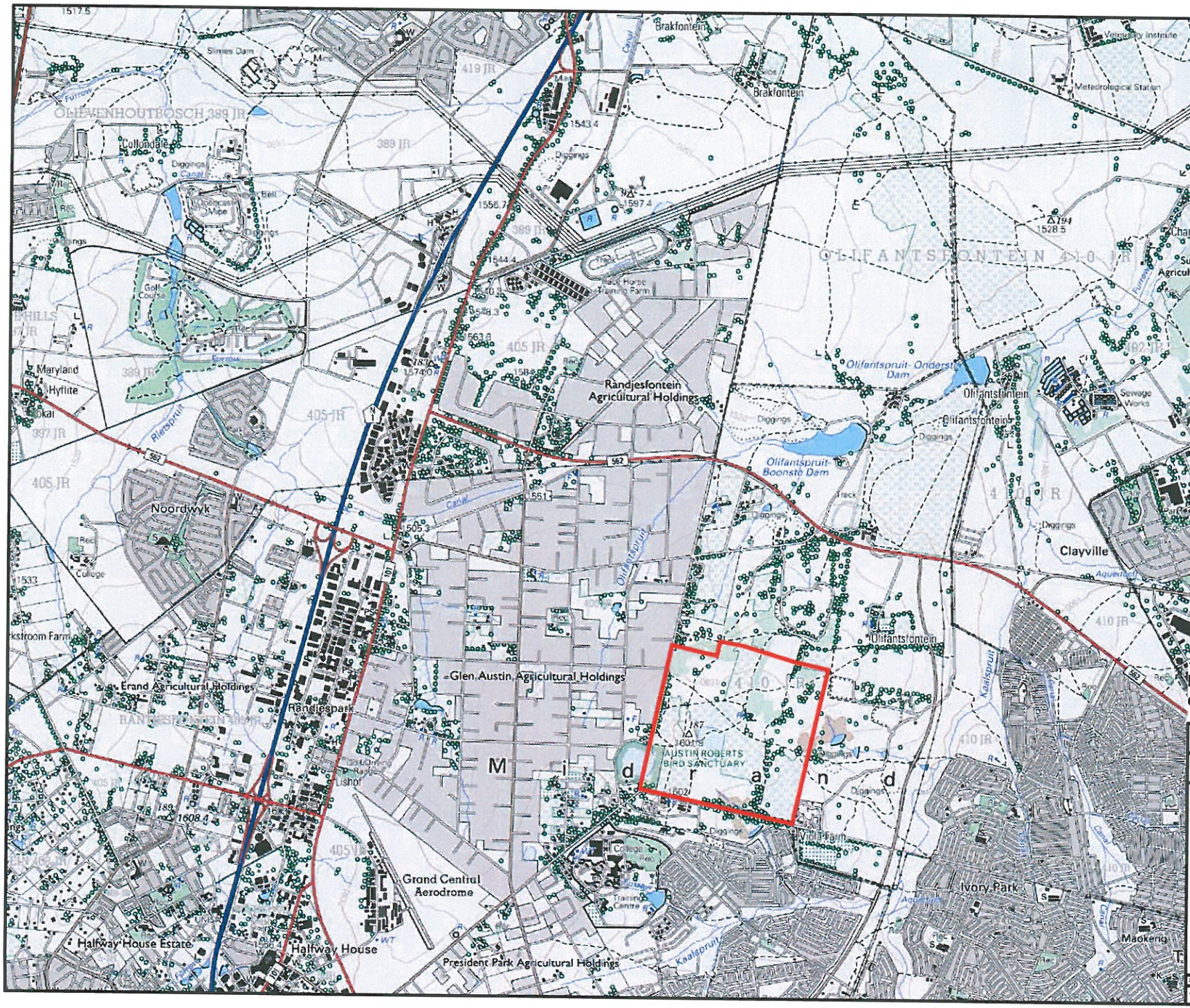
Outcropping boulder medium and hard (granite) rock has been recorded as positions r1,r2,r4 and r5 and solid hard (granite) rock outcrop at position r3 (Figure 4). There are certainly additional outcrops or near surface hard materials across this site currently masked by long grasses and the dumps of solid and organic waste. It is probably prudent to avoid such rocky sub-areas in the planning of this site.

Selected granular bedding and select fill will need to be imported to these Works.

8.7 General Recommendation

The Sub-Area Site Class presumed boundaries are shown on Intraconsult Soil Map Drawing IR1252/S. It is recommended that all layout plans for this development are reviewed on an ongoing basis and finally certified by the geotechnical specialist as being in accordance with the findings detailed in this report. These findings are based upon our interpretation of the data assessed during this study. While every effort has been made to determine overall ground conditions on this site, poorer sub-areas have been missed. For this reason, it is recommended that a competent specialist is always invited to inspect excavation works for services, etc. during the development of this site.

FIGURES



PORTION 183
OLIFANTSFONEIN 410 JR

LOCALITY MAP

FIGURE 2

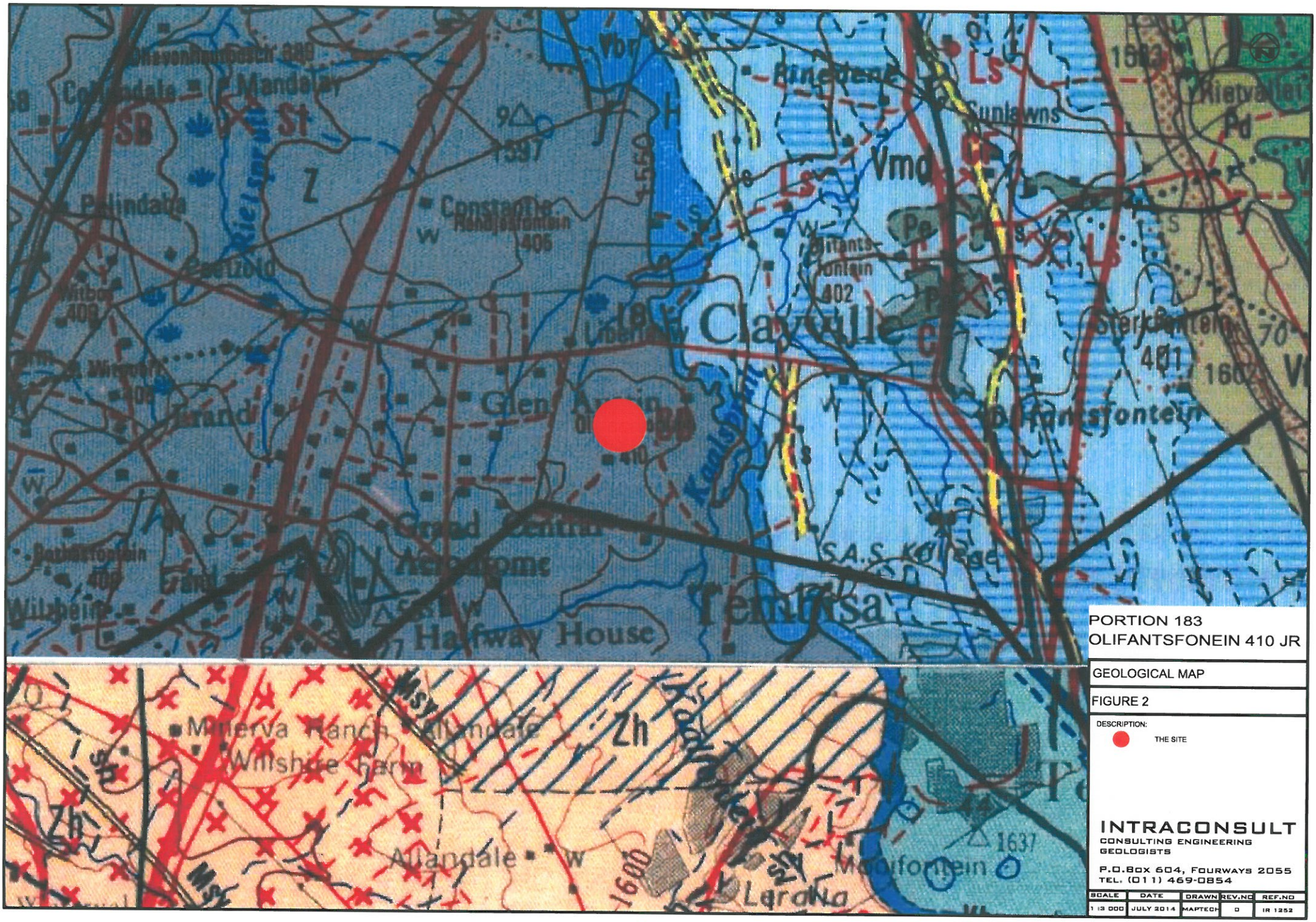
DESCRIPTION:

🟥 SITE BOUNDARY

INTRACONSULT
CONSULTING ENGINEERING
GEOLOGISTS

P.O.Box 604, Fourways 2055
TEL. (011) 469-0854

SCALE	DATE	DRAWN	REV.NO	REF.NO
1:13 000	JULY 2014	MAPTECH	0	IR 1252



PORTION 183
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GEOLOGICAL MAP

FIGURE 2

DESCRIPTION:

THE SITE

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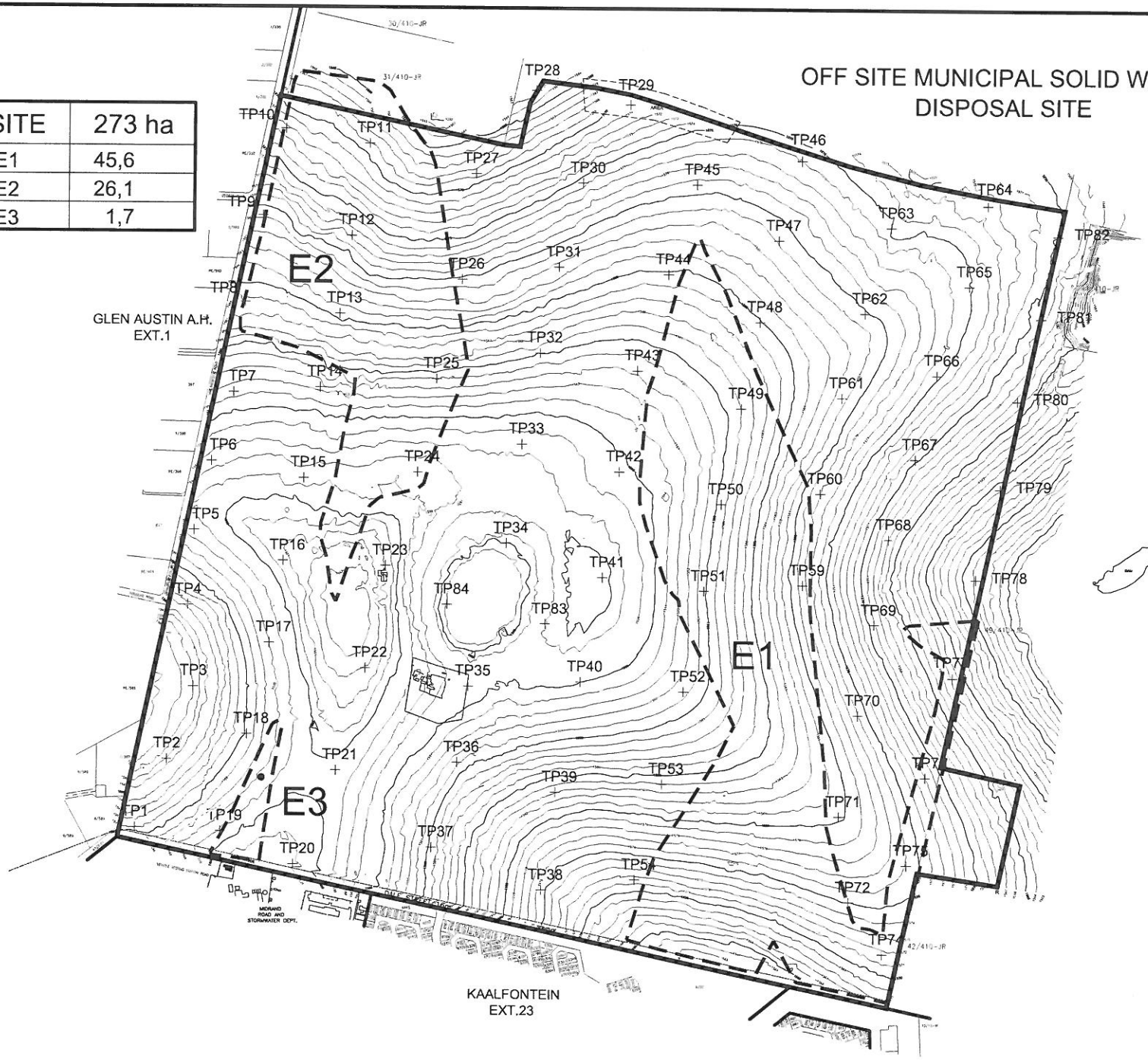
SCALE	DATE	DRAWN	REV.NO	REF.NO
1 : 3 000	JULY 2014	MAPTECH	0	IR 1252

TOTAL SITE	273 ha
Sub-area E1	45,6
Sub-area E2	26,1
Sub-area E3	1,7



PORTION 183
OLIFANTSFONTEIN 410 JR

PRELIMINARY ASSESSMENT: SOLID AND ORGANIC WASTE DUMP SUB-AREAS, E

FIGURE 3

DESCRIPTION:

SITE BOUNDARY

PRESUMED BOUNDARY OF SUB-AREAS

TP74 TRIAL HOLES POSITION AND NUMBER

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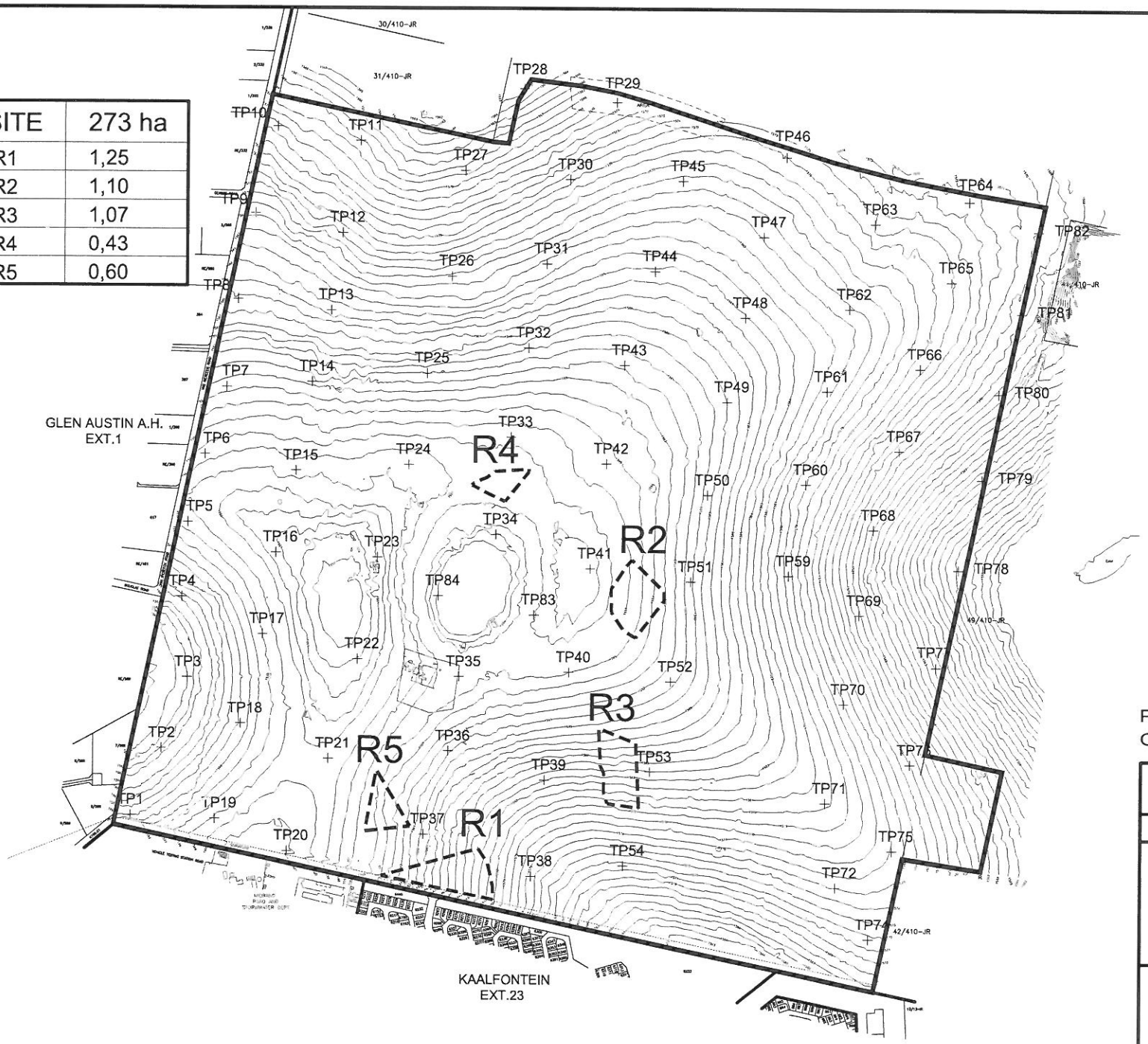
SCALE	DATE	DRAWN	REV.NO	REF.NO
1 : 3 000	JULY 2014	MAPTECH	0	IR1252/D

TOTAL SITE	273 ha
Sub-area R1	1,25
Sub-area R2	1,10
Sub-area R3	1,07
Sub-area R4	0,43
Sub-area R5	0,60



PORTION 183
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PRELIMINARY ASSESSMENT:
ROCK OUTCROP SUB-AREAS, R

FIGURE 4

DESCRIPTION:

SITE BOUNDARY

PRESUMED BOUNDARY OF SUB-AREAS

TP74 TRIAL HOLES POSITION AND NUMBER

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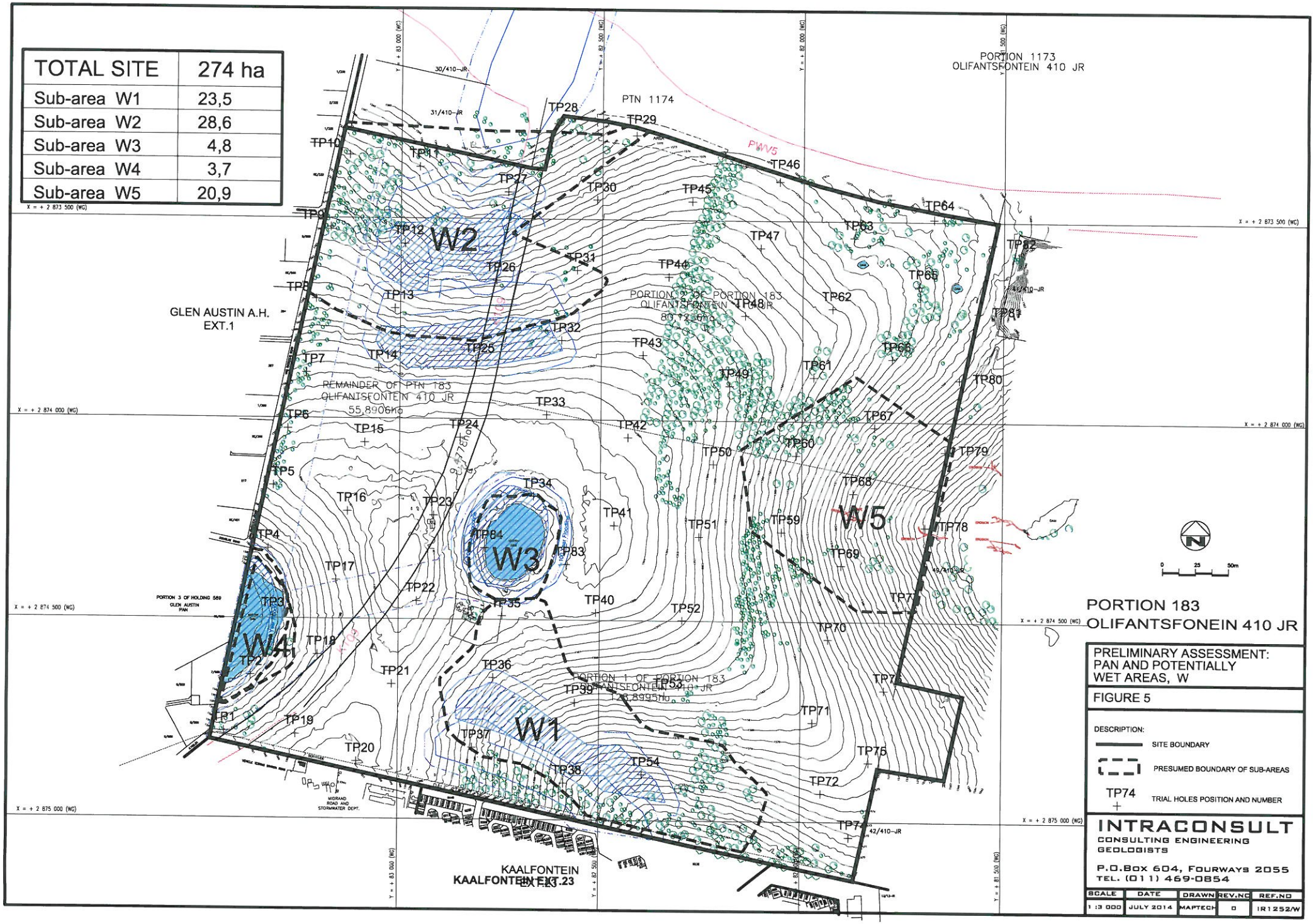
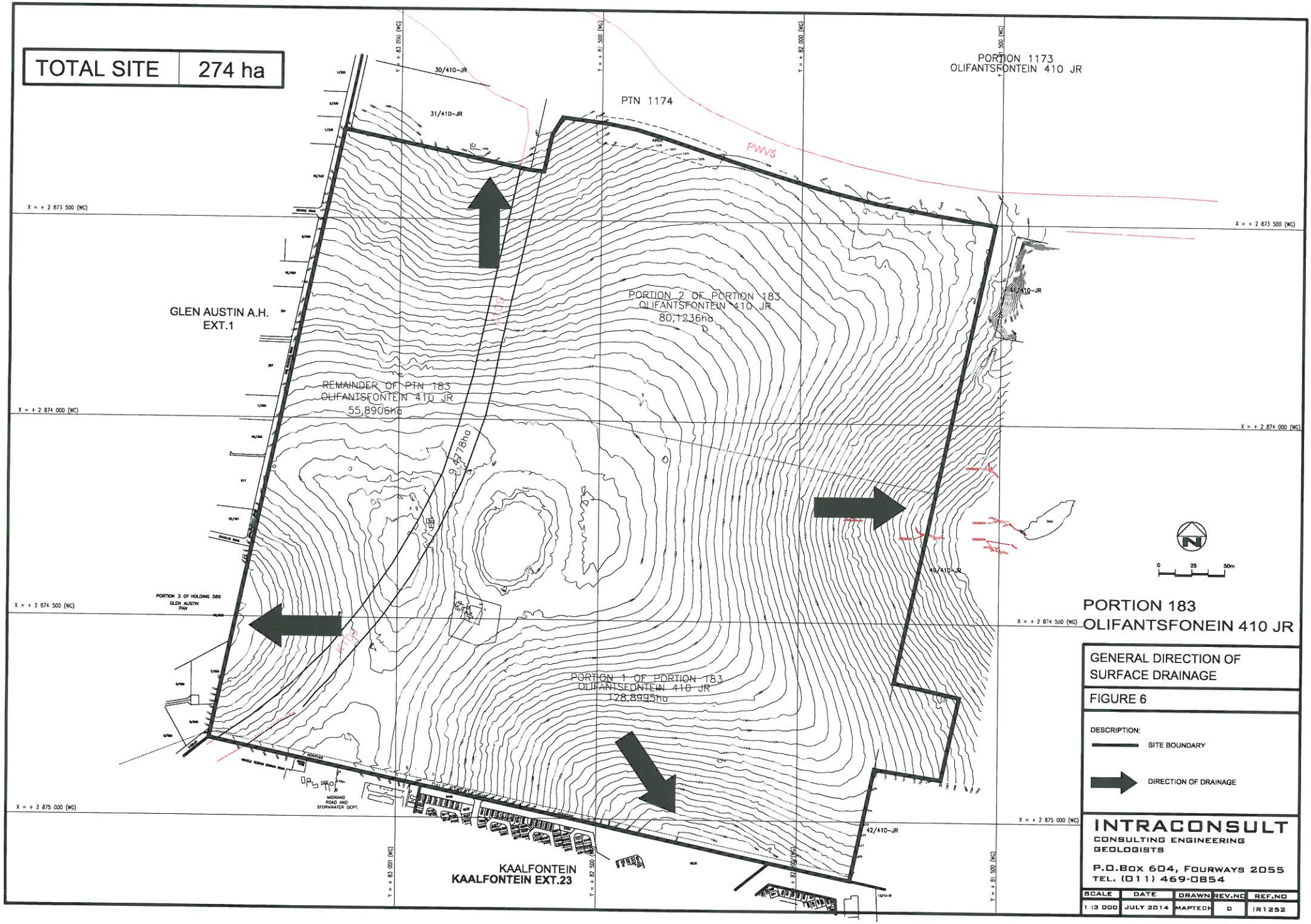
SCALE	DATE	DRAWN	REV.NO	REF.NO
1 :3 000	JULY 2014	MAPTECH	0	IR1252/R

TOTAL SITE	274 ha
Sub-area W1	23,5
Sub-area W2	28,6
Sub-area W3	4,8
Sub-area W4	3,7
Sub-area W5	20,9




TOTAL SITE 274 ha
PORTION 1173
OLIFANTSFONTEIN 410 JR
PTN 1174
30/410-JR
31/410-JR
PWV5
GLEN AUSTIN A.H.
EXT.1
PORTION 2 OF PORTION 183
OLIFANTSFONTEIN 410 JR
80,1236ha
REMAINDER OF PTN 183
OLIFANTSFONTEIN 410 JR
55,8906ha
9,4778ha
PORTION 3 OF HOLDING 589
GLEN AUSTIN
PAN
PORTION 1 OF PORTION 183
OLIFANTSFONTEIN 410 JR
128,8995ha
MIDRAND
ROAD AND
STORMWATER DEPT.
KAALFONTEIN
KAALFONTEIN EXT.23
42/410-JR
49/410-JR
X = + 2 873 500 (WC)
X = + 2 874 000 (WC)
X = + 2 874 500 (WC)
X = + 2 875 000 (WC)
Y = + 83 000 (WC)
Y = + 83 500 (WC)
Y = + 82 000 (WC)
Y = + 81 500 (WC)
0 25 50m
PORTION 183
OLIFANTSFONEIN 410 JR
GENERAL DIRECTION OF
SURFACE DRAINAGE
FIGURE 6
DESCRIPTION:
SITE BOUNDARY
DIRECTION OF DRAINAGE
INTRACONSULT
CONSULTING ENGINEERING
GEOLOGISTS
P.O.BOX 604, FOURWAYS 2055
TEL. (011) 469-0854
SCALE 1 :3 000
DATE JULY 2014
DRAWN MAPTECH
REV.NO 0
REF.NO IR1252

TABLES

PTN 183 OLIFANTSFONTEIN IR1252.....

TABLE 1 : SUMMARY OF REFUSAL & GROUNDWATER DEPTHS FOR EXCAVATION IN 0.0 TO 1.5M PROFILE

Test Pit No.	Depth (m)	Depth of Groundwater ,m (Potential Perched m)	0.0 to 1.5m PROFILE		Hard Rock Excavation from (m)	Boulder Encountered in Profile	Material at base of Test Pit
			Soft Excavation	Intermediate Excavation			
TP1	0.7	0.6m,[0.5]	0.5	>0.5			moderately ferruginised reworked residual granite
TP2	1.0	1.0	1.0	>1.0			residual granite
TP3	0.8	0.8	0.8	>0.8			residual granite
TP4	2.3	2.3	1.5				residual granite
TP5	2.7	nil	1.5				residual granite
TP6	2.8	nil	1.5				residual granite
TP7	2.0	nil	1.5				residual granite
TP8	2.1	[0.6]	1.5				leached residual granite
TP9	2.2	nil	1.5				residual granite
TP10	0.6	[0.3]	0.6	>0.6			hardpan ferricrete
TP11	2.4	[0.3]	1.5				residual granite
TP12	2.1	[0.3]	1.5				residual granite
TP13	0.3	[0.0]	0.3	>0.3			hardpan ferricrete
TP14	1.4	nil	1.4	>1.4			slightly ferruginised reworked residual granite
TP15	1.3	nil	1.3	>1.3			slightly ferruginised reworked residual granite
TP16	2.3	nil	1.5				residual granite
TP17	2.0	[1.8]	1.5				residual granite
TP18	0.6	nil	0.6	>0.6			hardpan ferricrete
TP19	1.7	nil	1.5				slightly ferruginised reworked residual granite
TP20	2.9	nil	1.5				residual granite
TP21	2.1	nil	1.5				residual granite
TP22	2.0	nil	1.5				residual granite
TP23	2.3	nil	1.5				residual granite
TP24	1.6	nil	1.5				moderately ferruginised reworked residual granite

TP25	2.0	[1.8]	1.5				slightly ferruginised reworked residual granite
TP26	0.4	[0.3]	0.3	>0.3			hardpan ferricrete
TP27	0.4	[0.3]	0.3	>0.3			hardpan ferricrete
TP28							
TP29	2.4	[1.2]	1.5				residual granite
TP30	1.4	nil	1.4	>1.4			slightly ferruginised reworked residual granite
TP31	1.2	[0.2]	1.2	>1.2			moderately ferruginised reworked residual granite
TP32	2.0	nil	1.5				residual granite
TP33	1.8	nil	1.5				residual granite
TP34	0.5	nil	0.5	>0.5			hardpan ferricrete
TP35	2.3	[1.8]	1.5				residual granite
TP36	0.6	[0.0]	0.6	>0.6			hardpan ferricrete
TP37	1.5	[0.0]	1.5				slightly ferruginised reworked residual granite
TP38	0.2	[0.0]	0.2	>0.2			hardpan ferricrete
TP39	0.6	[0.0]	0.6	>0.6			hardpan ferricrete
TP40	2.1	nil	1.5				slightly ferruginised reworked residual granite
TP41	2.0	nil	1.5				residual granite
TP42	1.2	nil	1,2	>1.2			hardpan ferricrete
TP43	1.4	nil	1.4	>1.4			moderately ferruginised reworked residual granite
TP44	1.8	nil	1.5				slightly ferruginised reworked residual granite
TP45	1.9	nil	1.5				slightly ferruginised reworked residual granite
TP46	1.6	nil	1.5				residual granite
TP47	0.9	nil	0.9	>0.9			slightly ferruginised reworked residual granite
TP48	1.2	nil	1.2	>1.2			hardpan ferricrete
TP49	1.1	nil	1.1	>1.1			slightly ferruginised reworked residual granite
TP50	1.6	nil	1.5				slightly ferruginised reworked residual granite

TP51	1.7	nil	1.5				slightly ferruginised reworked residual granite
TP52	1.6	nil	1.5				residual granite
TP53	2.0	1.3	1.5				residual granite
TP54	0.2	[0.0]	0.2	>0.2			hardpan ferricrete
TP55	-						NOT EXCAVATED
TP56	-						NOT EXCAVATED
TP57	-						NOT EXCAVATED
TP58	-						NOT EXCAVATED
TP59	1.7	1.7	1.5				slightly ferruginised reworked residual granite
TP60	0.5	[0.0]	0.5	>0.5			hardpan ferricrete
TP61	1.5	nil	1.5				slightly ferruginised reworked residual granite
TP62	0.8	nil	0.8	>0.8			hardpan ferricrete
TP63	1.2	[1.2]	1.2	>1.2			hardpan ferricrete
TP64	1.4	nil	1.4	>1.4			moderately ferruginised reworked residual granite
TP65	1.7	nil	1.5				moderately ferruginised reworked residual granite
TP66	0.9	[0.3]	0.9	>0.9			slightly ferruginised reworked residual granite
TP67	0.7	[0.0]	0.7	>0.7			slightly ferruginised reworked residual granite
TP68	1.2	[0.0]	1.2	>1.2			cemented hillwash
TP69	0.4	[0.0]	0.4	>0.4			slightly ferruginised reworked residual granite
TP70	1.0	[0.0]	1.0	>1.0			slightly ferruginised reworked residual granite
TP71	2.0	nil	1.5				residual granite
TP72	1.5	nil	1.5				residual granite
TP73	-						NOT EXCAVATED
TP74	1.5	nil	1.5				residual granite
TP75	1.5	nil	1.5				residual granite
TP76	2.0	nil	1.5				slightly ferruginised reworked residual granite
TP77	0.7	[0.7]	0.7	>0.7			hardpan ferricrete

TP78	0.6	[0.0]	0.6	>0.6			moderately ferruginised reworked residual granite
TP79	0.5	nil	0.5	>0.5			moderately ferruginised reworked residual granite
TP80	1.0	[0.2]	1.0	>1.0			moderately ferruginised reworked residual granite
TP81	0.1	[0.0]	0.1	>0.1			hardpan ferricrete
TP82	1.0	[0.3]	1.0	>1.0			hardpan ferricrete
TP83	1.2	nil	1.2	>1.2			hardpan ferricrete
TP84	1.1	[0.9]	1.1	>1.1			slightly ferruginised reworked residual granite

36 Fourth Str.,Booysens Reserve,Johannesburg 2091
PO Box 82223,Southdale 2135
Tel:+27 (0)11 835 3117
E-mail: jhb@civilab.co.za Website: www.civilab.co.za

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Civil Engineering Testing Laboratory

PTN 183 OLIFANTSFONTEIN — Job No: IR 1252

TABLE 2 : SUMMARIES OF LABORATORY TEST RESULTS (DISTURBED/UNDISTURBED SAMPLES)

TP No	Depth (m)	Soil Unit	LL	PI -425	LS (%)	GM	75 (%)	PI_W	LL_W	425 (%)	002 (%)	pH	Reading (µS/cm)	Cond. (S/m)	Resistivity Ohm.m	PRA	UCS
TP 1	0.3	Hillwash	29	12	6.5	0.8	51	9	21	71	31	5.59	90	0.009	111.11	A-6 (3)	CL
TP 18	0.3	Hillwash	31	15	7.5	0.91	51	10	21	68	25					A-6 (4)	CL
TP 19	0.8	Hillwash	36	16	8	0.89	50	11	24	67	26					A-6 (5)	CL
TP 20	0.6	Hillwash	31	14	7.5	1.11	43	9	19	61	24					A-6 (2)	SC
TP21	0.4	Hillwash	20	8	4	1.3	28	4	10	52	11					A-2-4 (0)	SC
TP 23	1	Hillwash	29	13	6.5	0.91	47	9	19	67	21					A-6 (3)	SC
TP 33	0.8	Hillwash	28	12	6.5	0.99	45	8	18	65	20	5.55	48.2	0.00482	207.47	A-6 (2)	SC
TP 39	0.3	Hillwash	34	17	8.5	1.27	39	9	18	54	22					A-6 (2)	SC
TP 42	0.6	Hillwash	21	9	4	1.25	30	5	11	53	14					A-2-4 (0)	SC
TP 45	0.6	Hillwash	23	10	4.5	1.03	36	6	15	64	19					A-4 (0)	SC
TP 46	0.5	Hillwash	22	9	4.5	0.84	46	6	16	72	22					A-4 (1)	SC
TP 47	0.3	Hillwash	18	6	2.5	1.06	33	4	12	64	15					A-2-4 (0)	SC-SM
TP 48	0.8	Hillwash	23	8	4	0.75	50	6	17	76	18					A-4 (1)	CL
TP 51	0.6	Hillwash	32	13	6.5	0.77	53	10	24	74	29					A-6 (4)	CL
TP52	0.8	Hillwash	34	13	7.5	0.73	57	10	25	74	30					A-6 (5)	CL
TP 68	0.6	Hillwash		NP		1.15	35			58	9					A-2-4 (0)	SM
TP 71	0.8	Hillwash	35	16	8	0.83	50	11	24	69	31					A-6 (5)	CL
TP 74	0.5	Hillwash	29	12	6	1.05	39	7	17	60	22					A-6 (1)	SC
TP 83	0.6	Hillwash	30	14	7.5	0.8	50	10	22	73	30					A-6 (4)	CL
TP 2	0.2	Lacustrine	37	20	8.5	1.1	43	11	21	56	27	5.74	130	0.013	76.92	A-6 (4)	SC
TP 78	0.3	Gully Wash	24	11	5.5	1.09	35	6	14	59	18	6.7	166	0.0166	60.24	A-2-6 (0)	SC

KEY

LL	: Liquid limit	GM	: Grading Modulus
PI(425)	: Plasticity Index of sample fine portion	PI_w	: Plasticity Index of whole sample (PI x passing 425)
LS	: Linear Shrinkage	NMC	: Natural moisture content
425 (%)	: Percentage passing 425	PRA	: Public Roads Administration Classification
USC	: Unified Soil Classification	Resistivity	: Ohm.m
LL_w	: Liquid Limit of whole sample (LL x passing 425)	Cond.	: Conductivity Sm
002 (%)	: Percentage passing 2µ.m	D_{85}/D_{15}	: Ratio of particle diameter corresponding to 85% and 15%
SP	: Slightly Plastic	NP	: None Plastic

36 Fourth Str.,Booysens Reserve,Johannesburg 2091
PO Box 82223,Southdale 2135
Tel:+27 (0)11 835 3117
E-mail: jhb@civilab.co.za Website: www.civilab.co.za

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TP No	Depth (m)	Soil Unit	LL	PI -425	LS (%)	GM	75 (%)	PI_W	LL_W	425 (%)	002 (%)	pH	Reading (µS/cm)	Cond. (S/m)	Resistivity Ohm.m	PRA	UCS
TP 7	1.0	Ferrug Res. Granite	33	13	6.5	1.38	36	7	17	51	8					A-6 (1)	SC
TP 15	1.0	Ferrug Res. Granite	35	14	7.5	1.23	43	8	19	55	16					A-6 (3)	SC
TP 17	1.6	Ferrug Res. Granite	35	14	7.5	1.14	43	8	20	56	16					A-6 (3)	SC
TP 22	1.0	Ferrug Res. Granite	31	13	6.5	1.77	26	5	11	37	9					A-2-6 (0)	SC
TP 24	1.0	Ferrug Res. Granite	33	14	6.5	1.4	36	7	16	49	13					A-6 (1)	SC
TP 25	1.5	Ferrug Res. Granite	30	13	6.5	1.32	38	6	15	49	13					A-6 (1)	SC
TP 31	1.0	Ferrug Res. Granite	32	14	7.5	1.54	31	6	13	42	12					A-2-6 (1)	SC
TP 40	1.8	Ferrug Res. Granite	39	17	9.5	0.9	54	11	26	66	26	5.88	22	0.0022	454.55	A-6 (6)	CL
TP 59	1.0	Ferrug Res. Granite	26	8	4	1.61	29	3	11	42	10					A-2-4 (0)	SC
TP 66	0.8	Ferrug Res. Granite	23	6	3.5	1.61	27	2	9	41	6					A-2-4 (0)	SC-SM
TP 69	0.3	Ferrug Res. Granite	28	11	6	1.81	26	4	10	37	11					A-2-6 (0)	SC
TP 70	0.5	Ferrug Res. Granite	35	11	6	1.33	38	6	18	50	13					A-6 (1)	SC
TP 76	1.5	Ferrug Res. Granite	38	17	8.5	1.16	44	10	21	56	22					A-6 (4)	SC
TP 84	0.8	Ferrug Res. Granite	24	11	5.5	1.53	29	5	11	46	12					A-2-6 (0)	SC

KEY

LL : Liquid limit
PI(425) : Plasticity Index of sample fine portion
LS : Linear Shrinkage
425 (%) : Percentage passing 425
USC : Unified Soil Classification
LL_w : Liquid Limit of whole sample (LL x passing 425)
002 (%) : Percentage passing 2µ.m
SP : Slightly Plastic

GM : Grading Modulus
PI_w : Plasticity Index of whole sample (PI x passing 425)
NMC : Natural moisture content
PRA : Public Roads Administration Classification
Resistivity : Ohm.m
Cond. : Conductivity Sm
D_{85}/D_{15} : Ratio of particle diameter corresponding to 85% and 15%
NP : None Plastic

36 Fourth Str.,Booysens Reserve,Johannesburg 2091
PO Box 82223,Southdale 2135
Tel:+27 (0)11 835 3117
E-mail: jhb@civilab.co.za Website: www.civilab.co.za

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TP No	Depth (m)	Soil Unit	LL	PI -425	LS (%)	GM	75 (%)	PI_W	LL_W	425 (%)	002 (%)	pH	Reading (µS/cm)	Cond. (S/m)	Resistivity Ohm.m	PRA	UCS
TP 14	0.6	Pebble Marker	27	11	6	2.16	18	3	8	28	8	5.45	100	0.01	100	A-2-6 (0)	GC
TP 8	1.5	Leached Res. Granite	19	7	4	1.31	35	4	10	51	12	6.41	60	0.006	166.67	A-2-4 (0)	SC-SM
TP 82	0.8	Nodular Ferricrete	33	16	8	1.43	37	8	17	51	18	6.25	87.6	0.00876	114.16	A-6 (2)	SC
TP 4	1.5	Res. Granite	29	14	6	1.71	22	5	10	35	8	6.49	30	0.003	333.33	A-2-6 (0)	SC
TP 5	1.2	Res. Granite	40	19	8.5	1.18	45	10	21	53	23					A-6 (5)	SC
TP 5	2.0	Res. Granite	35	15	8	0.91	49	10	23	65	20					A-6 (4)	SC
TP 11	2.0	Res. Granite	37	14	7.5	0.91	45	9	24	65	9					A-6 (3)	SC
TP 12	1.8	Res. Granite	39	16	8.5	1.66	28	6	14	36	10					A-2-6 (1)	SC
TP 16	2.0	Res. Granite	40	18	9.5	0.72	60	13	29	73	29					A-6 (9)	CL
TP 20	2.0	Res. Granite	39	19	9.5	0.69	61	14	28	73	33					A-6 (9)	CL
TP 29	2.0	Res. Granite	39	13	6.5	1.41	33	5	16	42	5					A-2-6 (1)	SC
TP 32	1.5	Res. Granite	40	15	8	1.49	35	6	17	43	11					A-2-6 (1)	SC
TP 41	1.6	Res. Granite	33	15	8	1.01	49	9	20	61	24					A-6 (4)	GC
TP 71	1.8	Res. Granite	39	16	8	1.04	49	10	24	62	25	5.84	105.8	0.01058	94.52	A-6 (5)	GC

KEY

LL	: Liquid limit	GM	: Grading Modulus
PI(425)	: Plasticity Index of sample fine portion	PI_w	: Plasticity Index of whole sample (PI x passing 425)
LS	: Linear Shrinkage	NMC	: Natural moisture content
425 (%)	: Percentage passing 425	PRA	: Public Roads Administration Classification
USC	: Unified Soil Classification	Resistivity	: Ohm.m
LL_w	: Liquid Limit of whole sample (LL x passing 425)	Cond.	: Conductivity Sm
002 (%)	: Percentage passing 2µ.m	D_{85}/D_{15}	: Ratio of particle diameter corresponding to 85% and 15%
SP	: Slightly Plastic	NP	: None Plastic

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PO Box 82223,Southdale 2135
Tel:+27 (0)11 835 3117
E-mail: jhb@civilab.co.za Website: www.civilab.co.za

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Civil Engineering Testing Laboratory

PTN 183 OLIFANTSFONTEIN — Job No: IR 1252

TABLE 3 : SUMMARIES OF LABORATORY TEST RESULTS (DISTURBED/UNDISTURBED SAMPLES)

TP No	Depth (m)	Soil Unit	ORC	e_o	Wi (%)	Wf (%)	P_d (kg/m^3)	Gs	P_b (kg/m^3)	S_i	S_f	CP_{200}		C_r	Comment		
TP 19	0.8	Hillwash		0.8172	15.6	18.6	1458	2.65		50.6	94.2	8.91					
TP21	0.4	Hillwash		0.7522	8.6	16	1512	2.65		30.3	93.8	10.6					
TP 23	1	Hillwash		0.9462	12.9	16.9	1362	2.65		36.1	81.2	13.9					
TP 33	0.8	Hillwash		0.8633	11.6	17.7	1422	2.65		35.6	80.4	9.13					
TP 42	0.6	Hillwash		0.6877	6.3	14.1	1570	2.65		24.3	86.4	11.5					
TP 46	0.5	Hillwash		0.8685	6.2	15.7	1418	2.65		18.9	98.6	17.7					
TP 47	0.3	Hillwash		0.6634	4.4	14.9	1593	2.65		17.6	89.4	8.44					
TP 48	0.8	Hillwash		0.7133	14.7	18.6	1547	2.65		54.6	100.9	2.89					
TP 51	0.6	Hillwash		0.8211	13.7	18.8	1455	2.65		44.2	98.3	5.08					
TP52	0.8	Hillwash		1.0552	11.5	22.5	1289	2.65		28.9	98.3	13.5					
TP 68	0.6	Hillwash		0.3377	4.6	8.7	1981	2.65		36.1	90.9	4.22					
TP 7	1.0	Ferrug Res. Granite		0.6307	10.9	19.6	1625	2.65		45.8	98.3	2.66					
TP 40	1.8	Ferrug Res. Granite		0.7606	11.6	19.6	1505	2.65		40.4	85.4	4.28					
TP 5	2.0	Res. Granite		0.668	14	18.7	1589	2.65		55.5	105.8	7.83					
TP 11	2.0	Res. Granite		0.6104	12.8	17.9	1646	2.65		55.6	86.7	2.26					
TP 16	2.0	Res. Granite		0.9123	18.8	21.3	1386	2.65		54.6	87.9	7.85					
TP 20	2.0	Res. Granite		0.8046	14.1	20.2	1468	2.65		46.4	95.5	8.97					
TP 29	2.0	Res. Granite		0.7003	13.3	19.6	1559	2.65		50.3	82.8	1.57					
TP 71	1.8	Res. Granite		0.6438	13.6	17.2	1612	2.65		56.0	99.6	6.46					

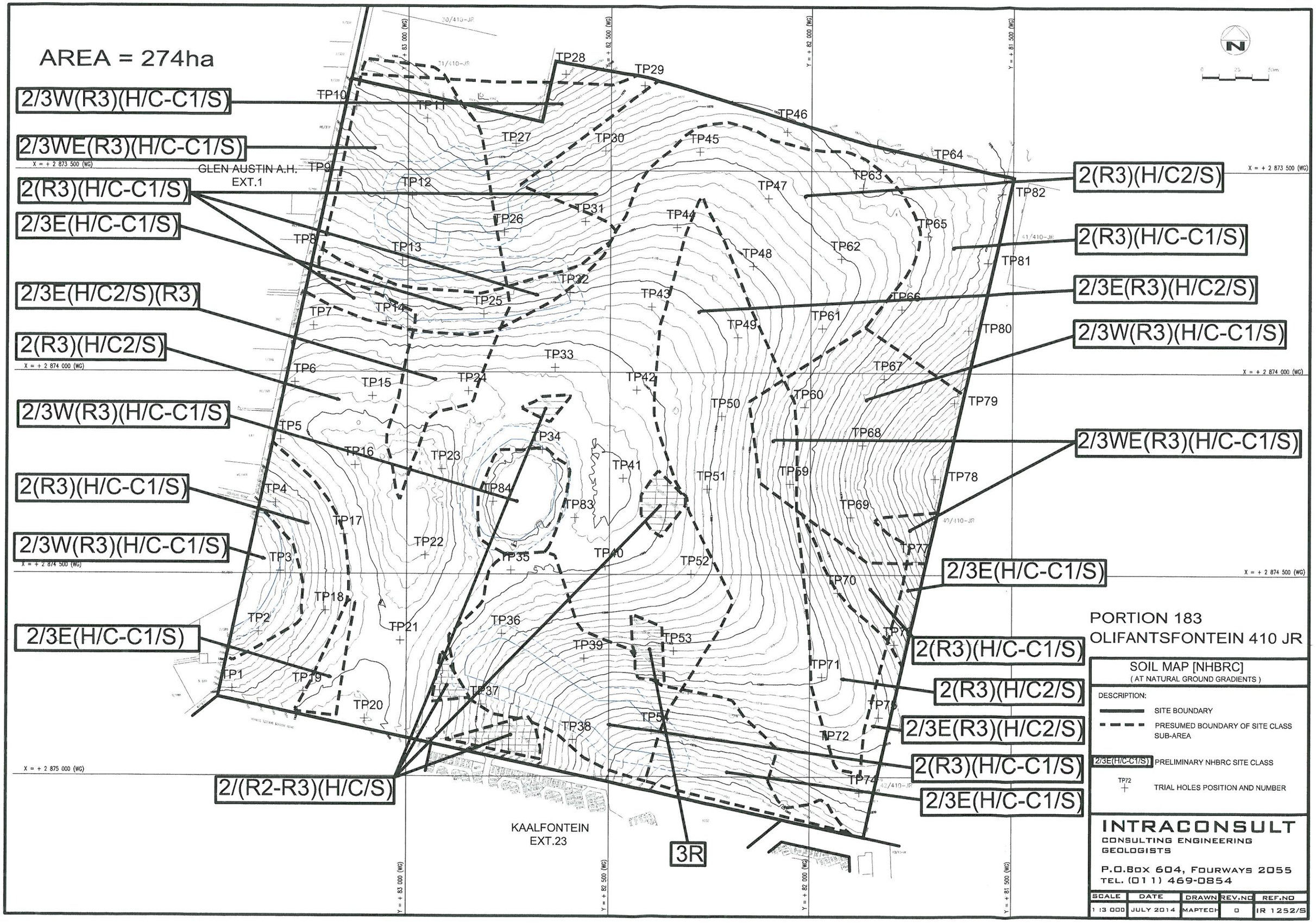
KEY

ORC : Estimated Overconsolidation Pressure (kPa)
e0 : Initial Void Ratio
Wi (%) : Initial Moisture Content
Wf (%) : Final Moisture Content
Si : Initial Degree of Saturation
Sf : Final Degree of Saturation

Pd (kg/m3) : Initial Dry Density
Pb (kg/m3) : Bulk Density
Gs : Specific Gravity (relative density)
P'c :Estimated Preconsolidation Pressure
CP200 : % Collapse Potential @ 200kPa Applied Load
Cr : Recompression Index

DRAWINGS

SOILS MAP IR1252/S


AREA = 274ha
2/3W(R3)(H/C-C1/S)
2/3WE(R3)(H/C-C1/S)
2(R3)(H/C-C1/S)
2/3E(H/C-C1/S)
2/3E(H/C2/S)(R3)
2(R3)(H/C2/S)
2/3W(R3)(H/C-C1/S)
2(R3)(H/C-C1/S)
2/3W(R3)(H/C-C1/S)
2/3E(H/C-C1/S)
2/(R2-R3)(H/C/S)
2(R3)(H/C2/S)
2(R3)(H/C-C1/S)
2/3E(R3)(H/C2/S)
2/3W(R3)(H/C-C1/S)
2/3WE(R3)(H/C-C1/S)
2/3E(H/C-C1/S)
2(R3)(H/C-C1/S)
2(R3)(H/C2/S)
2/3E(R3)(H/C2/S)
2(R3)(H/C-C1/S)
2/3E(H/C-C1/S)
3R
GLEN AUSTIN A.H. EXT.1
KAALFONTEIN EXT.23
X = + 2 873 500 (WG)
X = + 2 874 000 (WG)
X = + 2 874 500 (WG)
X = + 2 875 000 (WG)
Y = + 83 000 (WG)
Y = + 82 500 (WG)
Y = + 82 000 (WG)
Y = + 81 500 (WG)
PORTION 183
OLIFANTSFONTEIN 410 JR
SOIL MAP [NHBRC]
(AT NATURAL GROUND GRADIENTS)
DESCRIPTION:
SITE BOUNDARY
PRESUMED BOUNDARY OF SITE CLASS SUB-AREA
2/3E(H/C-C1/S) PRELIMINARY NHBRC SITE CLASS
TP72 TRIAL HOLES POSITION AND NUMBER
INTRACONSULT
CONSULTING ENGINEERING GEOLOGISTS
P.O.Box 604, Fourways 2055
TEL. (011) 469-0854
SCALE 1 :3 000
DATE JULY 2014
DRAWN MAPTECH
REV.NO 0
REF.NO IR 1252/S

APPENDICES

APPENDIX 1
TRIAL HOLE PROFILES

INTRACONSULT
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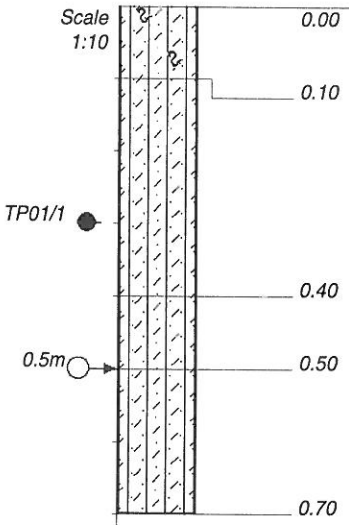
OLIFANTSFONTEIN PTN 183

HOLE No: TP01
Sheet 1 of 1

JOB NUMBER: IR1252



Very moist, dark brown, soft, intact, sandy clayey SILT with roots; **TOPSOIL**

Very moist, yellow-brown, firm, intact, sandy clayey SILT; **HILLWASH.**

Very moist, grey, soft, intact, sandy clayey SILT; **LEACHED HILLWASH.**

Very moist, reddish orange mottled grey, stiff, weakly cemented sandy clayey SILT; **MODERATELY FERRUGINISED REWORKED RESIDUAL GRANITE.**

NOTES

1) Refusal on very dense as above.

2) Slight seep below 0.5m.

3) Water standing at 0.6m.

4) Disturbed sample TP01/1 taken at 0.3m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874775
Y-COORD: 29 Y0083433

HOLE No: TP01

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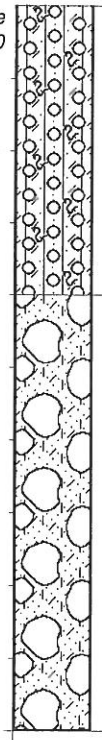
OLIFANTSFONTEIN PTN 183

HOLE No: TP02
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10

TP02/1



0.00

Slightly moist, grey mottled yellow-brown, stiff, shattered, sandy clayey SILT with scattered, medium and fine, subrounded quartz gravel and abundant roots to 0.1m; **LACUSTRINE**.

0.40

Moist, orange blotched black and grey, dense with medium dense and dense zones, relict jointed in places, clayey silty SAND with scattered, highly weathered, granite, subrounded cobble and boulders; **RESIDUAL GRANITE**.

1.00

NOTES

1) Refusal in the above.

2) Slight seep at base of pit.

3) Disturbed sample TP02/1 taken at 0.2m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874639
Y-COORD: 29 Y0083368

HOLE No: TP02

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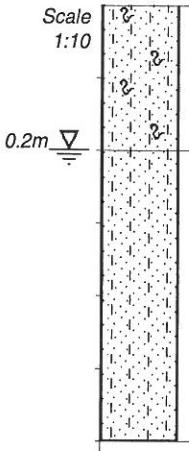
OLIFANTSFONTEIN PTN 183

HOLE No: TP03
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Very moist, dark brown, loose, intact, silty SAND with roots; **LACUSTRINE**.
0.20	Very moist to wet, orange blotched grey, dense, relict jointed, silty SAND; **RESIDUAL GRANITE**.
0.60	

NOTES

1) Refusal on very dense as above.

2) Slight seep at base of pit.

3) Perched water table conditions evident from 0.2m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874490
Y-COORD: 29 Y0083316

HOLE No: TP03

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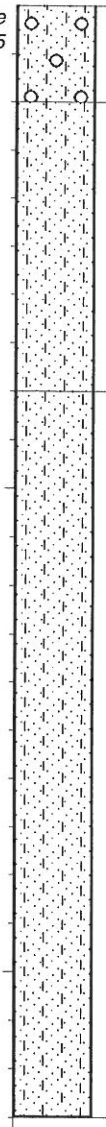
OLIFANTSFONTEIN PTN 183

HOLE No: TP04
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:15



0.00	Slightly moist, yellowish orange, medium dense, intact, silty SAND with scattered, medium and fine, subangular quartz gravel; **PEBBLE MARKER**.
0.20	Moist, reddish orange mottled black and buff, dense, relict jointed and slightly ferruginised, silty SAND; **RESIDUAL GRANITE**.
0.80	Moist, orange blotched grey and black, dense to very dense, jointed, silty, coarse medium and fine SAND; **RESIDUAL GRANITE**.
2.30	

NOTES

1) Refusal on very dense as above.

2) Slight seep at base of pit.

3) Disturbed sample TP4/1 taken at 1.5m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874323
Y-COORD: 29 Y0083327

HOLE No: TP04

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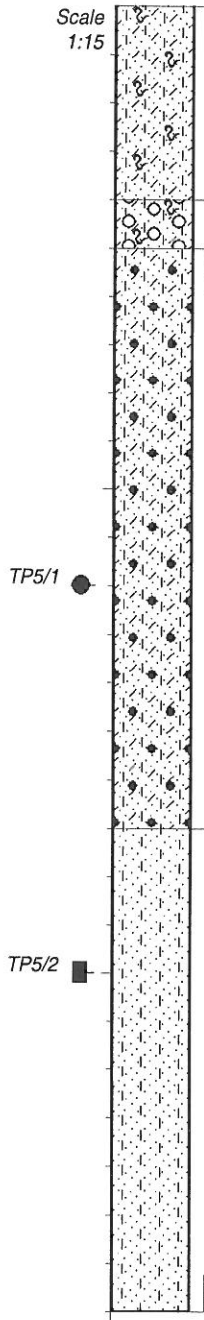
OLIFANTSFONTEIN PTN 183

HOLE No: TP05
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:15



0.00	Dry, orange-brown, dense, fissured, clayey silty SAND with roots; **HILLWASH**.
0.40	Closely packed, fine and medium, angular and subangular, quartz gravel clast supported with a matrix as above, dense, intact; **PEBBLE MARKER**.
0.50	Moist, reddish brown, medium dense, fissured, clayey silty SAND with scattered, weakly cemented, ferruginous concretions; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.70	Moist, orange blotched reddish brown and buff, medium dense, relict jointed, silty, coarse medium and fine SAND; **RESIDUAL GRANITE**.
2.70	

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Disturbed sample TP5/1 taken at 1.2m.

4) Undisturbed sample TP5/2 taken at 2.0m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874167
Y-COORD: 29 Y0083315

HOLE No: TP05

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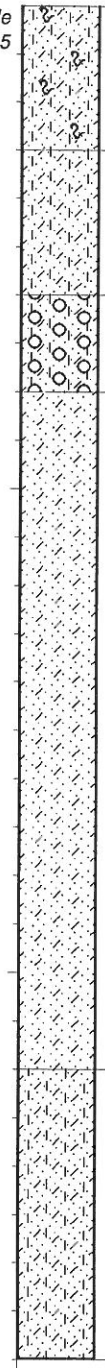
OLIFANTSFONTEIN PTN 183

HOLE No: TP06
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:15



0.00	Dry, dark orange-brown, dense, fissured, clayey silty SAND with roots to 0.1m; **HILLWASH**.
0.30	Moist, reddish orange, medium dense, clayey silty SAND with scattered tree roots; **HILLWASH**.
0.60	Closely packed, medium and fine, angular quartz gravel, clast supported with a matrix as above, dense, friable; **PEBBLE MARKER**.
0.80	Moist, reddish brown blotched dark reddish brown, dense with medium dense runnels, fissured and weakly cemented in places, clayey silty coarse medium and fine SAND; **SLIGHTLY FERRUGINISED RESIDUAL GRANITE**.
2.20	Moist, reddish brown blotched buff, dense, relict jointed to intact, clayey silty SAND; **RESIDUAL GRANITE**.
2.80	

NOTES

1) No refusal continues in the above.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874027
Y-COORD: 29 Y0083281

HOLE No: TP06

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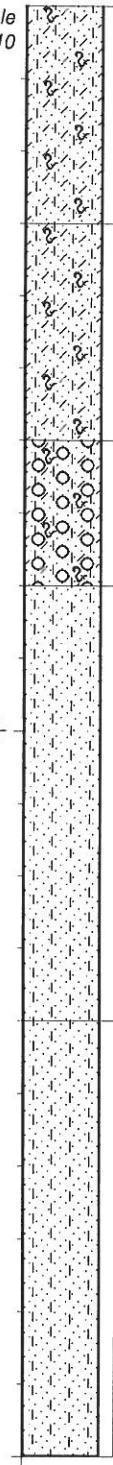
OLIFANTSFONTEIN PTN 183

HOLE No: TP07
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, orange-brown, dense, fissured, clayey silty SAND with roots; **HILLWASH**.
0.30	Moist, reddish orange, medium dense, intact, clayey silty SAND with tree roots; **HILLWASH**.
0.60	Closely packed, medium and fine, angular quartz gravel, clast supported with a matrix as above, dense, friable; **PEBBLE MARKER**.
0.80	Moist, reddish orange mottled black and buff, dense, relict jointed and slightly ferruginised, silty SAND; **RESIDUAL GRANITE**.
1.40	Slightly moist, buff blotched reddish brown, dense, relict jointed, silty, coarse medium and fine SAND; **RESIDUAL GRANITE**.
2.00	

NOTES

1) Refusal on very dense as above.

2) No water evident.

3) Undisturbed sample TP7/1 taken at 1.0m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

ELEVATION:
X-COORD: X2873887
Y-COORD: 29 Y0083239

HOLE No: TP07

TYPE SET BY :
SETUP FILE : Y.SET

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

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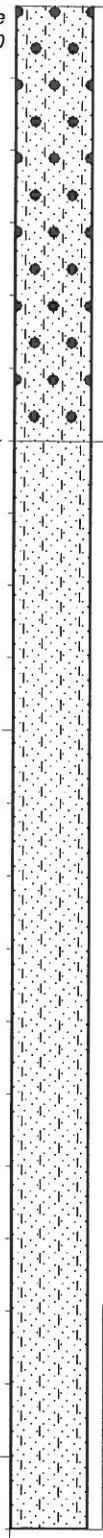
OLIFANTSFONTEIN PTN 183

HOLE No: TP08
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00

Dry, grey mottled black, orange and buff, very dense, strongly cemented hardpan boulder ferricrete with runnels of loose, silty SAND; **FERRUGINISED HILLWASH.**

0.60

Moist, grey mottled and botched orange and black, dense, weakly cemented, silty, coarse medium and fine SAND; **LEACHED RESIDUAL GRANITE.**

2.10

NOTES

1) Refusal on very dense as above.

2) No water encountered but perched water table conditions evident below 0.6m.

3) Disturbed sample TP8/1 taken at 1.5m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873705
Y-COORD: 29 Y0083216

HOLE No: TP08

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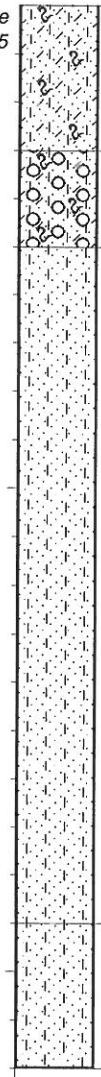
OLIFANTSFONTEIN PTN 183

HOLE No: TP09
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:15



0.00	Dry, grey, dense, fissured, clayey silty SAND with roots to 0.1m; **HILLWASH**.
0.30	Closely packed, medium and fine, angular quartz gravel, clast supported with a matrix as above, dense, friable; **PEBBLE MARKER**.
0.50	Moist, orange blotched black and grey, dense, relict jointed, silty, coarse medium and fine SAND; **SLIGHTLY FERRUGINISED RESIDUAL GRANITE**.
1.90	Moist, orange speckled black, dense, relict jointed, silty, coarse medium and fine SAND; **RESIDUAL GRANITE**.
2.20	

NOTES

1) No refusal continues in the above.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873529
Y-COORD: 29 Y0083187

HOLE No: TP09

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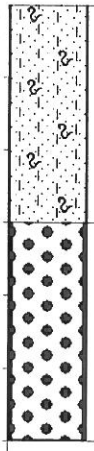
OLIFANTSFONTEIN PTN 183

HOLE No: TP10
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, grey, medium dense to dense, intact, silty SAND with roots; **HILLWASH**.
0.30	Dry, yellow mottled black and grey, very dense, strongly cemented **HARDPAN FERRICRETE**.
0.60	

NOTES

1) Refusal in the above.

2) No water encountered but perched water table conditions evident from surface.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873349
Y-COORD: 29 Y0083139

HOLE No: TP10

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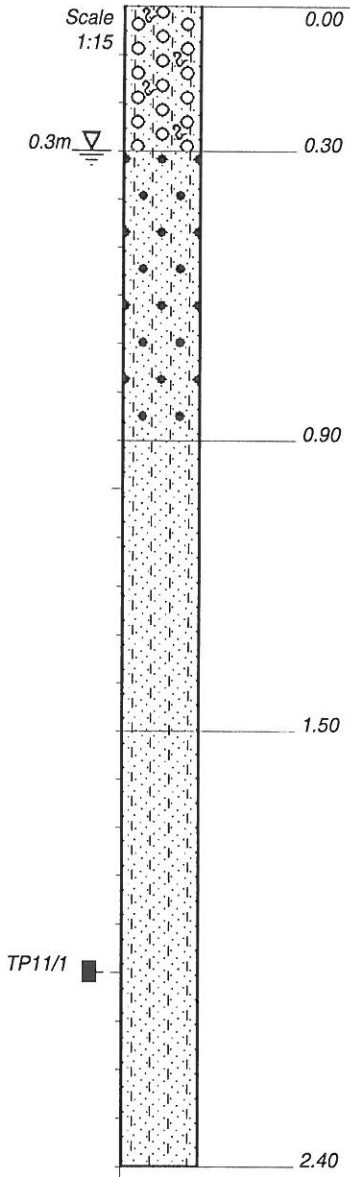
OLIFANTSFONTEIN PTN 183

HOLE No: TP11
Sheet 1 of 1

JOB NUMBER: IR1252



Dry, grey, dense, intact, silty SAND with numerous medium and fine, subangular and angular, quartz gravel and roots; **HILLWASH**.

Moist, yellow-brown mottled orange and grey, medium dense, micro voided, silty, coarse medium and fine SAND with scattered ferruginous concretions; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.

Moist, orange blotched black and grey, dense, relict jointed, silty, coarse medium and fine SAND; **SLIGHTLY FERRUGINISED RESIDUAL GRANITE**.

Moist, orange blotched grey, medium dense to dense, relict jointed, silty, coarse medium and fine SAND; **RESIDUAL GRANITE**.

NOTES

1) No refusal continues in the above.

2) No water encountered but perched water table conditions evident below 0.3m.

3) Undisturbed sample TP11/1 taken at 2.0m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873374
Y-COORD: 29 Y0082969

HOLE No: TP11

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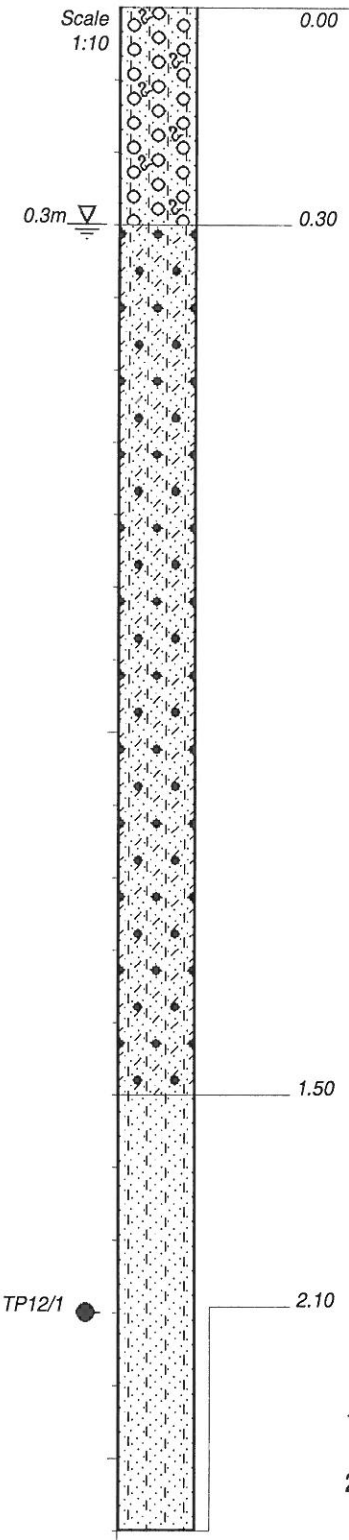
OLIFANTSFONTEIN PTN 183

HOLE No: TP12
Sheet 1 of 1

JOB NUMBER: IR1252



Dry, grey, dense, intact, silty SAND with numerous medium and fine, subangular and angular, quart gravel and roots; **HILLWASH**.

Moist, grey mottled orange and black, dense to medium dense in places, weakly cemented, clayey silty SAND and ferruginous concretions; **MODERATELY FERRUGINISED REWORKED RESIDUAL GRANITE**.

Very moist, orange blotched grey and black, medium dense, relict jointed, silty SAND; **RESIDUAL GRANITE**.

NOTES

1) No refusal continues in the above.

2) No water encountered but perched water table conditions evident below 0.3m.

3) Disturbed sample TP12/1 taken at 1.8m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873567
Y-COORD: 29 Y0083002

HOLE No: TP12

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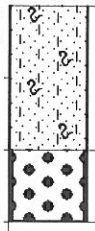
OLIFANTSFONTEIN PTN 183

HOLE No: TP13
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, grey, medium dense to dense, intact, silty SAND with roots; **HILLWASH**.
0.20	Dry, orange mottled red and black, very dense **HARDPAN FERRICRETE**.
0.30	

NOTES

1) Refusal in the above.

2) No water encountered but perched water table conditions evident from surface.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873730
Y-COORD: 29 Y0083024

HOLE No: TP13

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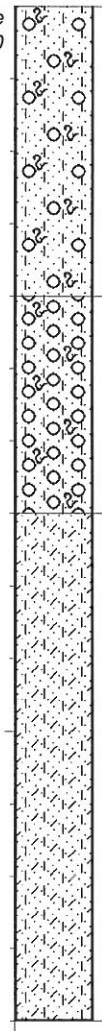
OLIFANTSFONTEIN PTN 183

HOLE No: TP14
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



TP14/1

0.00	Slightly moist, brown, dense, intact, silty SAND with scattered, subangular, medium and fine quartz gravel, roots to 0.1m; **HILLWASH**.
0.40	Closely packed, medium and fine, subangular and angular quartz and felspar gravel, clast supported in a matrix as above, contains fine roots, dense, friable; **PEBBLE MARKER**.
0.70	Moist, reddish brown mottled orange and black, dense, weakly cemented, clayey silty SAND; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.40	

NOTES

1) Refusal in the above.

2) No water evident.

3) Disturbed sample TP14/1 taken at 0.6m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873877
Y-COORD: 29 Y0083061

HOLE No: TP14

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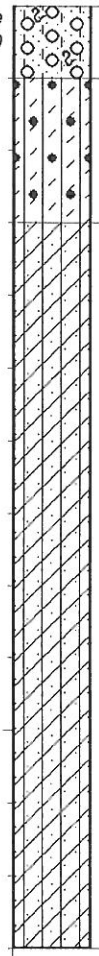
OLIFANTSFONTEIN PTN 183

HOLE No: TP15
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Slightly moist, brown, dense, intact, silty SAND with abundant medium and fine, angular and subangular, quartz gravel and roots; **PEBBLE MARKER**.
0.10	Moist, orange-brown mottled black, yellow and reddish orange, dense, friable, angular, medium and fine ferruginous concretions weakly cemented with clayey SILT matrix; **FERRUGINISED REWORKED RESIDUAL GRANITE**.
0.30	Moist, reddish brown mottled orange and black, dense, shattered, weakly cemented, sandy clay SILT; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.30	

NOTES

1) Refusal on very dense as above.

2) No water evident.

3) Disturbed sample TP15/1 taken at 1.0m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874061
Y-COORD: 29 Y0083090

HOLE No: TP15

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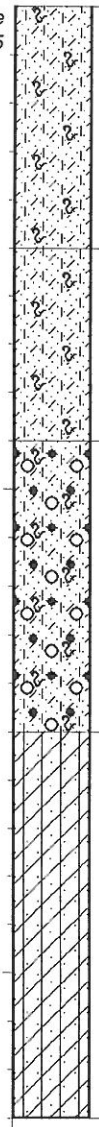
OLIFANTSFONTEIN PTN 183

HOLE No: TP16
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:15



0.00	Dry, reddish brown, dense, fissured, clayey silty SAND with roots to 0.1m; **HILLWASH**.
0.50	Moist and medium dense as above.
0.90	Closely packed, medium and fine with scattered coarse angular and subangular quartz gravel and abundant ferruginous concretions, clast supported in a matrix as above, medium dense, friable; **PEBBLE MARKER**.
1.50	Very moist, reddish brown blotched olive and buff, firm, intact, micaceous sandy clay SILT; **RESIDUAL GRANITE**.
2.30	

TP16/1

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Undisturbed sample TP16/1 taken at 2.0m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874229
Y-COORD: 29 Y0083130

HOLE No: TP16

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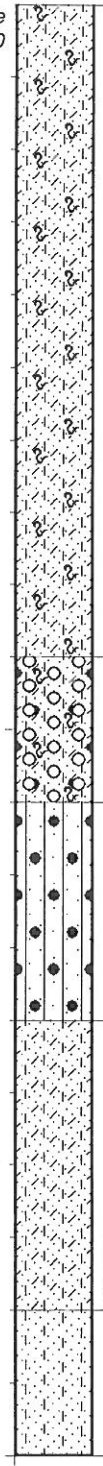
OLIFANTSFONTEIN PTN 183

HOLE No: TP17
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



Depth	Description
0.00	Very moist to moist, reddish brown, loose to medium dense, intact, clayey silty SAND with roots to 0.1m; **HILLWASH**.
0.90	Closely packed, coarse, medium and fine, subangular and angular, quartz gravel and ferruginous concretionsclast supported in a matrix as above, medium dense, friable; **PEBBLE MARKER**.
1.10	Very moist, reddish brown, medium dense, intact, sandy SILT with numerous ferricrete nodules; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.40	Very moist, reddish brown blotched grey mottled black, loose, intact, micaceous clayey silty SAND; **RESIDUAL GRANITE**.
1.80	Moist, dark olive blotched black, dense, relict jointed, micaceous silty SAND; **RESIDUAL GRANITE**.
2.00	

NOTES

1) Refusal in the above.

2) Slight seep at 1.8m and water standing at base of pit.

3) Disturbed sample TP17/1 taken at 1.6m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874395
Y-COORD: 29 Y0083159

HOLE No: TP17

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OLIFANTSFONTEIN PTN 183

HOLE No: TP18
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10

TP18/1

0.00

Very moist to wet, yellow-brown, loose, intact, clayey silty SAND with roots to 0.1m; **HILLWASH**.

0.60

NOTES

1) Refusal on very dense strongly cemented hardpan ferricrete.

2) No water encountered but perched water table conditions evident from surface.

3) Disturbed sample TP18/1 taken at 0.3m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874584
Y-COORD: 29 Y0083202

HOLE No: TP18

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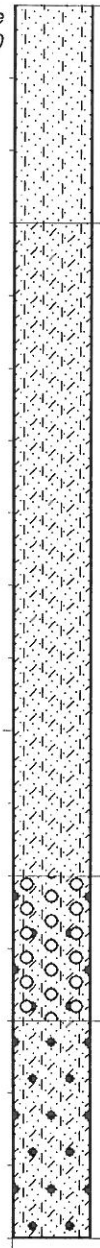
OLIFANTSFONTEIN PTN 183

HOLE No: TP19
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



TP19/1

0.00	Dry, reddish brown, dense, intact, silty SAND; **HILLWASH.**
0.30	Moist, reddish brown, medium dense, intact, clayey silty SAND; **HILLWASH.**
1.20	Closely packed, coarse, medium and fine, subangular and angular, quartz gravel and ferruginous concretions clast supported in a matrix as above, medium dense, friable; **PEBBLE MARKER.**
1.40	Moist, reddish brown mottled dark reddish brown, medium dense, friable, clayey silty SAND and loosely packed, medium ferruginous concretions; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE.**
1.70	

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Undisturbed sample TP19/1 taken at 0.8m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

ELEVATION:
X-COORD: X2874782
Y-COORD: 29 Y0083254

HOLE No: TP19

TYPE SET BY :
SETUP FILE : Y.SET

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

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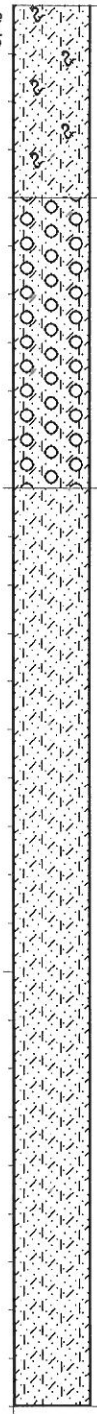
OLIFANTSFONTEIN PTN 183

HOLE No: TP20
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:15



0.00 Dry, reddish brown, dense, fissured, clayey silty SAND with roots to 0.1m; **HILLWASH**.

0.40 Moist, reddish brown, medium dense, intact, clayey silty SAND with abundant medium and fine, angular and subangular, quartz gravel; **PEBBLE MARKER**.

1.00 Moist, reddish brown, dense, intact, clayey silty SAND; **RESIDUAL GRANITE**.

2.90

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Disturbed sample TP20/1 taken at 0.6m.

4) Undisturbed sample TP20/2 taken at 2.0m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874847
Y-COORD: 29 Y0083106

HOLE No: TP20

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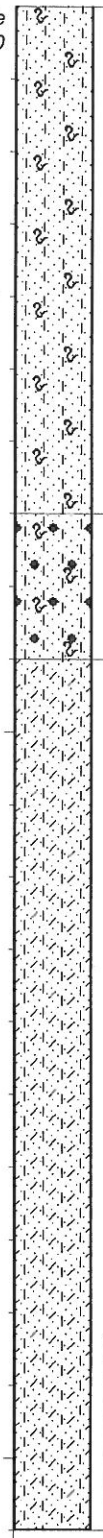
OLIFANTSFONTEIN PTN 183

HOLE No: TP21
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Slightly moist, brown, dense, micro-voided, silty SAND with roots; **HILLWASH**.
0.70	Closely packed, medium and fine, subangular and angular, ferruginous concretionsclast supported with a matrix as above, dense, friable; **FERRUGINISED PEBBLE MARKER**.
0.90	Moist, reddish brown mottled yellow, black and grey, dense, weakly cemented, clayey silty SAND; **SLIGHTLY FERRUGINISED RESIDUAL GRANITE**.
2.10	

NOTES

1) Refusal in the above.

2) No water evident.

3) Undisturbed sample TP21/1 taken at 0.4m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874660
Y-COORD: 29 Y0083018

HOLE No: TP21

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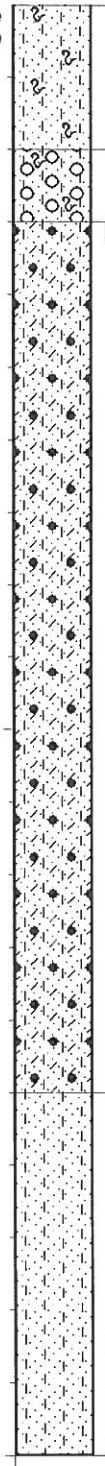
OLIFANTSFONTEIN PTN 183

HOLE No: TP22
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, brown, dense, fissured, silty SAND with roots; **HILLWASH**.
0.20	Closely packed, medium and fine, subangular and angular, quartz gravel, clast supported with a matrix as above, dense, intact; **PEBBLE MARKER**.
0.30	Slightly moist, yellow mottled black and reddish brown, dense to very dense, moderately well cemented, clayey silty SAND and ferruginous concretions; **FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.50	Moist, orange blotched reddish brown, dense, relict jointed, silty coarse medium and fine SAND; **RESIDUAL GRANITE**.
2.00	

NOTES

1) Refusal on very dense as above.

2) No water evident.

3) Disturbed sample TP22/1 taken at 1.0m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874442
Y-COORD: 29 Y0082960

HOLE No: TP22

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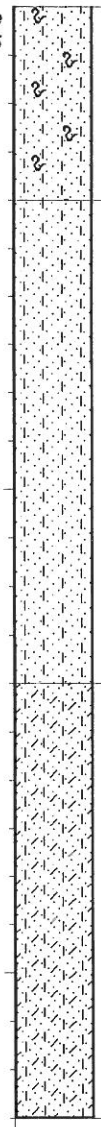
OLIFANTSFONTEIN PTN 183

HOLE No: TP23
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:15



TP23/1

0.00	Dry, reddish brown, dense, intact, silty SAND with roots to 0.1m; **HILLWASH**.
0.40	Very moist, reddish brown, medium dense, intact, silty SAND; **HILLWASH**.
1.40	Very moist, reddish brown, medium dense, intact, clayey silty SAND; **RESIDUAL GRANITE**.
2.30	

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Undisturbed sample TP23/1 taken at 1.0m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874235
Y-COORD: 29 Y0082917

HOLE No: TP23

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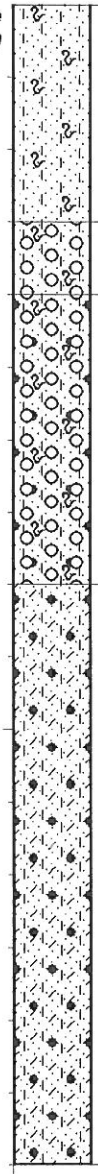
OLIFANTSFONTEIN PTN 183

HOLE No: TP24
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00		Dry, orange-brown, dense, intact, silty SAND with roots to 0.1m; **HILLWASH**.
0.30		As above with abundant medium and fine, subangular, quartz gravel, dense, intact; **PEBBLE MARKER**.
0.40		Slightly moist, orange-brown mottled black and yellow, dense, friable, closely packed, medium ferruginous concretions, clast supported with a dry, orange-brown, silty SAND matrix as above; **MODERATELY FERRUGINISED REWORKED RESIDUAL GRANITE**.
0.80	TP24/1	Moist, reddish brown mottled yellow and black, dense, intact, clayey silty SAND and ferruginous concretions; **MODERATELY FERRUGINISED REWORKED RESIDUAL GRANITE.**
1.60		

NOTES

1) Refusal in the above.

2) No water evident.

3) Disturbed sample TP24/1 taken at 1.0m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874046
Y-COORD: 29 Y0082858

HOLE No: TP24

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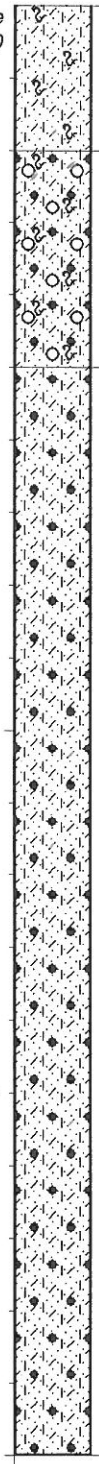
OLIFANTSFONTEIN PTN 183

HOLE No: TP25
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, brown, dense, fissured, clayey silty SAND with roots; **HILLWASH.**
0.20	Moist, orange-brown mottled black, medium dense, friable, loosely packed, medium and fine subangular and angular, ferruginous concretions and scattered quartz gravelsupported in a matrix as above; **SLIGHTLY FERRUGINISED PEBBLE MARKER.**
0.50	Very moist, reddish brown mottled grey, black and buff, dense with wet, loose, friable runnels, clayey silty SAND and weakly cemented ferruginous concretions; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE.**
2.00	

NOTES

1) No refusal continues in the above.

2) Slight seep below 1.8m with water standing at 2.0m.

3) Disturbed sample TP25/1 taken at 1.5m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873857
Y-COORD: 29 Y0082822

HOLE No: TP25

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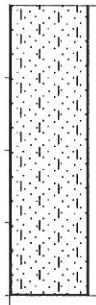
OLIFANTSFONTEIN PTN 183

HOLE No: TP26
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00 Dry, grey, dense, intact, silty SAND with scattered roots to 0.1m; **HILLWASH.**

0.40

NOTES

1) Refusal on very dense strongly cemented hardpan ferricrete.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873654
Y-COORD: 29 Y0082775

HOLE No: TP26

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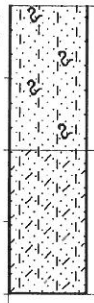
OLIFANTSFONTEIN PTN 183

HOLE No: TP27
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, grey, medium dense, intact, silty SAND with roots; **HILLWASH**.
0.20	Moist, yellow-brown, medium dense, intact, clayey silty SAND; **HILLWASH**.
0.40	

NOTES

1) Refusal on very dense strongly cemented hardpan ferricrete.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873436
Y-COORD: 29 Y0082751

HOLE No: TP27

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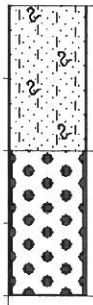
OLIFANTSFONTEIN PTN 183

HOLE No: TP28
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, grey, dense, intact, silty SAND with roots; **HILLWASH**.
0.20	Dry, yellow blotched grey mottled black, very dense, strongly cemented **HARDPAN FERRICRETE**.
0.40	

NOTES

1) Refusal in the above.

2) No water encountered but perched water table conditions evident from surface.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873264
Y-COORD: 29 Y0082631

HOLE No: TP28

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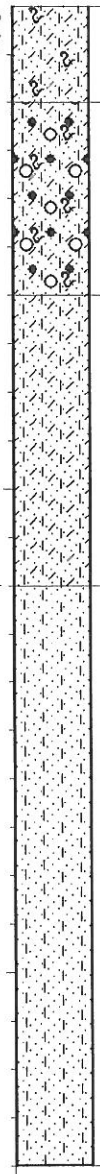
OLIFANTSFONTEIN PTN 183

HOLE No: TP29
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:15



0.00	Dry, grey, dense, intact, fissured, clayey silty SAND with roots; **HILLWASH**.
0.20	Dry, yellow-brown mottled orange and black, dense, moderately cemented ferruginous concretions clast supported with a matrix as above and scattered, medium and fine, angular quartz gravel; **PEBBLE MARKER**.
0.60	Moist, grey blotched orange and black, dense, intact, slightly clayey silty SAND; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.2m ▽ 1.20	Moist, orange blotched grey, dense, relict jointed, silty, coarse medium and fine SAND; **RESIDUAL GRANITE**.
TP29	
2.40	

NOTES

1) No refusal continues in the above.

2) No water encountered but perched water table conditions evident to 1.2m.

3) Undisturbed sample TP29 taken at 2.0m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873292
Y-COORD: 29 Y0082446

HOLE No: TP29

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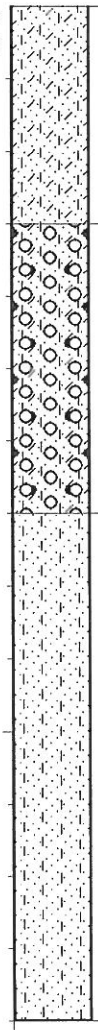
OLIFANTSFONTEIN PTN 183

HOLE No: TP30
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, grey-brown, dense, voided (termites), slightly clayey silty SAND; **HILLWASH**.
0.30	Closely packed, medium and fine, subangular and angular, ferruginous concretionsand quartz gravel, clast supported with a matrix as above, dense, friable; **FERRUGINISED PEBBLE MARKER**.
0.70	Moist, yellow-brown mottled orange, grey and black, dense, relict jointed, silty SAND; **SLIGHTLY FERRUGINISED RESIDUAL GRANITE**.
1.40	

NOTES

1) Refusal in the above.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873450
Y-COORD: 29 Y0082526

HOLE No: TP30

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OLIFANTSFONTEIN PTN 183

HOLE No: TP31
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10

0.00 – 0.20	Dry, grey, dense, intact, fissured, clayey silty SAND with roots; **HILLWASH**.
0.20 – 0.50	Closely packed, medium and fine with scattered coarse, angular and subangular, quartz gravel and abundant ferruginous concretions, clast supported in a matrix as above, medium dense, friable; **PEBBLE MARKER**.
0.50 – 1.20	Moist, reddish brown mottled grey, orange and black, dense to very dense, moderately cemented clayey silty SAND; **FERRUGINISED REWORKED RESIDUAL GRANITE**.

NOTES

1) Refusal on very dense as above.

2) No water encountered but perched water table conditions evident below 0.2m.

3) Disturbed sample TP31/1 taken at 1.0m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873627
Y-COORD: 29 Y0082574

HOLE No: TP31

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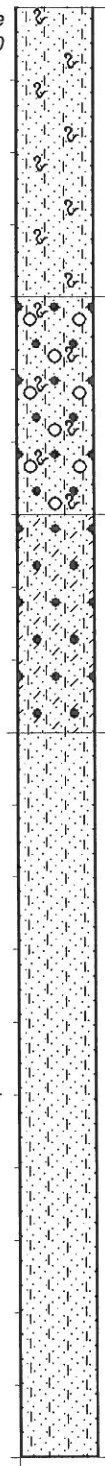
OLIFANTSFONTEIN PTN 183

HOLE No: TP32
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00 – 0.40	Dry, brown, dense, intact, silty SAND with roots; **HILLWASH**.
0.40 – 0.70	Closely packed, medium and fine with scattered, coarse, angular and subangular quartz gravel and abundant ferruginous concretions, clast supported in a matrix as above, medium dense, friable; **PEBBLE MARKER**.
0.70 – 1.00	Moist, orange-brown mottled black and yellow, dense with medium dense pockets, intact, clayey silty SAND and ferruginous concretions; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.00 – 2.00	Moist, orange, dense, relict jointed, silty, coarse medium and fine SAND; **RESIDUAL GRANITE**.

NOTES

1) Refusal on very dense as above.

2) No water evident.

3) Disturbed sample TP32/1 taken at 1.5m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873803
Y-COORD: 29 Y0082610

HOLE No: TP32

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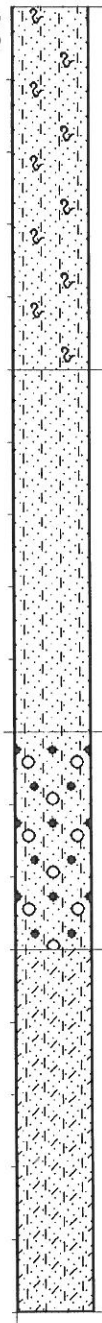
OLIFANTSFONTEIN PTN 183

HOLE No: TP33
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00		Dry, reddish brown, dense, intact, silty SAND with roots to 0.1m; **HILLWASH**.
0.50		Moist, reddish brown, medium dense, intact, silty SAND; **HILLWASH**.
	TP33/1	
1.00		Moist, reddish brown mottled black, medium dense, friable, loosely packed, fine ferruginous concretions and scattered quartz gravel supported in a matrix as above; **PEBBLE MARKER**.
1.30		Moist, reddish brown blotched grey and black, medium dense, intact, clayey silty SAND; **RESIDUAL GRANITE**.
1.80		

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Undisturbed sample TP33/1 taken at 0.8m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873992
Y-COORD: 29 Y0082644

HOLE No: TP33

D061 Jones & Wagener

dotPLOT 7016 PBpH67

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OLIFANTSFONTEIN PTN 183

HOLE No: TP34
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10

0.00	Slightly moist, yellow, dense, intact, clayey silty SAND; **HILLWASH**.
0.20	Moist, yellow mottled orange and black, dense, friable, medium angular ferruginous concretions loosely packed and supported in matrix as above; **NODULAR FERRICRETE.**
0.40	Moist, yellow mottled grey, orange and black, very dense, strongly cemented **HARDPAN FERRICRETE**.
0.50	

NOTES

1) Refusal in the above.

2) No water evident.

3) Excavated on edge of (old borrow area) pan.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874185
Y-COORD: 29 Y0082672

HOLE No: TP34

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OLIFANTSFONTEIN PTN 183

HOLE No: TP35
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10

0.00	Dry, grey, dense, intact, silty SAND; **HILLWASH**.
0.20	Closely packed, coarse, medium and fine, subangular and angular, quartz gravel and ferruginous concretions clast supported in a matrix as above, medium dense, friable; **PEBBLE MARKER**.
0.40	Moist, yellow mottled grey, black orange, dense to very dense, weakly cemented, clayey silty SAND; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.00	Very moist, orange blotched grey, dense, relict jointed, stained black silty, coarse medium and fine SAND; **RESIDUAL GRANITE**.
1.8m 1.80	

NOTES

1) Refusal on very dense as above at 2.3m.

2) Water standing at 1.8m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874480
Y-COORD: 29 Y0082748

HOLE No: TP35

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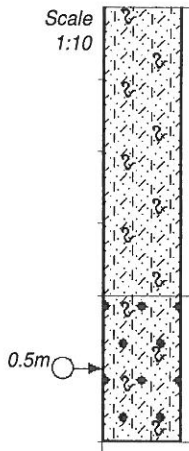
OLIFANTSFONTEIN PTN 183

HOLE No: TP36
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Very moist to wet, grey, loose, intact, clayey silty SAND with roots to 0.1m; **HILWASH**.
0.40	Closely packed, medium ferruginous concretions clast supported with a matrix as above , medium dense, friable; **PEBBLE MARKER**.
0.60	

NOTES

1) Refusal on very dense ferricrete.

2) Water standing at 0.5m.

3) Perched water table conditions evident from surface and area immediately north of test pit wet at surface.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874636
Y-COORD: 29 Y0082769

HOLE No: TP36

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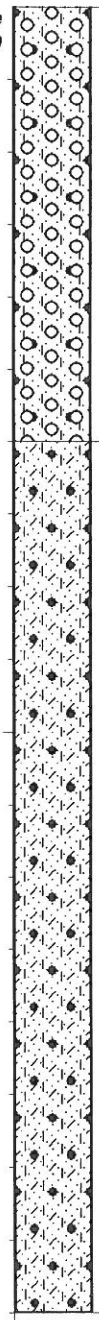
OLIFANTSFONTEIN PTN 183

HOLE No: TP37
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00

Slightly moist, grey mottled orange and black, dense, friable, closely packed, medium and fine, angular and subangular quartz gravel and ferruginous concretions, clast supported with a silty SAND matrix; **PEBBLE MARKER.**

0.60

Moist, grey blotched orange and black, dense, moderately cemented, clayey silty SAND and ferruginous concretions; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE.**

1.80

NOTES

1) Refusal on very dense as above.

2) No water encountered but perched water table conditions evident from surface.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874810
Y-COORD: 29 Y0082820

HOLE No: TP37

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OLIFANTSFONTEIN PTN 183

HOLE No: TP38
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10

0.00	Dry, grey, dense, intact, silty SAND; **HILLWASH**.
0.20	

NOTES

1) Refusal on very dense strongly cemented hardpan ferricrete.

2) No water encountered but perched water table conditions evident from surface.

3) Water surrounding test pit.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874897
Y-COORD: 29 Y0082597

HOLE No: TP38

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OLIFANTSFONTEIN PTN 183

HOLE No: TP39
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10

TP39/1

0.00 Wet, grey mottled yellow, medium dense, intact, clayey silty SAND; **HILLWASH**.

0.60

NOTES

1) Refusal on very dense strongly cemented hardpan ferricrete.

2) No water encountered but perched water table conditions evident from surface.

3) Area wet on surface immediately north of test pit.

4) Disturbed sample TP39/1 taken at 0.3m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874699
Y-COORD: 29 Y0082565

HOLE No: TP39

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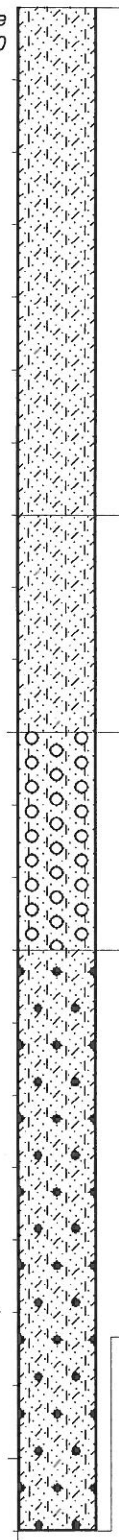
OLIFANTSFONTEIN PTN 183

HOLE No: TP40
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00 Dry, reddish brown, dense, intact, slightly clayey silty SAND; **HILLWASH**.

0.70 Moist, reddish brown, medium dense, slightly clayey silty SAND; **HILLWASH**.

1.00 Closely packed, medium and fine, angular quartz gravel, clast supported with a grey, silty SAND matrix, dense, friable; **PEBBLE MARKER**.

1.30 Moist, reddish brown blotched dark reddish brown, medium dense, intact, clayey silty SAND with numerous weakly cemented ferruginous concretions; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.

2.10

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Undisturbed sample TP40/1 taken at 1.8m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874470
Y-COORD: 29 Y0082518

HOLE No: TP40

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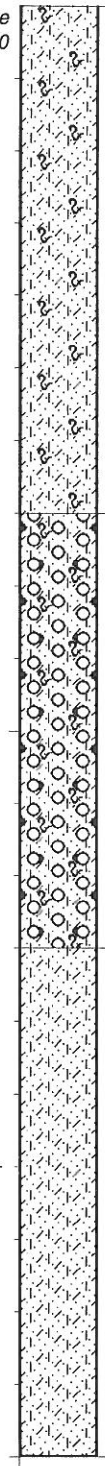
OLIFANTSFONTEIN PTN 183

HOLE No: TP41
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00 Moist, reddish brown, medium dense, intact, clayey silty SAND with roots to 0.1m; **HILLWASH**.

0.70 Closely packed, medium and fine, subangular and angular, quartz gravel and ferruginous concretionsclast supported in a matrix as above, medium dense, friable; **PEBBLE MARKER**.

1.30 Moist, reddish brown blotched buff, medium dense, fissured, clayey silty SAND; **RESIDUAL GRANITE**.

2.00

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Disturbed sample TP41/1 taken at 1.6m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874254
Y-COORD: 29 Y0082475

HOLE No: TP41

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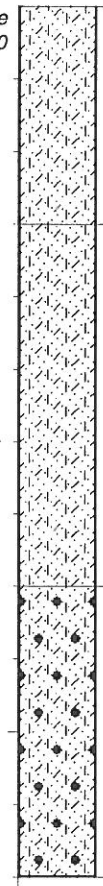
OLIFANTSFONTEIN PTN 183

HOLE No: TP42
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00		Dry, yellow-brown, dense, intact, clayey silty SAND; **HILLWASH**.
0.30		Moist, yellow-brown, medium dense, intact, clayey silty SAND; **HILLWASH**.
	TP42/1	
0.80		Closely packed, medium, subangular ferruginous concretions clast supported with a matrix as above, medium dense, friable; **NODULAR FERRICRETE**.
1.20		

NOTES

1) Refusal on very dense strongly cemented hardpan ferricrete.

2) No water evident.

3) Undisturbed sample TP42/1 taken at 0.6m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874039
Y-COORD: 29 Y0082445

HOLE No: TP42

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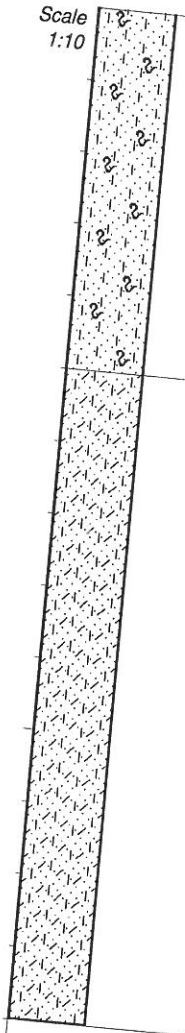
OLIFANTSFONTEIN PTN 183

HOLE No: TP43
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00 Dry, orange-brown, dense, intact, silty SAND with roots to 0.1m; **HILLWASH**.

0.50 Moist, reddish brown mottled black and orange, very dense, moderately cemented, clayey silty SAND; **FERRUGINISED REWORKED RESIDUAL GRANITE**.

1.40

NOTES

1) Refusal in the above.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

ELEVATION:
X-COORD: X2873834
Y-COORD: 29 Y0082409

D061 Jones & Wagener

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

HOLE No: TP43

dotPLOT 7016 PBpH67

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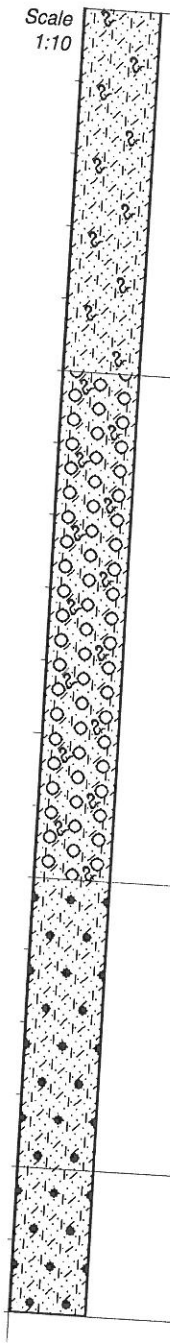
OLIFANTSFONTEIN PTN 183

HOLE No: TP44
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Slightly moist, reddish brown, dense, intact, slightly clayey silty SAND with roots to 0.1m; **HILLWASH**.
0.50	Closely packed, fine and medium, angular and subangular, quartz gravel clast supported with a matrix as above, dense, intact; **PEBBLE MARKER**.
1.20	Moist, orange-brown blotched reddish brown, medium dense, friable, weakly cemented ferruginous concretions supported in a clayey silty SAND matrix; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.60	Moist, reddish brown mottled orange and black, dense to very dense, intact, clayey silty SAND and ferruginous concretions; **FERRUGINISED RESIDUAL GRANITE**.
1.80	

NOTES

1) Refusal in the above.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873643
Y-COORD: 29 Y0082351

HOLE No: TP44

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dotPLOT 7016 PBpH67

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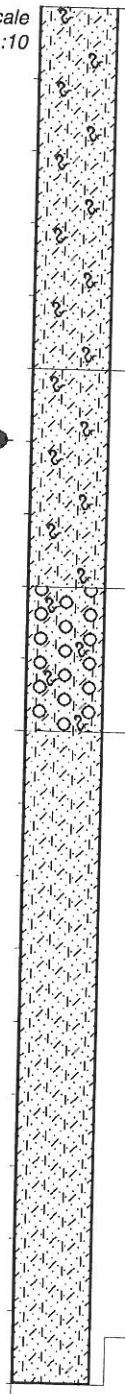
OLIFANTSFONTEIN PTN 183

HOLE No: TP45
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



	0.00	Slightly moist, reddish brown, dense, intact, slightly clayey silty SAND with roots to 0.1m; **HILLWASH**.
	0.50	
TP45/1		Moist and medium dense as above.
	0.80	
		Closely packed, medium and fine, subangular and angular, quartz and felspar gravel, clast supported in a matrix as above, contains fine roots, dense, friable; **PEBBLE MARKER**.
	1.00	
		Moist, reddish brown blotched dark reddish brown, medium dense with dense weakly cemented pockets, clayey silty SAND; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
	1.90	

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Disturbed sample TP45/1 taken at 0.6m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

ELEVATION:
X-COORD: X2873453
Y-COORD: 29 Y0082292

TYPE SET BY :
SETUP FILE : Y.SET

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

HOLE No: TP45

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dotPLOT 7016 PBpH67

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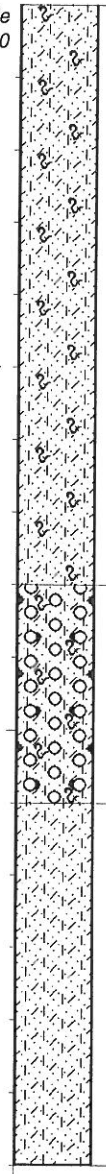
OLIFANTSFONTEIN PTN 183

HOLE No: TP46
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



TP46/1

0.00

Dry to slightly moist, yellow-brown, dense, fissured, slightly clayey silty SAND with roots; **HILLWASH**.

0.80

Loosely packed, coarse, medium and fine, subangular and angular, quartz gravel and ferruginous concretionssupported in a matrix as above, medium dense, friable; **PEBBLE MARKER**.

1.10

Moist, reddish brown speckled buff, dense, relict jointed, slightly clayey silty, coarse medium and fine SAND; **RESIDUAL GRANITE**.

1.60

NOTES

1) Refusal in very dense as above.

2) No water evident.

3) Undisturbed sample TP46/1 taken at 0.5m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873404
Y-COORD: 29 Y0082078

HOLE No: TP46

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OLIFANTSFONTEIN PTN 183

HOLE No: TP47
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10

TP47/1

0.00	Dry, yellow-brown, medium dense, intact, slightly clayey silty SAND with roots to 0.1m; **HILLWASH**.
0.50	Closely packed, medium and fine, angular quartz gravel, clast supported with a matrix as above, dense, friable; **PEBBLE MARKER**.
0.70	Slightly moist, yellow-brown mottled reddish brown, dense, friable, weakly cemented and closely packed, medium ferruginous concretionsclast supported with a clayey silty SAND matrix; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
0.90	

NOTES

1) Refusal in very dense as above.

2) No water evident.

3) Disturbed sample TP47/1 taken at 0.3m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873567
Y-COORD: 29 Y0082121

HOLE No: TP47

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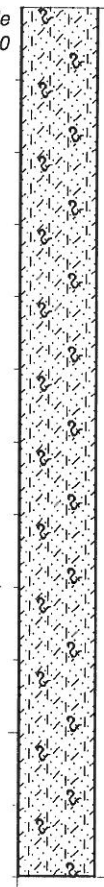
OLIFANTSFONTEIN PTN 183

HOLE No: TP48
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



TP48/1

0.00

Moist, yellow-brown, medium dense, intact, clayey silty SAND with roots to 0.1m; **HILLWASH**.

1.20

NOTES

1) Refusal on very dense strongly cemented hardpan ferricrete.

2) No water evident.

3) Undisturbed sample TP48/1 taken at 0.8m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873734
Y-COORD: 29 Y0082160

HOLE No: TP48

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OLIFANTSFONTEIN PTN 183

HOLE No: TP49
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10

0.00	Dry, reddish brown, dense, intact, clayey silty SAND; **HILLWASH**.
0.30	Dry, reddish brown mottled yellow and black, dense, friable, ferricrete nodules clast supported in a clayey silty SAND matrix; **NODULAR FERRICRETE**.
1.10	

NOTES

1) Refusal on very dense ferricrete.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873910
Y-COORD: 29 Y0082194

HOLE No: TP49

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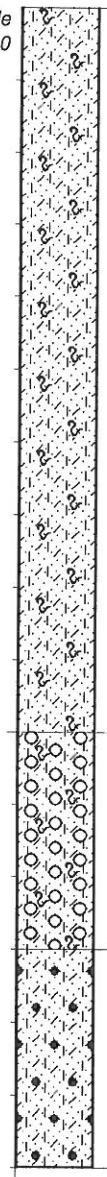
OLIFANTSFONTEIN PTN 183

HOLE No: TP50
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, reddish brown, dense, intact, clayey silty SAND with roots to 0.1m; **HILLWASH**.
1.00	Closely packed, fine and medium, angular and subangular quartz gravel clast supported with a matrix as above, dense, intact; **PEBBLE MARKER**.
1.30	Moist, brown mottled reddish brown, yellow and black, medium dense with dense pockets, friable, weakly cemented, medium ferruginous concretions,clast supported with a clayey silty SAND matrix; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.60	

NOTES

1) No refusal continues in the above.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874101
Y-COORD: 29 Y0082233

HOLE No: TP50

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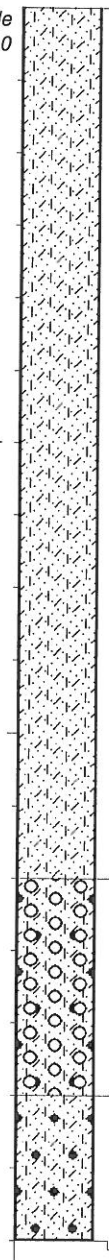
OLIFANTSFONTEIN PTN 183

HOLE No: TP51
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Moist, reddish brown, medium dense, intact, clayey silty SAND; **HILLWASH**.
1.20	Loosely packed, medium and fine, subangular and angular quartz gravel and ferruginous concretions supported in a matrix as above, medium dense, friable; **PEBBLE MARKER**.
1.50	Moist, brown mottled reddish brown, yellow and black, medium dense with dense pockets, friable, weakly cemented, medium ferruginous concretions, clast supported with a clayey silty SAND matrix; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.70	

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Undisturbed sample TP51/1 taken at 0.6m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874282
Y-COORD: 29 Y0082267

HOLE No: TP51

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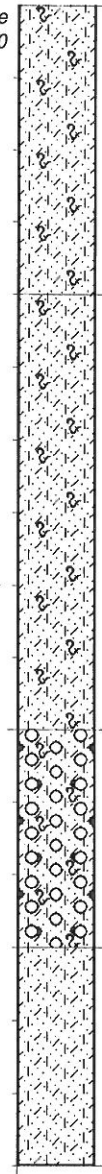
OLIFANTSFONTEIN PTN 183

HOLE No: TP52
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



	0.00	Dry, reddish brown, dense, intact, slightly clayey silty SAND with roots; **HILLWASH**.
	0.40	As above but moist and medium dense.
TP52/1	1.00	Loosely packed, medium and fine, subangular and angular, quartz gravel and ferruginous concretionssupported in a matrix as above, medium dense, friable; **PEBBLE MARKER**.
	1.30	Moist, reddish brown speckled buff, medium dense, intact, clayey silty SAND; **RESIDUAL GRANITE**.
	1.60	

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Undisturbed sample TP52/1 taken at 0.8m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874482
Y-COORD: 29 Y0082306

HOLE No: TP52

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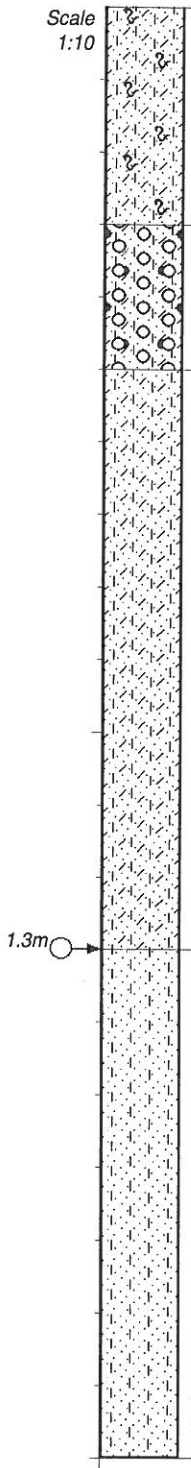
OLIFANTSFONTEIN PTN 183

HOLE No: TP53
Sheet 1 of 1

JOB NUMBER: IR1252



0.00	Moist, grey, loose, intact, clayey silty SAND with roots; **HILLWASH**.
0.30	Loosely packed, medium and fine, subangular and angular, quartz gravel and ferruginous concretionssupported in a moist, grey mottled orange, clayey silty SAND, medium dense, friable; **PEBBLE MARKER**.
0.50	Moist, orange mottled yellow, grey and black, dense, weakly cemented, clayey silty SAND with wet, grey, loosely filled runnels; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.30	Moist, orange blotched grey and reddish brown, dense, relict jointed, silty SAND; **RESIDUAL GRANITE**.
2.00	

NOTES

1) Refusal in very dense as above.

2) Slight seep from runnels at 1.3m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

ELEVATION:
X-COORD: X2874676
Y-COORD: 29 Y0082348

HOLE No: TP53

TYPE SET BY :
SETUP FILE : Y.SET

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

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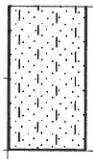
OLIFANTSFONTEIN PTN 183

HOLE No: TP54
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00 Dry, grey-brown, dense, intact, silty SAND; **HILLWASH**.

0.20

NOTES

1) Refusal on very dense strongly cemented hardpan ferricrete.

2) No water encountered but perched water table conditions evident from surface.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874874
Y-COORD: 29 Y0082400

HOLE No: TP54

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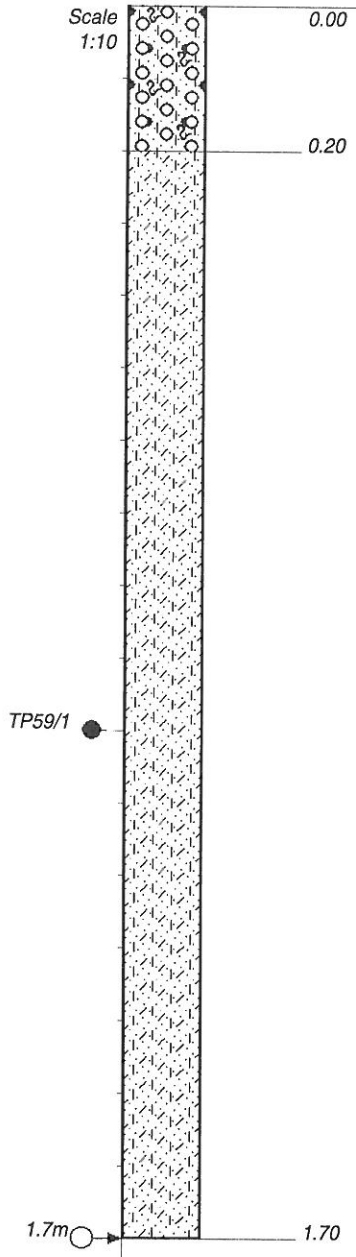
OLIFANTSFONTEIN PTN 183

HOLE No: TP59
Sheet 1 of 1

JOB NUMBER: IR1252



Dry, grey, medium dense, friable, closely packed, medium and fine, subangular and angular, quartz gravel and ferruginous concretionsclast supported with a silty SAND matrix, roots; **PEBBLE MARKER**.

Very moist, orange mottled grey and black, dense, weakly cemented and relict jointed, slightly clayey silty SAND; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.

NOTES

1) No refusal continues in the above.

2) Water standing at 1.7m.

3) Disturbed sample TP59/1 taken at 1.0m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874267
Y-COORD: 29 Y0082062

HOLE No: TP59

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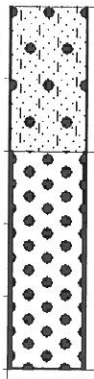
OLIFANTSFONTEIN PTN 183

HOLE No: TP60
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, grey, medium dense, friable, closely packed ferricrete nodules clast supported with silty SAND matrix; **NODULAR FERRICRETE**.
0.20	Dry, orange mottled grey and black, very dense, strongly cemented **HARDPAN FERRICRETE**.
0.50	

NOTES

1) Refusal in the above.

2) No water encountered but perched water table conditions evident from surface.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874080
Y-COORD: 29 Y0082030

HOLE No: TP60

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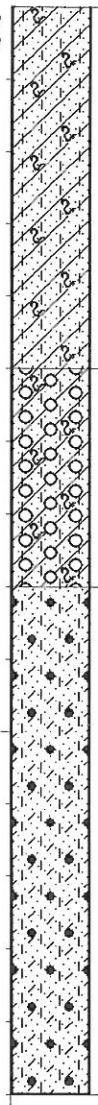
OLIFANTSFONTEIN PTN 183

HOLE No: TP61
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, orange-brown, dense, clay silty SAND with roots; **HILLWASH.**
0.50	Closely packed, fine and medium, angular and subangular, quartz gravel clast supported with a matrix as above, dense, intact; **PEBBLE MARKER.**
0.80	Moist, brown mottled reddish brown, yellow and black, medium dense with dense pockets, friable, weakly cemented, medium ferruginous concretions,clast supported with a clayey silty SAND matrix; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE.**
1.50	

NOTES

1) No refusal continues in the above.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873887
Y-COORD: 29 Y0081987

HOLE No: TP61

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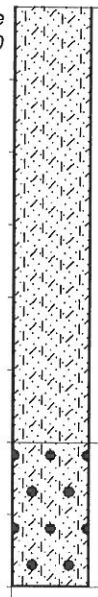
OLIFANTSFONTEIN PTN 183

HOLE No: TP62
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00 Dry, yellow-brown, dense, intact, clayey silty SAND; **HILLWASH**.

0.60 Slightly moist, yellow-brown mottled reddish orange and black, medium dense, friable, ferricrete nodules clast supported in a matrix as above; **NODULAR FERRICRETE**.

0.80

NOTES

1) Refusal on very dense strongly cemented hardpan ferricrete.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873715
Y-COORD: 29 Y0081944

HOLE No: TP62

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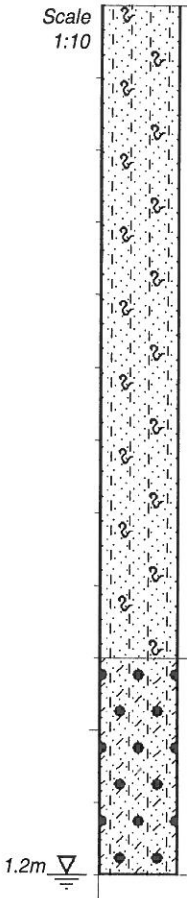
OLIFANTSFONTEIN PTN 183

HOLE No: TP63
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00 Moist, grey, medium dense, intact, silty SAND with roots to 0.1m; **HILLWASH.**

0.90 Moist, grey mottled orange, medium dense, friable, ferricrete nodules clast supported in a clayey silty SAND matrix; **NODULAR FERRICRETE.**

1.20

NOTES

1) Refusal on very dense ferricrete.

2) No water encountered but perched water table conditions evident at 1.2m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873539
Y-COORD: 29 Y0081892

HOLE No: TP63

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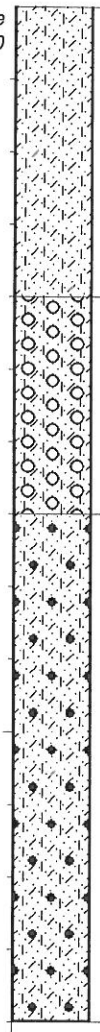
OLIFANTSFONTEIN PTN 183

HOLE No: TP64
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, yellow-brown, dense, intact, clayey silty SAND; **HILLWASH**.
0.40	Closely packed, medium and fine, angular quartz gravel, clast supported with a matrix as above, dense, friable; **PEBBLE MARKER**.
0.70	Moist, reddish brown mottled grey, yellow and black, very dense, moderately cemented, clayey silty SAND and ferruginous concretions;**MODERATELY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.40	

NOTES

1) Refusal in the above.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873494
Y-COORD: 29 Y0081693

HOLE No: TP64

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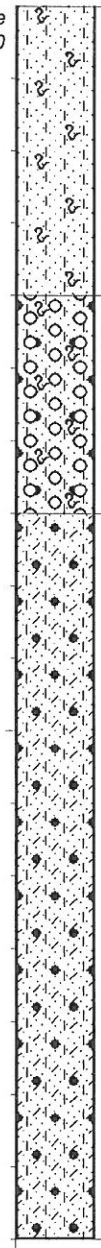
OLIFANTSFONTEIN PTN 183

HOLE No: TP65
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, brown, dense, fissured, silty SAND with roots; **HILLWASH**.
0.40	Closely packed, medium and fine, subangular and angular, quartz gravels and ferruginous concretions, clast supported with a matrix as above, dense, friable; **PEBBLE MARKER**.
0.70	Moist, brown mottled reddish brown, yellow and black, medium dense with dense pockets, friable, weakly cemented, medium ferruginous concretions,clast supported with a clayey silty SAND matrix; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.70	

NOTES

1) Refusal on very dense ferricrete.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873656
Y-COORD: 29 Y0081727

HOLE No: TP65

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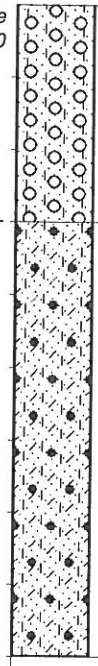
OLIFANTSFONTEIN PTN 183

HOLE No: TP66
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Closely packed, medium and fine, angular quartz gravel, clast supported with a grey, silty SAND matrix, dense, friable; **PEBBLE MARKER**.
0.30	Slightly moist, orange mottled grey and black, dense, moderately cemented clayey silty SAND and ferruginous concretions; **MODERATELY FERRUGINISED REWORKED RESIDUAL GRANITE**.
0.90	

NOTES

1) Refusal in very dense as above.

2) No water encountered but perched water table conditions evident below 0.3m.

3) Disturbed sample TP66/1 taken at 0.8m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873837
Y-COORD: 29 Y0081790

HOLE No: TP66

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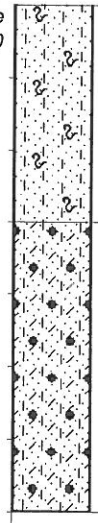
OLIFANTSFONTEIN PTN 183

HOLE No: TP67
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, grey, dense, intact, silty SAND with roots; **HILLWASH**.
0.30	Moist, grey mottled orange and black, very dense, moderately cemented, clayey silty SAND and ferruginous concretions; **FERRUGINISED REWORKED RESIDUAL GRANITE**.
0.70	

NOTES

1) Refusal in the above.

2) No water encountered but perched water table conditions evident from surface.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874004
Y-COORD: 29 Y0081831

HOLE No: TP67

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OLIFANTSFONTEIN PTN 183

HOLE No: TP68
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10

TP68/1

0.00 Moist becoming wet with depth, grey occasionally mottled orange, medium dense, intact, silty SAND; **HILLWASH**.

1.20

NOTES

1) Refusal on very dense ferricrete.

2) Slight seep at base of pit.

3) Undisturbed sample TP68/1 taken at 0.6m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874169
Y-COORD: 29 Y0081883

HOLE No: TP68

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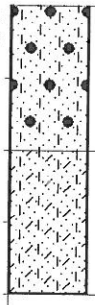
OLIFANTSFONTEIN PTN 183

HOLE No: TP69
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



TP69/1

0.00	Dry, grey, medium dense, friable, closely packed ferricrete nodules clast supported with silty SAND matrix; **NODULAR FERRICRETE**.
0.20	Moist, orange mottled grey, very dense, weakly cemented, clayey silty SAND; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
0.40	

NOTES

1) Refusal in the above.

2) No water encountered but perched water table conditions evident from surface.

3) Disturbed sample TP69/1 taken at 0.3m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874348
Y-COORD: 29 Y0081913

HOLE No: TP69

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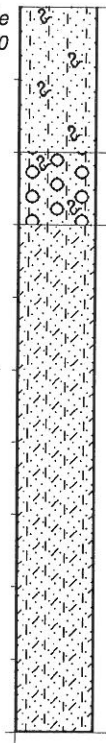
OLIFANTSFONTEIN PTN 183

HOLE No: TP70
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, grey, dense, intact, silty SAND with roots; **HILLWASH**.
0.20	Closely packed, fine and medium, angular and subangular, quartz gravel clast supported with a matrix as above, dense, intact; **PEBBLE MARKER**.
0.30	Moist, orange mottled grey, yellow and black, dense, weakly cemented, clayey silty SAND; **SLIGHTLY FERRUGINISED REWORKED RESIDUAL GRANITE**.
1.00	

NOTES

1) Refusal in very dense as above.

2) No water encountered but perched water table conditions evident from surface.

3) Disturbed sample TP70/1 taken at 0.5m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874537
Y-COORD: 29 Y0081943

HOLE No: TP70

INTRACONSULT
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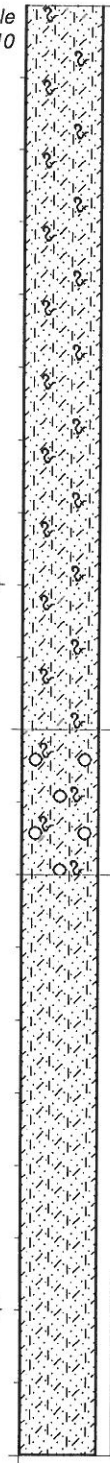
OLIFANTSFONTEIN PTN 183

HOLE No: TP71
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry becoming moist below 0.4m, dense to medium dense with depth, intact, clayey silty SAND with roots to 0.1m; **HILLWASH**.
1.00	As above with scattered, medium and fine, angular quartz gravel; **PEBBLE MARKER**.
1.20	Very moist, reddish orange blotched buff, medium dense, intact, clayey silty SAND; **RESIDUAL GRANITE**.
2.00	

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Disturbed sample TP71/1 taken at 0.8m.

4) Undisturbed sample TP71/2 taken at 1.8m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874739
Y-COORD: 29 Y0081981

HOLE No: TP71

INTRACONSULT
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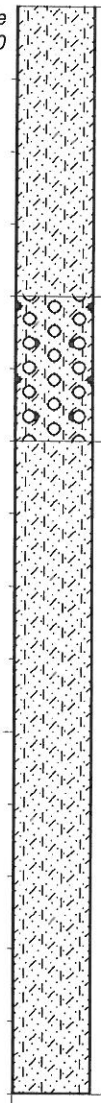
Tel: (011) 469-0854

OLIFANTSFONTEIN PTN 183

HOLE No: TP72
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Dry, grey-brown, dense, fissured, slightly clayey silty SAND; **HILLWASH**.
0.40	Loosely packed, coarse, medium and fine, subangular and angular, quartz gravel and ferruginous concretions supported in an orange-brown matrix as above, medium dense, friable; **PEBBLE MARKER**.
0.60	Moist, reddish brown blotched buff, dense, intact, clayey silty SAND; **RESIDUAL GRANITE**.
1.50	

NOTES

1) Refusal in very dense as above.

2) No water evident.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874915
Y-COORD: 29 Y0081957

HOLE No: TP72

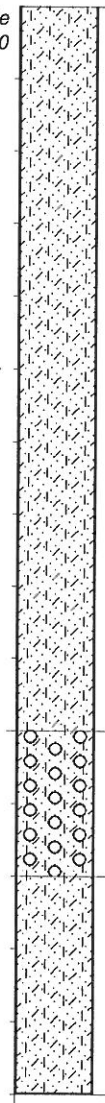
INTRACONSULT
Consulting Engineers & Geologists
Tel: (011) 469-0854

OLIFANTSFONTEIN PTN 183

HOLE No: TP74
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



TP74/1

0.00 Slightly moist, reddish brown, dense to medium dense with depth, intact, clayey silty SAND; **HILLWASH**.

1.00 Closely packed, fine and medium, angular and subangular, quartz gravel clast supported with a matrix as above, dense, intact; **PEBBLE MARKER**.

1.20 Moist, reddish orange blotched reddish brown speckled buff, medium dense, intact, clayey silty SAND; **RESIDUAL GRANITE**.

1.50

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Active termites in hillwash horizon.

4) Undisturbed sample TP74/1 taken at 0.5m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2875020
Y-COORD: 29 Y0081887

HOLE No: TP74

INTRACONSULT
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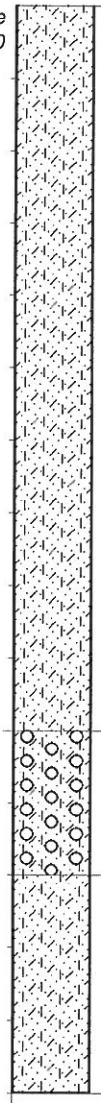
Tel: (011) 469-0854

OLIFANTSFONTEIN PTN 183

HOLE No: TP75
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00 Slightly moist, reddish brown, dense to medium dense with depth, intact, clayey silty SAND; **HILLWASH**.

1.00 Closely packed, fine and medium, angular and subangular quartz gravel clast supported with a matrix as above, dense, intact; **PEBBLE MARKER**.

1.20 Moist, reddish orange blotched reddish brown speckled buff, medium dense, intact, clayey silty SAND; **RESIDUAL GRANITE**.

1.50

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Waste and building rubble fill surrounding pit.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874842
Y-COORD: 29 Y0081839

HOLE No: TP75

INTRACONSULT
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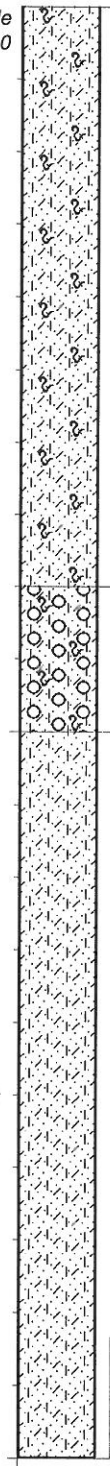
OLIFANTSFONTEIN PTN 183

HOLE No: TP76
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00 Dry to slightly moist, orange-brown, dense, fissured, clayey silty SAND with roots to 0.3m; **HILLWASH**.

0.80 Closely packed, fine and medium, angular and subangular, quartz gravel clast supported with a matrix as above, dense, intact; **PEBBLE MARKER**.

1.00 Moist, orange-brown blotched buff, medium dense, intact, clayey silty SAND; **REWORKED RESIDUAL GRANITE**.

2.00

NOTES

1) No refusal continues in the above.

2) No water evident.

3) Disturbed sample TP76/1 taken at 1.5m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874659
Y-COORD: 29 Y0081801

HOLE No: TP76

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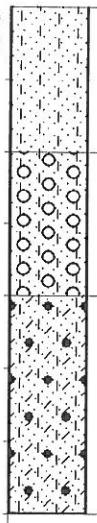
OLIFANTSFONTEIN PTN 183

HOLE No: TP77
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00 – 0.20	Dry, grey, dense, intact, silty SAND; **HILLWASH**.
0.20 – 0.40	Closely packed, fine and medium, angular and subangular, quartz gravel clast supported with a yellow-brown, silty SAND matrix, dense, intact; **PEBBLE MARKER**.
0.40 – 0.70	Slightly moist, orange mottled grey and black, dense, moderately cemented, clayey silty SAND and ferruginous concretions; **MODERATELY FERRUGINISED REWORKED RESIDUAL GRANITE**.

0.7m ▽

NOTES

1) Refusal on very dense strongly cemented hardpan ferricrete.

2) No water encountered but perched water table conditions evident below 0.7m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874456
Y-COORD: 29 Y0081751

HOLE No: TP77

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OLIFANTSFONTEIN PTN 183

HOLE No: TP78
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10

TP78/1

0.00 Slightly moist, grey blotched yellow, dense, weakly cemented, clayey silty sand; **GULLYWASH**.

0.60

NOTES

1) Refusal in very dense as above.

2) No water encountered but perched water table conditions evident from surface.

3) Disturbed sample TP78/1 taken at 0.3m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874254
Y-COORD: 29 Y0081702

HOLE No: TP78

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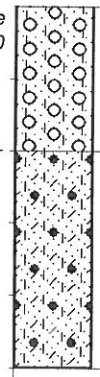
Tel: (011) 469-0854

OLIFANTSFONTEIN PTN 183

HOLE No: TP79
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00	Closely packed, medium and fine, angular quartz gravel, clast supported with a grey, silty SAND matrix, dense, friable; **PEBBLE MARKER**.
0.20	Moist, yellow mottled grey, black and orange, very dense, moderately cemented clayey silty SAND and ferruginous concretions; **MODERATELY FERRUGINISED REWORKED RESIDUAL GRANITE**.
0.50	

0.2m ▽

NOTES

1) Refusal in the above.

2) No water encountered but perched water table conditions evident below 0.2m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB
TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014
DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874065
Y-COORD: 29 Y0081659

HOLE No: TP79

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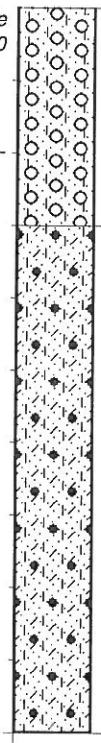
OLIFANTSFONTEIN PTN 183

HOLE No: TP80
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.2m

0.00 Closely packed, medium and fine, angular, quartz gravel, clast supported with a grey, silty SAND matrix, dense, friable; **PEBBLE MARKER**.

0.30 Moist, yellow mottled grey, black and orange, very dense, moderately cemented, clayey silty SAND and ferruginous concretions;**MODERATLEY FERRUGINISED REWORKED RESIDUAL GRANITE**.

1.00

NOTES

1) Refusal in the above.

2) No water encountered but perched water table conditions evident below 0.2m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873889
Y-COORD: 29 Y0081624

HOLE No: TP80

INTRACONSULT
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OLIFANTSFONTEIN PTN 183

HOLE No: TP81
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10

0.00	Dry, grey, dense, intact, silty SAND; **HILLWASH**.
0.10	

NOTES

1) Refusal on very dense strongly cemented hardpan ferricrete.

2) No water encountered but perched water table conditions evident from surface.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873717
Y-COORD: 29 Y0081577

HOLE No: TP81

INTRACONSULT
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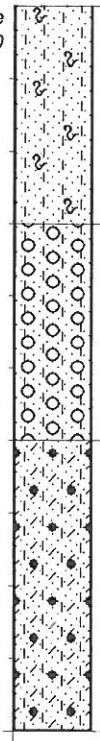
OLIFANTSFONTEIN PTN 183

HOLE No: TP82
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



TP82/1

0.00	Dry, grey-brown, dense, fissured, silty SAND with roots; **HILLWASH**.
0.30	Closely packed, fine and medium, angular and subangular, quartz gravel clast supported with a yellow-brown, silty SAND matrix, dense, intact; **PEBBLE MARKER**.
0.60	Moist, yellow-brown mottled reddish brown blotched grey, medium dense, friable, weakly cemented ferruginous concretions supported in a clayey silty SAND matrix; **NODULAR FERRICRETE**.
1.00	

NOTES

1) Refusal on very dense ferricrete.

2) No water evident.

3) Disturbed sample TP82/1 taken at 0.8m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2873550
Y-COORD: 29 Y0081547

HOLE No: TP82

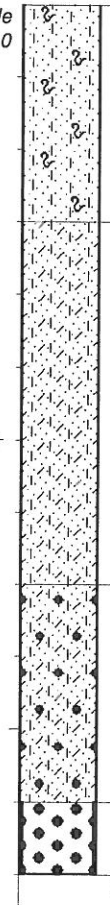
INTRACONSULT
Consulting Engineers & Geologists
Tel: (011) 469-0854

OLIFANTSFONTEIN PTN 183

HOLE No: TP83
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



TP83/1

0.00	Dry, grey-brown, dense, fissured, silty SAND with roots; **HILLWASH.**
0.30	Moist, orange-brown, medium dense, intact, clayey silty SAND; **HILLWASH.**
0.80	Loosely packed, coarse and medium ferruginous concretionssupported in a matrix as above, dense, friable; **NODULAR FERRICRETE.**
1.10	Orange mottled black and yellow-brown, very dense and strongly cemented **HARDPAN FERRICRETE.**
1.20	

NOTES

1) Refusal in the above.

2) No water evident.

3) Excavated on edge of (old borrow area) pan.

4) Disturbed sample TP83/1 taken at 0.6m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874347
Y-COORD: 29 Y0082597

HOLE No: TP83

INTRACONSULT
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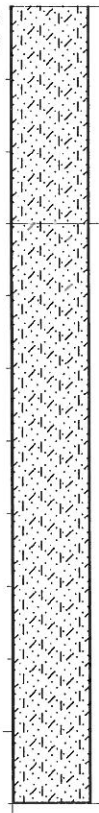
Tel: (011) 469-0854

OLIFANTSFONTEIN PTN 183

HOLE No: TP84
Sheet 1 of 1

JOB NUMBER: IR1252

Scale 1:10



0.00 Very moist, grey mottled orange, medium dense, intact, slightly clayey silty SAND; **HILLWASH**.

0.30 Very moist, yellow mottled grey, orange and black, dense, relict jointed and moderately cemented, clayey silty SAND; **SLIGHTLY FERRUGINISED RESIDUAL GRANITE**.

1.10

NOTES

1) Refusal in very dense as above.

2) Water standing at 0.9m.

3) Disturbed sample TP84/1 taken at 0.8m.

CONTRACTOR : Dalton Plant Hire
MACHINE : JCB 3CX
DRILLED BY :
PROFILED BY : BB

TYPE SET BY :
SETUP FILE : Y.SET

INCLINATION : Vertical
DIAM :
DATE : 30 June 2014
DATE : 30 June 2014

DATE : 11/08/2014 11:02
TEXT : ..INTRA\IR1252PROFILES.DOC

ELEVATION:
X-COORD: X2874315
Y-COORD: 29 Y0082793

HOLE No: TP84

APPENDIX 2
LABORATORY TEST RESULTS

36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
E-mail: jhb@civilab.co.za•Website: www.civilab.co.za

sanas T0062

Civilab

Civil Engineering Testing Laboratories

Client	: INTRACONSULT CC (C)	**Client Reference**	:
Address	: P O BOX 604	**Order No.**	: IR1252
	: FOURWAYS		
	: 2055		
Attention	:	**Date Received**	: 07/07/2014
Facsimile	: 011 469 0961	**Date Tested**	: 04/07/2014 - 07/08/2014
E-mail	: intrac@mweb.co.za	**Date Reported**	: 07/08/2014
Project	: **PTN 183 Olifantsfontein**		
Project No.	: **2014-B-1295**		
		Page	: 1 of 84

Herewith please find the test report(s) pertaining to the above project. All tests were conducted in accordance with prescribed test method(s). Information herein consists of the following:

Test(s) conducted / Item(s) measured	Qty.	Test Method(s)	Authorized By	Page(s)
Atterberg Limits < 0.425mm	49.000	TMH1 A2, A3, A4	J Marques	2-26
Sieve Analysis 0.075mm (Mass Grading)	49.000	TMH1 A1	J Marques	2-26
Hydrometer Analysis	49.000	ASTM D422	J Marques	2-26
pH *	10.000	TMH1:A20	J Marques	1 File, 1 Page
Conductivity *	10.000	TMH1:A21T	J Marques	Incl. in pH
Oedometer: Collapse Potential *	19.000	BS 1377 Part 5	J Marques	19 Files, 57 Pages

Any test results contained in this report and marked with * in the table above are "not SANAS accredited" and are not included in the schedule of accreditation for this laboratory.

Any information contained in this test report pertain only to the areas and/or samples tested. Documents may only be reproduced or published in their full context.

While every care is taken to ensure that all tests are carried out in accordance with recognised standards, neither Civilab (Proprietary) Limited nor its employess shall be liable in any way whatsoever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequences thereof.

All interpretations, Interpolations, Opinions and/or Classifications contained in this report falls outside our scope of accreditation.

The following parameters, where applicable, were excluded from the classification procedure: Chemical modifications, Additional fines, Fractured Faces, Soluble Salts, pH, Conductivity, Coarse Sand Ratio, Durability (COLTO: G4-G9).

The following parameters, where applicable, were assumed: Rock types were assumed to be of an Arenaceous nature with Siliceous cementing material.

Unless otherwise requested or stated, all samples will be discarded after a period of 3 months.

Deviations in Test Methods:

36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
E-mail: jhb@civilab.co.za•Website: www.civilab.co.za

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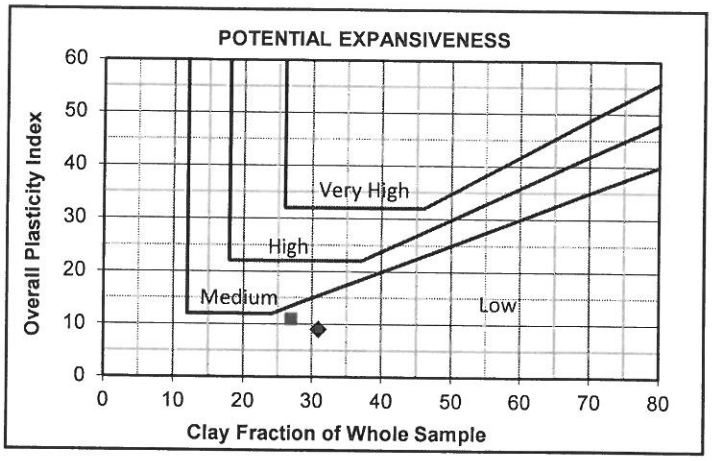
Civil Engineering Testing Laboratories

Client	:	INTRACONSULT CC (C)	Date Received:	07/07/2014
Project	:	PTN 183 Olifantsfontein	Date Reported:	07/08/2014
Project No	:	2014-B-1295	Page No. :	2 of 84

FOUNDATION INDICATOR

Laboratory Number		1 ◆	2 ■
Field Number		TP 1	TP 2
Client Reference			
Depth (m)		0.3	0.2
Position			
Coordinates	X		
	Y		
Description		Hillwash	Lacustrine
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

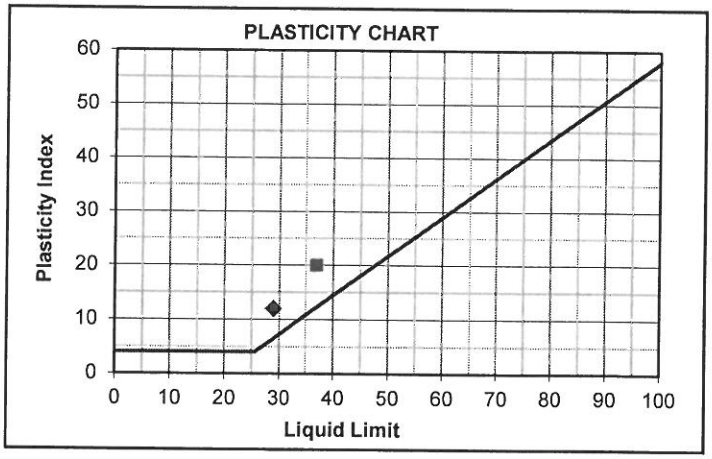


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	97
	4.75 mm	100	96
	2.00 mm	98	91
	0.425 mm	71	56
	0.075 mm	51	43
Grading Modulus		0.8	1.1



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	50	42
	0.040 mm	47	41
	0.020 mm	42	38
	0.006 mm	35	30
	0.002 mm	31	27
Gravel	%	2	9
Sand	%	48	49
Silt	%	19	15
Clay	%	31	27

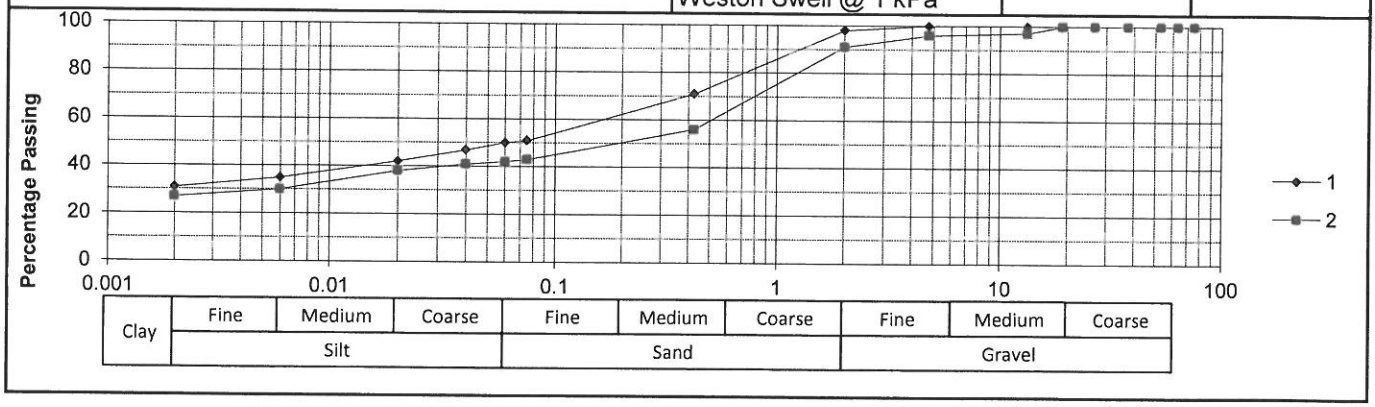
Laboratory Number		1 ◆	2 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	29	37
Plasticity Index	%	12	20
Linear Shrinkage	%	6.5	8.5
Overall PI	%	9	11

Classifications

HRB	A-6(3)	A-6(4)
Unified	CL	SC
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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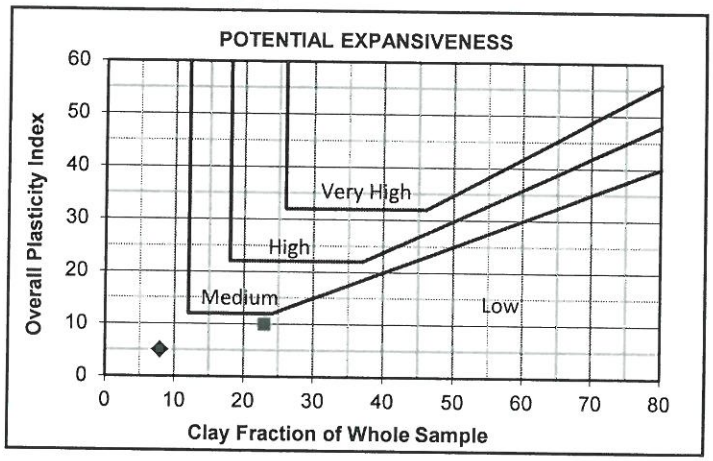
FOUNDATION INDICATOR

Laboratory Number		3 ◆	4 ■
Field Number		TP 4	TP 5
Client Reference			
Depth (m)		1.5	1.2
Position			
Coordinates	X		
	Y		
Description		Res. Granite	Res. Granite
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

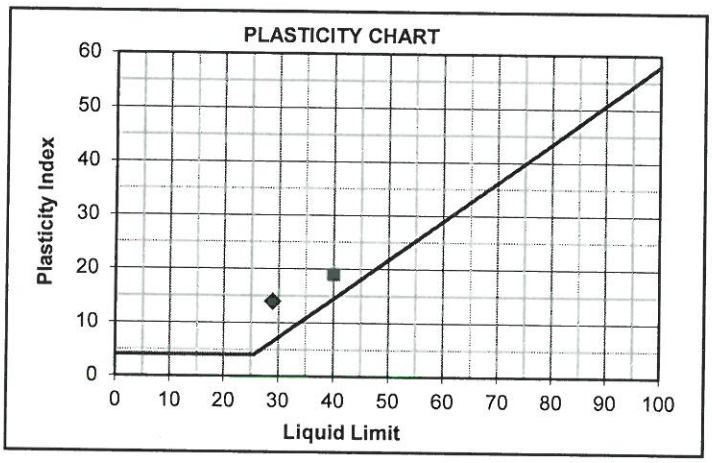


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	94	100
	4.75 mm	84	98
	2.00 mm	72	84
	0.425 mm	35	53
	0.075 mm	22	45
Grading Modulus		1.71	1.18



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	21	43
	0.040 mm	18	39
	0.020 mm	15	36
	0.006 mm	10	27
	0.002 mm	8	23
Gravel	%	28	16
Sand	%	51	41
Silt	%	13	20
Clay	%	8	23

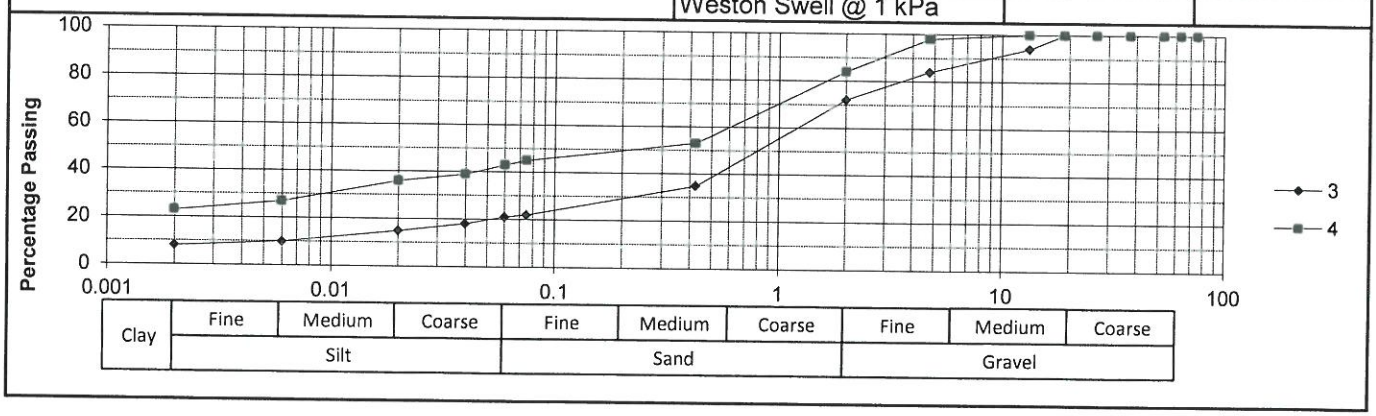
Laboratory Number	3 ◆	4 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	29	40
Plasticity Index	%	14	19
Linear Shrinkage	%	6.0	8.5
Overall PI	%	5	10

Classifications

HRB	A-2-6(0)	A-6(5)
Unified	SC	SC
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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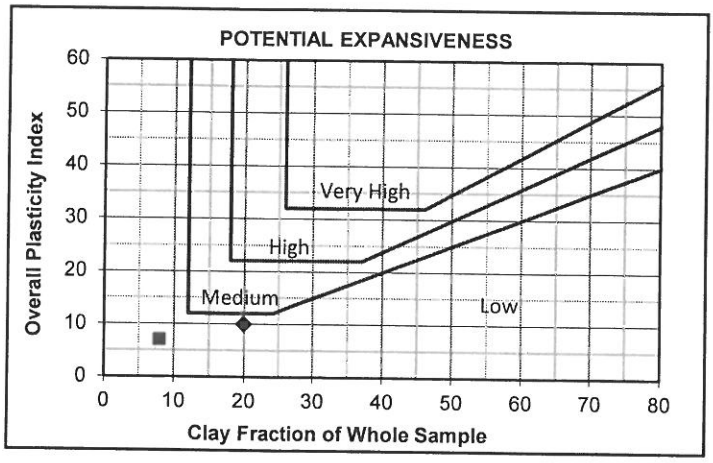
FOUNDATION INDICATOR

Laboratory Number		5 ◆	6 ■
Field Number		TP 5	TP 7
Client Reference			
Depth (m)		2	1
Position			
Coordinates	X		
	Y		
Description		Res. Granite	Slightly Ferrug Res. Granite
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

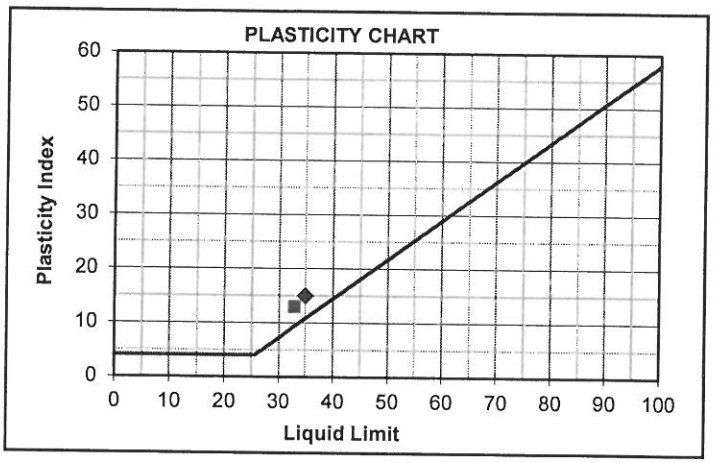


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	100	98
	2.00 mm	95	75
	0.425 mm	65	51
	0.075 mm	49	36
Grading Modulus		0.91	1.38



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	47	29
	0.040 mm	44	20
	0.020 mm	39	16
	0.006 mm	28	12
	0.002 mm	20	8
Gravel	%	5	25
Sand	%	48	46
Silt	%	27	21
Clay	%	20	8

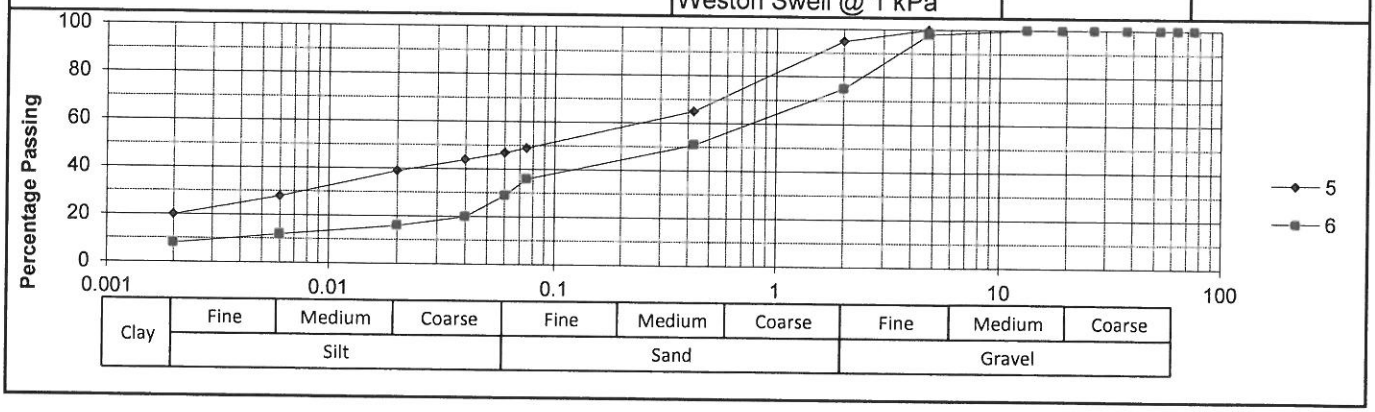
Laboratory Number	5 ◆	6 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	35	33
Plasticity Index	%	15	13
Linear Shrinkage	%	8.0	6.5
Overall PI	%	10	7

Classifications

HRB	A-6(4)	A-6(1)
Unified	SC	SC
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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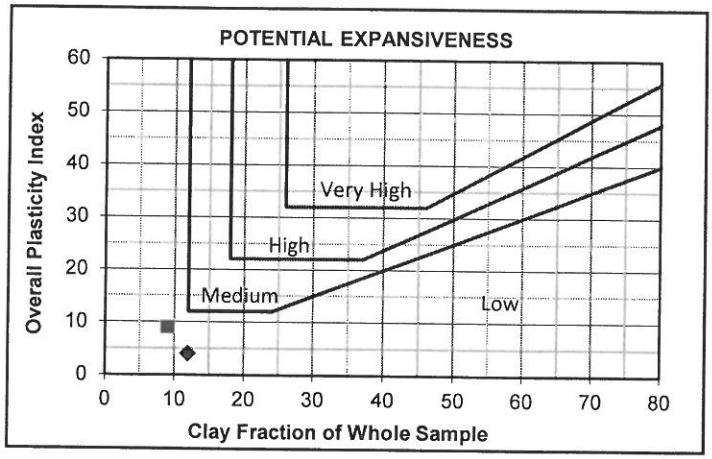
FOUNDATION INDICATOR

Laboratory Number		7 ◆	8 ■
Field Number		TP 8	TP 11
Client Reference			
Depth (m)		1.5	2
Position			
Coordinates	X		
	Y		
Description		Leached Res. Granite	Res. Granite
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

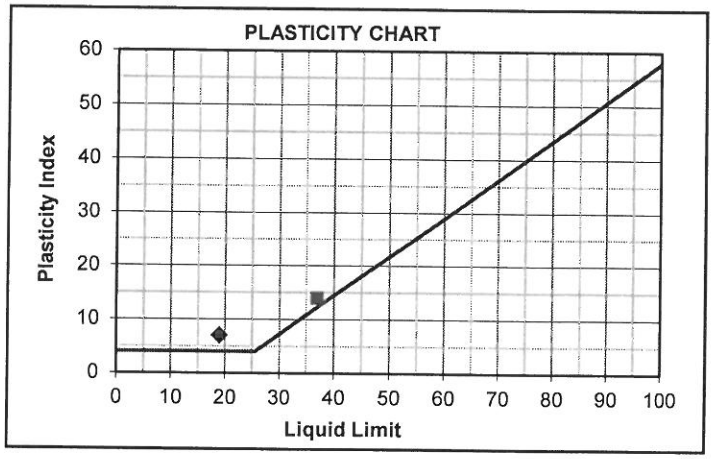


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	95	100
	2.00 mm	83	99
	0.425 mm	51	65
	0.075 mm	35	45
Grading Modulus		1.31	0.91



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	33	39
	0.040 mm	30	30
	0.020 mm	21	23
	0.006 mm	15	13
	0.002 mm	12	9
Gravel	%	17	1
Sand	%	50	60
Silt	%	21	30
Clay	%	12	9

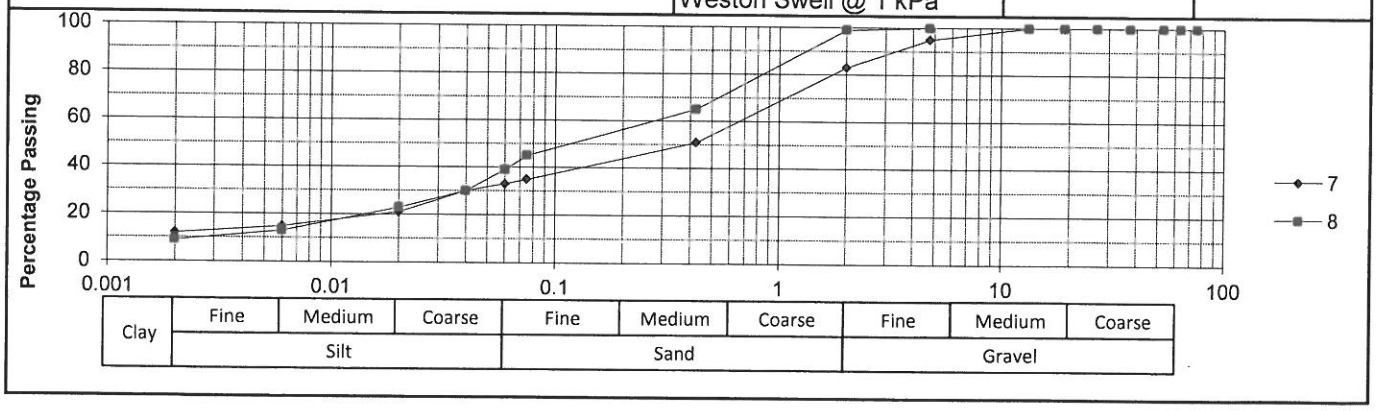
Laboratory Number	7 ◆	8 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	19	37
Plasticity Index	%	7	14
Linear Shrinkage	%	4.0	7.5
Overall PI	%	4	9

Classifications

HRB	A-2-4(0)	A-6(3)
Unified	SC-SM	SC
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
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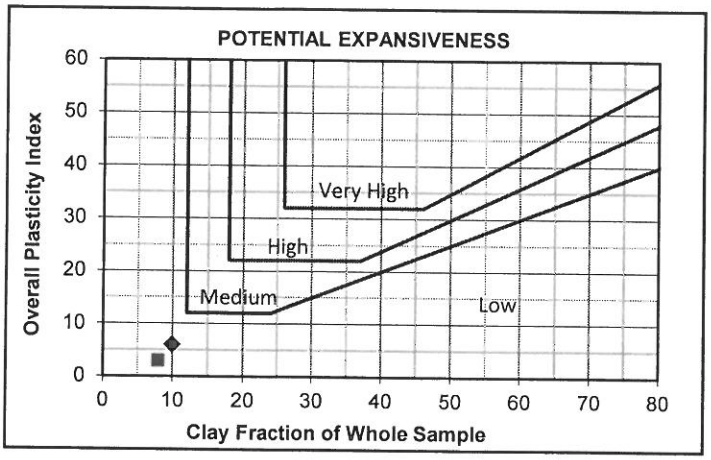
FOUNDATION INDICATOR

Laboratory Number		9 ◆	10 ■
Field Number		TP 12	TP 14
Client Reference			
Depth (m)		1.8	0.6
Position			
Coordinates	X		
	Y		
Description		Res. Granite	Pebble Marker
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

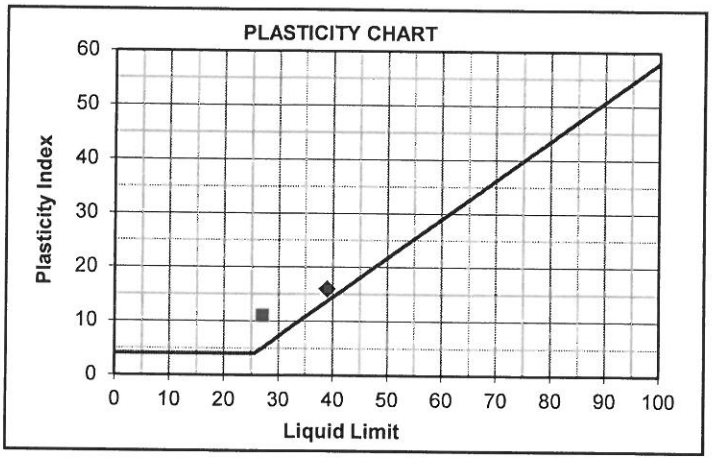


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	95
	19.0 mm	100	87
	13.2 mm	98	80
	4.75 mm	90	55
	2.00 mm	70	38
	0.425 mm	36	28
	0.075 mm	28	18
Grading Modulus		1.66	2.16



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	26	17
	0.040 mm	22	15
	0.020 mm	19	12
	0.006 mm	13	10
	0.002 mm	10	8
Gravel	%	30	62
Sand	%	44	21
Silt	%	16	9
Clay	%	10	8

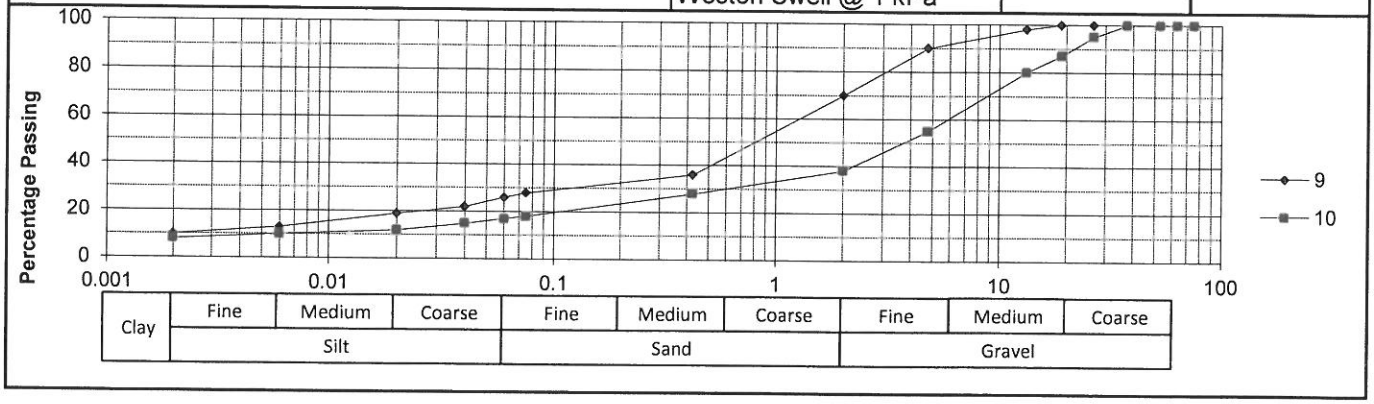
Laboratory Number		9 ◆	10 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	39	27
Plasticity Index	%	16	11
Linear Shrinkage	%	8.5	6.0
Overall PI	%	6	3

Classifications

HRB	A-2-6(1)	A-2-6(0)
Unified	SC	GC
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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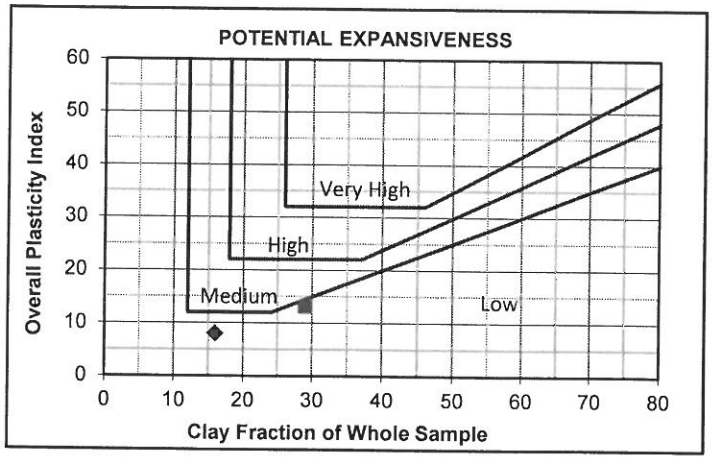
FOUNDATION INDICATOR

Laboratory Number		11 ◆	12 ■
Field Number		TP 15	TP 16
Client Reference			
Depth (m)		1	2
Position			
Coordinates	X		
	Y		
Description		Slightly Ferrug Res. Granite	Res. Granite
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

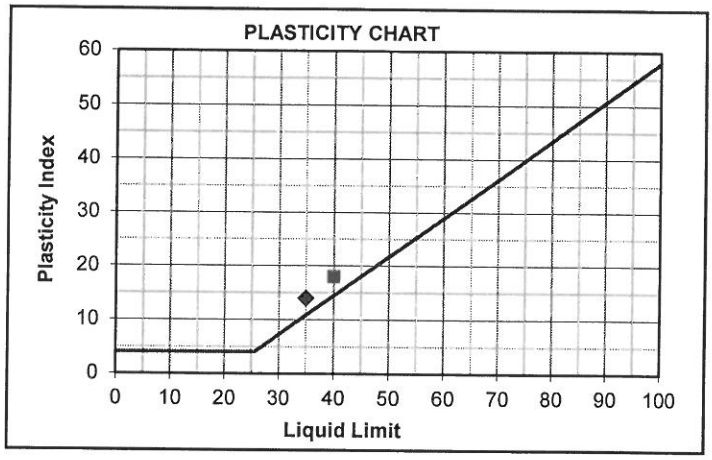


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	93	99
	2.00 mm	79	95
	0.425 mm	55	73
	0.075 mm	43	60
Grading Modulus		1.23	0.72



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	39	58
	0.040 mm	33	53
	0.020 mm	26	46
	0.006 mm	19	35
	0.002 mm	16	29
Gravel	%	21	5
Sand	%	40	37
Silt	%	23	29
Clay	%	16	29

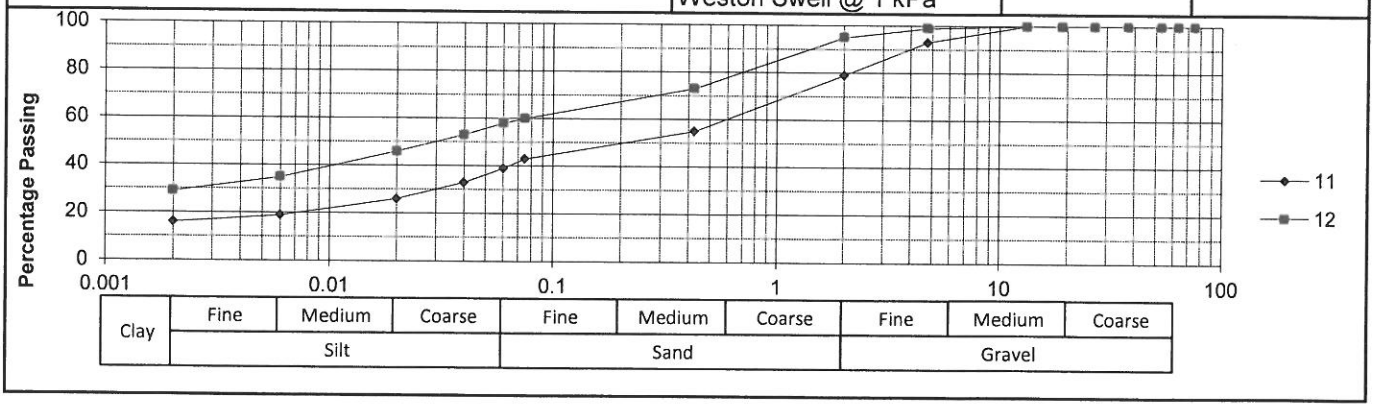
Laboratory Number		11 ◆	12 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	35	40
Plasticity Index	%	14	18
Linear Shrinkage	%	7.5	9.5
Overall PI	%	8	13

Classifications

HRB	A-6(3)	A-6(9)
Unified	SC	CL
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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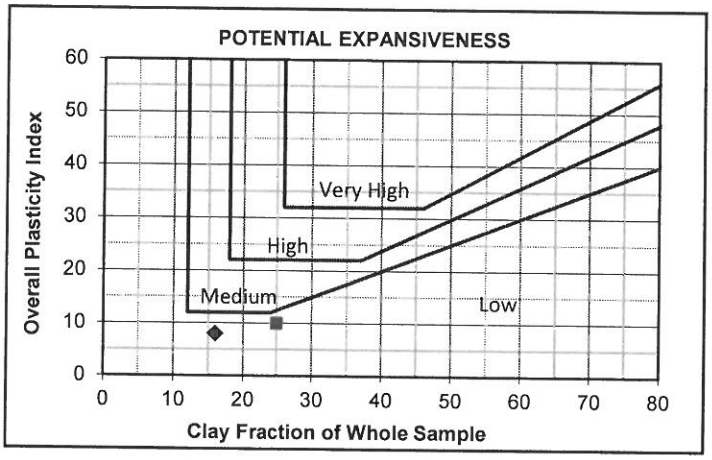
FOUNDATION INDICATOR

Laboratory Number		13 ◆	14 ■
Field Number		TP 17	TP 18
Client Reference			
Depth (m)		1.6	0.3
Position			
Coordinates	X		
	Y		
Description		Slightly Ferrug Res. Granite	Hillwash
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

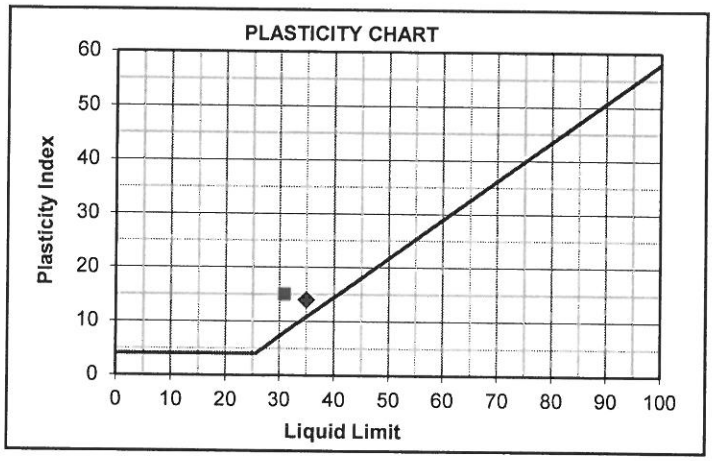


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	98
	4.75 mm	98	96
	2.00 mm	87	90
	0.425 mm	56	68
	0.075 mm	43	51
Grading Modulus		1.14	0.91



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	39	49
	0.040 mm	33	45
	0.020 mm	28	39
	0.006 mm	20	30
	0.002 mm	16	25
Gravel	%	13	10
Sand	%	48	41
Silt	%	23	24
Clay	%	16	25

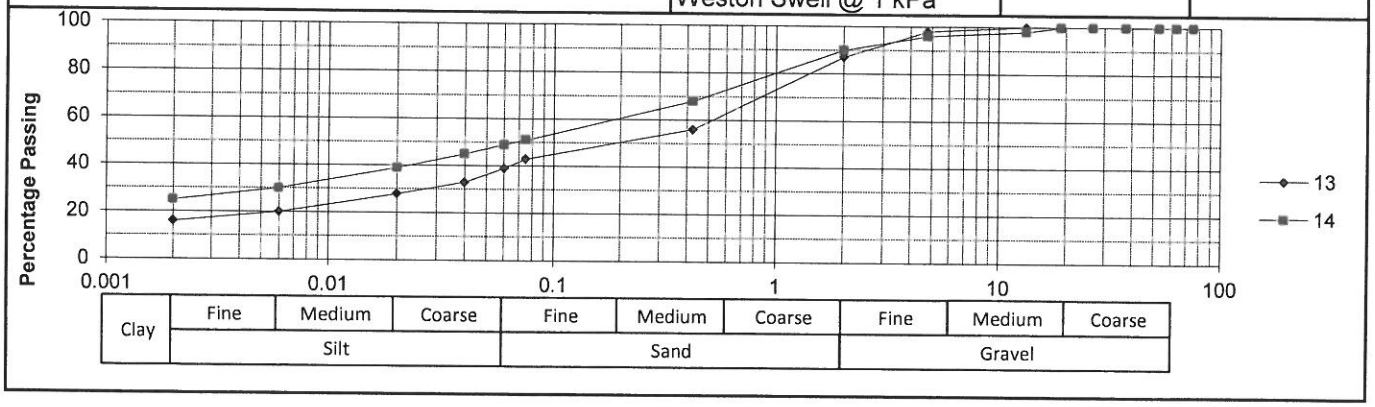
Laboratory Number		13 ◆	14 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	35	31
Plasticity Index	%	14	15
Linear Shrinkage	%	7.5	7.5
Overall PI	%	8	10

Classifications

HRB	A-6(3)	A-6(4)
Unified	SC	CL
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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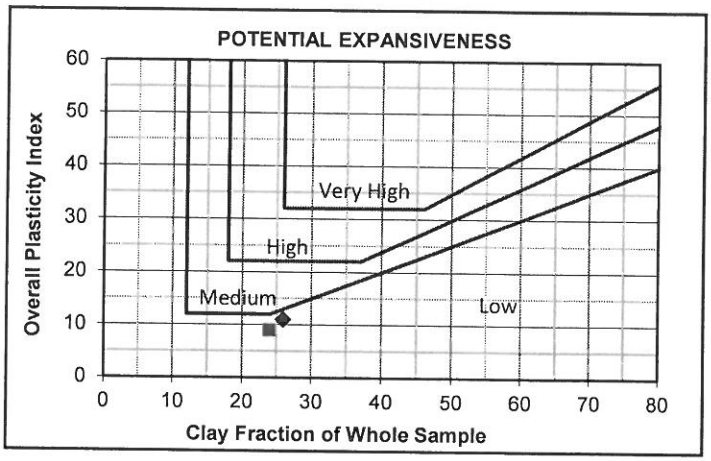
FOUNDATION INDICATOR

Laboratory Number		15 ◆	16 ■
Field Number		TP 19	TP 20
Client Reference			
Depth (m)		0.8	0.6
Position			
Coordinates	X		
	Y		
Description		Hillwash	Hillwash
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

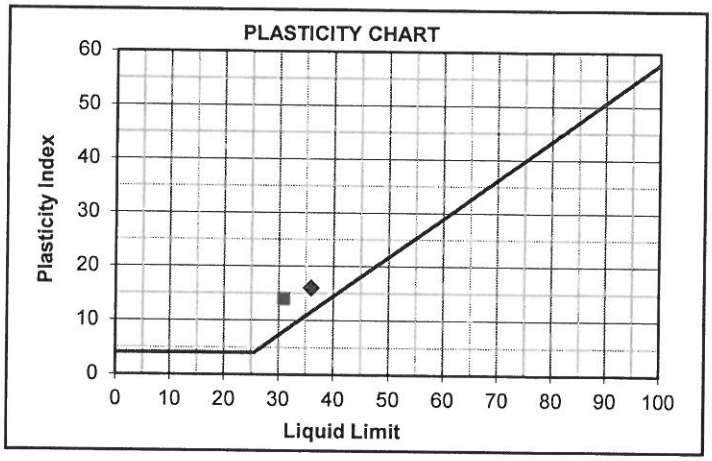


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

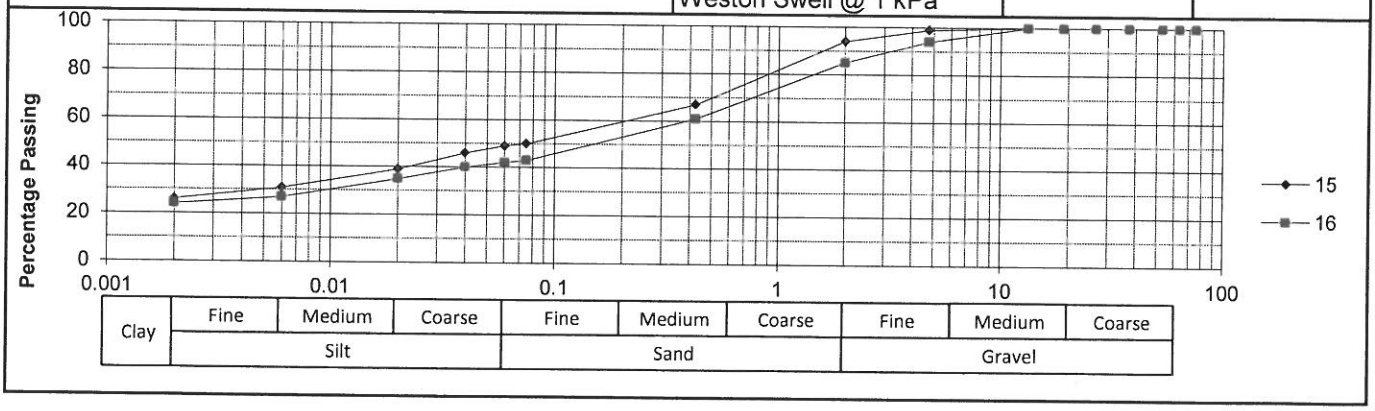
Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	99	94
	2.00 mm	94	85
	0.425 mm	67	61
	0.075 mm	50	43
Grading Modulus		0.89	1.11



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	49	42
	0.040 mm	46	40
	0.020 mm	39	35
	0.006 mm	31	27
	0.002 mm	26	24
Gravel	%	6	15
Sand	%	45	43
Silt	%	23	18
Clay	%	26	24

Laboratory Number		15 ◆	16 ■
Atterberg Limits - TMH1 Method A2, A3 & A4			
Liquid Limit	%	36	31
Plasticity Index	%	16	14
Linear Shrinkage	%	8.0	7.5
Overall PI	%	11	9
Classifications			
HRB		A-6(5)	A-6(2)
Unified		CL	SC
Weston Swell @ 1 kPa			



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PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
E-mail: jhb@civilab.co.za•Website: www.civilab.co.za

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Client	:	INTRACONSULT CC (C)	Date Received:	07/07/2014
Project	:	PTN 183 Olifantsfontein	Date Reported:	07/08/2014
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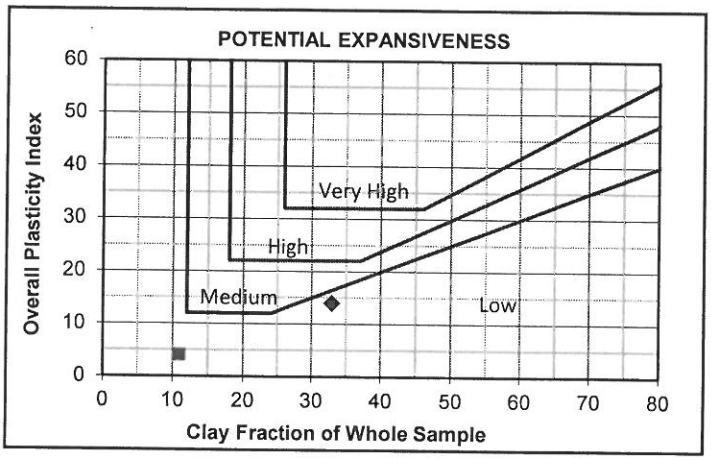
FOUNDATION INDICATOR

Laboratory Number		17 ◆	18 ■
Field Number		TP 20	TP 21
Client Reference			
Depth (m)		2	0.4
Position			
Coordinates	X		
	Y		
Description		Res. Granite	Hillwash
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

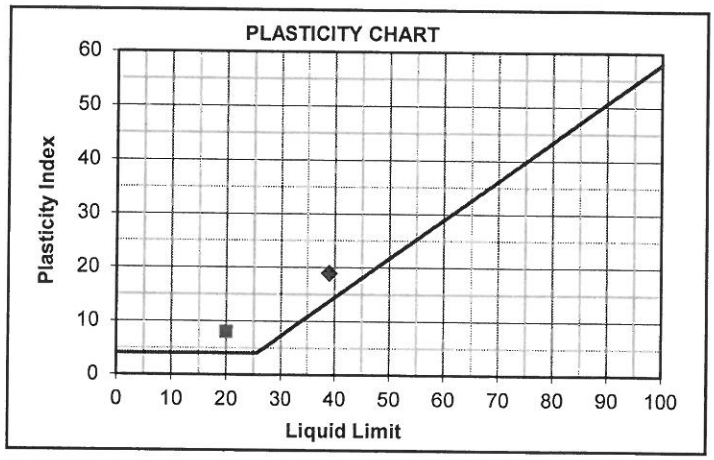


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

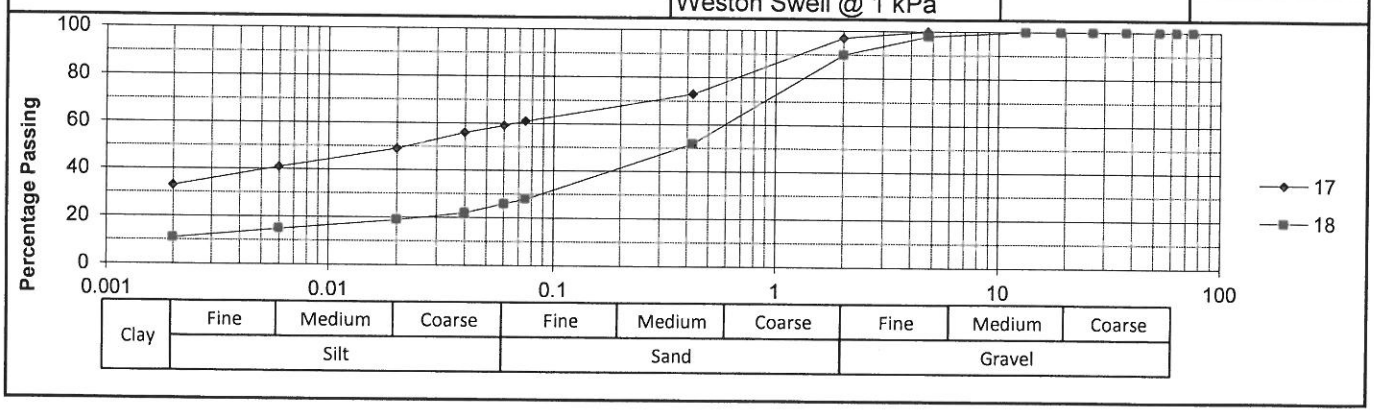
Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	100	98
	2.00 mm	97	90
	0.425 mm	73	52
	0.075 mm	61	28
Grading Modulus		0.69	1.3



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	59	26
	0.040 mm	56	22
	0.020 mm	49	19
	0.006 mm	41	15
	0.002 mm	33	11
Gravel	%	3	10
Sand	%	38	64
Silt	%	26	15
Clay	%	33	11

Laboratory Number		17 ◆	18 ■
Atterberg Limits - TMH1 Method A2, A3 & A4			
Liquid Limit	%	39	20
Plasticity Index	%	19	8
Linear Shrinkage	%	9.5	4.0
Overall PI	%	14	4
Classifications			
HRB		A-6(9)	A-2-4(0)
Unified		CL	SC
Weston Swell @ 1 kPa			



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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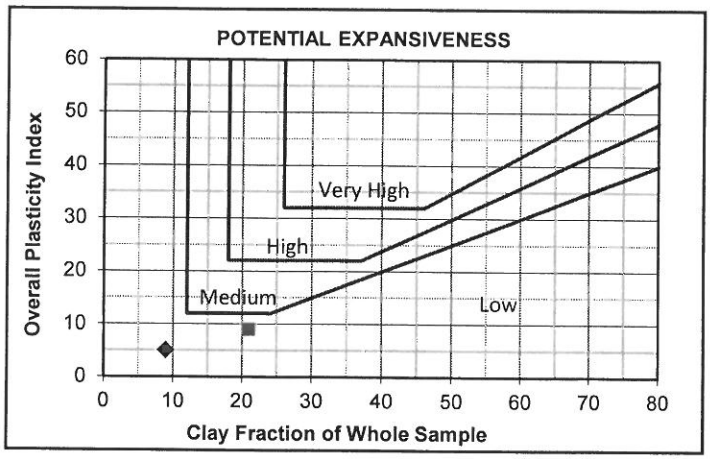
FOUNDATION INDICATOR

Laboratory Number		19 ◆	20 ■
Field Number		TP 22	TP 23
Client Reference			
Depth (m)		1	1
Position			
Coordinates	X		
	Y		
Description		Slightly Ferrug Res. Granite	Hillwash
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

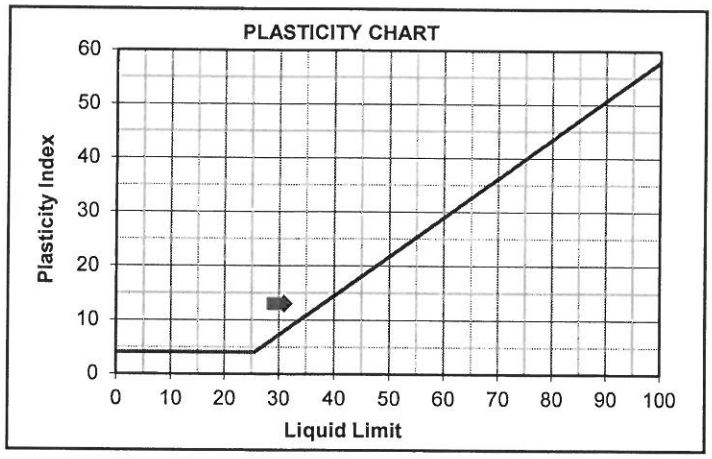


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	99	100
	4.75 mm	81	100
	2.00 mm	60	95
	0.425 mm	37	67
	0.075 mm	26	47
Grading Modulus		1.77	0.91



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	24	44
	0.040 mm	21	40
	0.020 mm	17	35
	0.006 mm	11	26
	0.002 mm	9	21
Gravel	%	40	5
Sand	%	36	51
Silt	%	15	23
Clay	%	9	21

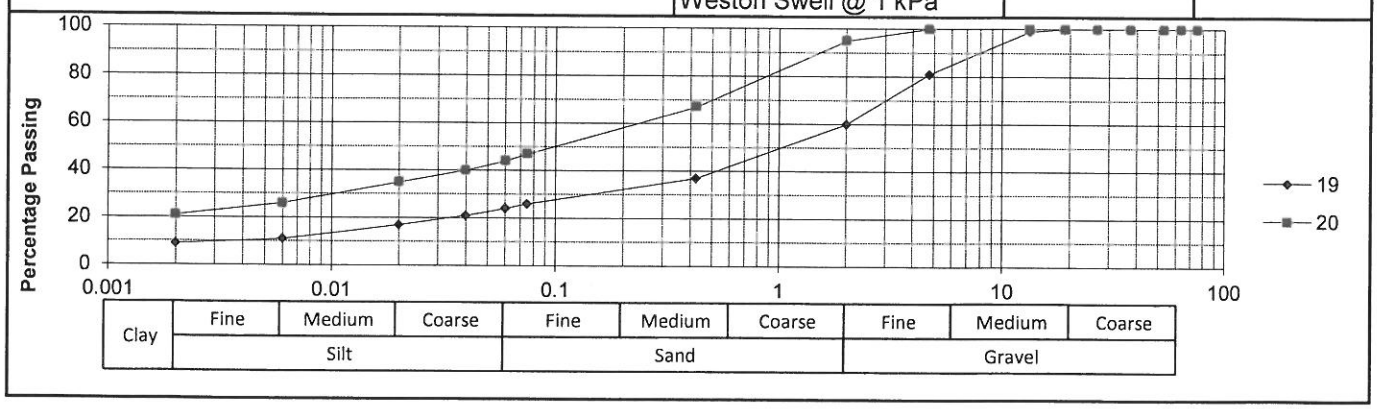
Laboratory Number		19 ◆	20 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	31	29
Plasticity Index	%	13	13
Linear Shrinkage	%	6.5	6.5
Overall PI	%	5	9

Classifications

HRB	A-2-6(0)	A-6(3)
Unified	SC	SC
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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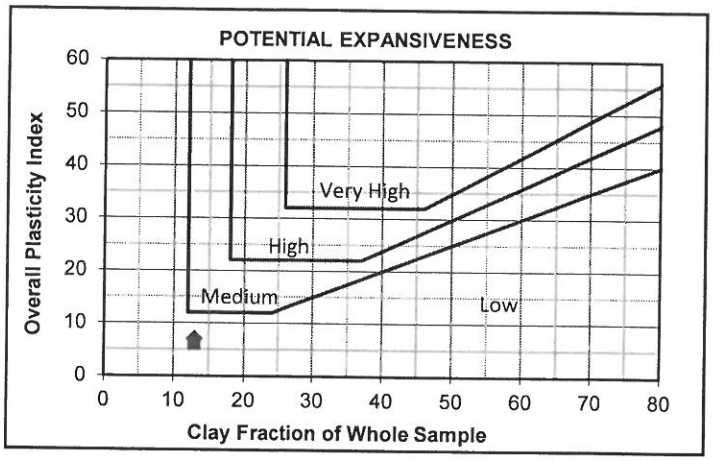
FOUNDATION INDICATOR

Laboratory Number		21 ◆	22 ■
Field Number		TP 24	TP 25
Client Reference			
Depth (m)		1	1.5
Position			
Coordinates	X		
	Y		
Description		Slightly Ferrug Res. Granite	Slightly Ferrug Res. Granite
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

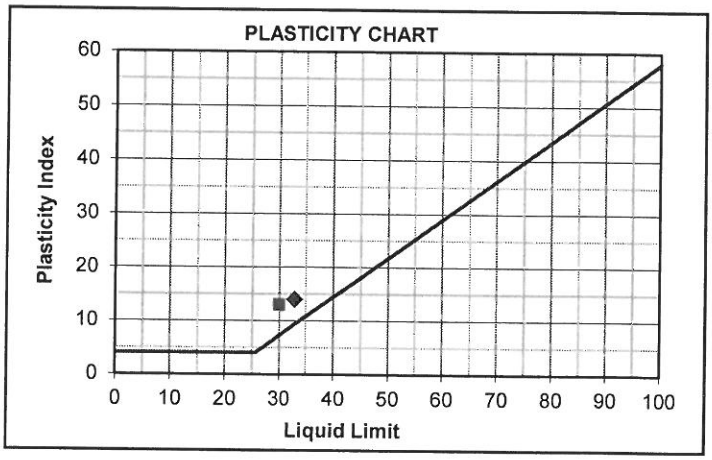


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

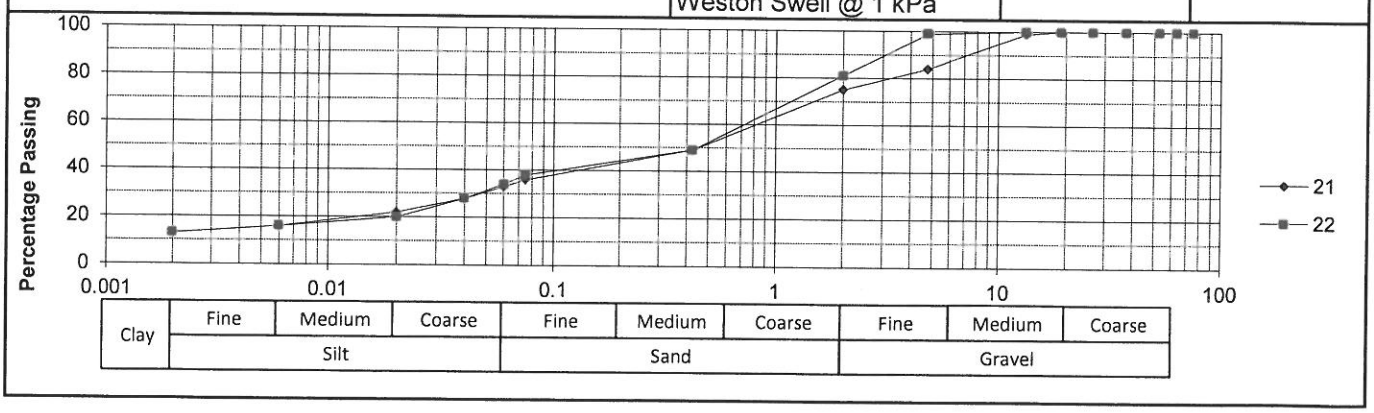
Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	99	100
	4.75 mm	84	99
	2.00 mm	75	81
	0.425 mm	49	49
	0.075 mm	36	38
Grading Modulus		1.4	1.32



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	33	34
	0.040 mm	28	28
	0.020 mm	22	20
	0.006 mm	16	16
	0.002 mm	13	13
Gravel	%	25	19
Sand	%	42	47
Silt	%	20	21
Clay	%	13	13

Laboratory Number		21 ◆	22 ■
Atterberg Limits - TMH1 Method A2, A3 & A4			
Liquid Limit	%	33	30
Plasticity Index	%	14	13
Linear Shrinkage	%	6.5	6.5
Overall PI	%	7	6
Classifications			
HRB		A-6(1)	A-6(1)
Unified		SC	SC
Weston Swell @ 1 kPa			



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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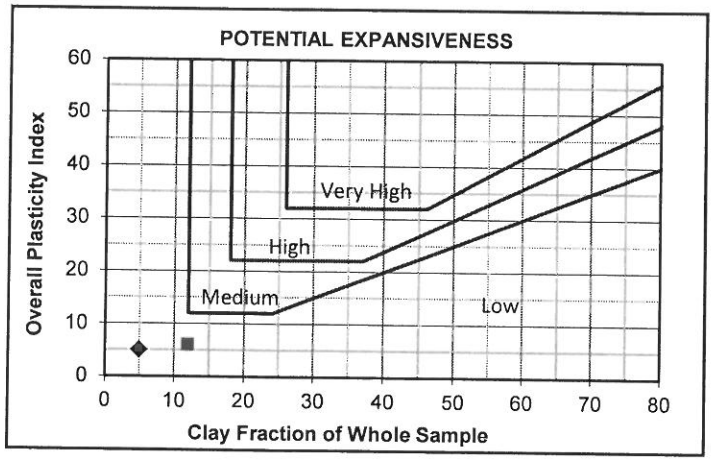
FOUNDATION INDICATOR

Laboratory Number		23 ◆	24 ■
Field Number		TP 29	TP 31
Client Reference			
Depth (m)		2	1
Position			
Coordinates	X		
	Y		
Description		Res. Granite	Slightly Ferrug Res. Granite
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

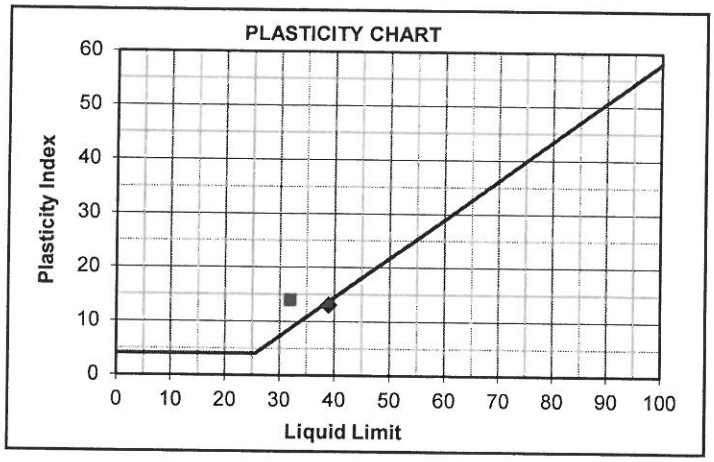


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

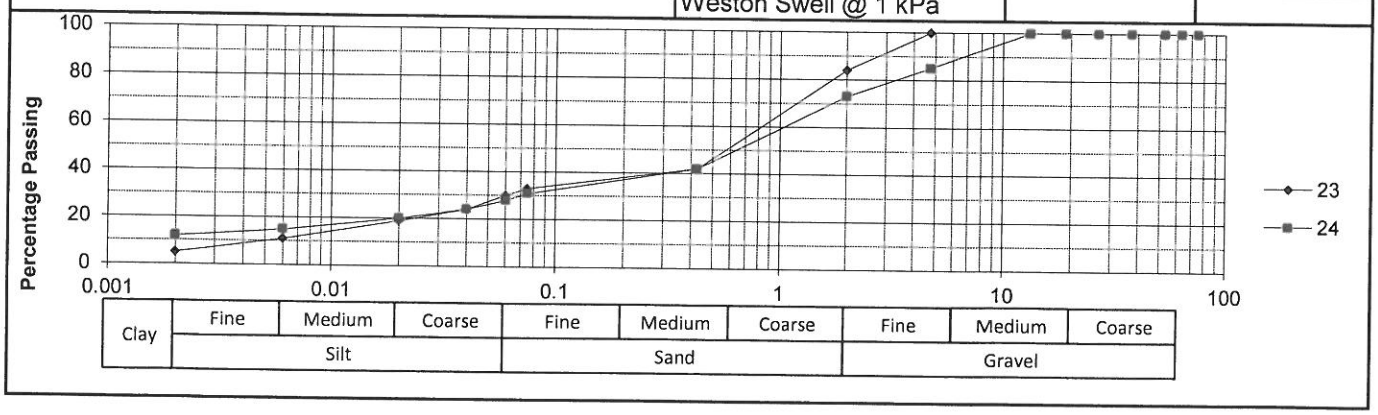
Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	100	85
	2.00 mm	84	73
	0.425 mm	42	42
	0.075 mm	33	31
Grading Modulus		1.41	1.54



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	30	28
	0.040 mm	24	24
	0.020 mm	19	20
	0.006 mm	11	15
	0.002 mm	5	12
Gravel	%	16	27
Sand	%	54	45
Silt	%	25	16
Clay	%	5	12

Laboratory Number		23 ◆	24 ■
Atterberg Limits - TMH1 Method A2, A3 & A4			
Liquid Limit	%	39	32
Plasticity Index	%	13	14
Linear Shrinkage	%	6.5	7.5
Overall PI	%	5	6
Classifications			
HRB		A-2-6(1)	A-2-6(1)
Unified		SC	SC
Weston Swell @ 1 kPa			



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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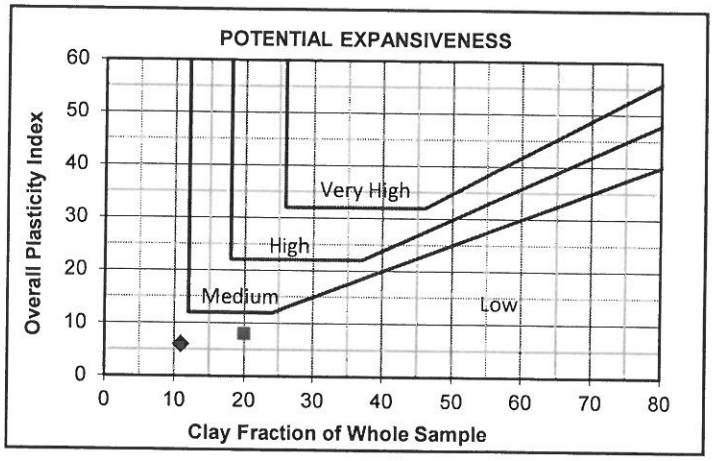
FOUNDATION INDICATOR

Laboratory Number		25 ◆	26 ■
Field Number		TP 32	TP 33
Client Reference			
Depth (m)		1.5	0.8
Position			
Coordinates	X		
	Y		
Description		Res. Granite	Hillwash
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

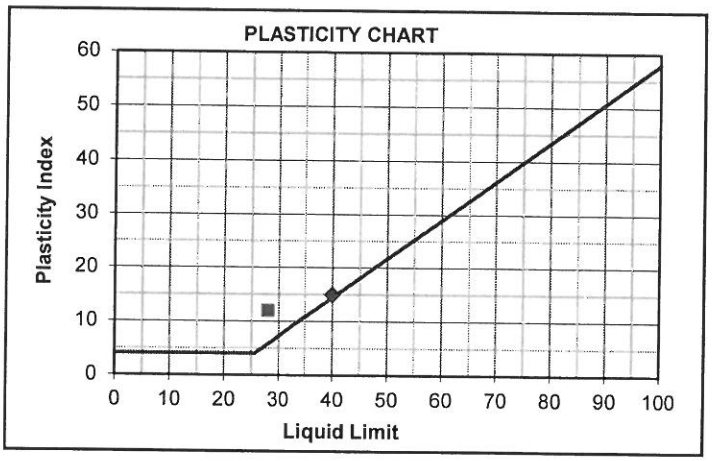


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

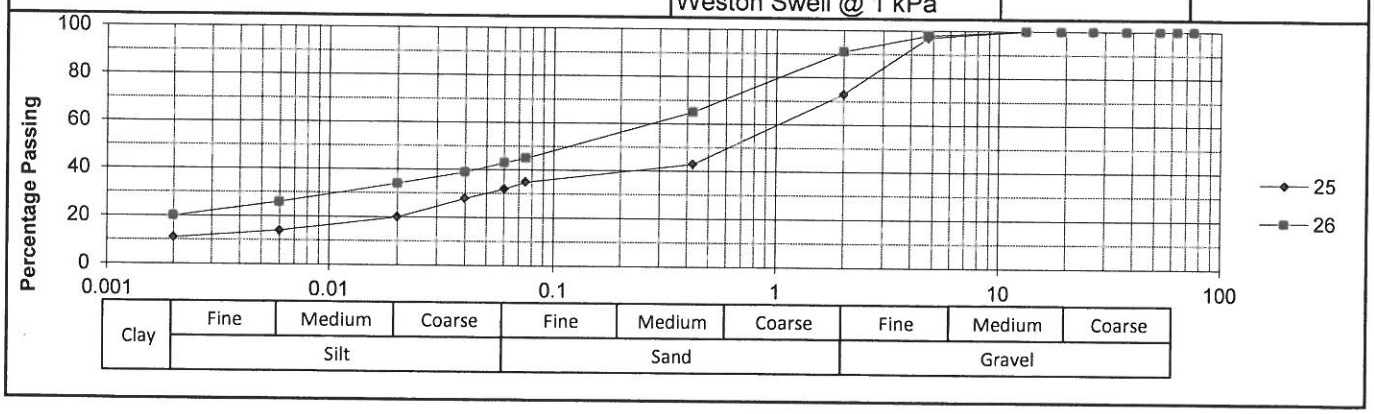
Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	97	98
	2.00 mm	73	91
	0.425 mm	43	65
	0.075 mm	35	45
Grading Modulus		1.49	0.99



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	32	43
	0.040 mm	28	39
	0.020 mm	20	34
	0.006 mm	14	26
	0.002 mm	11	20
Gravel	%	27	9
Sand	%	41	48
Silt	%	21	23
Clay	%	11	20

Laboratory Number		25 ◆	26 ■
Atterberg Limits - TMH1 Method A2, A3 & A4			
Liquid Limit	%	40	28
Plasticity Index	%	15	12
Linear Shrinkage	%	8.0	6.5
Overall PI	%	6	8
Classifications			
HRB		A-2-6(1)	A-6(2)
Unified		SC	SC
Weston Swell @ 1 kPa			



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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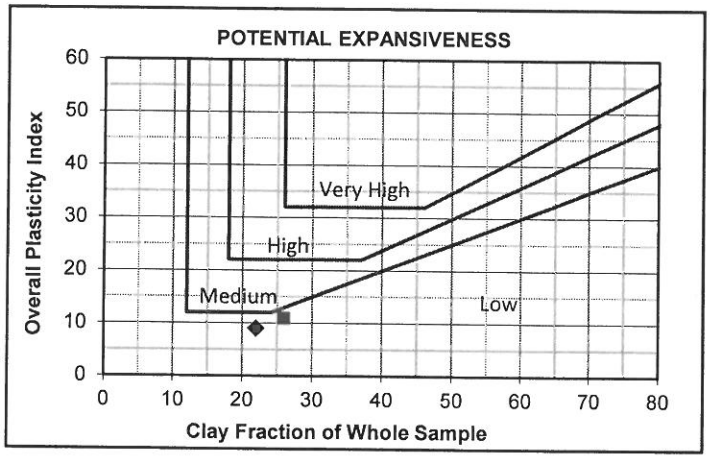
FOUNDATION INDICATOR

Laboratory Number		27 ◆	28 ■
Field Number		TP 39	TP 40
Client Reference			
Depth (m)		0.3	1.8
Position			
Coordinates	X		
	Y		
Description		Hillwash	Slightly Ferrug Res. Granite
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

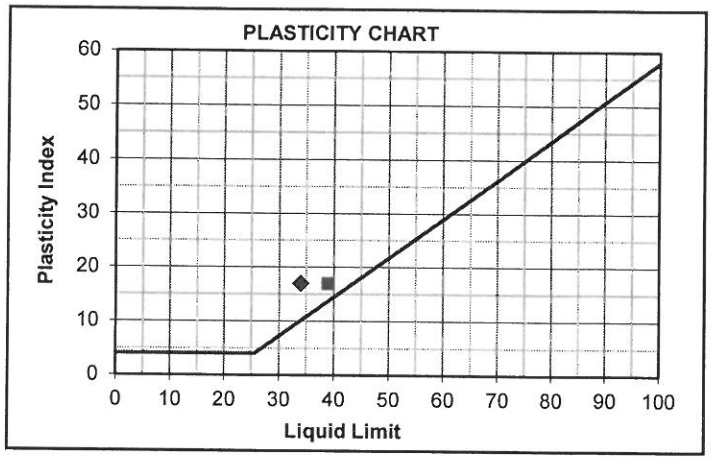


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

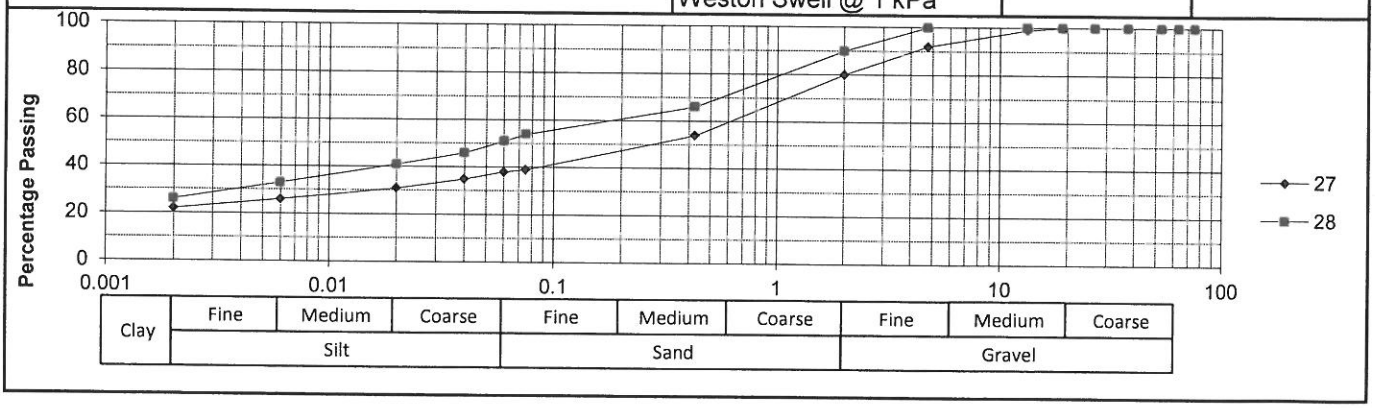
Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	99	100
	4.75 mm	92	100
	2.00 mm	80	90
	0.425 mm	54	66
	0.075 mm	39	54
Grading Modulus		1.27	0.9



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	38	51
	0.040 mm	35	46
	0.020 mm	31	41
	0.006 mm	26	33
	0.002 mm	22	26
Gravel	%	20	10
Sand	%	42	39
Silt	%	16	25
Clay	%	22	26

Laboratory Number		27 ◆	28 ■
Atterberg Limits - TMH1 Method A2, A3 & A4			
Liquid Limit	%	34	39
Plasticity Index	%	17	17
Linear Shrinkage	%	8.5	9.5
Overall PI	%	9	11
Classifications			
HRB		A-6(2)	A-6(6)
Unified		SC	CL
Weston Swell @ 1 kPa			



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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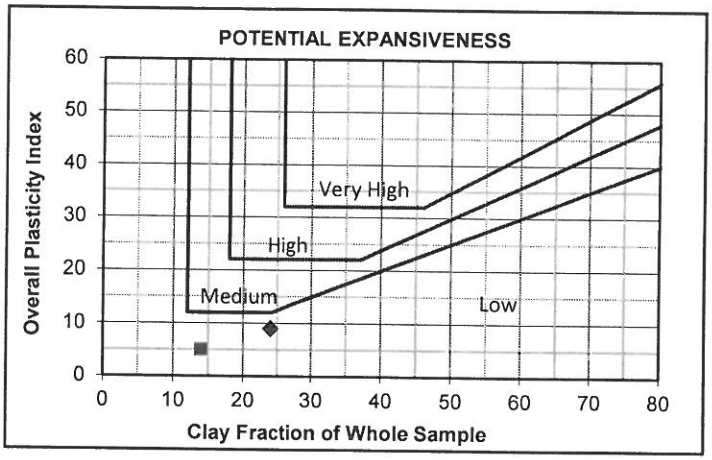
FOUNDATION INDICATOR

Laboratory Number		29 ◆	30 ■
Field Number		TP 41	TP 42
Client Reference			
Depth (m)		1.6	0.6
Position			
Coordinates	X		
	Y		
Description		Res. Granite	Hillwash
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

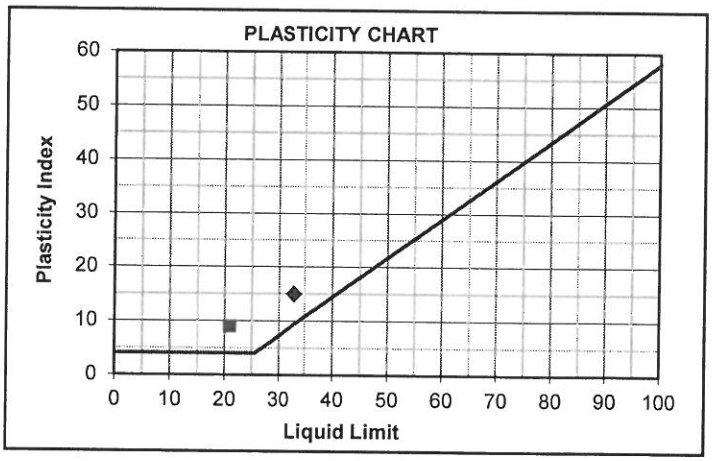


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	98	100
	2.00 mm	89	92
	0.425 mm	61	53
	0.075 mm	49	30
Grading Modulus		1.01	1.25



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	46	28
	0.040 mm	42	25
	0.020 mm	38	22
	0.006 mm	30	17
	0.002 mm	24	14
Gravel	%	11	8
Sand	%	43	64
Silt	%	22	14
Clay	%	24	14

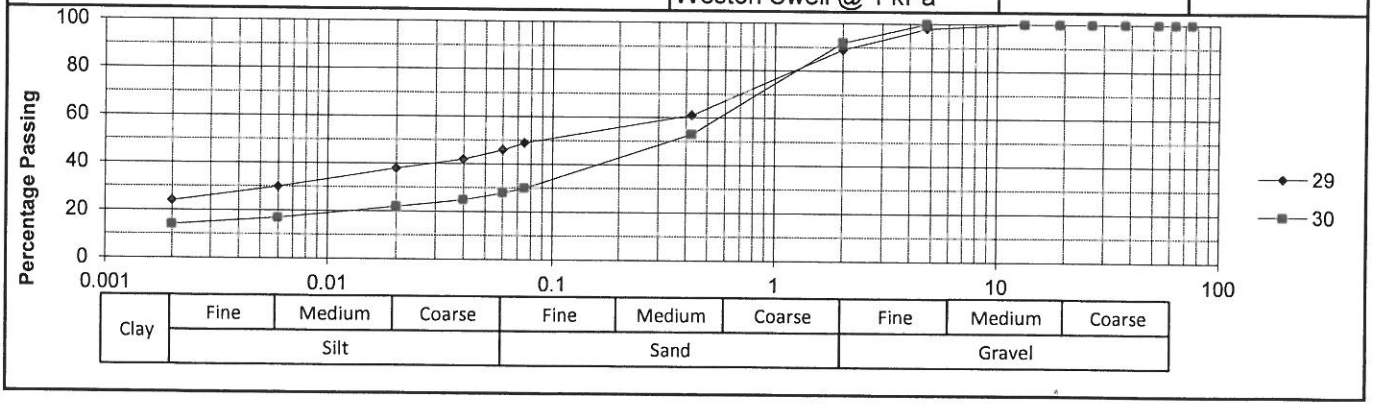
Laboratory Number		29 ◆	30 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	33	21
Plasticity Index	%	15	9
Linear Shrinkage	%	8.0	4.0
Overall PI	%	9	5

Classifications

HRB	A-6(4)	A-2-4(0)
Unified	GC	SC
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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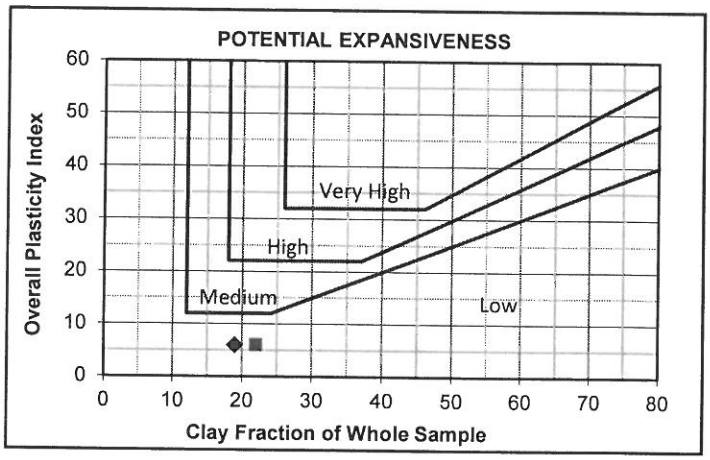
FOUNDATION INDICATOR

Laboratory Number		31 ◆	32 ■
Field Number		TP 45	TP 46
Client Reference			
Depth (m)		0.6	0.5
Position			
Coordinates	X		
	Y		
Description		Hillwash	Hillwash
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

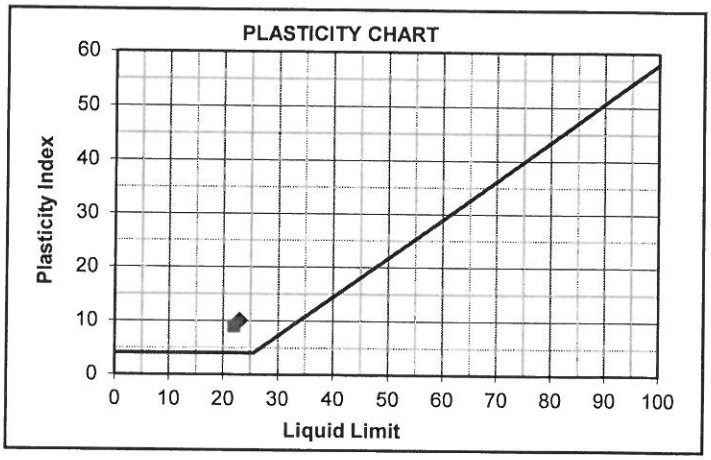


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	100	100
	2.00 mm	97	98
	0.425 mm	64	72
	0.075 mm	36	46
Grading Modulus		1.03	0.84



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	34	42
	0.040 mm	31	37
	0.020 mm	28	34
	0.006 mm	22	27
	0.002 mm	19	22
Gravel	%	3	2
Sand	%	63	56
Silt	%	15	20
Clay	%	19	22

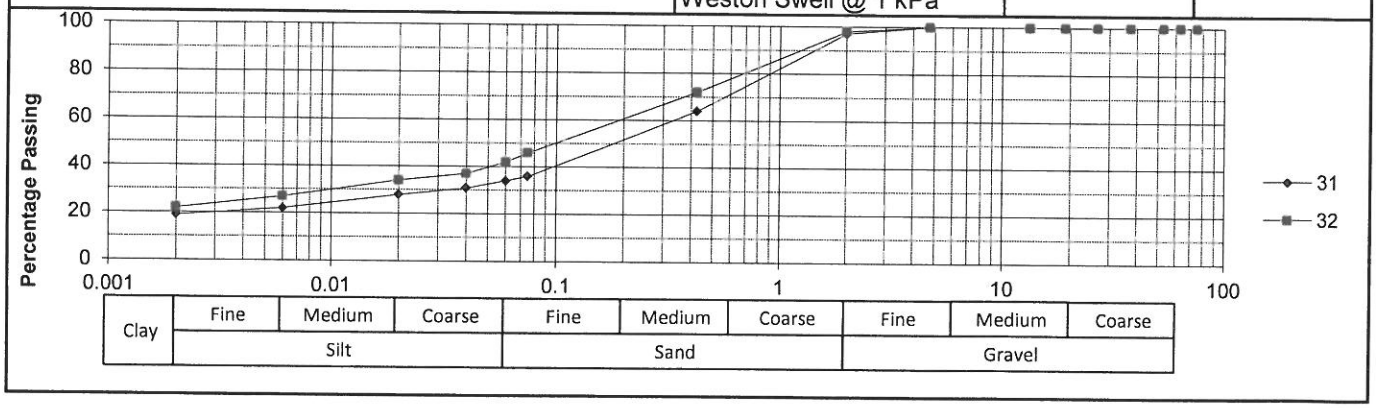
Laboratory Number		31 ◆	32 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	23	22
Plasticity Index	%	10	9
Linear Shrinkage	%	4.5	4.5
Overall PI	%	6	6

Classifications

HRB	A-4(0)	A-4(1)
Unified	SC	SC
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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Client	:	INTRACONSULT CC (C)	Date Received:	07/07/2014
Project	:	PTN 183 Olifantsfontein	Date Reported:	07/08/2014
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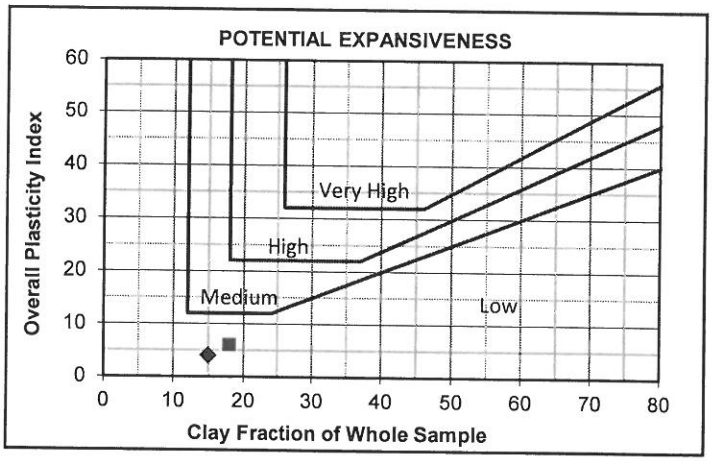
FOUNDATION INDICATOR

Laboratory Number		33 ◆	34 ■
Field Number		TP 47	TP 48
Client Reference			
Depth (m)		0.3	0.8
Position			
Coordinates	X		
	Y		
Description		Hillwash	Hillwash
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

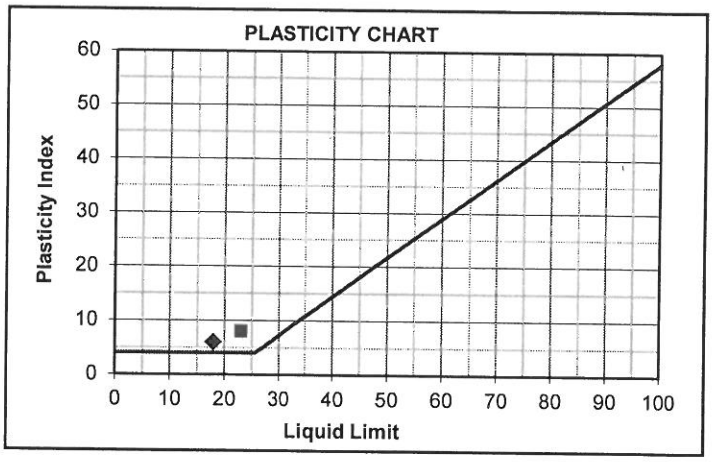


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	99	100
	2.00 mm	97	99
	0.425 mm	64	76
	0.075 mm	33	50
Grading Modulus		1.06	0.75



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	32	46
	0.040 mm	29	41
	0.020 mm	23	35
	0.006 mm	18	24
	0.002 mm	15	18
Gravel	%	3	1
Sand	%	65	53
Silt	%	17	28
Clay	%	15	18

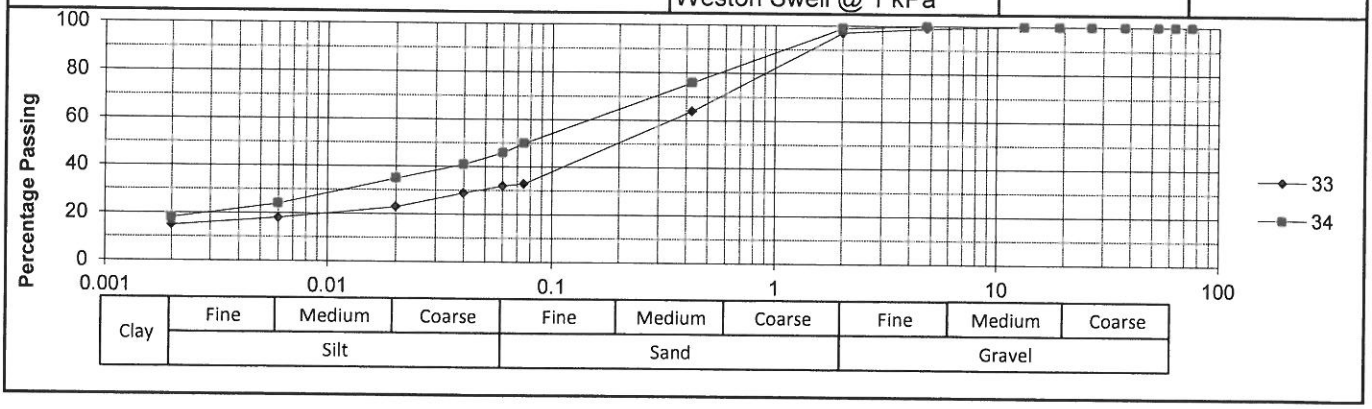
Laboratory Number		33 ◆	34 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	18	23
Plasticity Index	%	6	8
Linear Shrinkage	%	2.5	4.0
Overall PI	%	4	6

Classifications

HRB	A-2-4(0)	A-4(1)
Unified	SC-SM	CL
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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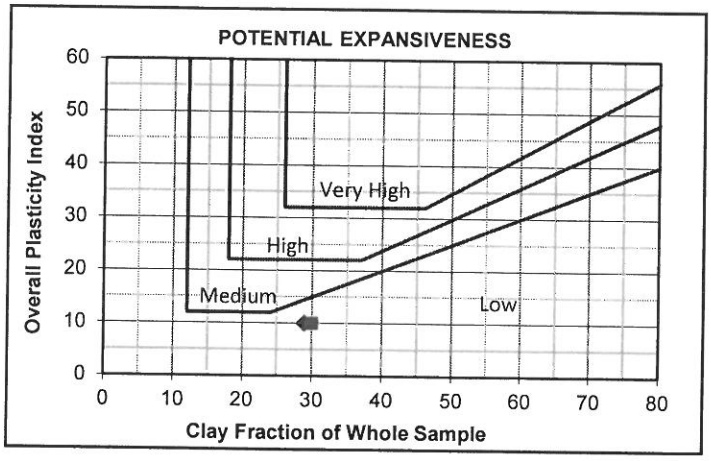
FOUNDATION INDICATOR

Laboratory Number		35 ◆	36 ■
Field Number		TP 51	TP 52
Client Reference			
Depth (m)		0.6	0.8
Position			
Coordinates	X		
	Y		
Description		Hillwash	Hillwash
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

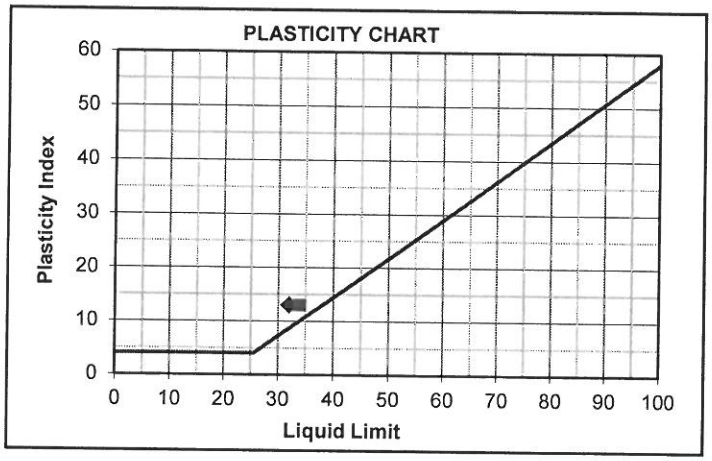


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

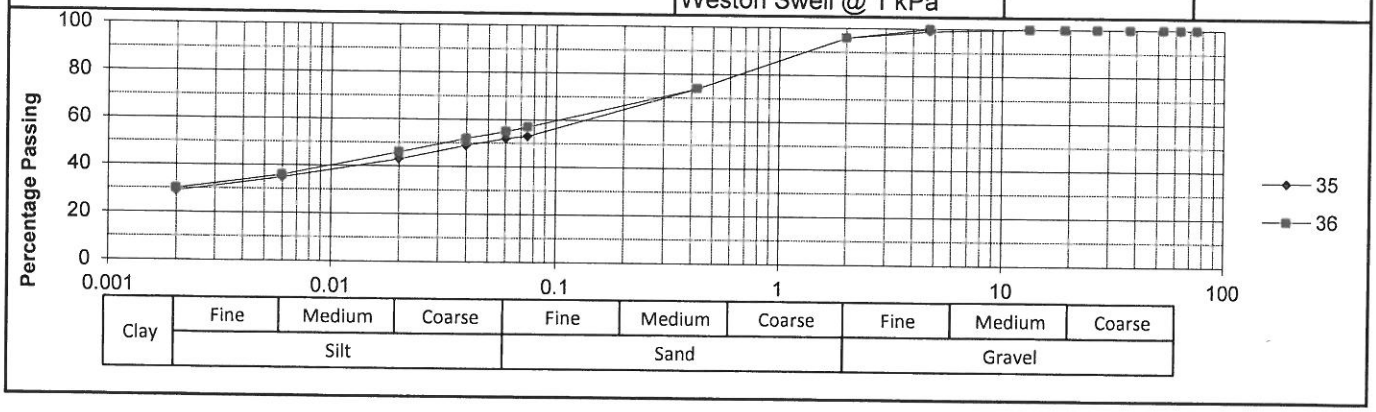
Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	99	100
	2.00 mm	96	96
	0.425 mm	74	74
	0.075 mm	53	57
Grading Modulus		0.77	0.73



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	52	55
	0.040 mm	49	52
	0.020 mm	43	46
	0.006 mm	35	36
	0.002 mm	29	30
Gravel	%	4	4
Sand	%	44	41
Silt	%	23	25
Clay	%	29	30

Laboratory Number		35 ◆	36 ■
Atterberg Limits - TMH1 Method A2, A3 & A4			
Liquid Limit	%	32	34
Plasticity Index	%	13	13
Linear Shrinkage	%	6.5	7.5
Overall PI	%	10	10
Classifications			
HRB		A-6(4)	A-6(5)
Unified		CL	CL
Weston Swell @ 1 kPa			



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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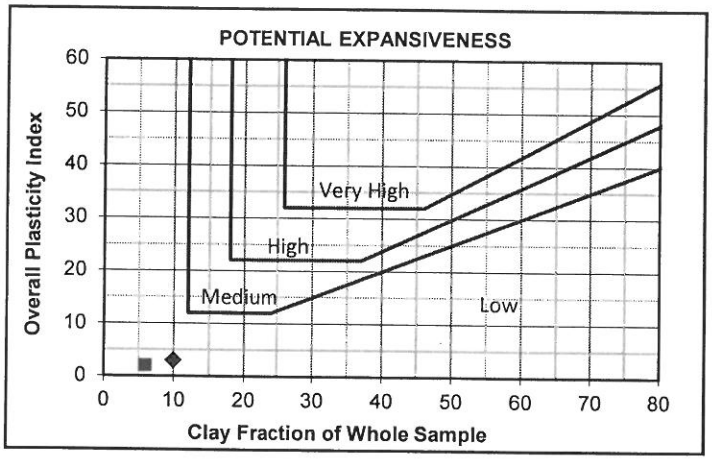
FOUNDATION INDICATOR

Laboratory Number		37 ◆	38 ■
Field Number		TP 59	TP 66
Client Reference			
Depth (m)		1	0.8
Position			
Coordinates	X		
	Y		
Description		Slightly Ferrug Res. Granite	Slightly Ferrug Res. Granite
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

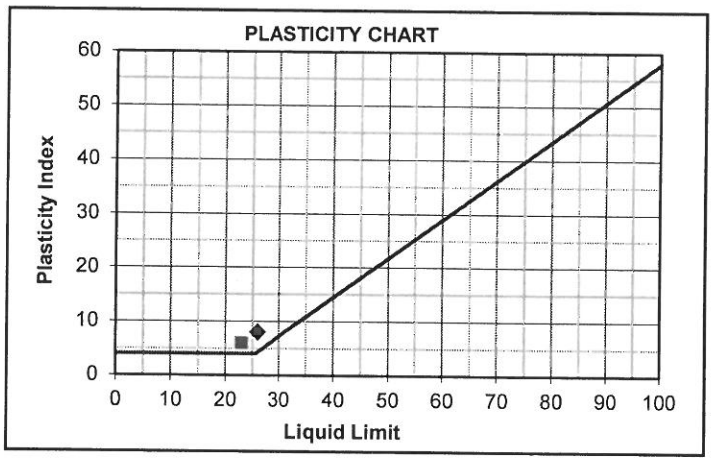


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

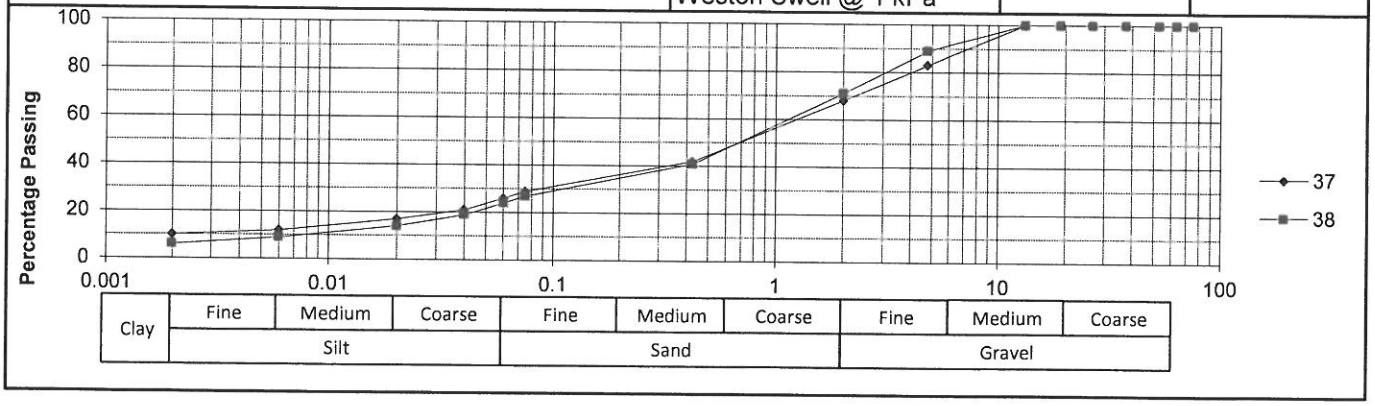
Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	83	89
	2.00 mm	68	71
	0.425 mm	42	41
	0.075 mm	29	27
Grading Modulus		1.61	1.61



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	26	24
	0.040 mm	21	19
	0.020 mm	17	14
	0.006 mm	12	9
	0.002 mm	10	6
Gravel	%	32	29
Sand	%	42	47
Silt	%	16	18
Clay	%	10	6

Laboratory Number		37 ◆	38 ■
Atterberg Limits - TMH1 Method A2, A3 & A4			
Liquid Limit	%	26	23
Plasticity Index	%	8	6
Linear Shrinkage	%	4.0	3.5
Overall PI	%	3	2
Classifications			
HRB		A-2-4(0)	A-2-4(0)
Unified		SC	SC-SM
Weston Swell @ 1 kPa			



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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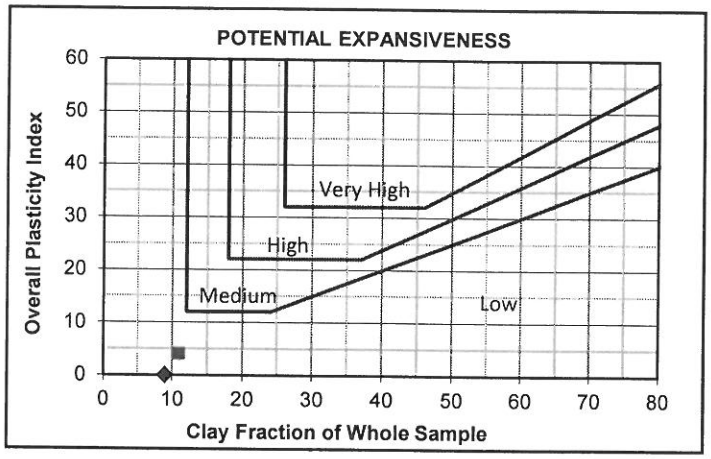
FOUNDATION INDICATOR

Laboratory Number		39 ◆	40 ■
Field Number		TP 68	TP 69
Client Reference			
Depth (m)		0.6	0.3
Position			
Coordinates	X		
	Y		
Description		Hillwash	Slightly Ferrug Res. Granite
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

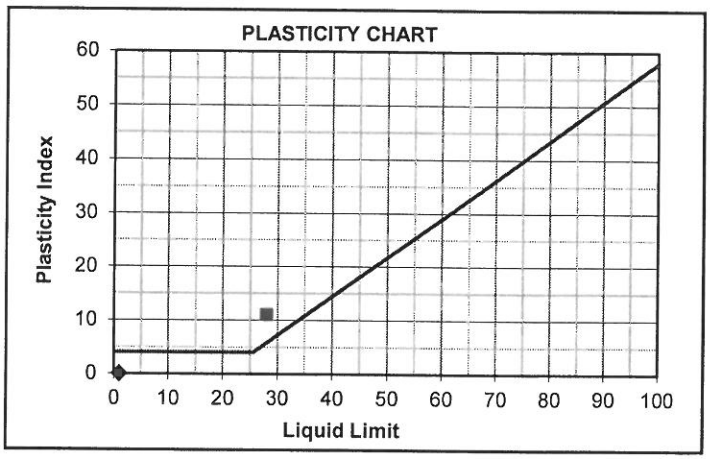


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	99
	4.75 mm	99	73
	2.00 mm	92	56
	0.425 mm	58	37
	0.075 mm	35	26
Grading Modulus		1.15	1.81



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	33	24
	0.040 mm	28	21
	0.020 mm	21	18
	0.006 mm	13	14
	0.002 mm	9	11
Gravel	%	8	44
Sand	%	59	32
Silt	%	24	13
Clay	%	9	11

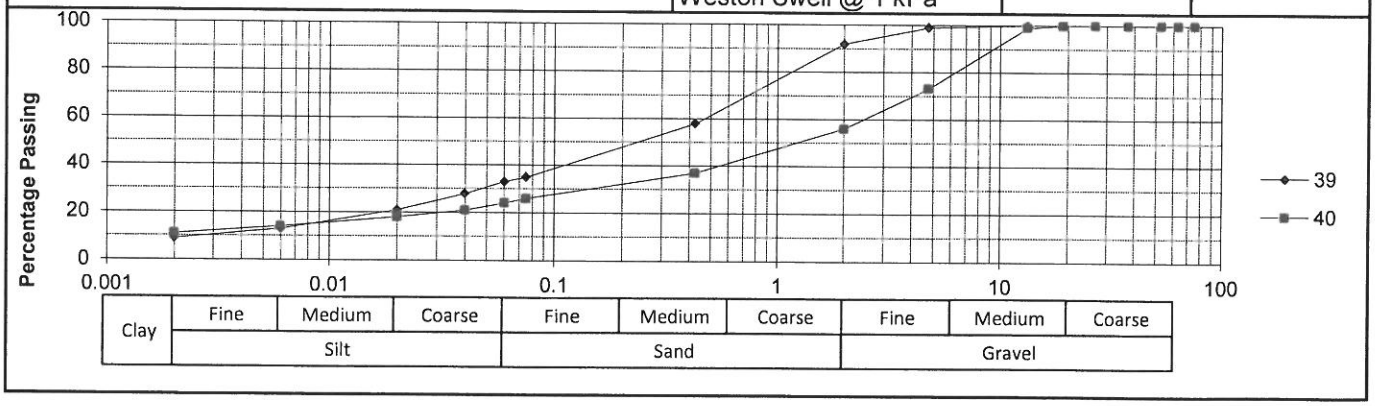
Laboratory Number	39 ◆	40 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	NP	28
Plasticity Index	%		11
Linear Shrinkage	%		6.0
Overall PI	%		4

Classifications

HRB	A-2-4(0)	A-2-6(0)
Unified	SM	SC
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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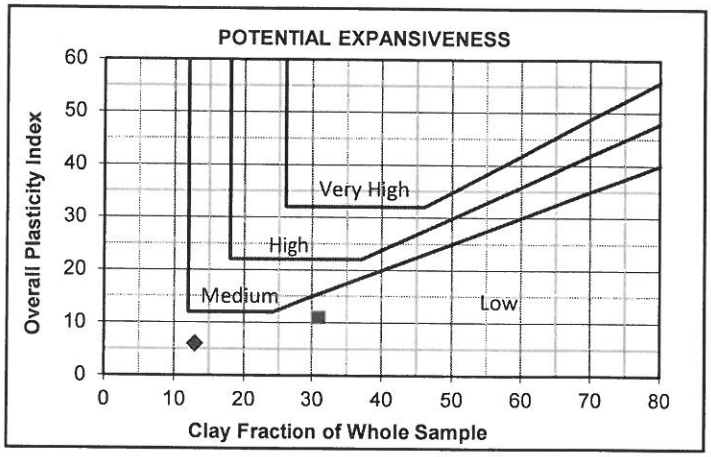
FOUNDATION INDICATOR

Laboratory Number		41 ◆	42 ■
Field Number		TP 70	TP 71
Client Reference			
Depth (m)		0.5	0.8
Position			
Coordinates	X		
	Y		
Description		Slightly Ferrug Res. Granite	Hillwash
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

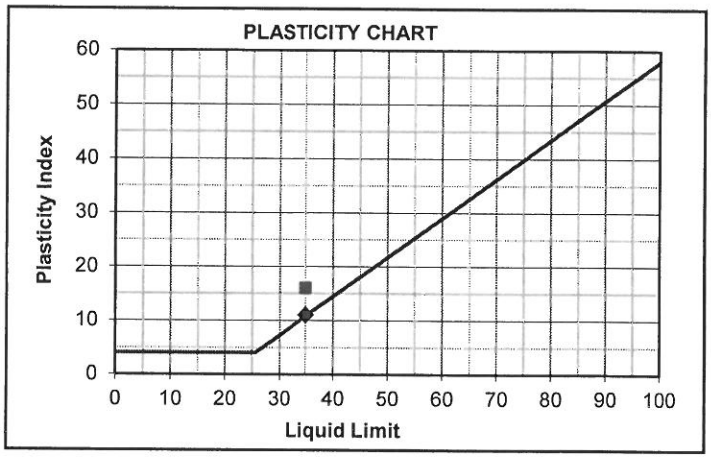


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

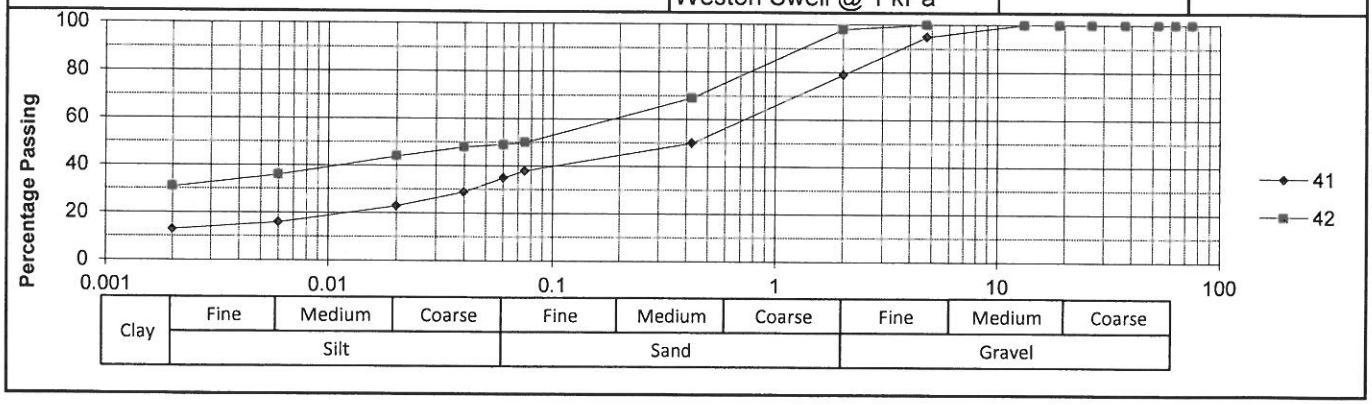
Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	95	100
	2.00 mm	79	98
	0.425 mm	50	69
	0.075 mm	38	50
Grading Modulus		1.33	0.83



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	35	49
	0.040 mm	29	48
	0.020 mm	23	44
	0.006 mm	16	36
	0.002 mm	13	31
Gravel	%	21	2
Sand	%	44	49
Silt	%	22	18
Clay	%	13	31

Laboratory Number		41 ◆	42 ■
Atterberg Limits - TMH1 Method A2, A3 & A4			
Liquid Limit	%	35	35
Plasticity Index	%	11	16
Linear Shrinkage	%	6.0	8.0
Overall PI	%	6	11
Classifications			
HRB		A-6(1)	A-6(5)
Unified		SC	CL
Weston Swell @ 1 kPa			



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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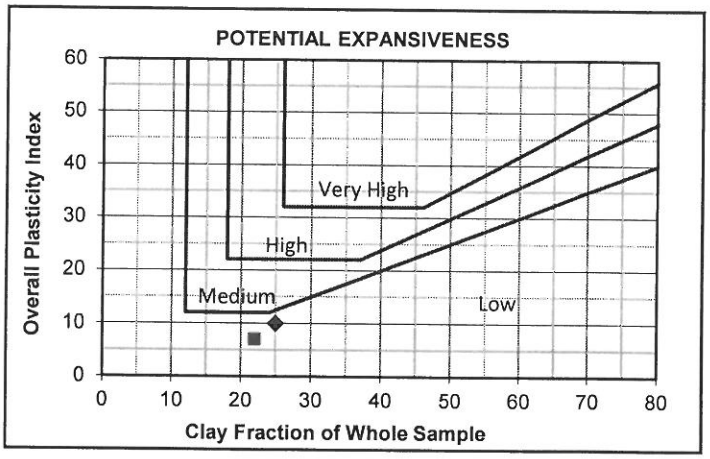
FOUNDATION INDICATOR

Laboratory Number		43 ◆	44 ■
Field Number		TP 71	TP 74
Client Reference			
Depth (m)		1.8	0.5
Position			
Coordinates	X		
	Y		
Description		Res. Granite	Hillwash
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

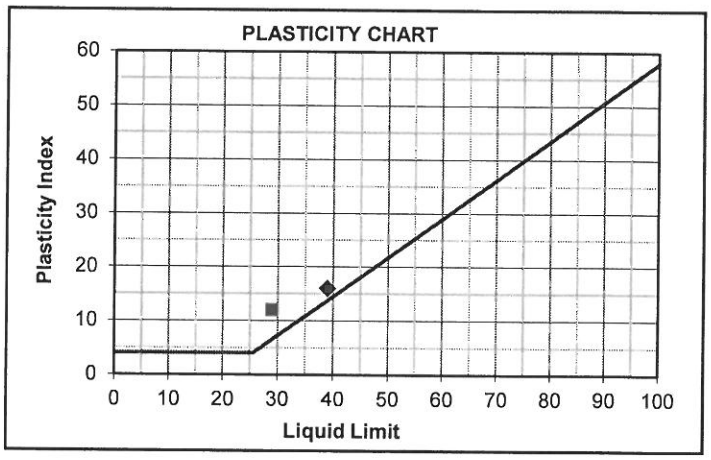


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	96	100
	2.00 mm	85	96
	0.425 mm	62	60
	0.075 mm	49	39
Grading Modulus		1.04	1.05



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	48	38
	0.040 mm	47	36
	0.020 mm	42	33
	0.006 mm	30	27
	0.002 mm	25	22
Gravel	%	15	4
Sand	%	37	58
Silt	%	23	16
Clay	%	25	22

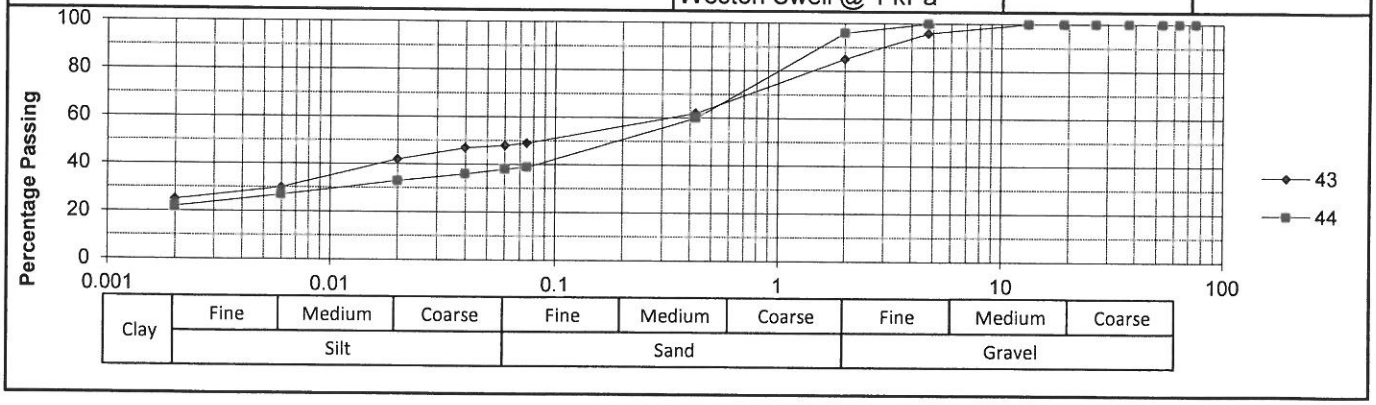
Laboratory Number	43 ◆	44 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	39	29
Plasticity Index	%	16	12
Linear Shrinkage	%	8.0	6.0
Overall PI	%	10	7

Classifications

HRB	A-6(5)	A-6(1)
Unified	GC	SC
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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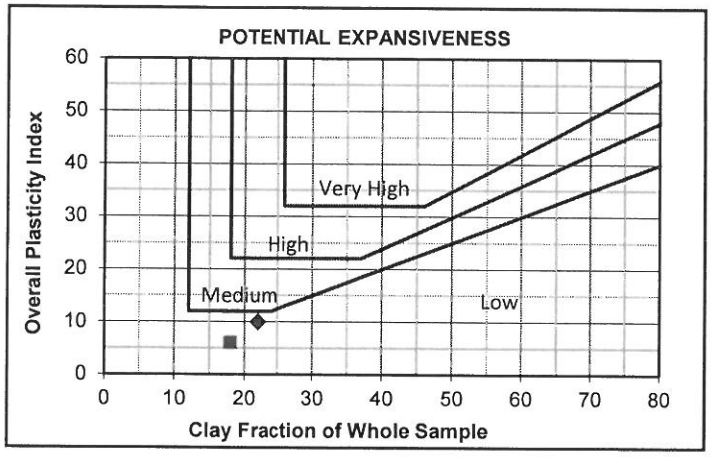
FOUNDATION INDICATOR

Laboratory Number		45 ◆	46 ■
Field Number		TP 76	TP 78
Client Reference			
Depth (m)		1.5	0.3
Position			
Coordinates	X		
	Y		
Description		Slightly Ferrug Res. Granite	Gully Wash
Aditional Information			
Calcrete / Crushed Stabilizing Agent			

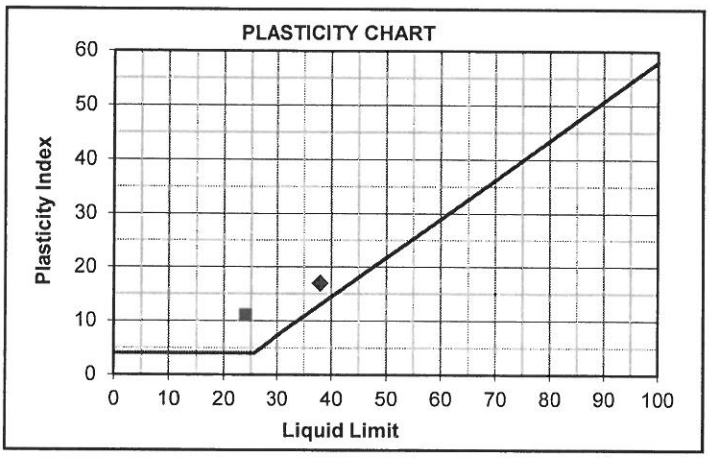


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

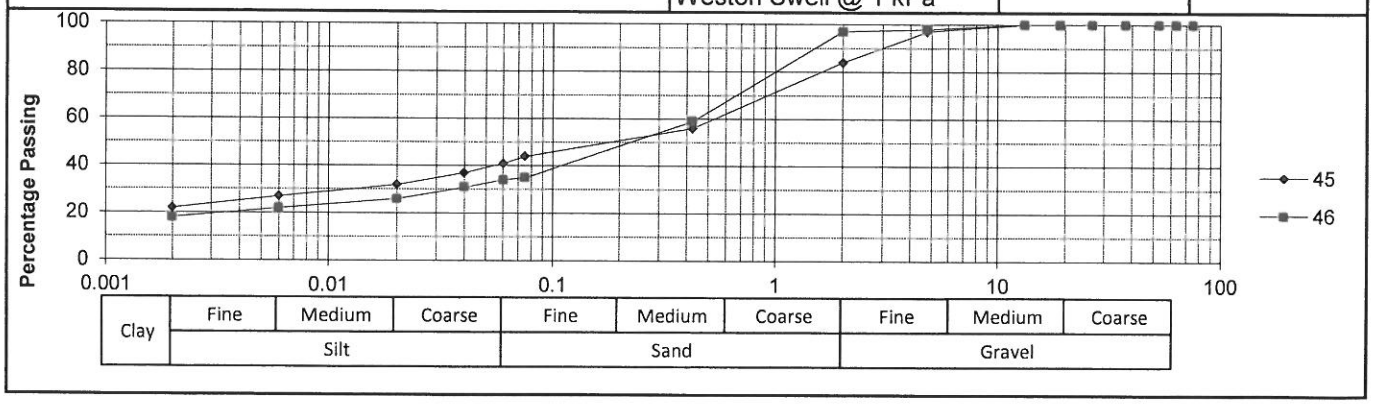
Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	97	98
	2.00 mm	84	97
	0.425 mm	56	59
	0.075 mm	44	35
Grading Modulus		1.16	1.09



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	41	34
	0.040 mm	37	31
	0.020 mm	32	26
	0.006 mm	27	22
	0.002 mm	22	18
Gravel	%	16	3
Sand	%	43	63
Silt	%	19	16
Clay	%	22	18

Laboratory Number		45 ◆	46 ■
Atterberg Limits - TMH1 Method A2, A3 & A4			
Liquid Limit	%	38	24
Plasticity Index	%	17	11
Linear Shrinkage	%	8.5	5.5
Overall PI	%	10	6
Classifications			
HRB		A-6(4)	A-2-6(0)
Unified		SC	SC
Weston Swell @ 1 kPa			



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
E-mail: jhb@civilab.co.za•Website: www.civilab.co.za

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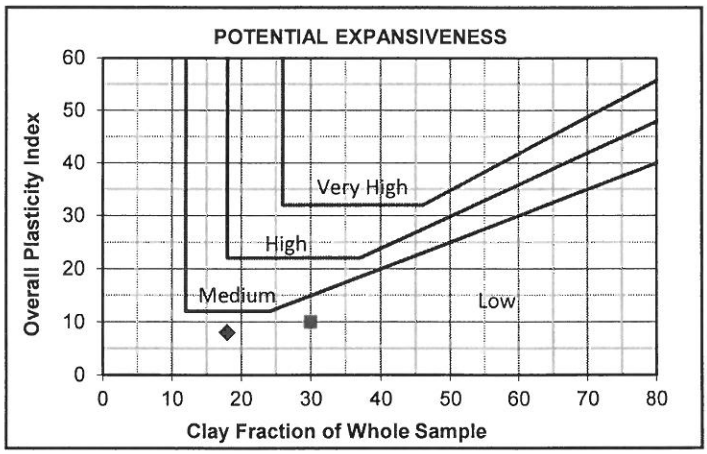
Client	:	INTRACONSULT CC (C)	Date Received:	07/07/2014
Project	:	PTN 183 Olifantsfontein	Date Reported:	07/08/2014
Project No	:	2014-B-1295	Page No. :	25 of 84

FOUNDATION INDICATOR

Laboratory Number		47 ◆	48 ■
Field Number		TP 82	TP 83
Client Reference			
Depth (m)		0.8	0.6
Position			
Coordinates	X		
	Y		
Description		Nodular Ferricrete	Hillwash
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

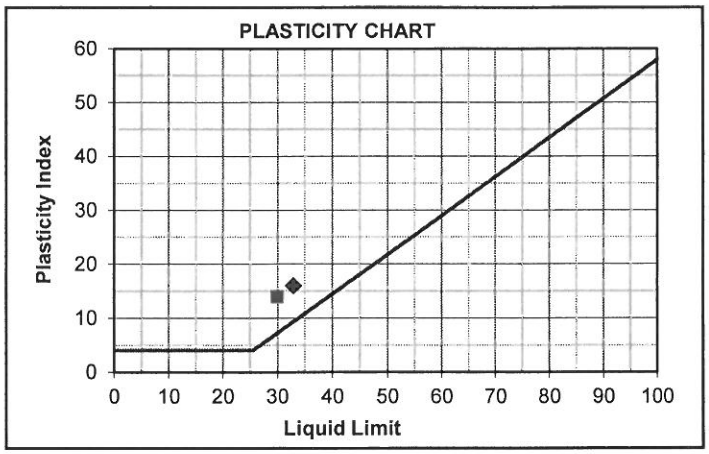


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	100
	63.0 mm	100	100
	53.0 mm	100	100
	37.5 mm	100	100
	26.5 mm	100	100
	19.0 mm	100	100
	13.2 mm	100	100
	4.75 mm	87	99
	2.00 mm	69	97
	0.425 mm	51	73
	0.075 mm	37	50
Grading Modulus		1.43	0.8



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	34	48
	0.040 mm	30	45
	0.020 mm	26	41
	0.006 mm	21	36
	0.002 mm	18	30
Gravel	%	31	3
Sand	%	35	49
Silt	%	16	18
Clay	%	18	30

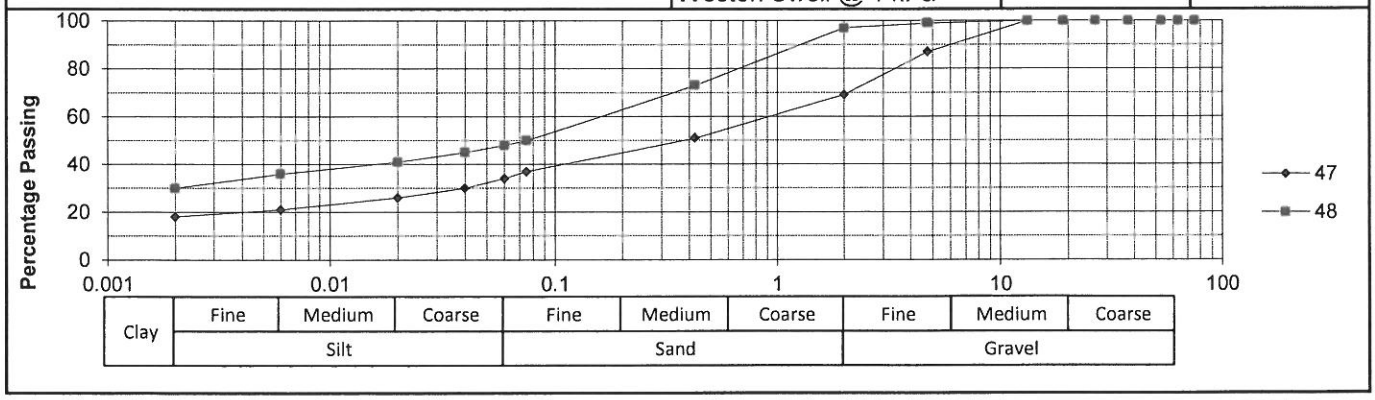
Laboratory Number	47 ◆	48 ■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	33	30
Plasticity Index	%	16	14
Linear Shrinkage	%	8.0	7.5
Overall PI	%	8	10

Classifications

HRB	A-6(2)	A-6(4)
Unified	SC	CL
Weston Swell @ 1 kPa		



36 Fourth Street, Booysens Reserve, Johannesburg 2091
PO Box 82223, Southdale 2135
Tel: +27 (0)11 835 3117•Fax: +27 (0)11 835 2503
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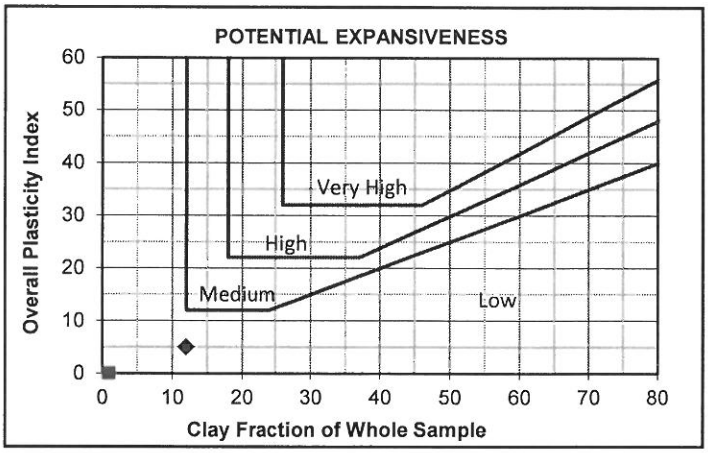
Client	:	INTRACONSULT CC (C)	Date Received:	07/07/2014
Project	:	PTN 183 Olifantsfontein	Date Reported:	07/08/2014
Project No	:	2014-B-1295	Page No. :	26 of 84

FOUNDATION INDICATOR

Laboratory Number		49 ◆	■
Field Number		TP 84	
Client Reference			
Depth (m)		0.8	
Position			
Coordinates	X		
	Y		
Description		Slightly Ferrug Res. Granite	
Aditional Information			
Calcrete / Crushed			
Stabilizing Agent			

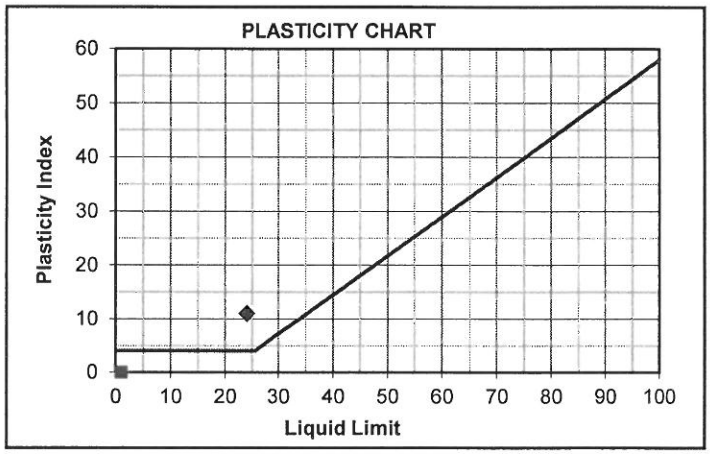


Moisture Content & Relative Density-TMH1 Metod A12T

Moisture Content (%)		
Relative Density (S.G.)		

Sieve Analysis (Wet Preparation) - TMH1 Method A1(a)

Percentage Passing	75.0 mm	100	
	63.0 mm	100	
	53.0 mm	100	
	37.5 mm	100	
	26.5 mm	100	
	19.0 mm	100	
	13.2 mm	97	
	4.75 mm	80	
	2.00 mm	72	
	0.425 mm	46	
	0.075 mm	29	
Grading Modulus		1.53	



Hydrometer Analysis - ASTM Method D422

Percentage Passing	0.060 mm	28	
	0.040 mm	25	
	0.020 mm	20	
	0.006 mm	15	
	0.002 mm	12	
Gravel	%	28	
Sand	%	44	
Silt	%	16	
Clay	%	12	

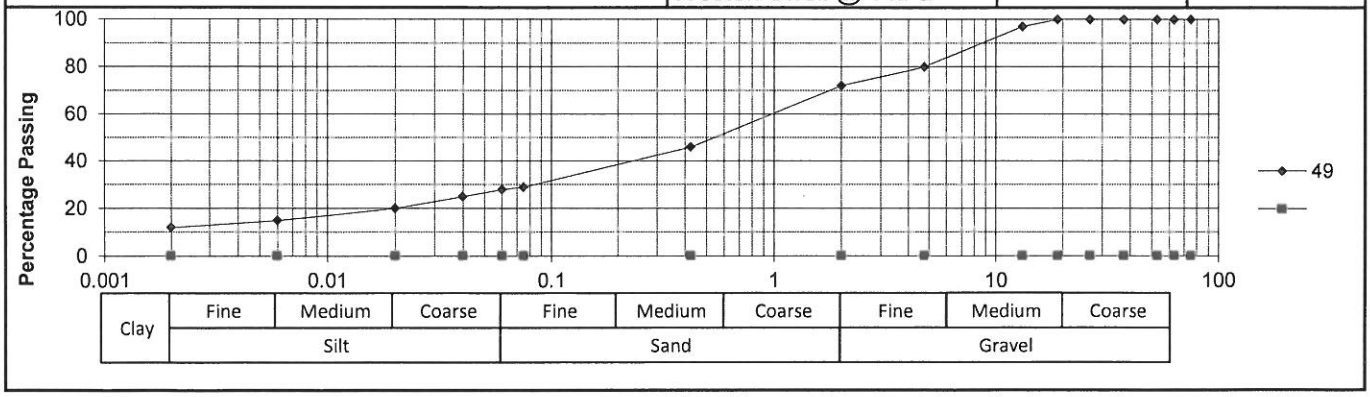
Laboratory Number		49 ◆	■

Atterberg Limits - TMH1 Method A2, A3 & A4

Liquid Limit	%	24	
Plasticity Index	%	11	
Linear Shrinkage	%	5.5	
Overall PI	%	5	

Classifications

HRB	A-2-6(0)	
Unified	SC	
Weston Swell @ 1 kPa		



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P O Box 82223, Southdale 2135
Tel: +27 (0)11 835-3117 • Fax: +27 (0)11 835-2503
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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN						Test 1
Project No.:	2014-B-1295			Sample No.:	1295-5		
Borehole No:	TP 5			Depth:	2.0		
Date Received:	07/07/2014			Date Tested:	24/07/2014		
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 7.83%						
Machine No.	18	Ring No.	G	Height (mm)	18.3	Diameter (mm)	69.3

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
204.4	209.6	189.1	79.44	14.0%	18.7%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.6680	Degree of Saturation (%)	55.3	Dry Density (Kg/m3)	1589

Effect. Stress (kPa)		10	51	100	198	198	398	100	10	0	0	0
Dial Correction (u)		0	16	29	47	47	67	29	10	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		13787
00:00:00	0.00	13787										
06:00:00	18.97							11199				
08:00:00	21.91				13301							
21:00:00	35.50			13438			11117					
22:00:00	36.33					11867						
26:00:00	39.50	13662										
74:00:00	66.63								11588			
76:00:00	67.53		13512									
End of Primary Cons		13662	13512	13438	13301	11867	11117	11199	11588			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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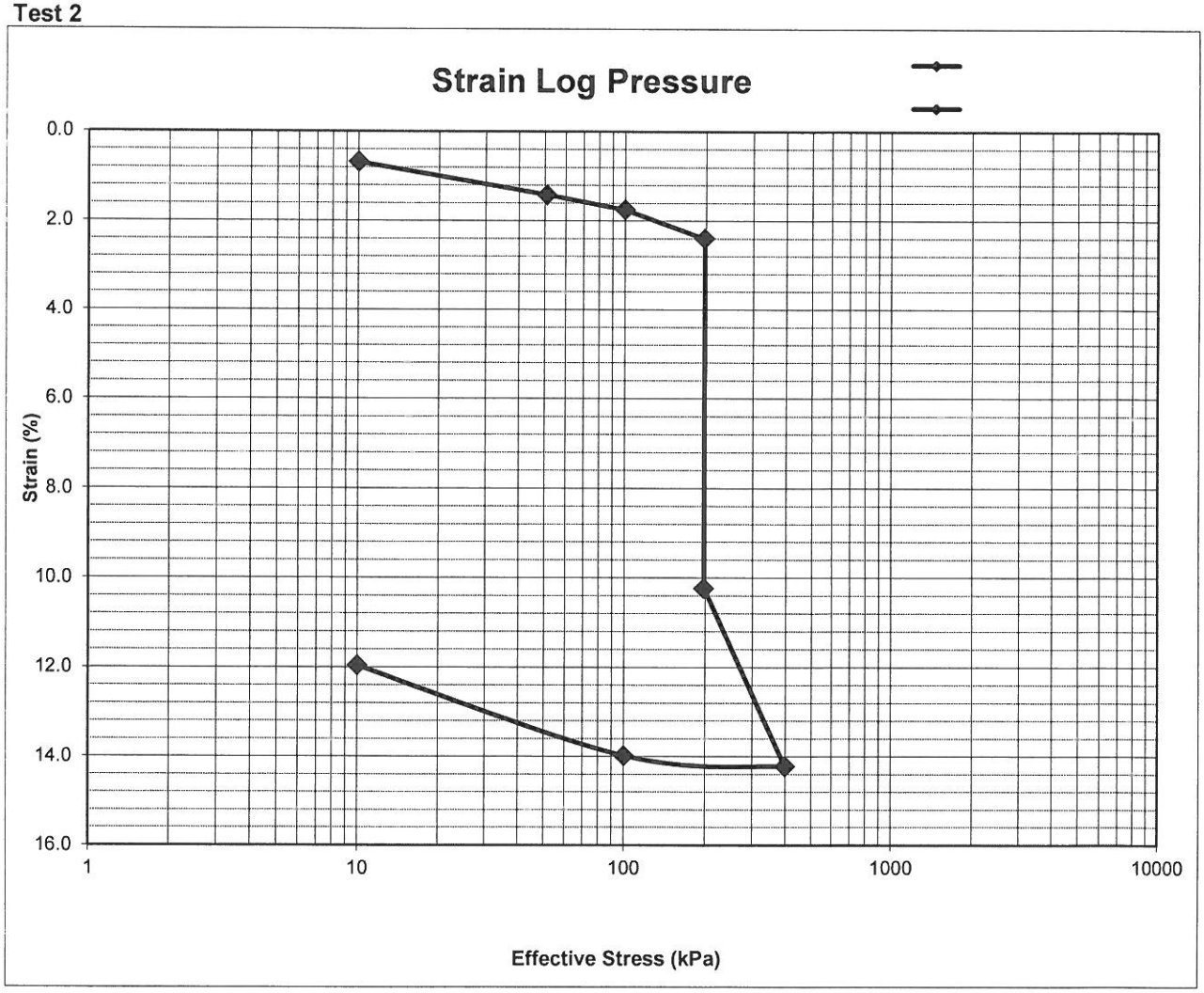
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-5
Borehole No:	TP 5	Depth:	2.0
Date Received:	07/07/2014	Date Tested:	24/07/2014

Test 1

Effect.Stress (kPa)	10	51	100	198	198	398	100	10			
Strain (%)	0.68	1.42	1.75	2.40	10.23	14.22	13.98	11.96			
Mv (1/MPa)		0.1786	0.0680	0.0664		0.1995	0.0081	0.2247			
Void Ratio	0.6566	0.6444	0.6389	0.628	0.4973	0.4308	0.4348	0.4685			

Test 2



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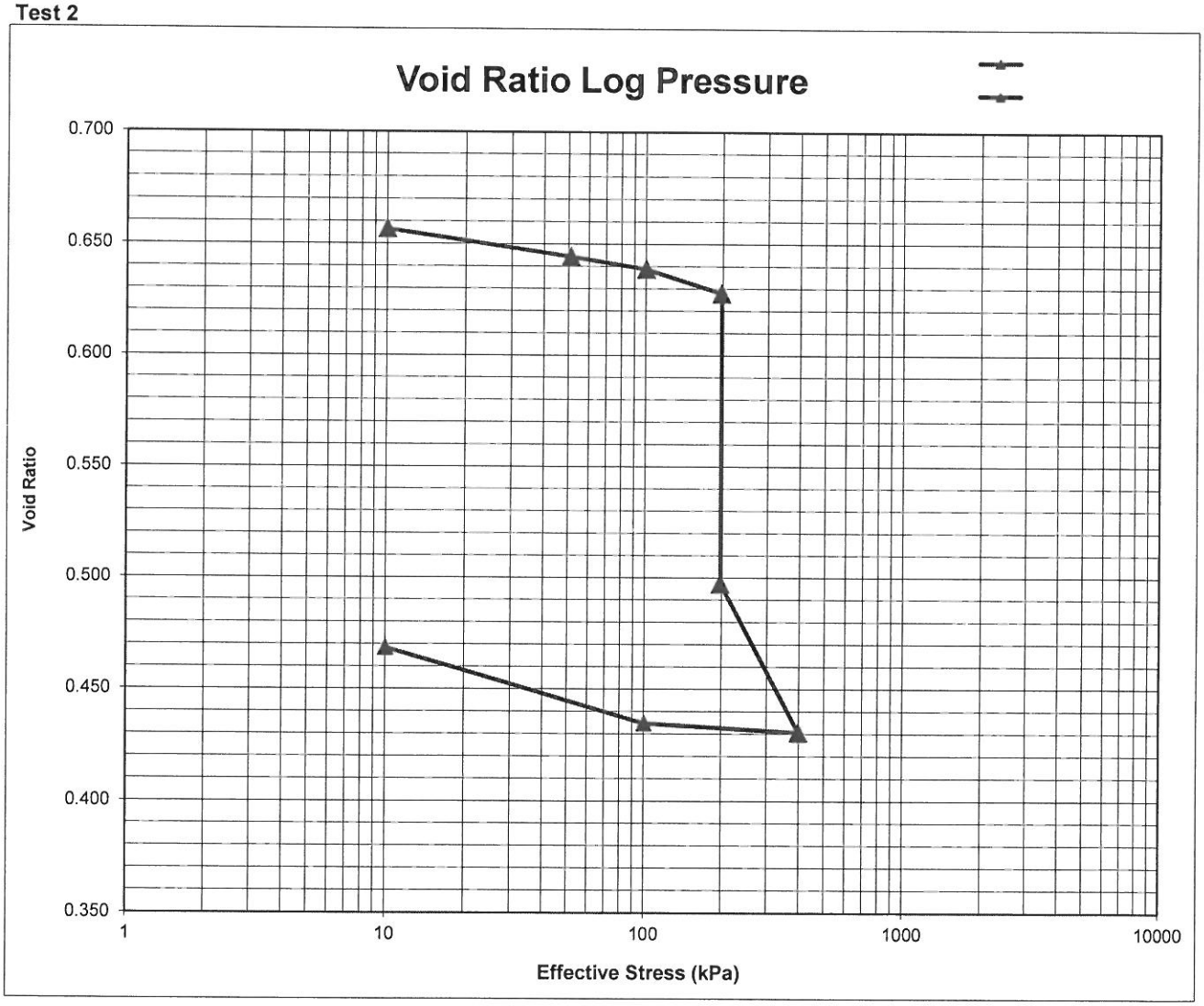
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-5
Borehole No:	TP 5	Depth:	2.0
Date Receive(	07/07/2014	Date Tested:	24/07/2014

Test 1

Effect. Stress (kPa)	10	51	100	198	198	398	100	10			
Strain (%)	0.68	1.42	1.75	2.40	10.23	14.22	13.98	11.96			
Mv (1/MPa)		0.1786	0.0680	0.0664		0.1995	0.0081	0.2247			
Void Ratio	0.6566	0.6444	0.6389	0.628	0.4973	0.4308	0.4348	0.4685			

Test 2



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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		Test 1
Project No.:	2014-B-1295	Sample No.:	1295-6
Borehole No:	TP 7	Depth:	1.0
Date Received:	07/07/2014	Date Tested:	24/07/2014
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 2.66%		

Machine No.	17	Ring No.	AR	Height (mm)	18.8	Diameter (mm)	69.1

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
206.2	216.1	193.7	79.13	10.9%	19.6%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.6307	Degree of Saturation (%)	45.8	Dry Density (Kg/m3)	1625

Effect. Stress (kPa)		10	51	100	198	198	398	100	10	0	0	0
Dial Correction (u)		0	16	29	47	47	67	29	10	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		13833
00:00:00	0.00	13833										
04:00:00	15.49								12644			
19:00:00	33.76				13219							
20:00:00	34.64						12280	12375				
21:00:00	35.50		13442									
30:00:00	42.43			13353								
74:00:00	66.63					12719						
76:00:00	67.53	13607										
End of Primary Cons		13607	13442	13353	13219	12719	12280	12375	12644			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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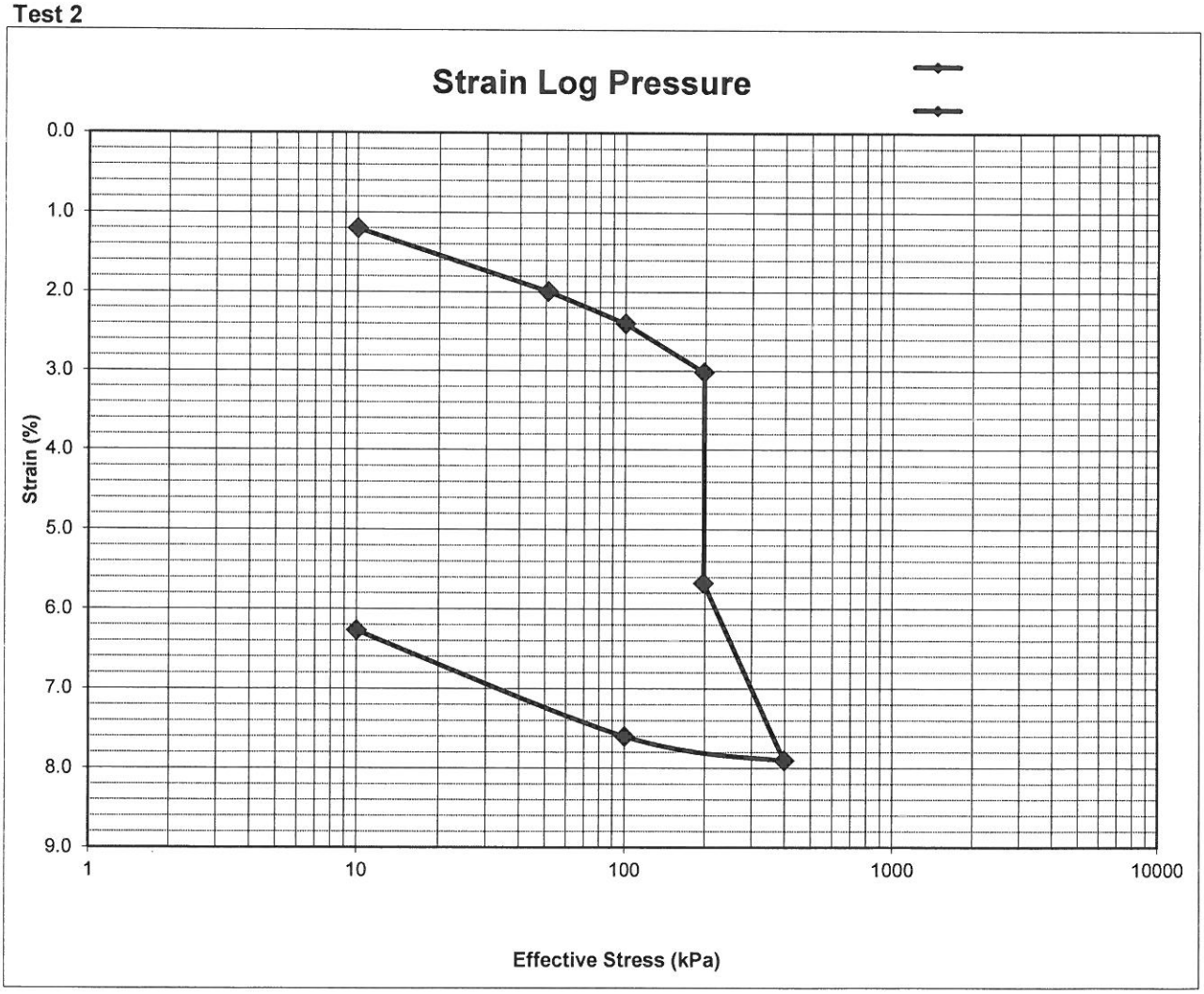
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-6
Borehole No:	TP 7	Depth:	1.0
Date Received:	07/07/2014	Date Tested:	24/07/2014

Test 1

Effect.Stress (kPa)	10	51	100	198	198	398	100	10			
Strain (%)	1.20	1.99	2.40	3.02	5.68	7.90	7.60	6.27			
Mv (1/MPa)		0.1933	0.0825	0.0630		0.1114	0.0102	0.1478			
Void Ratio	0.6111	0.5982	0.5916	0.5815	0.5382	0.5018	0.5068	0.5285			

Test 2



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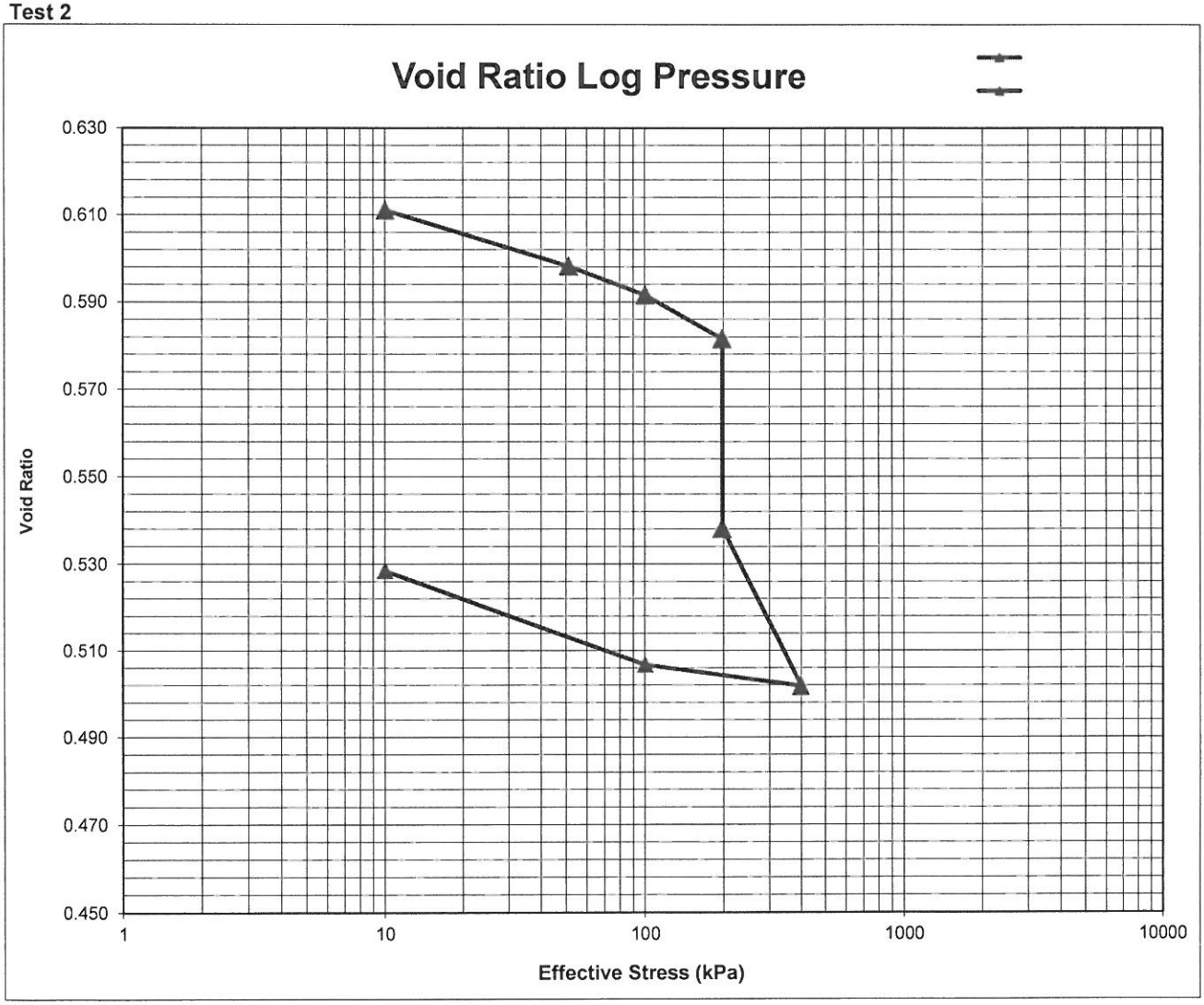
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-6
Borehole No:	TP 7	Depth:	1.0
Date Receive(	07/07/2014	Date Tested:	24/07/2014

Test 1

Effect. Stress (kPa)	10	51	100	198	198	398	100	10			
Strain (%)	1.20	1.99	2.40	3.02	5.68	7.90	7.60	6.27			
Mv (1/MPa)		0.1933	0.0825	0.0630		0.1114	0.0102	0.1478			
Void Ratio	0.6111	0.5982	0.5916	0.5815	0.5382	0.5018	0.5068	0.5285			

Test 2



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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN						Test 1
Project No.:	2014-B-1295			Sample No.:	1295-8		
Borehole No:	TP 11			Depth:	2.0		
Date Received:	07/07/2014			Date Tested:	24/07/2014		
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 2.26%						
Machine No.	15	Ring No.	O	Height (mm)	18.7	Diameter (mm)	69.7

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
216.9	222.9	201.9	84.49	12.8%	17.9%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.6104	Degree of Saturation (%)	55.5	Dry Density (Kg/m3)	1646

Effect. Stress (kPa)		10	52	102	202	202	402	102	10	0	0	0
Dial Correction (u)		0	16	29	47	47	67	29	10	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		13951
00:00:00	0.00	13951										
02:00:00	10.95	13949										
05:00:00	17.32							12908				
19:00:00	33.76						12802					
24:00:00	37.95				13645	13222						
26:00:00	39.50		13884									
76:00:00	67.53			13707					13204			
End of Primary Cons		13949	13884	13707	13645	13222	12802	12908	13204			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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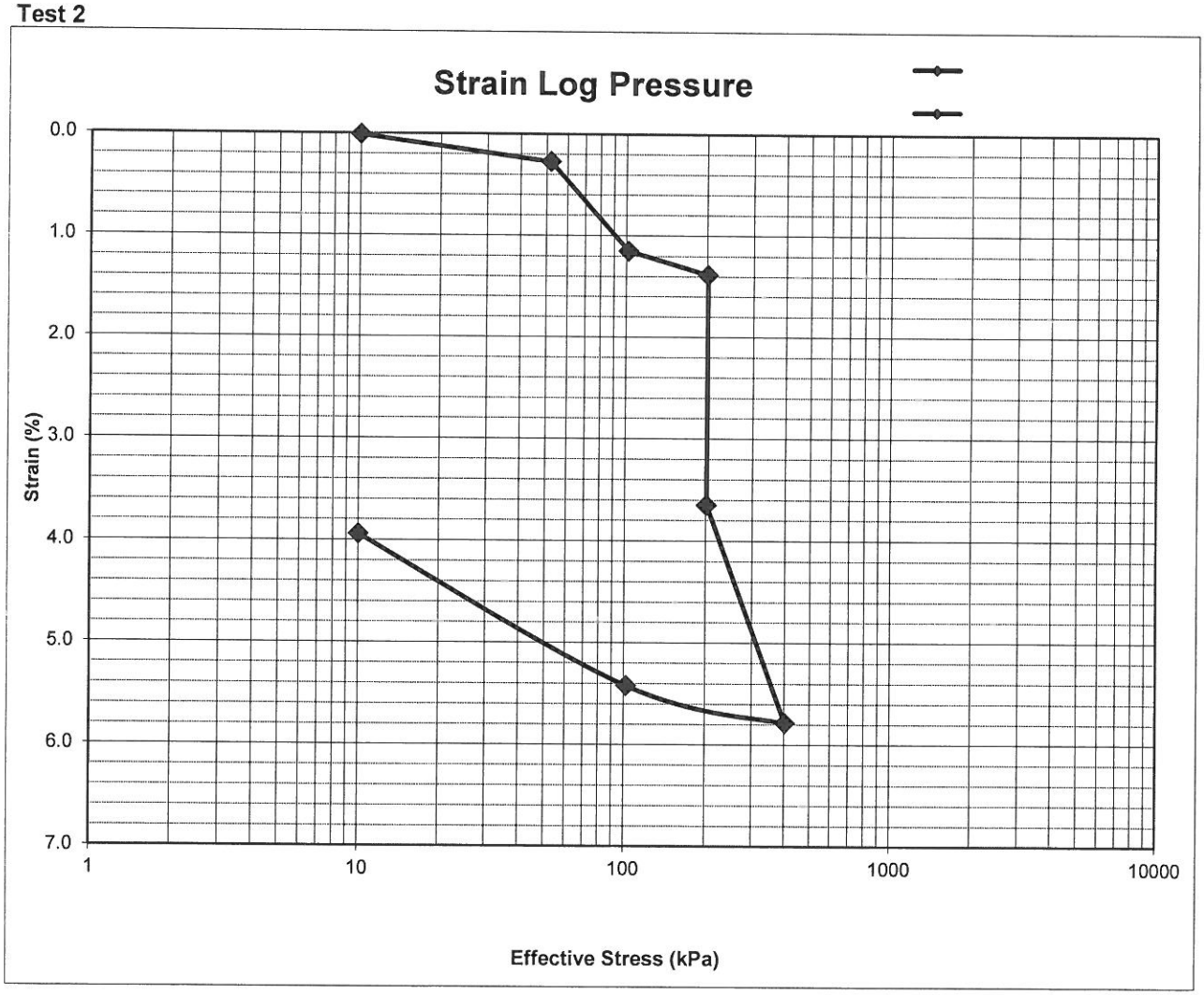
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-8
Borehole No:	TP 11	Depth:	2.0
Date Received:	07/07/2014	Date Tested:	24/07/2014

Test 1

Effect.Stress (kPa)	10	52	102	202	202	402	102	10			
Strain (%)	0.01	0.27	1.15	1.39	3.65	5.79	5.42	3.94			
Mv (1/MPa)		0.0624	0.1754	0.0235		0.1070	0.0121	0.1610			
Void Ratio	0.6102	0.606	0.5919	0.5881	0.5517	0.5172	0.5231	0.5469			

Test 2



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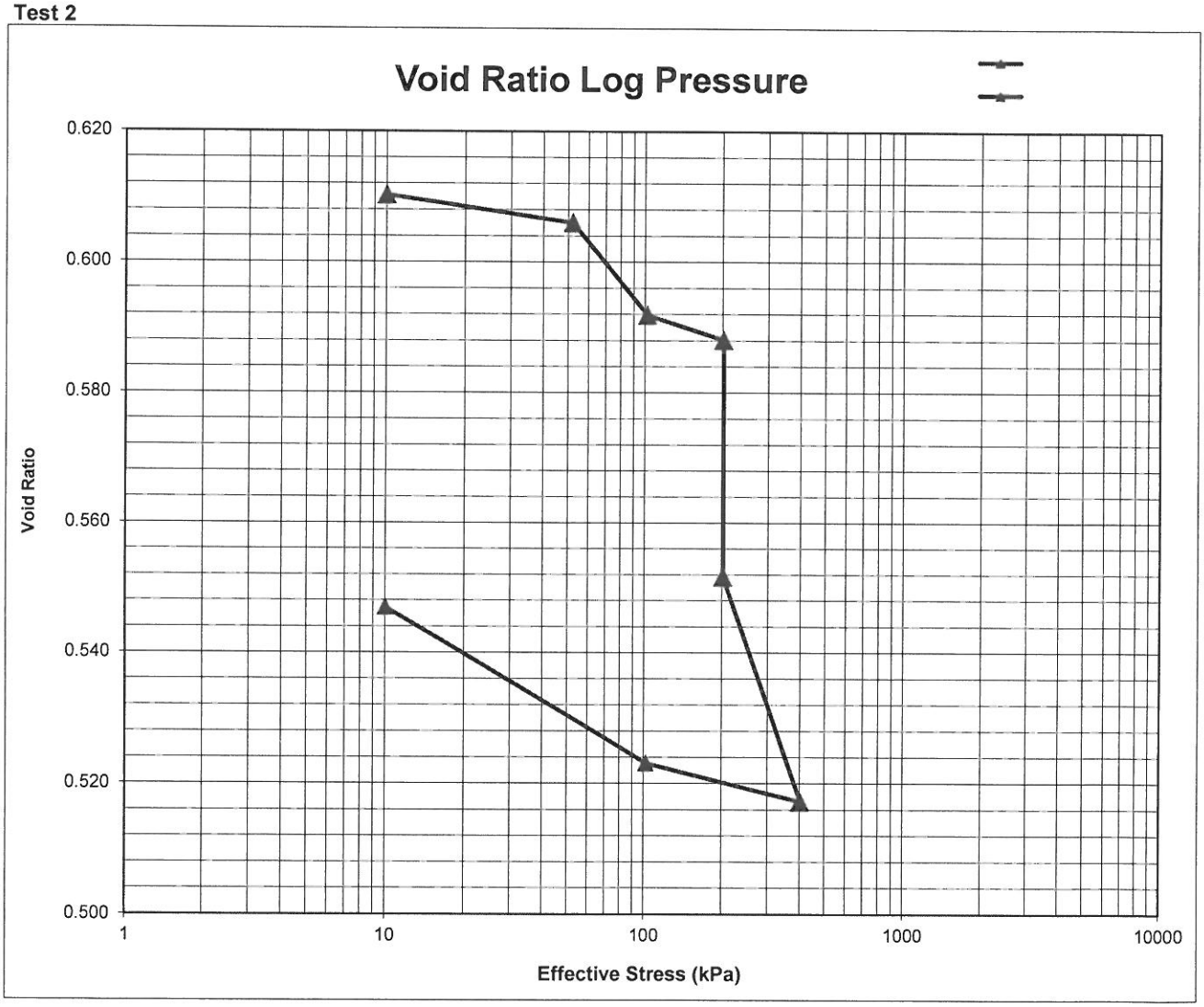
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-8
Borehole No:	TP 11	Depth:	2.0
Date Receive(	07/07/2014	Date Tested:	24/07/2014

Test 1

Effect. Stress (kPa)	10	52	102	202	202	402	102	10			
Strain (%)	0.01	0.27	1.15	1.39	3.65	5.79	5.42	3.94			
Mv (1/MPa)		0.0624	0.1754	0.0235		0.1070	0.0121	0.1610			
Void Ratio	0.6102	0.606	0.5919	0.5881	0.5517	0.5172	0.5231	0.5469			

Test 2



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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		Test 1
Project No.:	2014-B-1295	Sample No.:	1295-12
Borehole No:	TP 16	Depth:	2.0
Date Received:	07/07/2014	Date Tested:	25/07/2014
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 7.85%		

Machine No.	6	Ring No.	33	Height (mm)	19.6	Diameter (mm)	76.1

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
235.8	238.9	212.6	89.06	18.8%	21.3%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.9123	Degree of Saturation (%)	54.5	Dry Density (Kg/m3)	1386

Effect. Stress (kPa)		10	50	100	200	200	400	100	10	0	0	0
Dial Correction (u)		0	50	82	122	122	189	117	42	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		13793
00:00:00	0.00	13793										
18:00:00	32.86								10981			
19:00:00	33.76						10627					
20:00:00	34.64							10746				
22:00:00	36.33		13392		13159							
32:00:00	43.82			13237								
75:00:00	67.08					11621						
78:00:00	68.41	13585										
End of Primary Cons		13585	13392	13237	13159	11621	10627	10746	10981			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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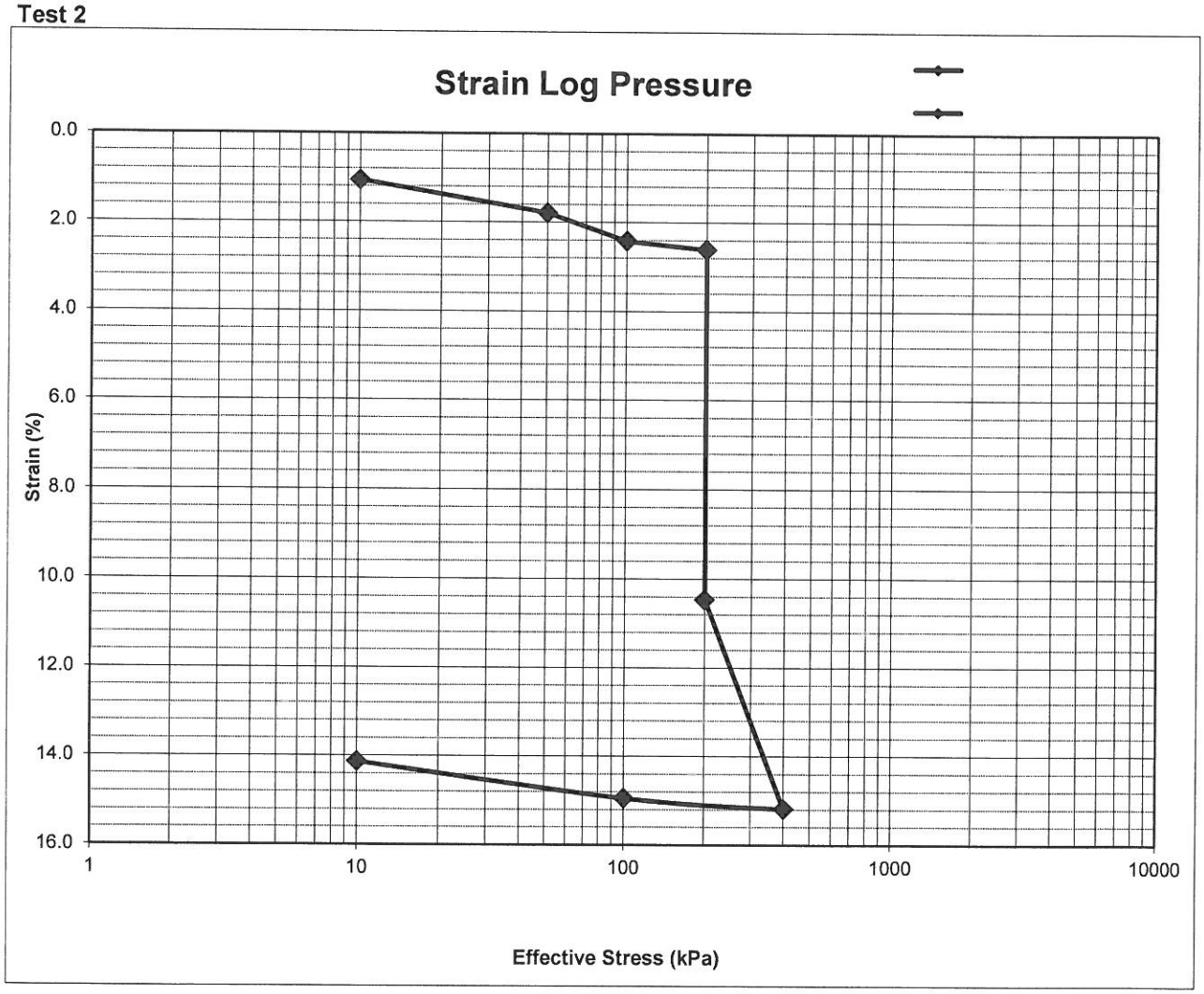
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-12
Borehole No:	TP 16	Depth:	2.0
Date Received:	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect.Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	1.06	1.79	2.42	2.61	10.46	15.19	14.95	14.13			
Mv (1/MPa)		0.1824	0.1255	0.0194		0.2365	0.0080	0.0907			
Void Ratio	0.892	0.878	0.866	0.8623	0.7123	0.6218	0.6264	0.642			

Test 2



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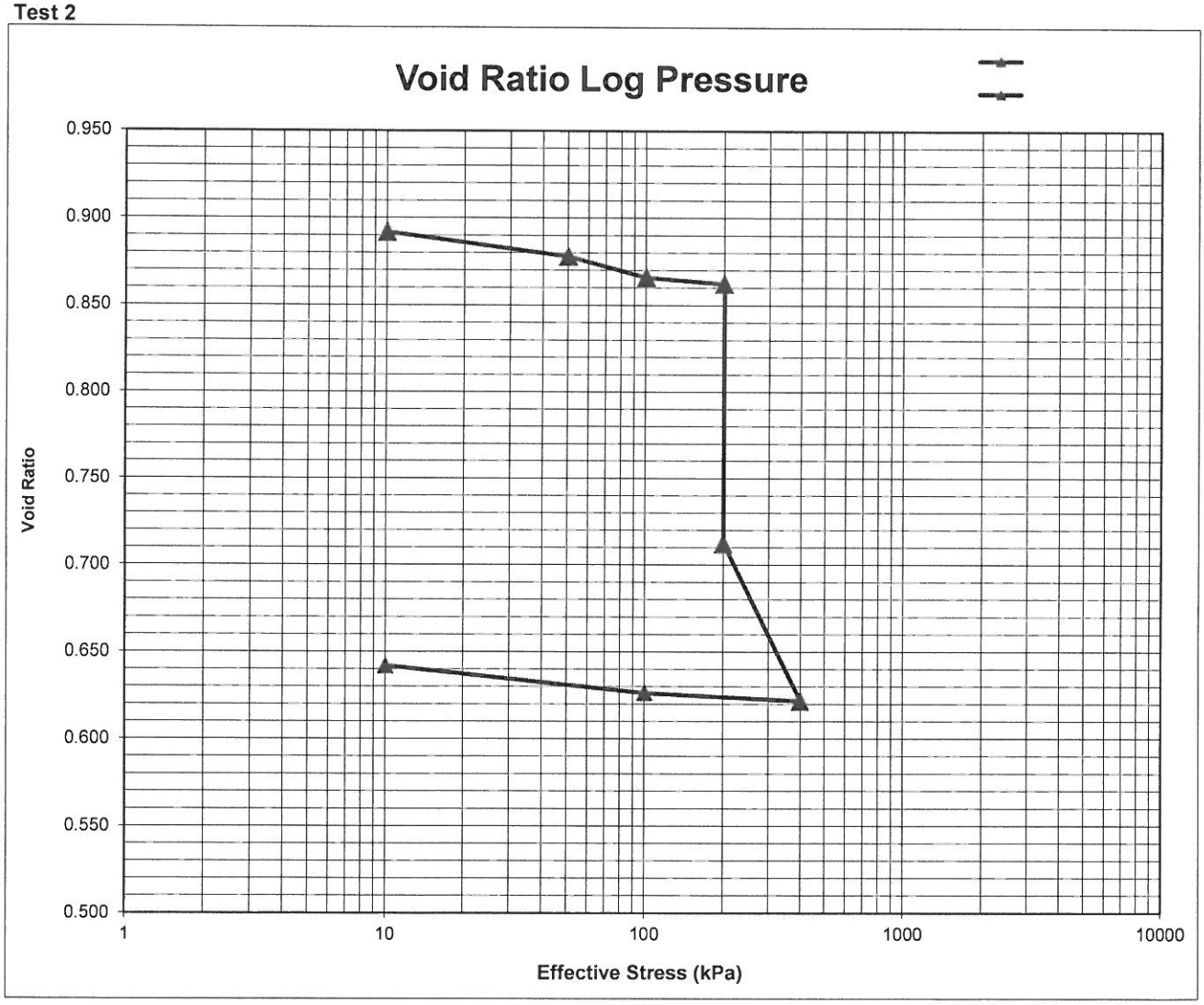
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-12
Borehole No:	TP 16	Depth:	2.0
Date Receive(	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect. Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	1.06	1.79	2.42	2.61	10.46	15.19	14.95	14.13			
Mv (1/MPa)		0.1824	0.1255	0.0194		0.2365	0.0080	0.0907			
Void Ratio	0.892	0.878	0.866	0.8623	0.7123	0.6218	0.6264	0.642			

Test 2



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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		Test 1
Project No.:	2014-B-1295	Sample No.:	1295-15
Borehole No:	TP 19	Depth:	0.8
Date Received:	07/07/2014	Date Tested:	24/07/2014
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 8.91%		

Machine No.	13	Ring No.	15	Height (mm)	19.1	Diameter (mm)	69.6

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
207.1	210.3	190.6	84.63	15.6%	18.6%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.8172	Degree of Saturation (%)	50.5	Dry Density (Kg/m3)	1458

Effect. Stress (kPa)		10	52	102	202	202	402	102	10	0	0	0
Dial Correction (u)		0	16	29	47	47	67	29	10	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		13718
00:00:00	0.00	13718										
03:00:00	13.42		13601									
19:00:00	33.76							10416				
20:00:00	34.64	13701					10346					
24:00:00	37.95				13023	11322						
72:00:00	65.73								10619			
77:00:00	67.97			13167								
End of Primary Cons		13701	13601	13167	13023	11322	10346	10416	10619			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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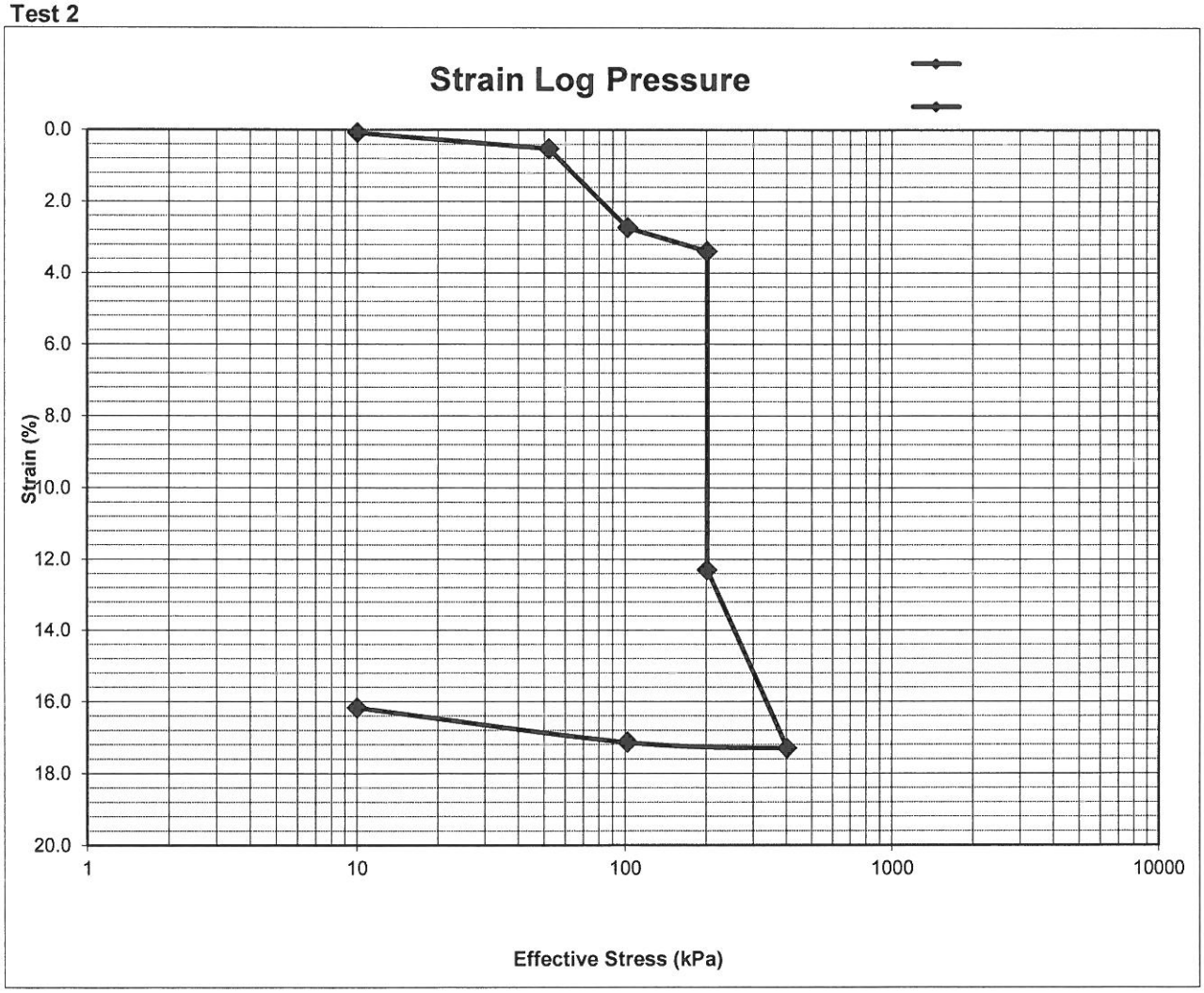
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-15
Borehole No:	TP 19	Depth:	0.8
Date Received:	07/07/2014	Date Tested:	24/07/2014

Test 1

Effect.Stress (kPa)	10	52	102	202	202	402	102	10			
Strain (%)	0.09	0.53	2.73	3.39	12.30	17.30	17.14	16.17			
Mv (1/MPa)		0.1047	0.4408	0.0660		0.2503	0.0056	0.1047			
Void Ratio	0.8156	0.8076	0.7675	0.7556	0.5937	0.5028	0.5058	0.5233			

Test 2



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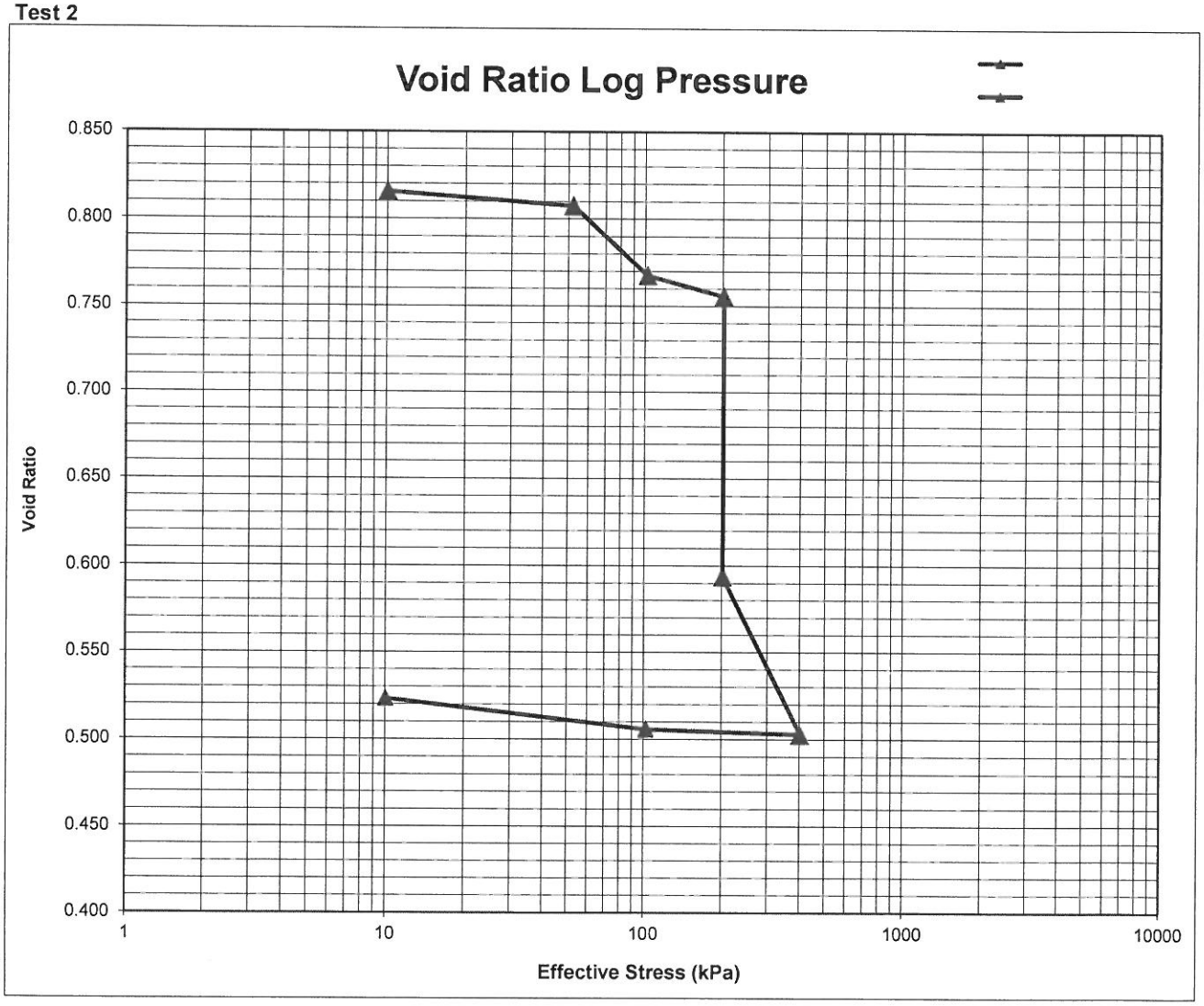
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-15
Borehole No:	TP 19	Depth:	0.8
Date Receive(	07/07/2014	Date Tested:	24/07/2014

Test 1

Effect. Stress (kPa)	10	52	102	202	202	402	102	10			
Strain (%)	0.09	0.53	2.73	3.39	12.30	17.30	17.14	16.17			
Mv (1/MPa)		0.1047	0.4408	0.0660		0.2503	0.0056	0.1047			
Void Ratio	0.8156	0.8076	0.7675	0.7556	0.5937	0.5028	0.5058	0.5233			

Test 2



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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		Test 1
Project No.:	2014-B-1295	Sample No.:	1295-17
Borehole No:	TP 20	Depth:	2.0
Date Received:	07/07/2014	Date Tested:	24/07/2014
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 8.97%		

Machine No.	12	Ring No.	8	Height (mm)	19.6	Diameter (mm)	76.1

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
236.5	244.4	218.0	87.09	14.1%	20.2%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.8046	Degree of Saturation (%)	46.5	Dry Density (Kg/m3)	1468

Effect. Stress (kPa)		10	50	100	200	200	400	100	10	0	0	0
Dial Correction (u)		0	41	67	107	107	141	112	39	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		13830
00:00:00	0.00	13830										
04:00:00	15.49		13546									
06:00:00	18.97							10810				
19:00:00	33.76						10702					
21:00:00	35.50			13438								
22:00:00	36.33					11556						
24:00:00	37.95				13313							
74:00:00	66.63	13705							11140			
End of Primary Cons		13705	13546	13438	13313	11556	10702	10810	11140			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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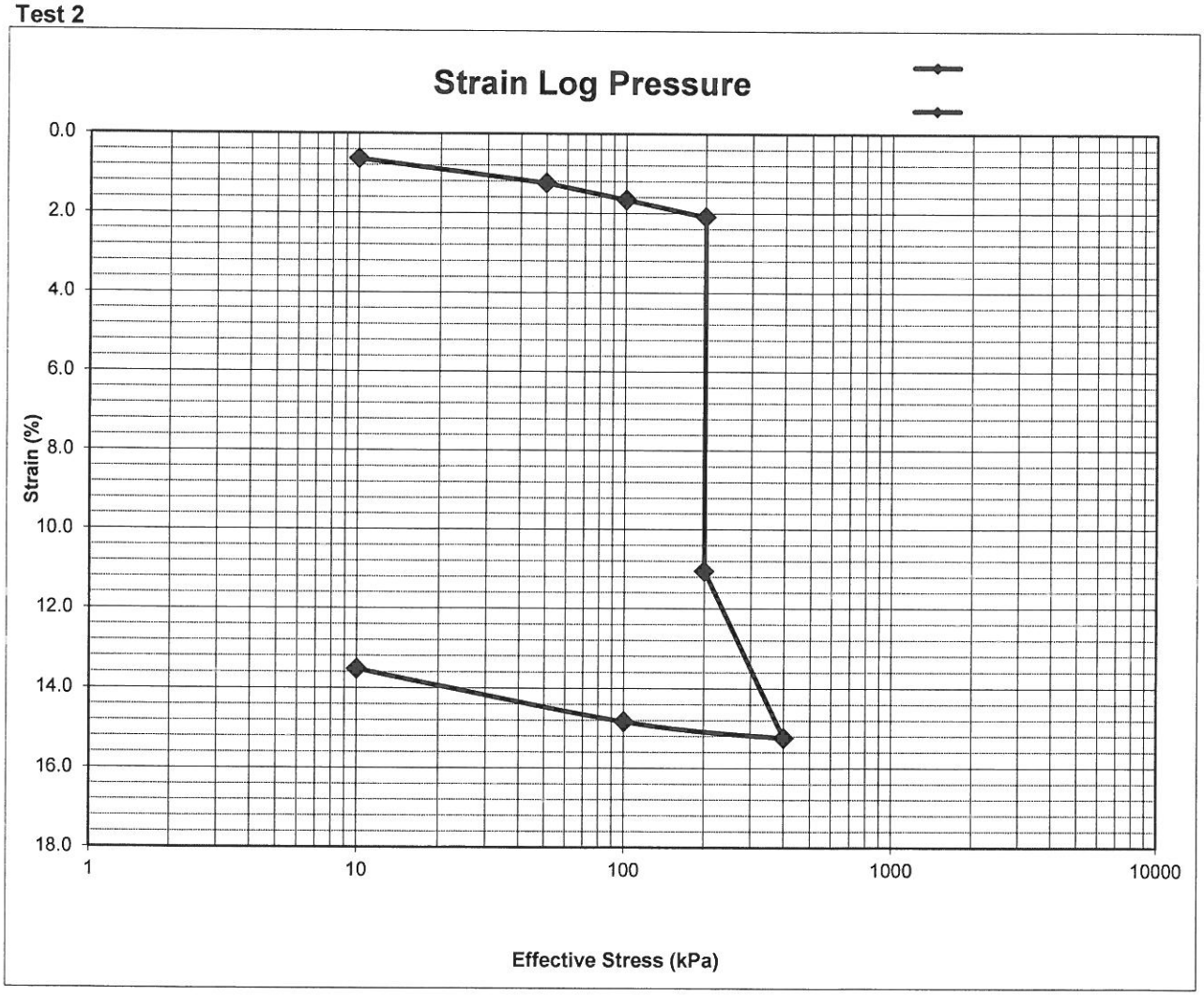
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-17
Borehole No:	TP 20	Depth:	2.0
Date Received:	07/07/2014	Date Tested:	24/07/2014

Test 1

Effect.Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.64	1.24	1.66	2.09	11.06	15.24	14.84	13.53			
Mv (1/MPa)		0.1505	0.0837	0.0434		0.2092	0.0134	0.1457			
Void Ratio	0.7931	0.7823	0.7747	0.7669	0.6051	0.5296	0.5369	0.5605			

Test 2



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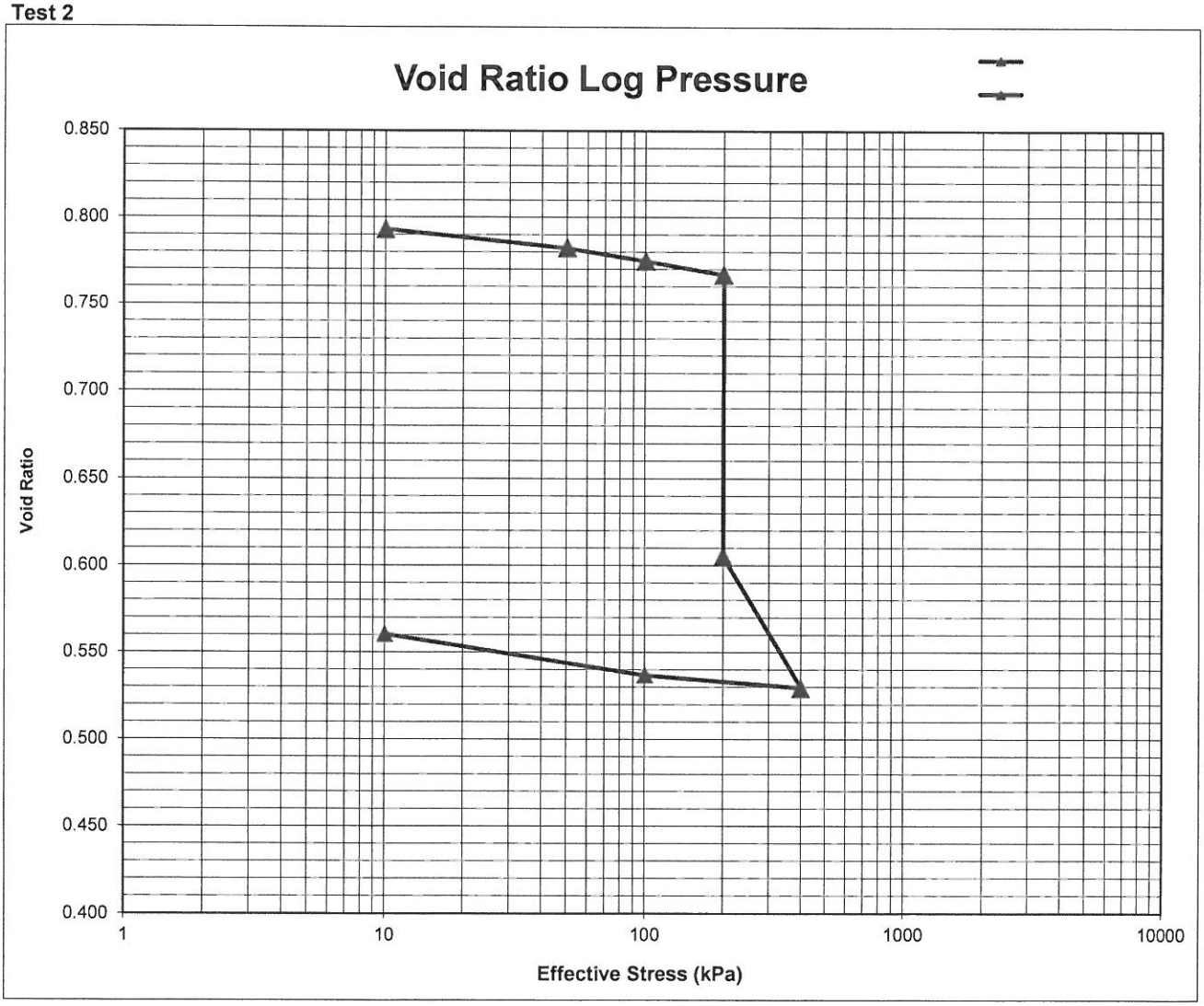
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-17
Borehole No:	TP 20	Depth:	2.0
Date Receivec	07/07/2014	Date Tested:	24/07/2014

Test 1

Effect. Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.64	1.24	1.66	2.09	11.06	15.24	14.84	13.53			
Mv (1/MPa)		0.1505	0.0837	0.0434		0.2092	0.0134	0.1457			
Void Ratio	0.7931	0.7823	0.7747	0.7669	0.6051	0.5296	0.5369	0.5605			

Test 2



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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		Test 1
Project No.:	2014-B-1295	Sample No.:	1295-18
Borehole No:	TP 21	Depth:	0.4
Date Received:	07/07/2014	Date Tested:	25/07/2014
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 10.6%		

Machine No.	11	Ring No.	4	Height (mm)	19.45	Diameter (mm)	75.55

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
230.4	240.1	219.0	87.13	8.6%	16.0%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.7522	Degree of Saturation (%)	30.5	Dry Density (Kg/m3)	1512

Effect. Stress (kPa)		10	50	100	200	200	400	100	10	0	0	0
Dial Correction (u)		0	63	85	117	117	173	157	60	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		14092
00:00:00	0.00	14092										
02:00:00	10.95	14092										
19:00:00	33.76							10594				
20:00:00	34.64		14002		13612							
22:00:00	36.33						10504					
24:00:00	37.95					11547						
74:00:00	66.63								10702			
77:00:00	67.97			13679								
End of Primary Cons		14092	14002	13679	13612	11547	10504	10594	10702			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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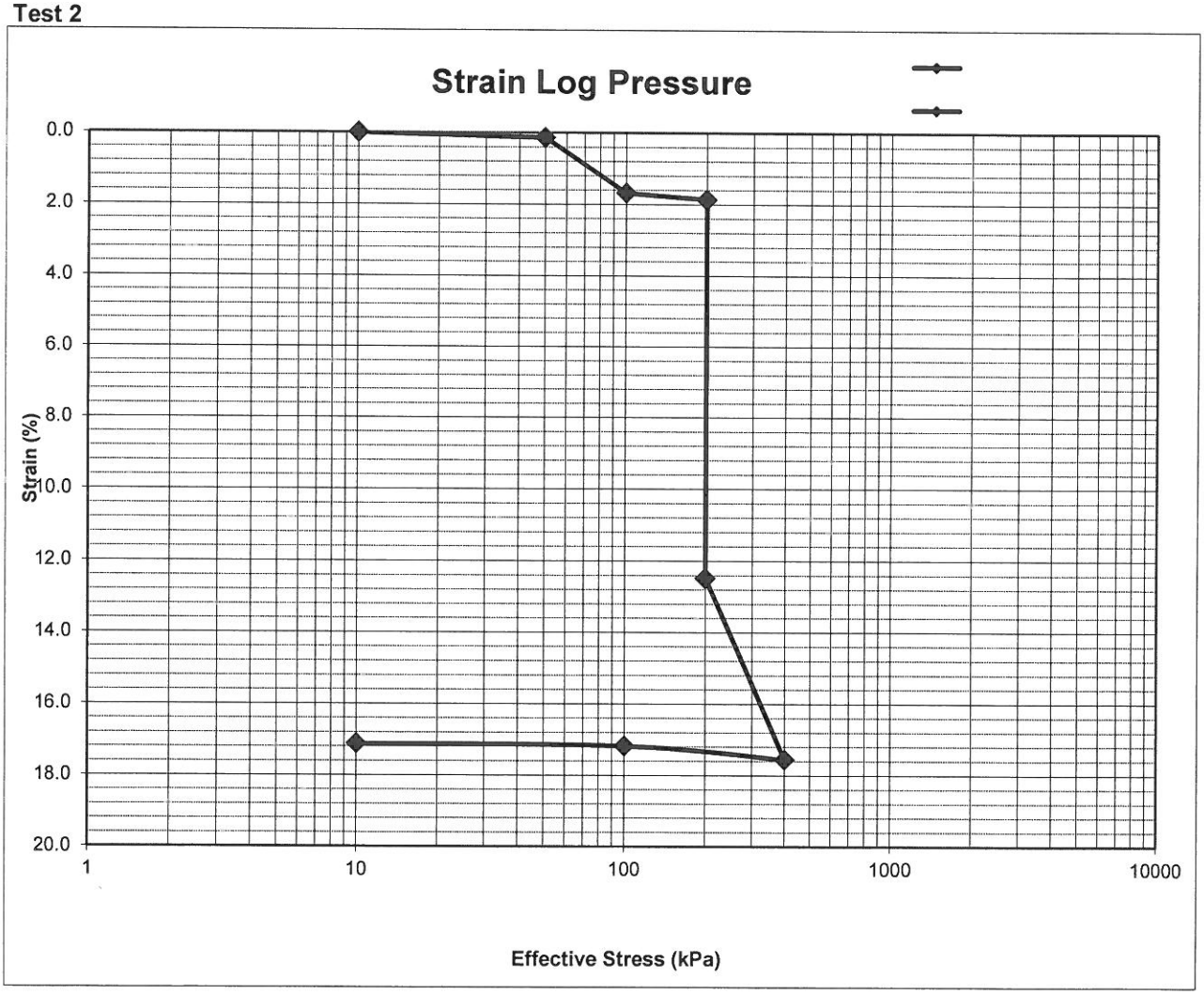
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-18
Borehole No:	TP 21	Depth:	0.4
Date Received:	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect.Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.00	0.14	1.69	1.87	12.48	17.56	17.18	17.12			
Mv (1/MPa)		0.0347	0.3095	0.0180		0.2537	0.0127	0.0063			
Void Ratio	0.7522	0.7497	0.7226	0.7195	0.5334	0.4445	0.4512	0.4522			

Test 2



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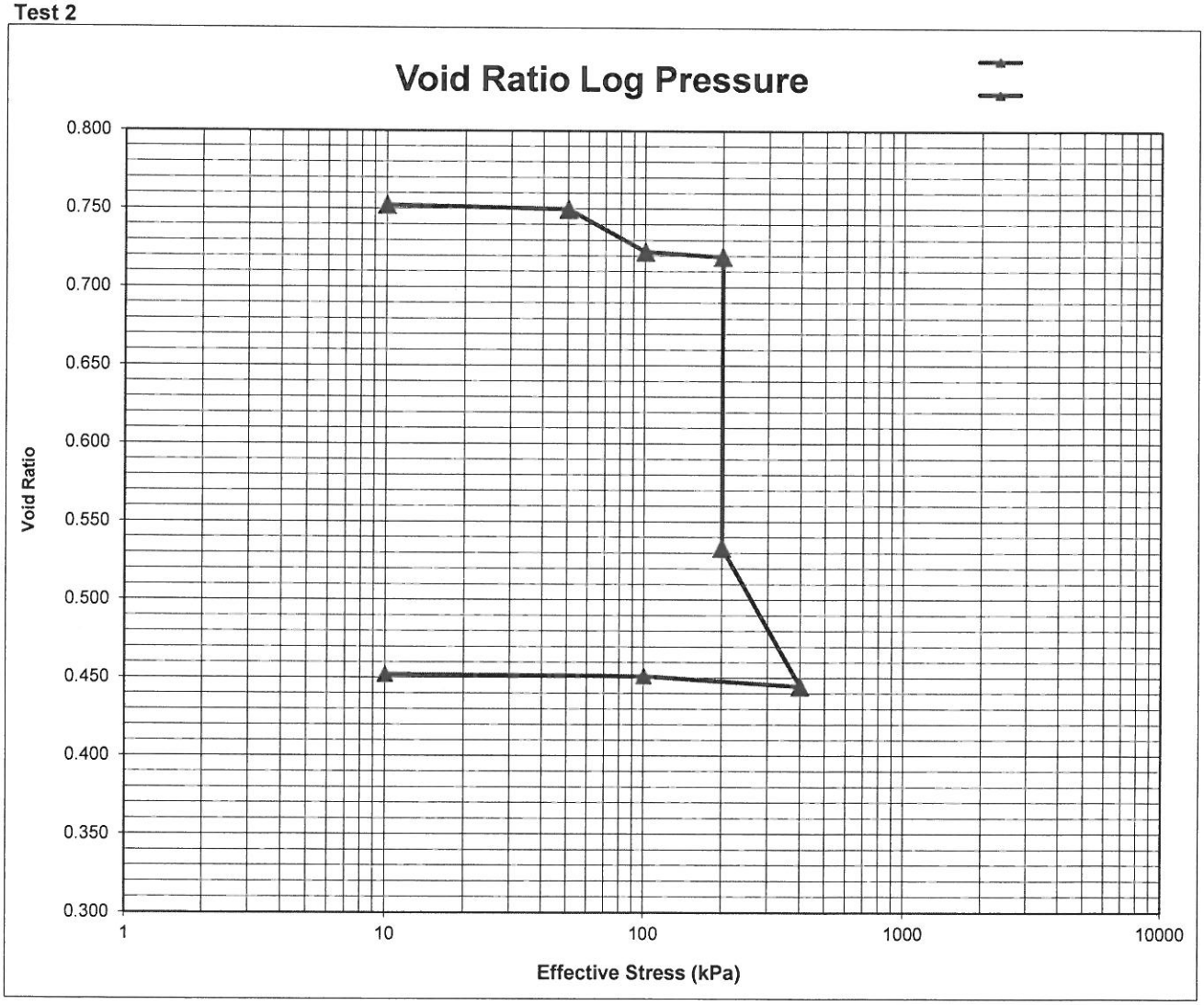
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-18
Borehole No:	TP 21	Depth:	0.4
Date Receive	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect. Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.00	0.14	1.69	1.87	12.48	17.56	17.18	17.12			
Mv (1/MPa)		0.0347	0.3095	0.0180		0.2537	0.0127	0.0063			
Void Ratio	0.7522	0.7497	0.7226	0.7195	0.5334	0.4445	0.4512	0.4522			

Test 2



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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN						Test 1
Project No.:	2014-B-1295			Sample No.:	1295-20		
Borehole No:	TP 23			Depth:	1.0		
Date Received:	07/07/2014			Date Tested:	25/07/2014		
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 13.9%						
Machine No.	5	Ring No.	24	Height (mm)	18.6	Diameter (mm)	76.6

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
221.8	226.4	206.7	89.99	12.9%	16.9%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.9462	Degree of Saturation (%)	36.2	Dry Density (Kg/m3)	1362

Effect. Stress (kPa)		10	50	100	200	200	400	100	10	0	0	0
Dial Correction (u)		0	37	68	101	101	170	112	45	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		13774
00:00:00	0.00	13774										
18:00:00	32.86								9956			
19:00:00	33.76				13317		9727					
20:00:00	34.64							9810				
21:00:00	35.50		13482									
30:00:00	42.43			13409								
75:00:00	67.08					10731						
76:00:00	67.53	13578										
End of Primary Cons		13578	13482	13409	13317	10731	9727	9810	9956			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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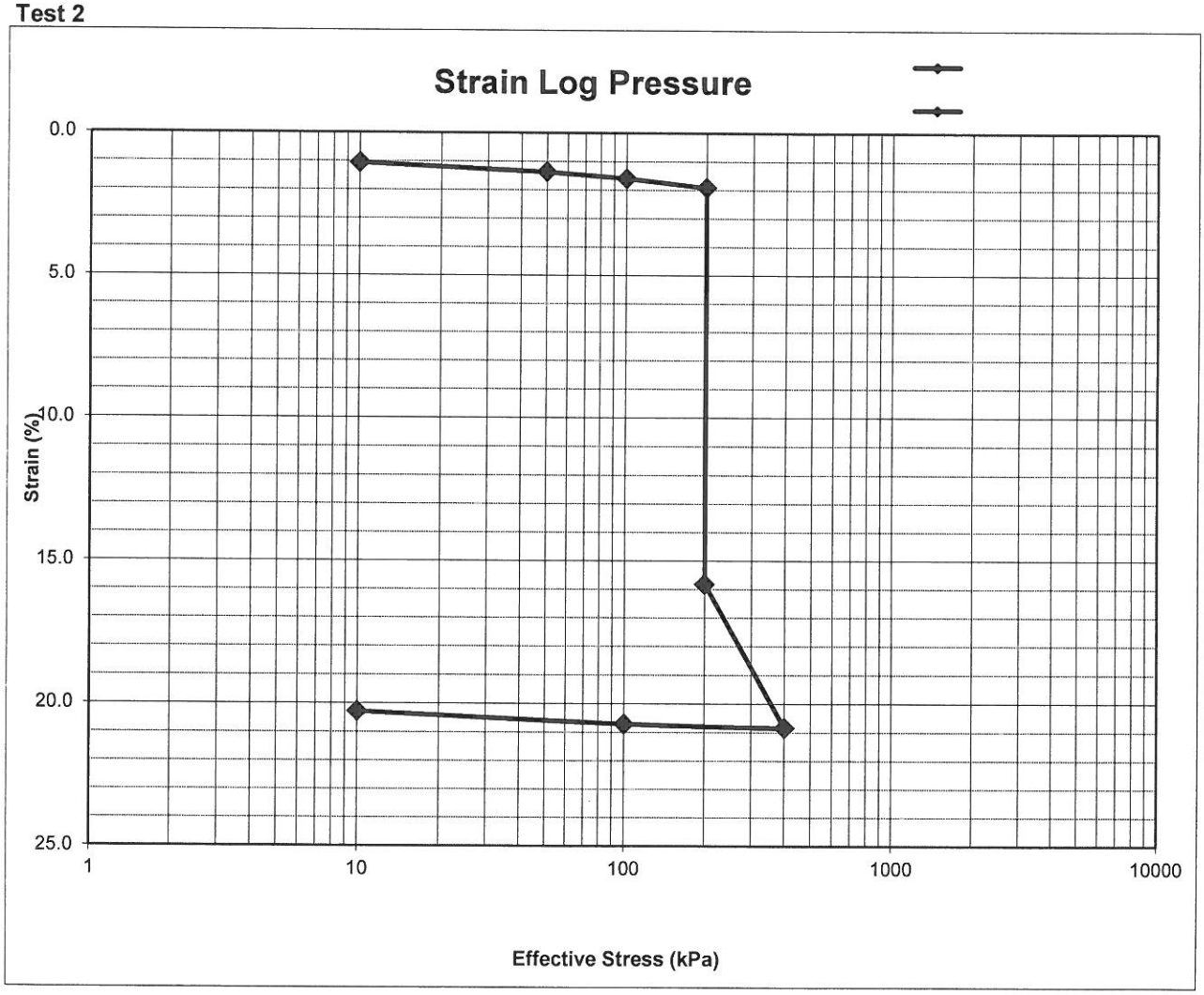
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-20
Borehole No:	TP 23	Depth:	1.0
Date Received:	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect.Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	1.05	1.37	1.60	1.91	15.82	20.84	20.71	20.28			
Mv (1/MPa)		0.0793	0.0452	0.0317		0.2513	0.0045	0.0472			
Void Ratio	0.9257	0.9196	0.9152	0.909	0.6384	0.5406	0.5432	0.5515			

Test 2



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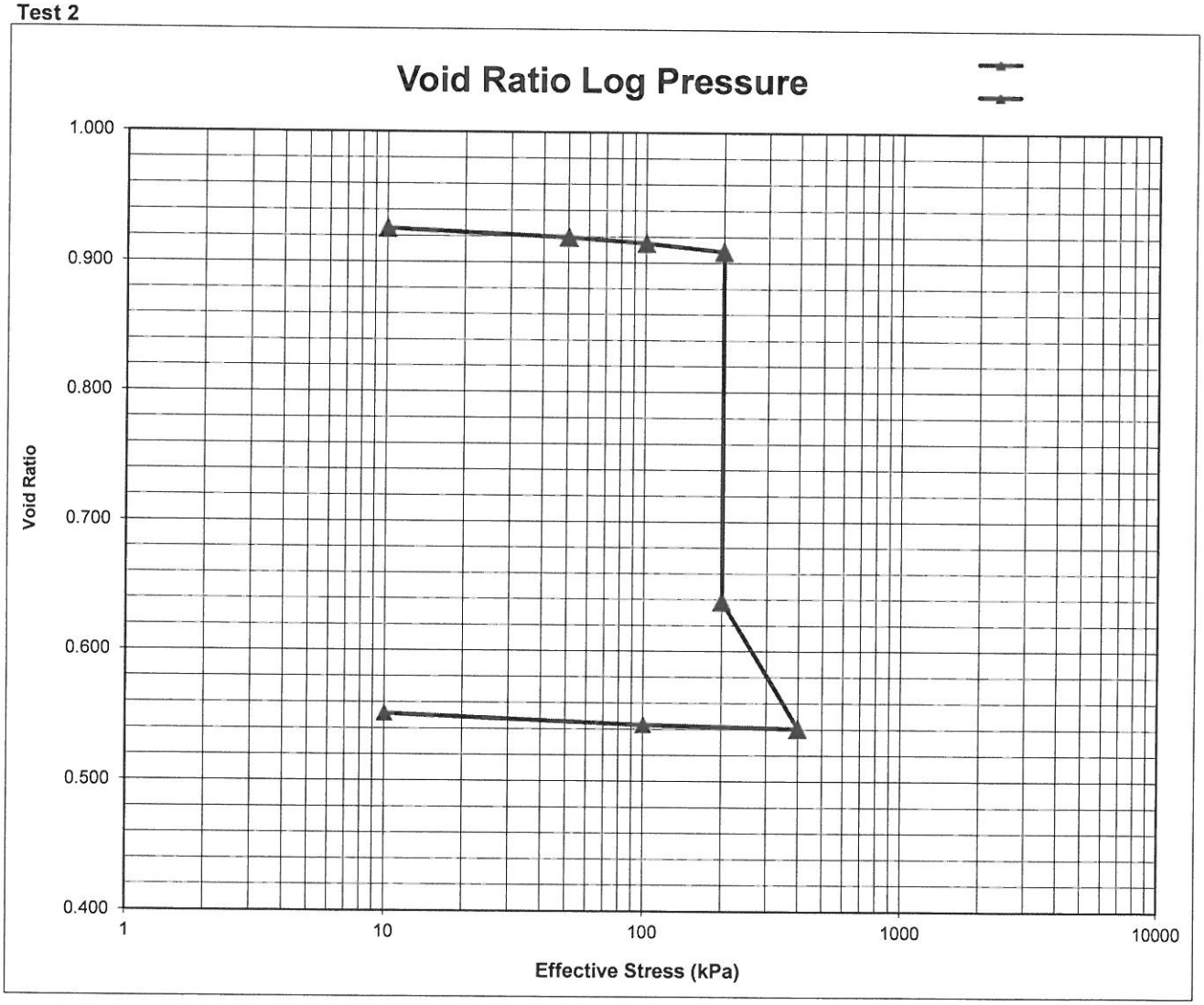
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-20
Borehole No:	TP 23	Depth:	1.0
Date Receive	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect. Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	1.05	1.37	1.60	1.91	15.82	20.84	20.71	20.28			
Mv (1/MPa)		0.0793	0.0452	0.0317		0.2513	0.0045	0.0472			
Void Ratio	0.9257	0.9196	0.9152	0.909	0.6384	0.5406	0.5432	0.5515			

Test 2



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Project:	PTN 183 OLIFANTSFONTEIN						Test 1
Project No.:	2014-B-1295			Sample No.:	1295-23		
Borehole No:	TP 29			Depth:	2.0		
Date Received:	07/07/2014			Date Tested:	25/07/2014		
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 1.57%						
Machine No.	4	Ring No.	18	Height (mm)	18.4	Diameter (mm)	76.4

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
237.9	246.2	220.4	88.93	13.3%	19.6%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.7003	Degree of Saturation (%)	50.4	Dry Density (Kg/m3)	1559

Effect. Stress (kPa)		10	50	100	200	200	400	100	10	0	0	0
Dial Correction (u)		0	58	97	154	154	206	162	34	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		13815
00:00:00	0.00	13815										
03:00:00	13.42	13811										
04:00:00	15.49							12650				
20:00:00	34.64			13346	13224	12935						
21:00:00	35.50						12525					
74:00:00	66.63								12993			
78:00:00	68.41		13448									
End of Primary Cons		13811	13448	13346	13224	12935	12525	12650	12993			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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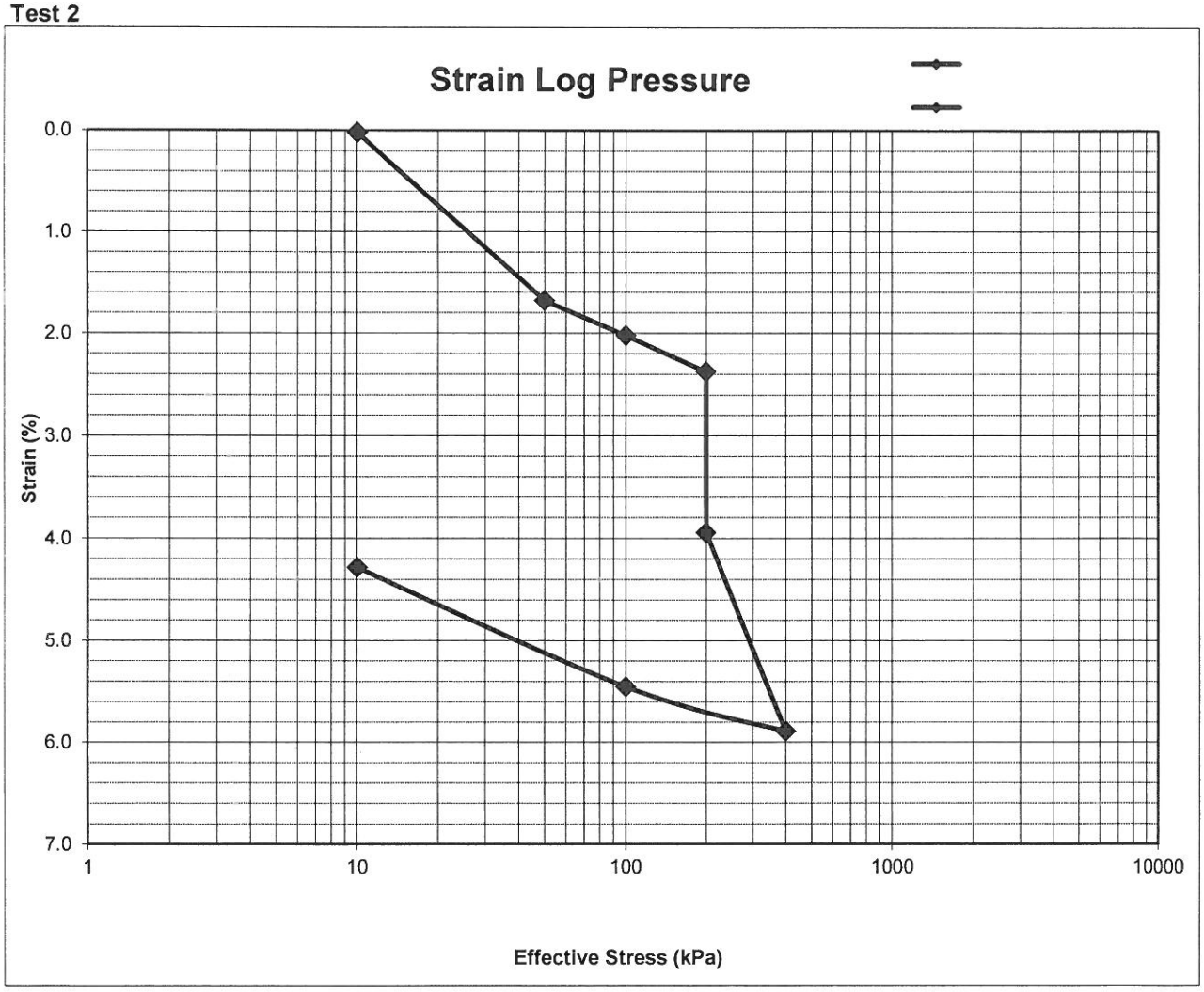
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-23
Borehole No:	TP 29	Depth:	2.0
Date Received:	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect.Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.02	1.68	2.02	2.38	3.95	5.89	5.45	4.28			
Mv (1/MPa)		0.4144	0.0685	0.0353		0.0973	0.0147	0.1298			
Void Ratio	0.6999	0.6717	0.6659	0.6599	0.6332	0.6001	0.6076	0.6274			

Test 2



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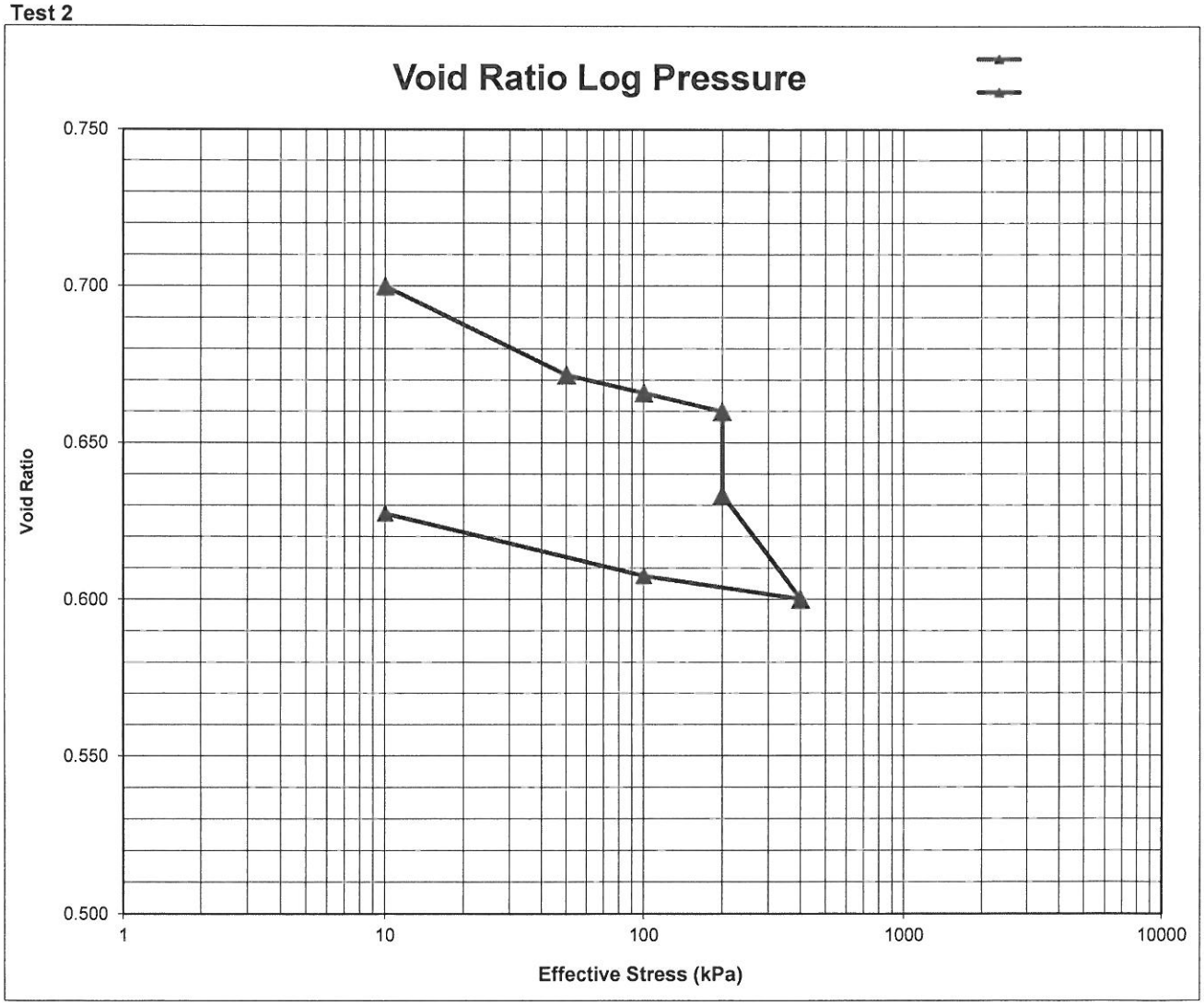
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-23
Borehole No:	TP 29	Depth:	2.0
Date Receivec	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect. Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.02	1.68	2.02	2.38	3.95	5.89	5.45	4.28			
Mv (1/MPa)		0.4144	0.0685	0.0353		0.0973	0.0147	0.1298			
Void Ratio	0.6999	0.6717	0.6659	0.6599	0.6332	0.6001	0.6076	0.6274			

Test 2



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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		Test 1
Project No.:	2014-B-1295	Sample No.:	1295-26
Borehole No:	TP 33	Depth:	0.8
Date Received:	07/07/2014	Date Tested:	25/07/2014
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 9.13%		

Machine No.	19	Ring No.	C4	Height (mm)	19.98	Diameter (mm)	71.28

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
202.8	209.7	189.6	76.21	11.6%	17.7%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.8633	Degree of Saturation (%)	35.7	Dry Density (Kg/m3)	1422

Effect. Stress (kPa)		10	50	100	200	200	400	100	10	0	0	0
Dial Correction (u)		0	29	53	80	80	115	118	50	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		13855
00:00:00	0.00	13855										
04:00:00	15.49		13578									
19:00:00	33.76						10636		10803			
21:00:00	35.50			13507								
22:00:00	36.33				13420	11595						
74:00:00	66.63	13631						10703				
End of Primary Cons		13631	13578	13507	13420	11595	10636	10703	10803			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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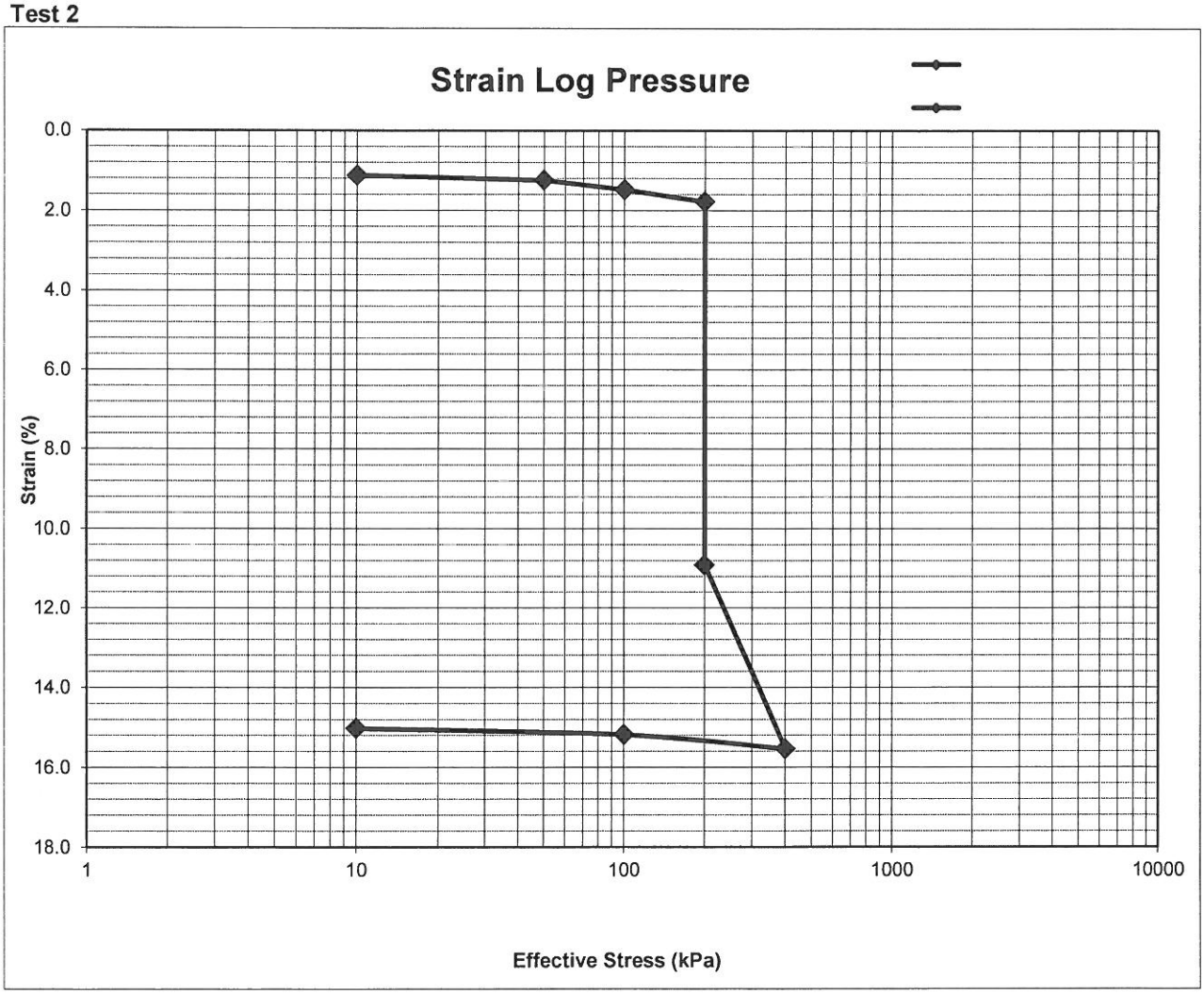
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-26
Borehole No:	TP 33	Depth:	0.8
Date Received:	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect.Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	1.12	1.24	1.48	1.78	10.91	15.54	15.19	15.03			
Mv (1/MPa)		0.0300	0.0470	0.0300		0.2312	0.0117	0.0178			
Void Ratio	0.8424	0.8402	0.8358	0.8302	0.66	0.5739	0.5804	0.5834			

Test 2



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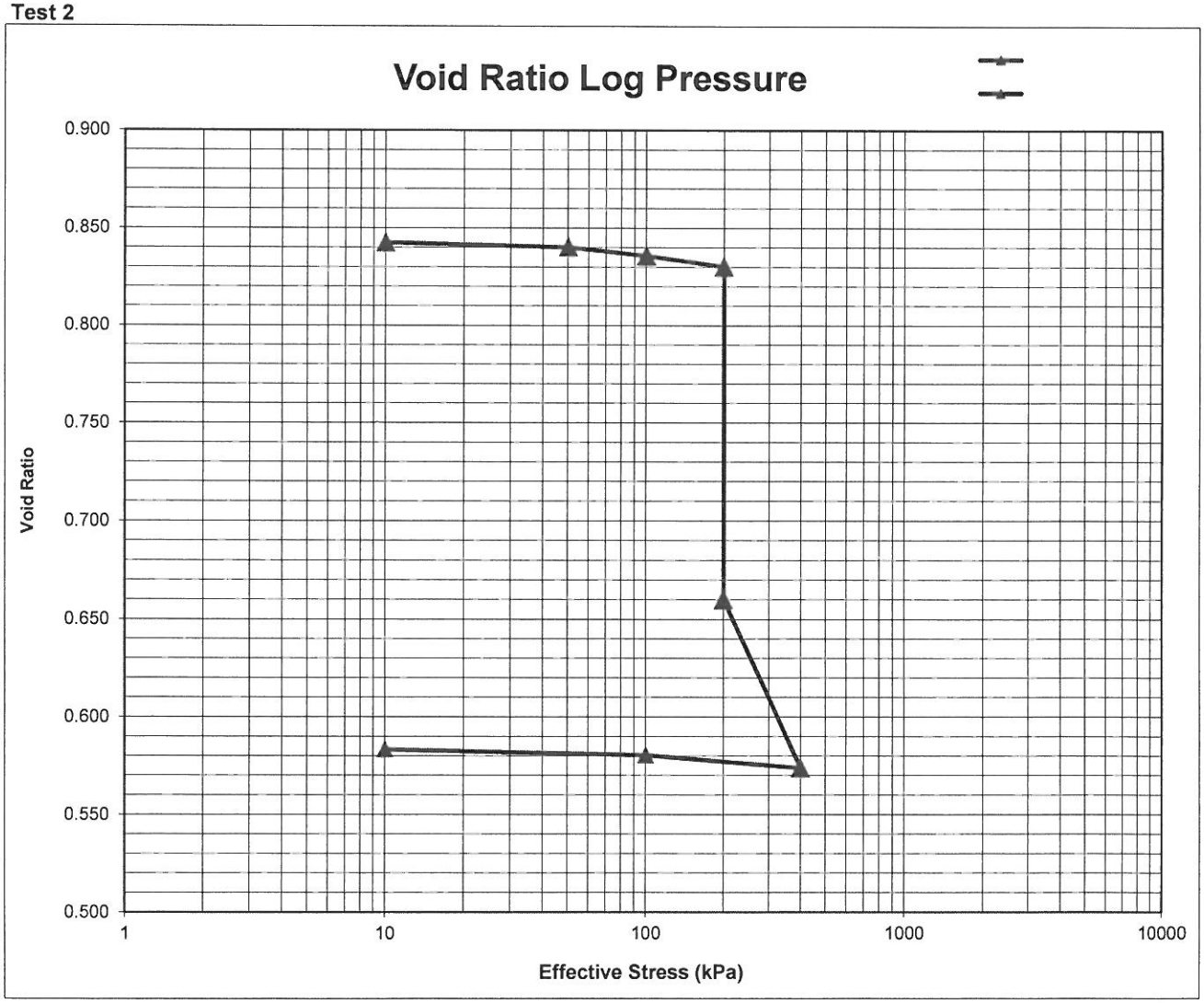
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-26
Borehole No:	TP 33	Depth:	0.8
Date Receivec	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect. Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	1.12	1.24	1.48	1.78	10.91	15.54	15.19	15.03			
Mv (1/MPa)		0.0300	0.0470	0.0300		0.2312	0.0117	0.0178			
Void Ratio	0.8424	0.8402	0.8358	0.8302	0.66	0.5739	0.5804	0.5834			

Test 2



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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		Test 1
Project No.:	2014-B-1295	Sample No.:	1295-28
Borehole No:	TP 40	Depth:	1.8
Date Received:	07/07/2014	Date Tested:	25/07/2014
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 4.28%		

Machine No.	20	Ring No.	C3	Height (mm)	20.7	Diameter (mm)	71.2

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
213.6	223.5	199.2	75.15	11.6%	19.6%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.7606	Degree of Saturation (%)	40.4	Dry Density (Kg/m3)	1505

Effect. Stress (kPa)		10	50	100	200	200	400	100	10	0	0	0
Dial Correction (u)		0	27	48	73	73	102	105	0	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		12023
00:00:00	0.00	12023										
04:00:00	15.49		11826									
19:00:00	33.76						10026		10228			
21:00:00	35.50			11727								
22:00:00	36.33				11581	10696						
74:00:00	66.63	11900						10105				
End of Primary Cons		11900	11826	11727	11581	10696	10026	10105	10228			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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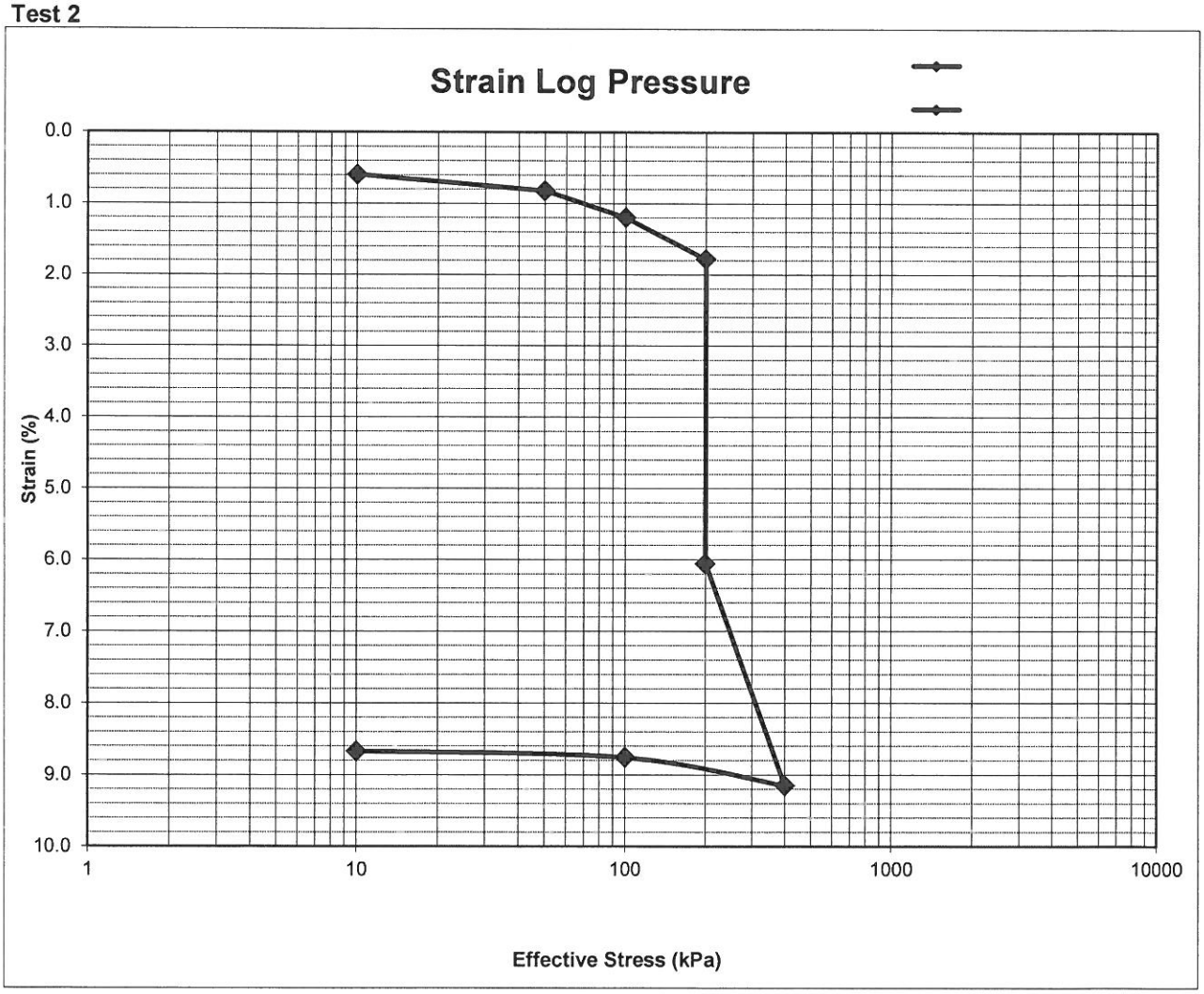
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-28
Borehole No:	TP 40	Depth:	1.8
Date Received:	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect.Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.59	0.82	1.20	1.78	6.06	9.15	8.76	8.67			
Mv (1/MPa)		0.0568	0.0754	0.0585		0.1548	0.0132	0.0097			
Void Ratio	0.7502	0.7462	0.7395	0.7292	0.654	0.5995	0.6064	0.608			

Test 2



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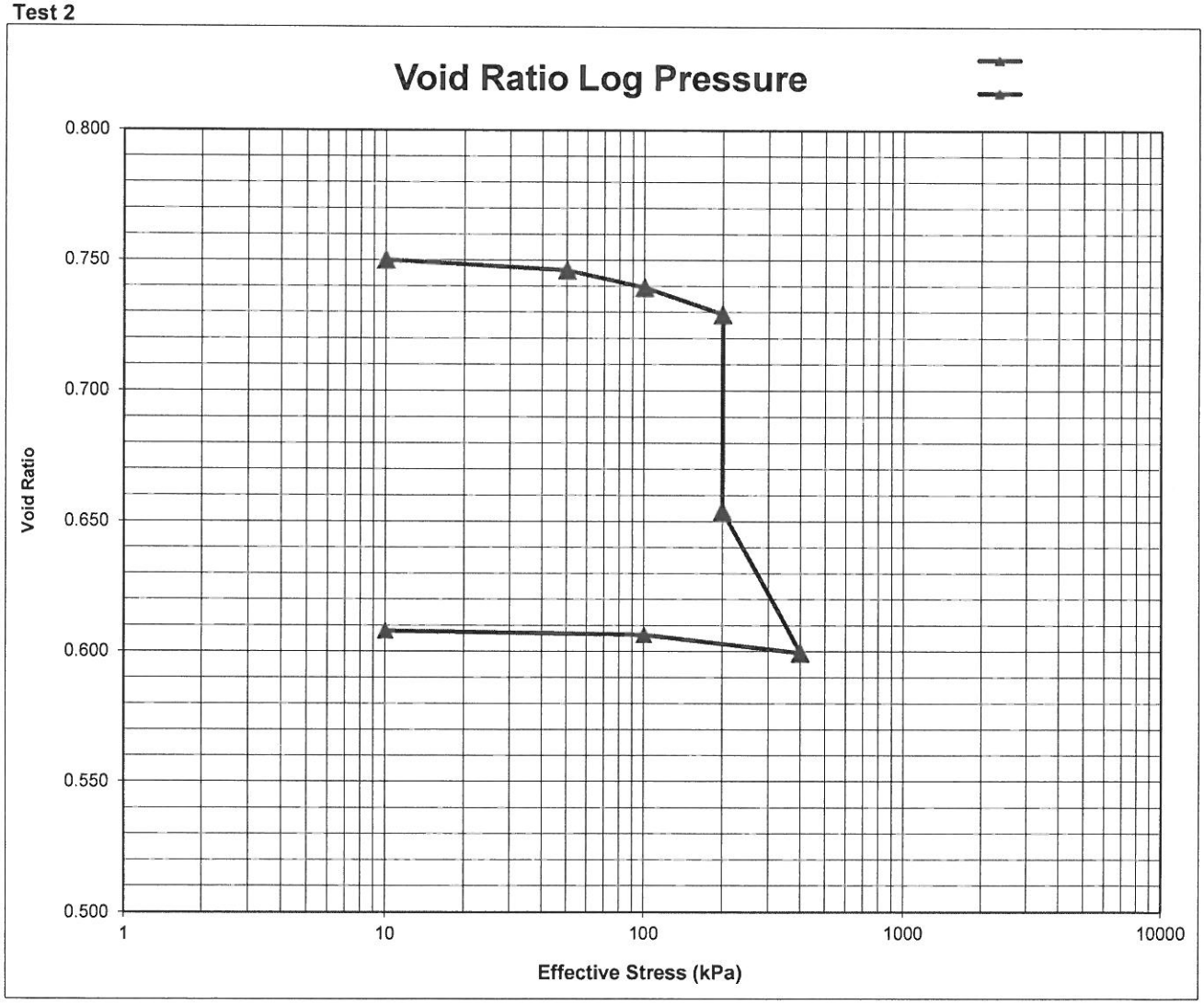
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-28
Borehole No:	TP 40	Depth:	1.8
Date Receive(	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect. Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.59	0.82	1.20	1.78	6.06	9.15	8.76	8.67			
Mv (1/MPa)		0.0568	0.0754	0.0585		0.1548	0.0132	0.0097			
Void Ratio	0.7502	0.7462	0.7395	0.7292	0.654	0.5995	0.6064	0.608			

Test 2



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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		Test 1
Project No.:	2014-B-1295	Sample No.:	1295-30
Borehole No:	TP 42	Depth:	0.6
Date Received:	07/07/2014	Date Tested:	25/07/2014
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 11.5%		

Machine No.	2	Ring No.	12	Height (mm)	19.4	Diameter (mm)	76.1

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
233.8	244.7	225.1	86.55	6.3%	14.1%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.6877	Degree of Saturation (%)	24.2	Dry Density (Kg/m3)	1570

Effect. Stress (kPa)		10	50	100	200	200	400	100	10	0	0	0
Dial Correction (u)		0	56	78	112	112	151	177	117	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		14077
00:00:00	0.00	14077										
04:00:00	15.49							10691				
18:00:00	32.86								11027			
19:00:00	33.76					11355						
20:00:00	34.64		13804	13716	13585							
74:00:00	66.63	13967					10616					
End of Primary Cons		13967	13804	13716	13585	11355	10616	10691	11027			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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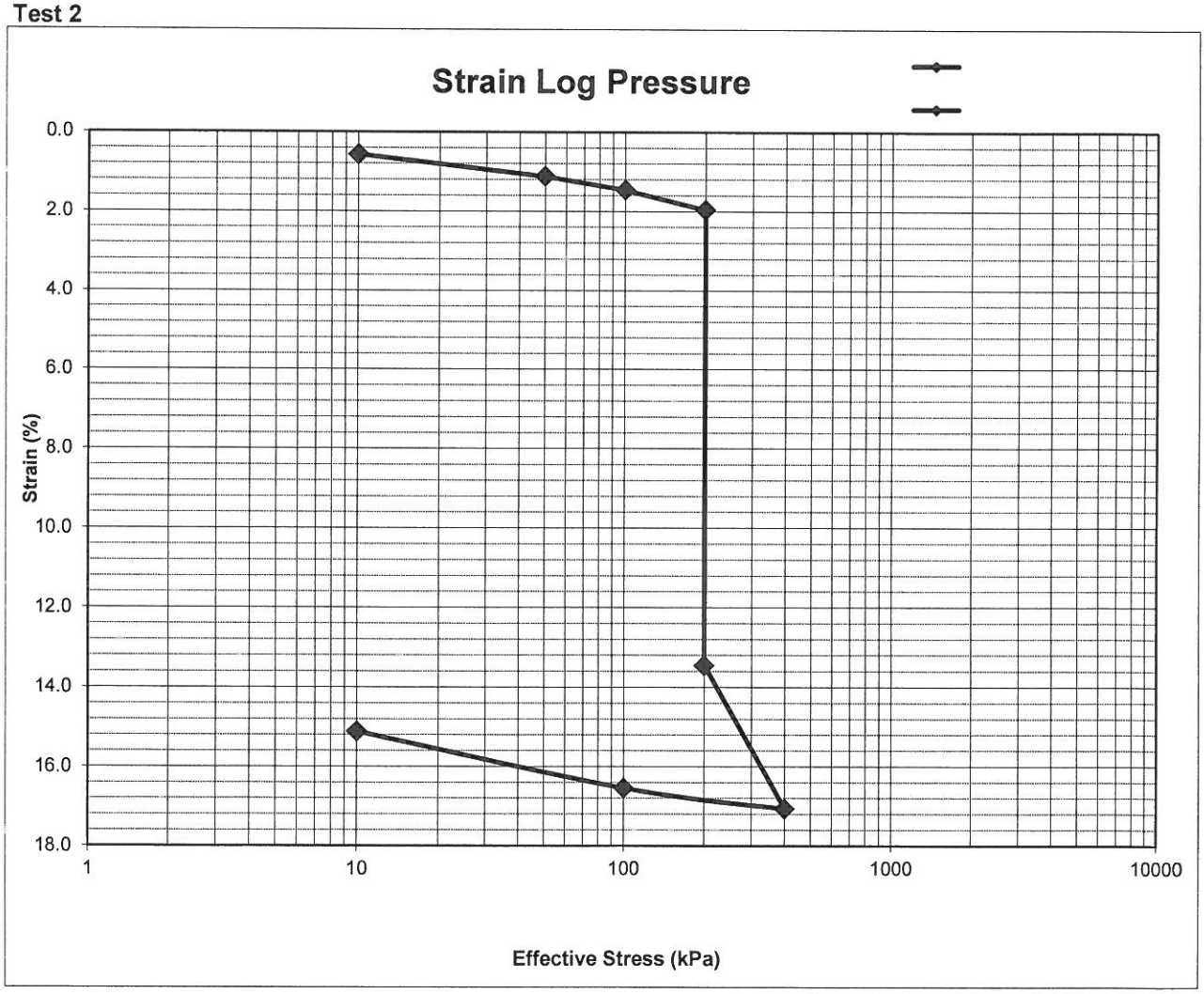
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-30
Borehole No:	TP 42	Depth:	0.6
Date Received:	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect.Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.57	1.12	1.46	1.96	13.45	17.06	16.54	15.12			
Mv (1/MPa)		0.1379	0.0680	0.0500		0.1804	0.0174	0.1581			
Void Ratio	0.6781	0.6688	0.6631	0.6547	0.4607	0.3998	0.4085	0.4326			

Test 2



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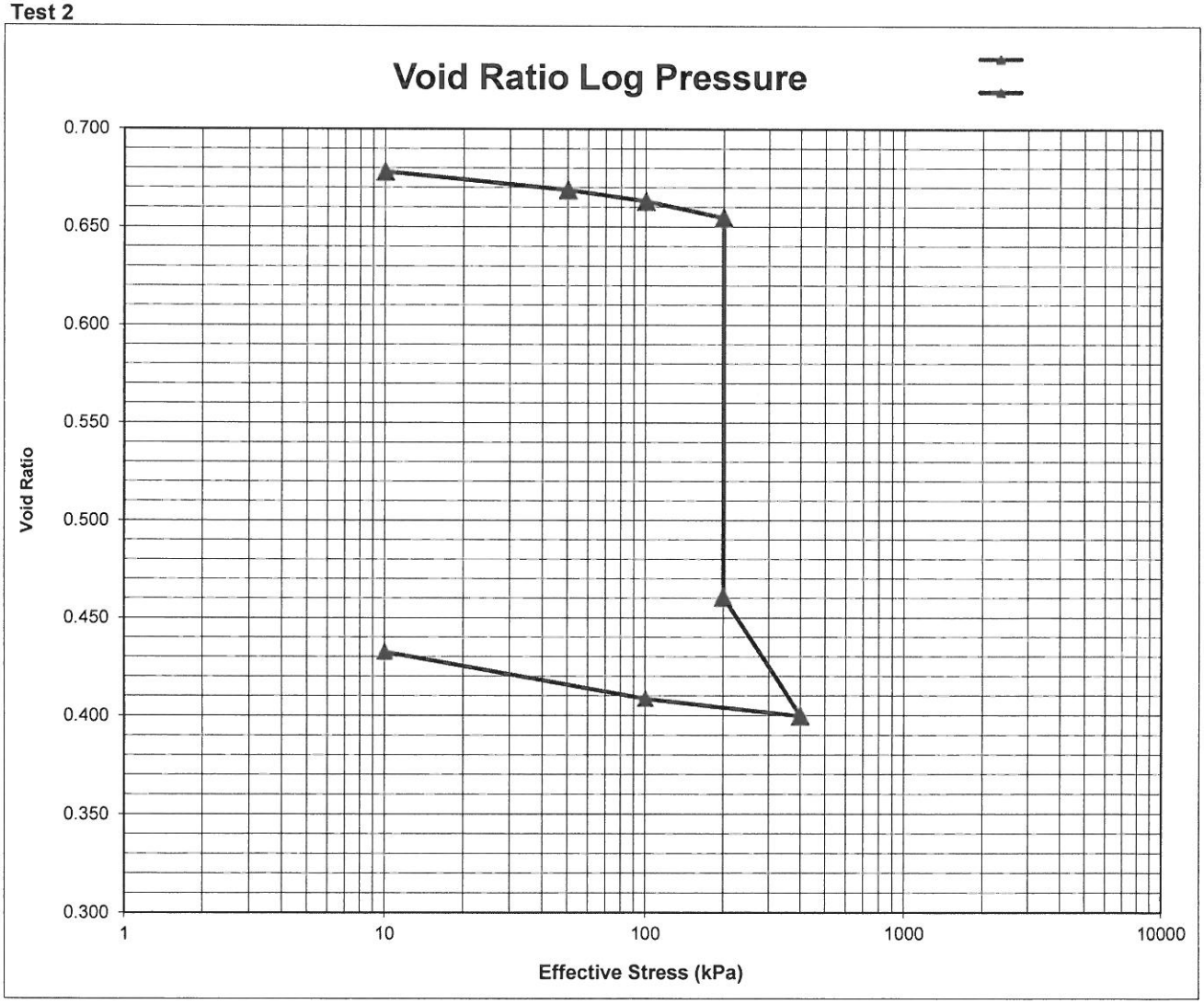
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-30
Borehole No:	TP 42	Depth:	0.6
Date Receivec	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect. Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.57	1.12	1.46	1.96	13.45	17.06	16.54	15.12			
Mv (1/MPa)		0.1379	0.0680	0.0500		0.1804	0.0174	0.1581			
Void Ratio	0.6781	0.6688	0.6631	0.6547	0.4607	0.3998	0.4085	0.4326			

Test 2



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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		Test 1
Project No.:	2014-B-1295	Sample No.:	1295-32
Borehole No:	TP 46	Depth:	0.5
Date Received:	07/07/2014	Date Tested:	29/07/2014
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 17.7%		

Machine No.	1	Ring No.	30	Height (mm)	19.6	Diameter (mm)	76.7

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
225.1	237.3	217.1	88.66	6.2%	15.7%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.8685	Degree of Saturation (%)	19.0	Dry Density (Kg/m3)	1418

Effect. Stress (kPa)		10	50	100	200	200	400	100	10	0	0	0
Dial Correction (u)		0	0	65	96	96	137	123	65	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		13683
00:00:00	0.00	13683										
17:00:00	31.94					9616						
19:00:00	33.76			13318								
20:00:00	34.64	13619	13484					8790				
24:00:00	37.95						8720		8934			
74:00:00	66.63				13082							
End of Primary Cons		13619	13484	13318	13082	9616	8720	8790	8934			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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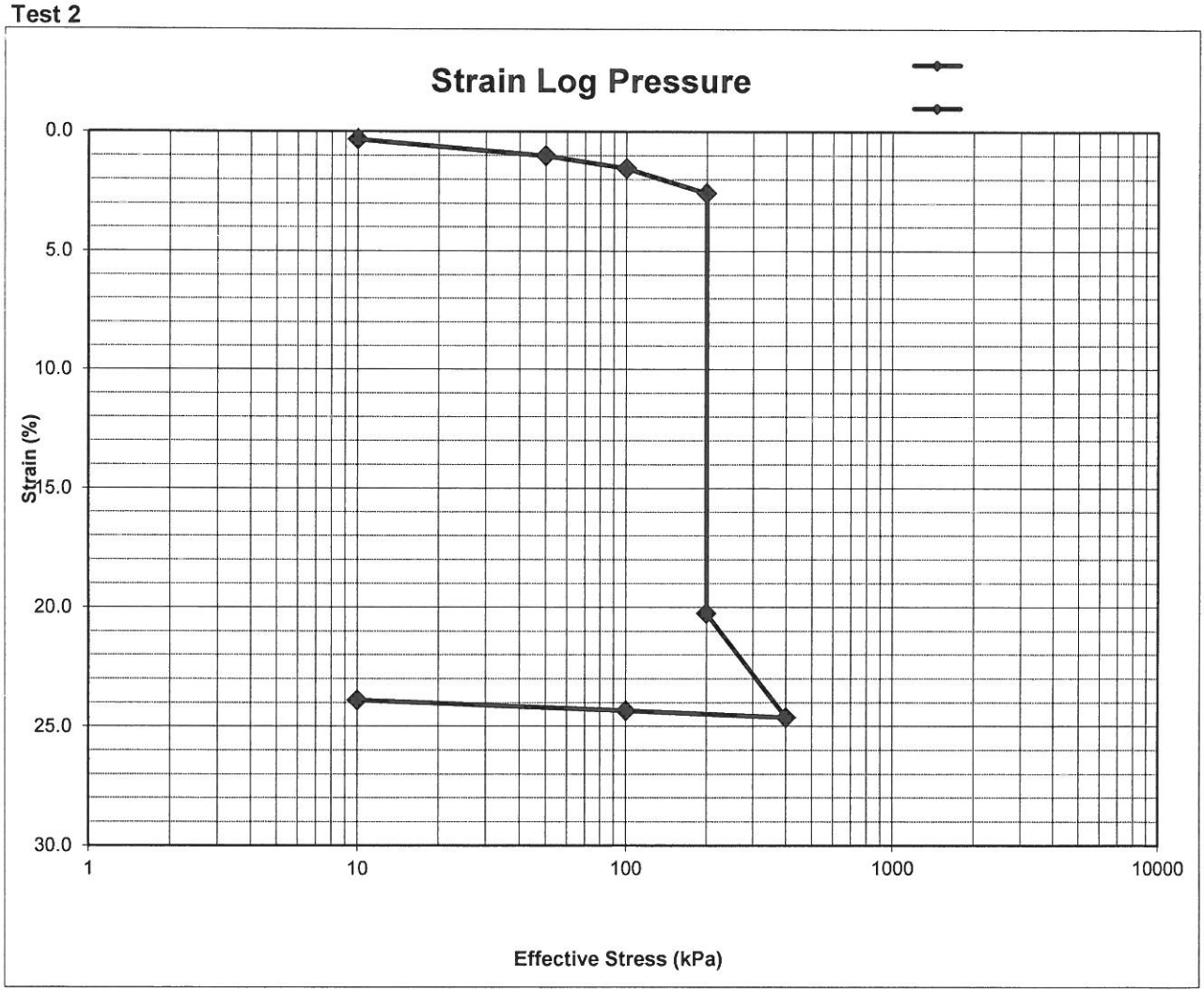
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-32
Borehole No:	TP 46	Depth:	0.5
Date Received:	07/07/2014	Date Tested:	29/07/2014

Test 1

Effect.Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.33	1.02	1.53	2.58	20.26	24.62	24.34	23.90			
Mv (1/MPa)		0.1722	0.1031	0.1046		0.2181	0.0095	0.0488			
Void Ratio	0.8624	0.8495	0.8399	0.8203	0.4899	0.4084	0.4137	0.4219			

Test 2



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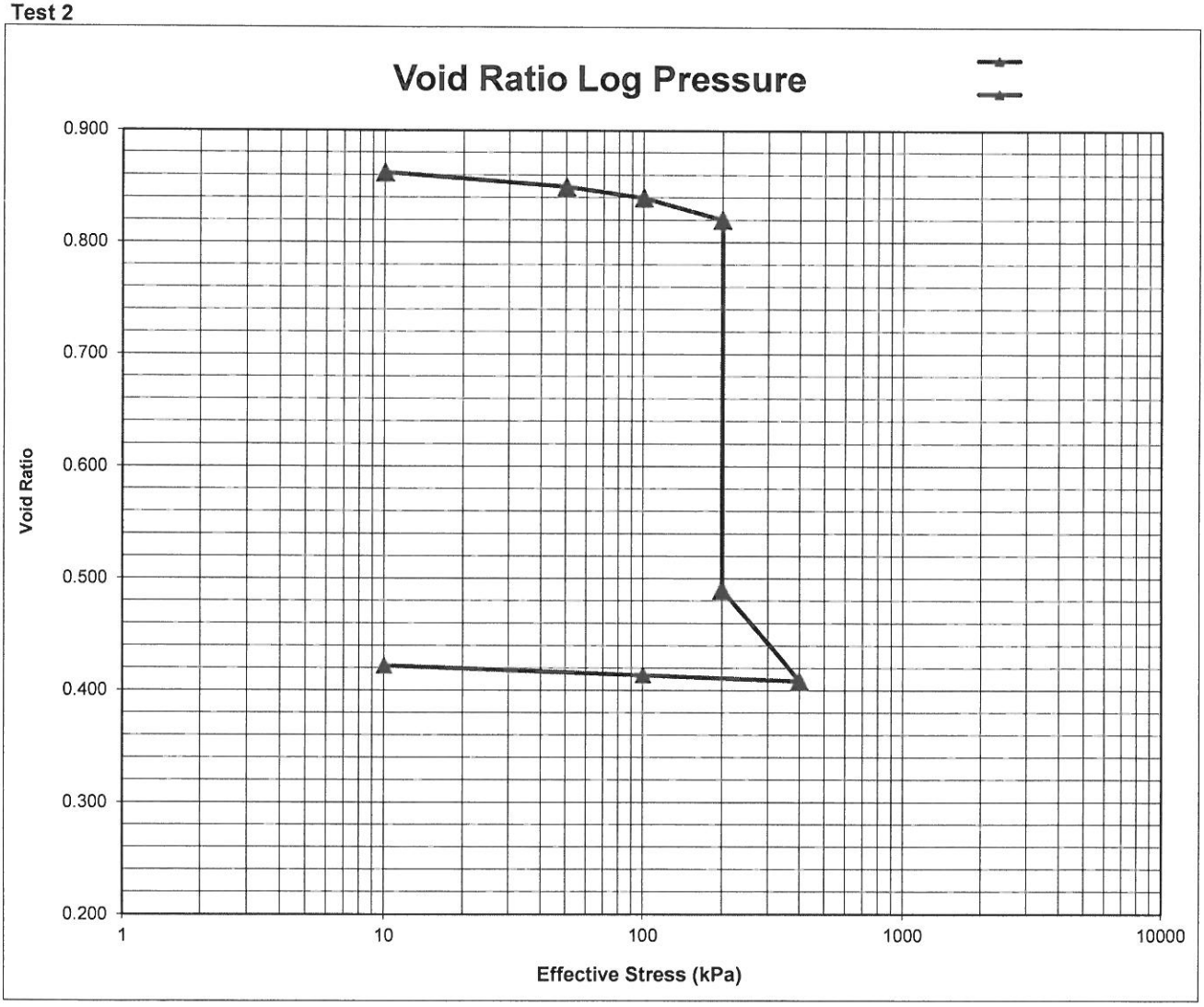
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-32
Borehole No:	TP 46	Depth:	0.5
Date Receive(	07/07/2014	Date Tested:	29/07/2014

Test 1

Effect. Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.33	1.02	1.53	2.58	20.26	24.62	24.34	23.90			
Mv (1/MPa)		0.1722	0.1031	0.1046		0.2181	0.0095	0.0488			
Void Ratio	0.8624	0.8495	0.8399	0.8203	0.4899	0.4084	0.4137	0.4219			

Test 2



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Project:	PTN 183 OLIFANTSFONTEIN		Test 1
Project No.:	2014-B-1295	Sample No.:	1295-33
Borehole No:	TP 47	Depth:	0.3
Date Received:	07/07/2014	Date Tested:	25/07/2014
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 8.44%		

Machine No.	14	Ring No.	H	Height (mm)	19.15	Diameter (mm)	69.35

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
202.2	214.3	197.1	81.86	4.4%	14.9%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.6634	Degree of Saturation (%)	17.7	Dry Density (Kg/m3)	1593

Effect. Stress (kPa)		10	52	102	202	202	402	102	10	0	0	0
Dial Correction (u)		0	16	29	47	47	67	29	10	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns									Initial Dial Reading	13790
00:00:00	0.00	13790										
05:00:00	17.32				13379							
17:00:00	31.94						10964					
19:00:00	33.76			13489								
20:00:00	34.64							11030	11225			
22:00:00	36.33		13562									
24:00:00	37.95	13684										
76:00:00	67.53					11763						
End of Primary Cons		13684	13562	13489	13379	11763	10964	11030	11225			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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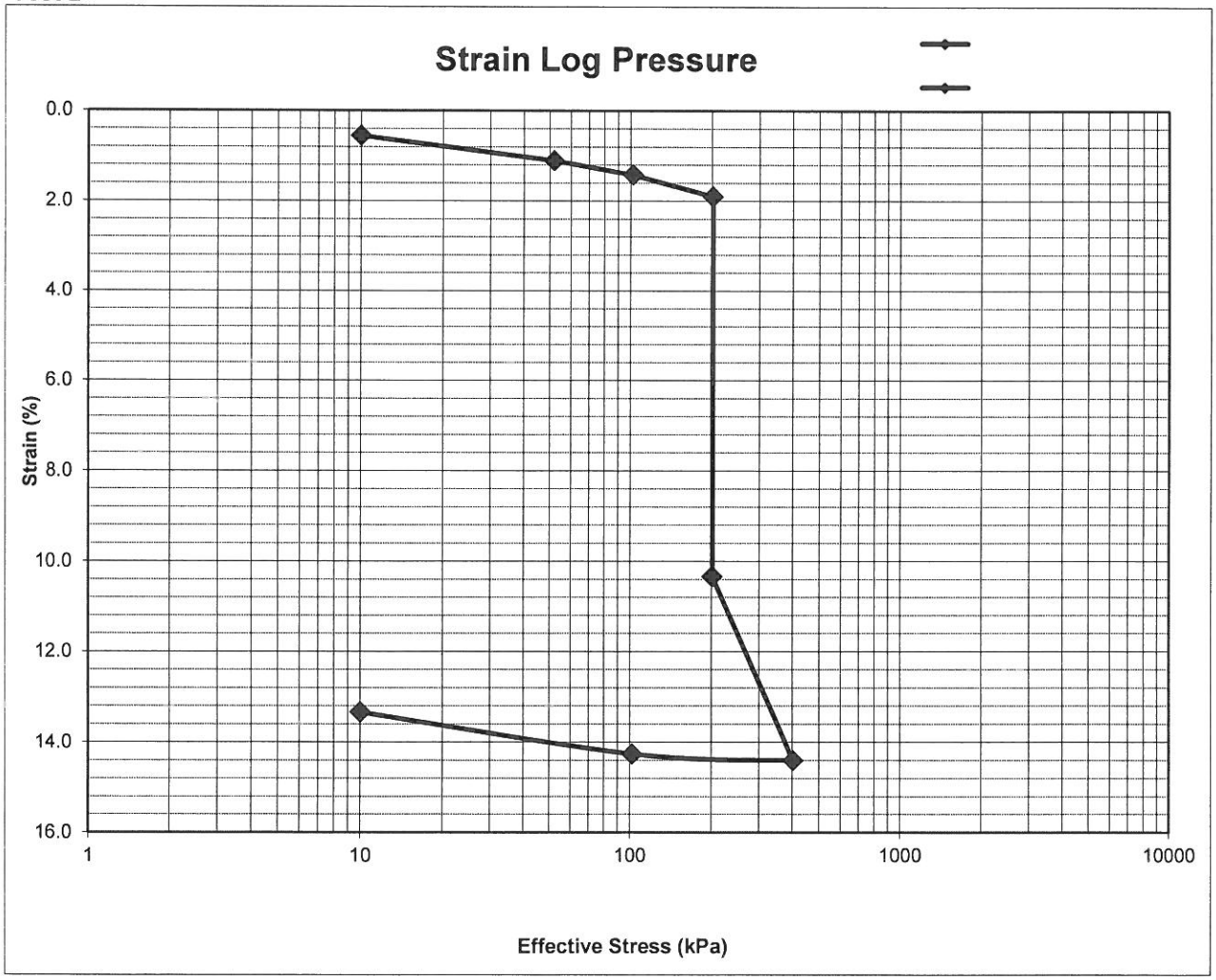
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-33
Borehole No:	TP 47	Depth:	0.3
Date Received:	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect.Stress (kPa)	10	52	102	202	202	402	102	10			
Strain (%)	0.55	1.11	1.42	1.90	10.34	14.41	14.26	13.34			
Mv (1/MPa)		0.1318	0.0627	0.0480		0.2034	0.0049	0.0999			
Void Ratio	0.6542	0.645	0.6398	0.6318	0.4914	0.4237	0.4262	0.4415			

Test 2



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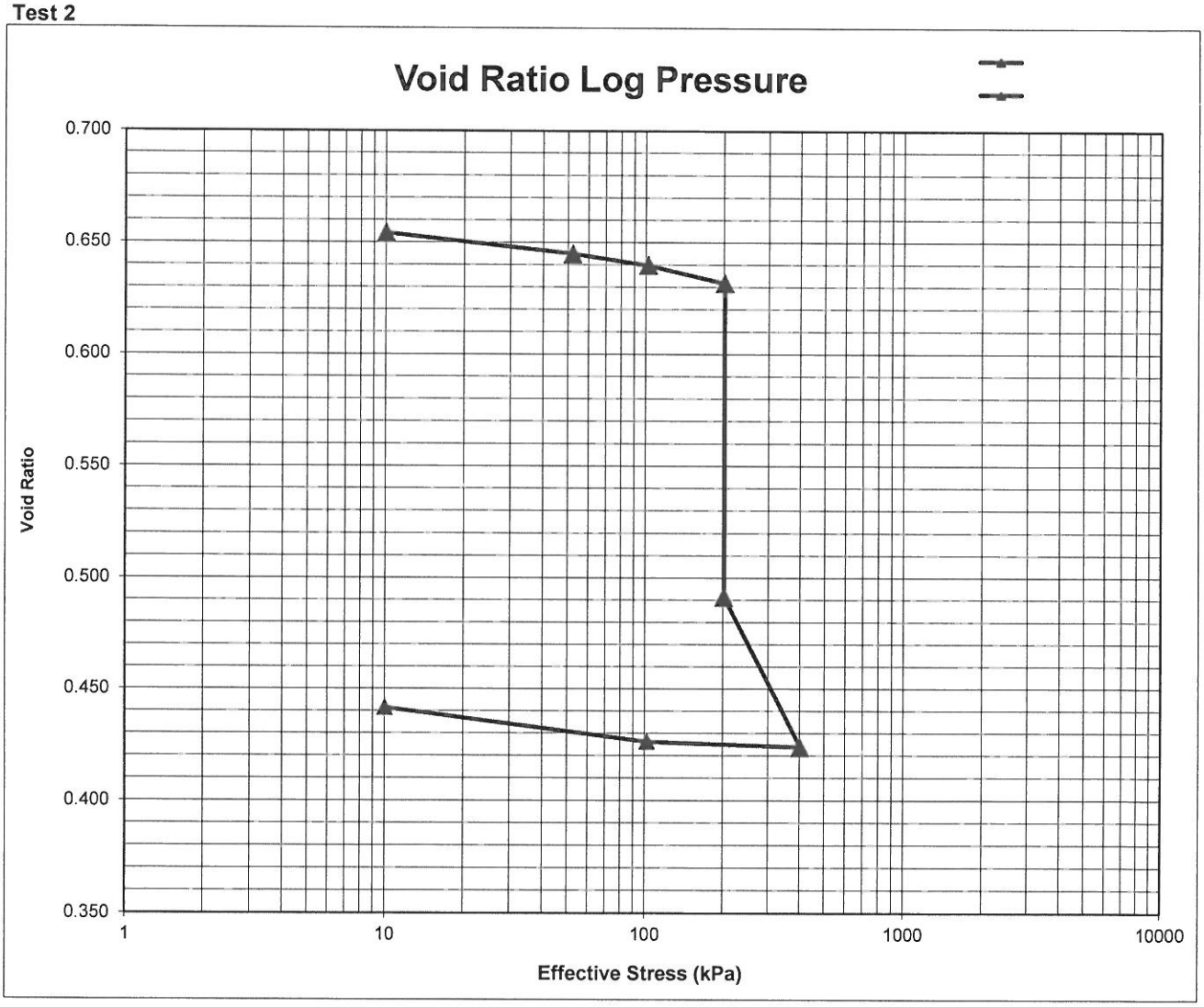
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-33
Borehole No:	TP 47	Depth:	0.3
Date Receivec	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect. Stress (kPa)	10	52	102	202	202	402	102	10			
Strain (%)	0.55	1.11	1.42	1.90	10.34	14.41	14.26	13.34			
Mv (1/MPa)		0.1318	0.0627	0.0480		0.2034	0.0049	0.0999			
Void Ratio	0.6542	0.645	0.6398	0.6318	0.4914	0.4237	0.4262	0.4415			

Test 2



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P O Box 82223, Southdale 2135
Tel: +27 (0)11 835-3117 • Fax: +27 (0)11 835-2503
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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		Test 1
Project No.:	2014-B-1295	Sample No.:	1295-34
Borehole No:	TP 48	Depth:	0.8
Date Received:	07/07/2014	Date Tested:	25/07/2014
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 2.89%		

Machine No.	15	Ring No.	C	Height (mm)	18.4	Diameter (mm)	70.2

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
217.2	221.5	201.0	90.85	14.7%	18.6%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.7133	Degree of Saturation (%)	54.6	Dry Density (Kg/m3)	1547

Effect. Stress (kPa)		10	52	102	202	202	402	102	10	0	0	0
Dial Correction (u)		0	16	29	47	47	67	29	10	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		13388
00:00:00	0.00	13388										
02:00:00	10.95	13336										
05:00:00	17.32			12853								
06:00:00	18.97							10775				
17:00:00	31.94					11703						
19:00:00	33.76		13107									
20:00:00	34.64						10695					
22:00:00	36.33								10962			
78:00:00	68.41				12236							
End of Primary Cons		13336	13107	12853	12236	11703	10695	10775	10962			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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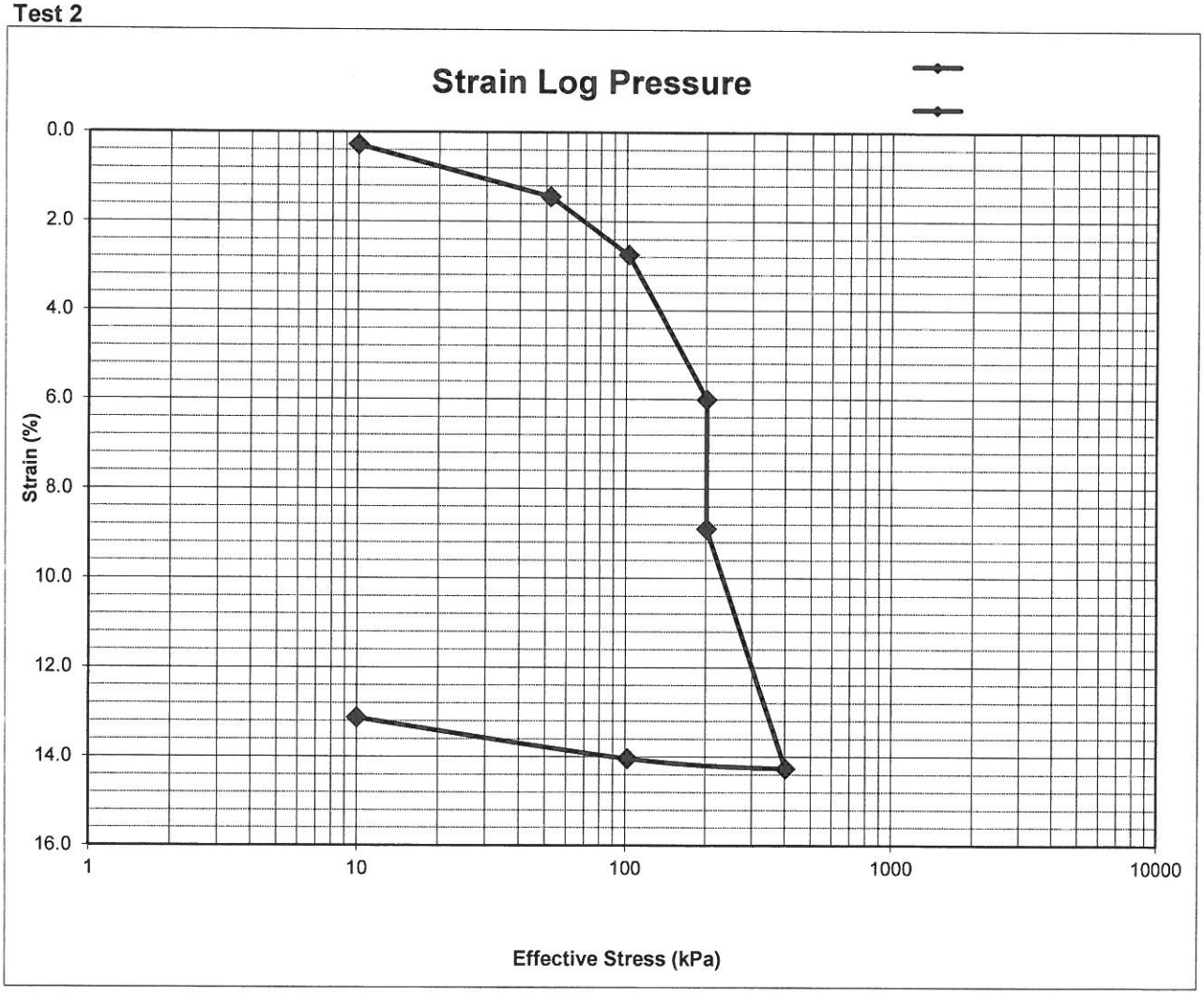
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-34
Borehole No:	TP 48	Depth:	0.8
Date Received:	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect.Stress (kPa)	10	52	102	202	202	402	102	10			
Strain (%)	0.28	1.44	2.75	6.01	8.90	14.27	14.04	13.13			
Mv (1/MPa)		0.2756	0.2620	0.3255		0.2685	0.0076	0.0992			
Void Ratio	0.7085	0.6887	0.6662	0.6104	0.5608	0.4688	0.4727	0.4884			

Test 2



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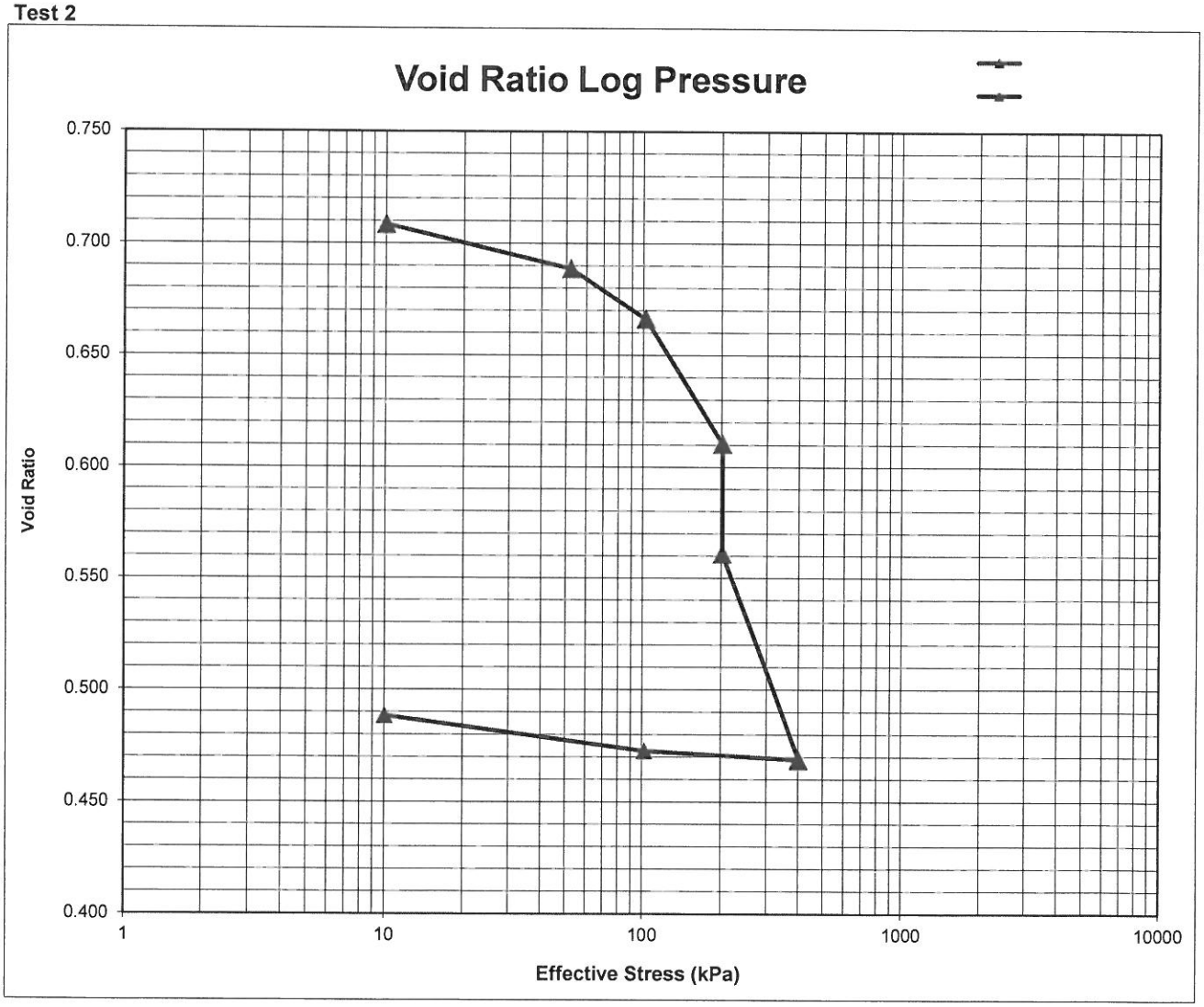
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-34
Borehole No:	TP 48	Depth:	0.8
Date Receivec	07/07/2014	Date Tested:	25/07/2014

Test 1

Effect. Stress (kPa)	10	52	102	202	202	402	102	10			
Strain (%)	0.28	1.44	2.75	6.01	8.90	14.27	14.04	13.13			
Mv (1/MPa)		0.2756	0.2620	0.3255		0.2685	0.0076	0.0992			
Void Ratio	0.7085	0.6887	0.6662	0.6104	0.5608	0.4688	0.4727	0.4884			

Test 2



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Project:	PTN 183 OLIFANTSFONTEIN						Test 1
Project No.:	2014-B-1295			Sample No.:	1295-35		
Borehole No:	TP 51			Depth:	0.6		
Date Received:	07/07/2014			Date Tested:	07/08/2014		
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 5.08%						
Machine No.	12	Ring No.	16	Height (mm)	19.95	Diameter (mm)	75.95

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
256.3	263.0	238.3	106.78	13.7%	18.8%

Pre-Determined Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.8211	Degree of Saturation (%)	44.2	Dry Density (Kg/m3)	1455

Effect. Stress (kPa)		10	50	100	200	200	400	100	10	0	0	0
Dial Correction (u)		0	41	67	107	107	141	112	39	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns								Initial Dial Reading		13832
00:00:00	0.00	13832										
03:00:00	13.42	13831										
04:00:00	15.49							10201				
20:00:00	34.64						10086					
22:00:00	36.33		13583		13032	12019						
53:00:00	56.39			13158								
73:00:00	66.18								10350			
End of Primary Cons		13831	13583	13158	13032	12019	10086	10201	10350			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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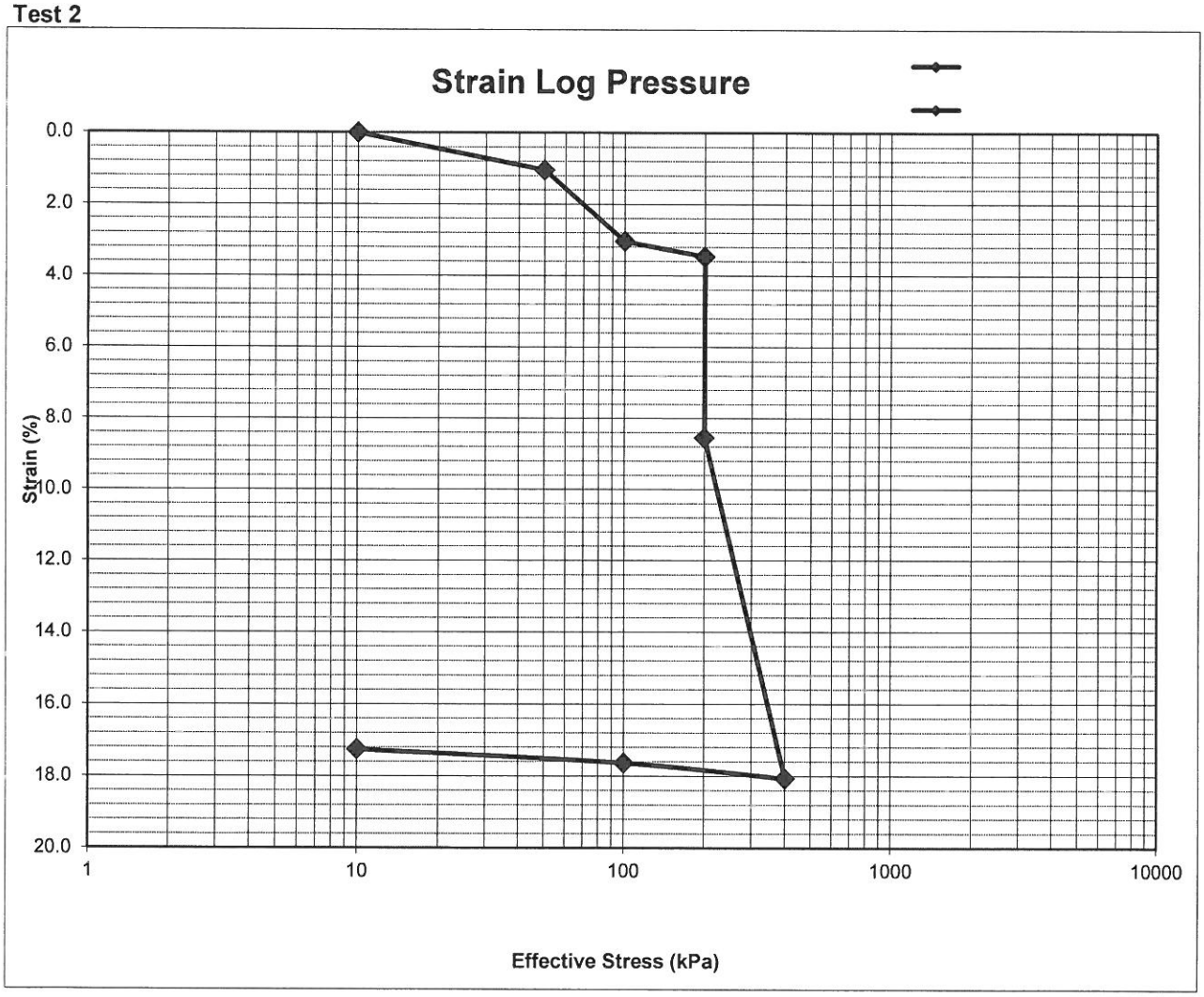
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-35
Borehole No:	TP 51	Depth:	0.6
Date Received:	07/07/2014	Date Tested:	07/08/2014

Test 1

Effect.Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.01	1.04	3.04	3.47	8.55	18.07	17.64	17.26			
Mv (1/MPa)		0.2594	0.4000	0.0431		0.4759	0.0144	0.0423			
Void Ratio	0.821	0.8021	0.7657	0.7579	0.6654	0.4921	0.4999	0.5068			

Test 2



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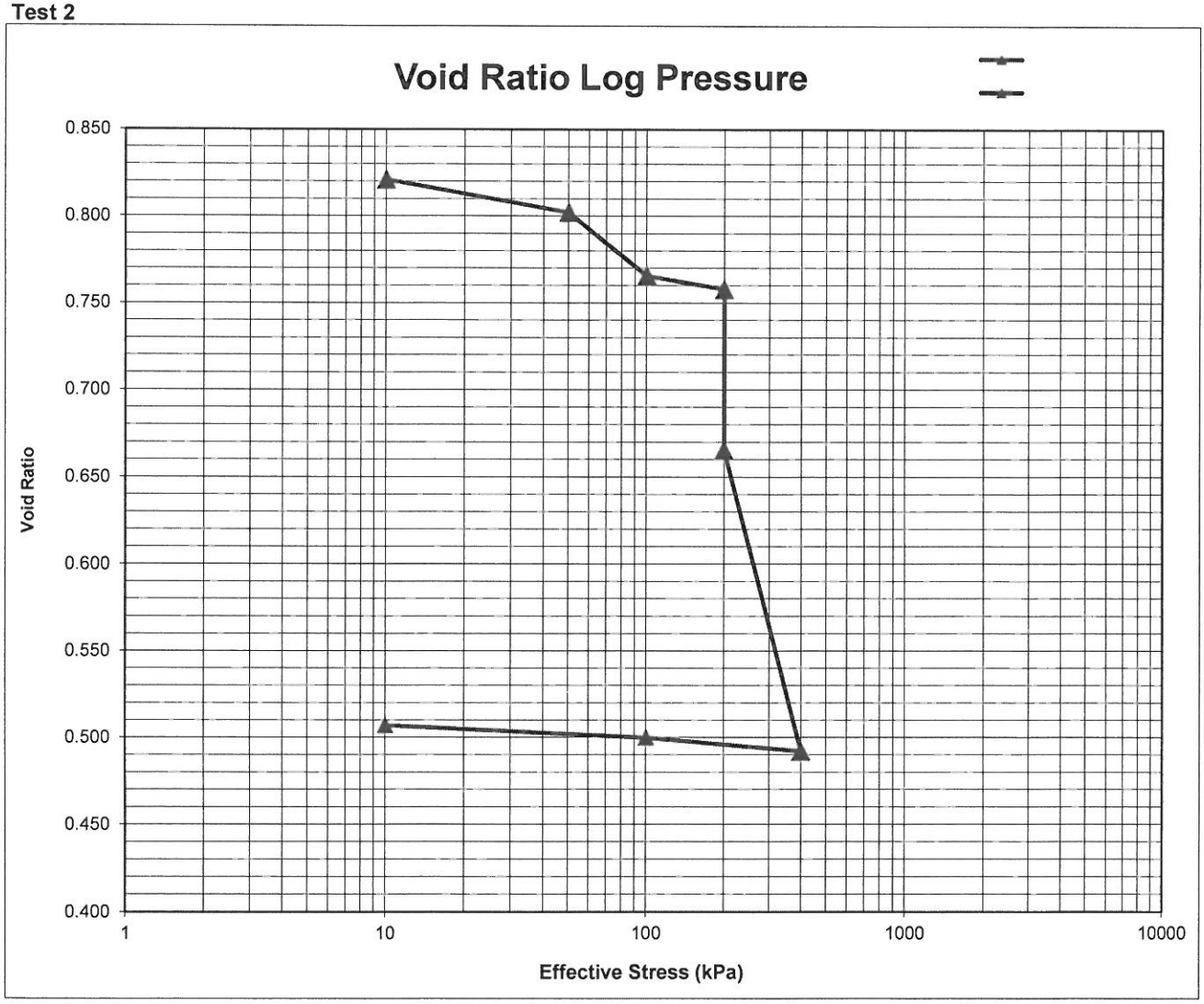
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-35
Borehole No:	TP 51	Depth:	0.6
Date Receivec	07/07/2014	Date Tested:	07/08/2014

Test 1

Effect. Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.01	1.04	3.04	3.47	8.55	18.07	17.64	17.26			
Mv (1/MPa)		0.2594	0.4000	0.0431		0.4759	0.0144	0.0423			
Void Ratio	0.821	0.8021	0.7657	0.7579	0.6654	0.4921	0.4999	0.5068			

Test 2



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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN						Test 1
Project No.:	2014-B-1295			Sample No.:	1295-36		
Borehole No:	TP 52			Depth:	0.8		
Date Received:	07/07/2014			Date Tested:	01/08/2014		
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 13.5%						
Machine No.	16	Ring No.	BR	Height (mm)	18.3	Diameter (mm)	69.1

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
179.5	189.2	169.3	80.81	11.5%	22.5%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	1.0552	Degree of Saturation (%)	28.9	Dry Density (Kg/m3)	1289

Effect. Stress (kPa)		10	51	100	198	198	398	100	10	0	0	0
Dial Correction (u)		0	16	29	47	47	67	29	10	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns									Initial Dial Reading	13222
00:00:00	0.00	13222										
05:00:00	17.32							9062				
18:00:00	32.86		13025	12918								
20:00:00	34.64				12752							
21:00:00	35.50						8999					
22:00:00	36.33	13149										
23:00:00	37.15								9218			
74:00:00	66.63					10288						
End of Primary Cons		13149	13025	12918	12752	10288	8999	9062	9218			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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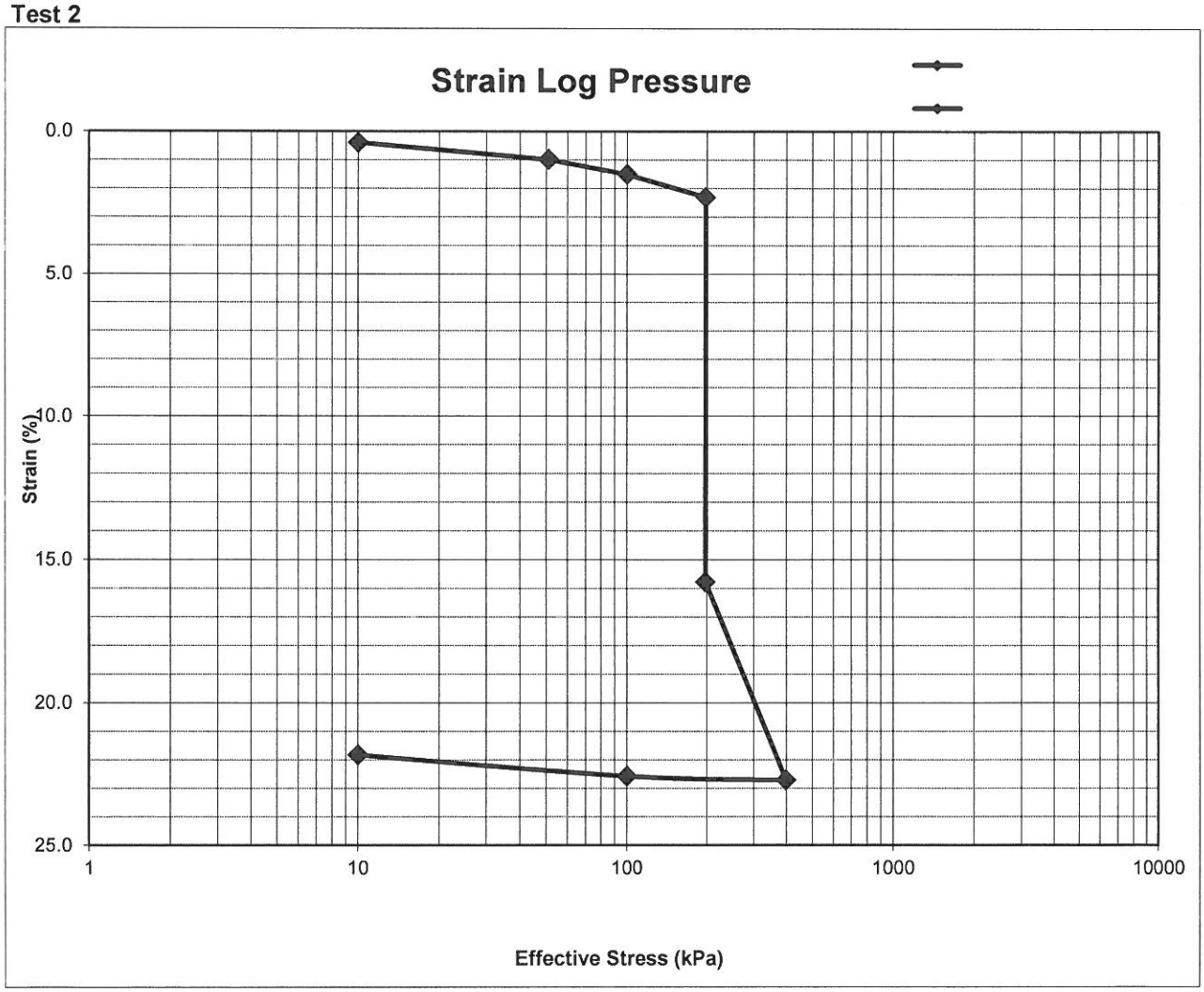
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-36
Borehole No:	TP 52	Depth:	0.8
Date Received:	07/07/2014	Date Tested:	01/08/2014

Test 1

Effect.Stress (kPa)	10	51	100	198	198	398	100	10			
Strain (%)	0.40	0.99	1.50	2.31	15.78	22.71	22.57	21.83			
Mv (1/MPa)		0.1439	0.1048	0.0825		0.3467	0.0046	0.0832			
Void Ratio	1.047	1.0348	1.0243	1.0077	0.731	0.5884	0.5912	0.6066			

Test 2



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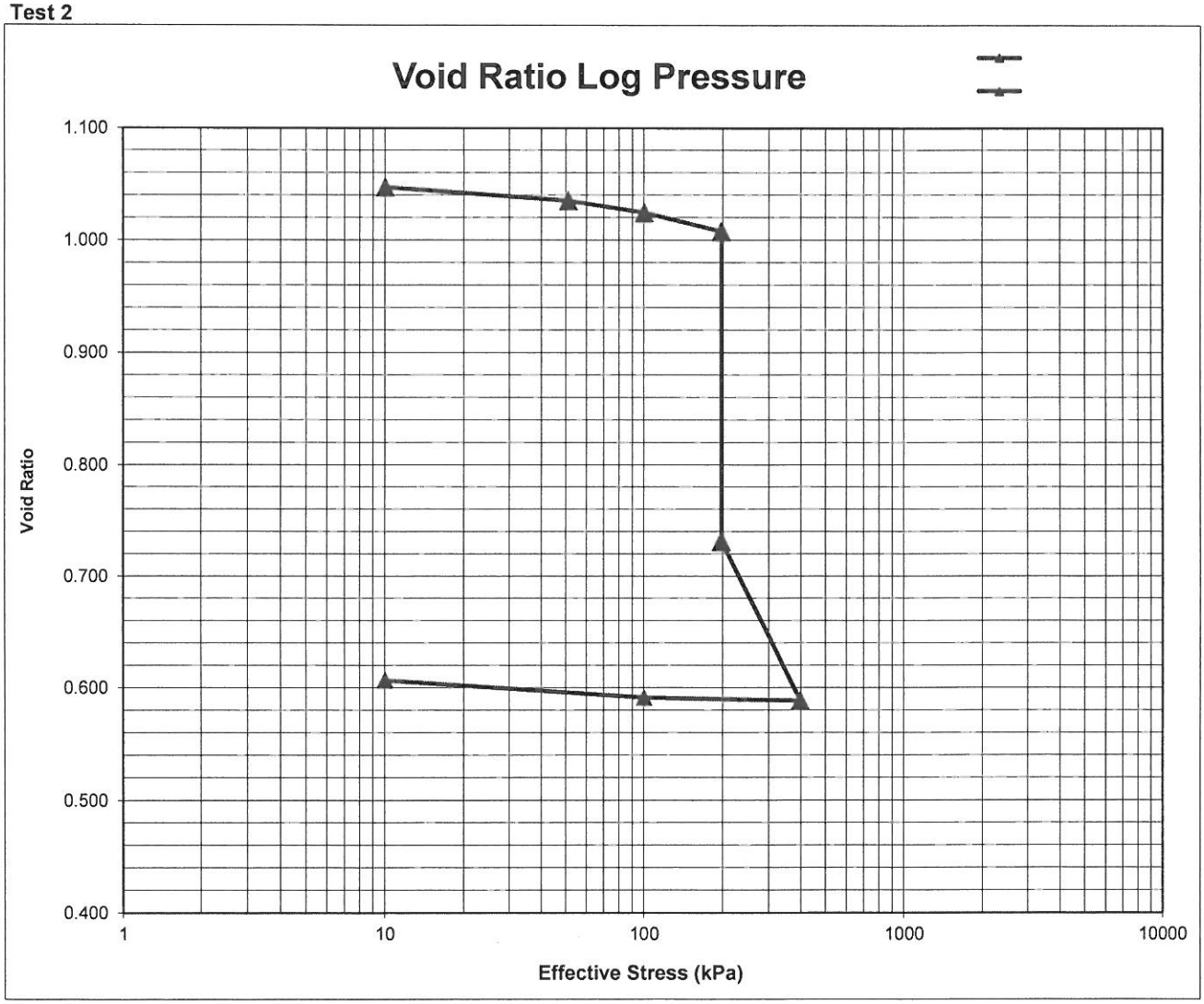
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-36
Borehole No:	TP 52	Depth:	0.8
Date Receivec	07/07/2014	Date Tested:	01/08/2014

Test 1

Effect. Stress (kPa)	10	51	100	198	198	398	100	10			
Strain (%)	0.40	0.99	1.50	2.31	15.78	22.71	22.57	21.83			
Mv (1/MPa)		0.1439	0.1048	0.0825		0.3467	0.0046	0.0832			
Void Ratio	1.047	1.0348	1.0243	1.0077	0.731	0.5884	0.5912	0.6066			

Test 2



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Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN						Test 1
Project No.:	2014-B-1295			Sample No.:	1295-39		
Borehole No:	TP 68			Depth:	0.6		
Date Received:	07/07/2014			Date Tested:	01/08/2014		
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 4.22%						
Machine No.	11	Ring No.	14	Height (mm)	20.1	Diameter (mm)	75.8

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
295.3	302.8	287.1	107.41	4.6%	8.7%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.3377	Degree of Saturation (%)	35.8	Dry Density (Kg/m3)	1981

Effect. Stress (kPa)		10	50	100	200	200	400	100	10	0	0	0
Dial Correction (u)		0	63	85	117	117	173	157	60	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns									Initial Dial Reading	14092
00:00:00	0.00	14092										
02:00:00	10.95	14092										
20:00:00	34.64		13906	13861								
22:00:00	36.33							12626	12769			
25:00:00	38.73						12548					
36:00:00	46.48				13684							
74:00:00	66.63					12835						
End of Primary Cons		14092	13906	13861	13684	12835	12548	12626	12769			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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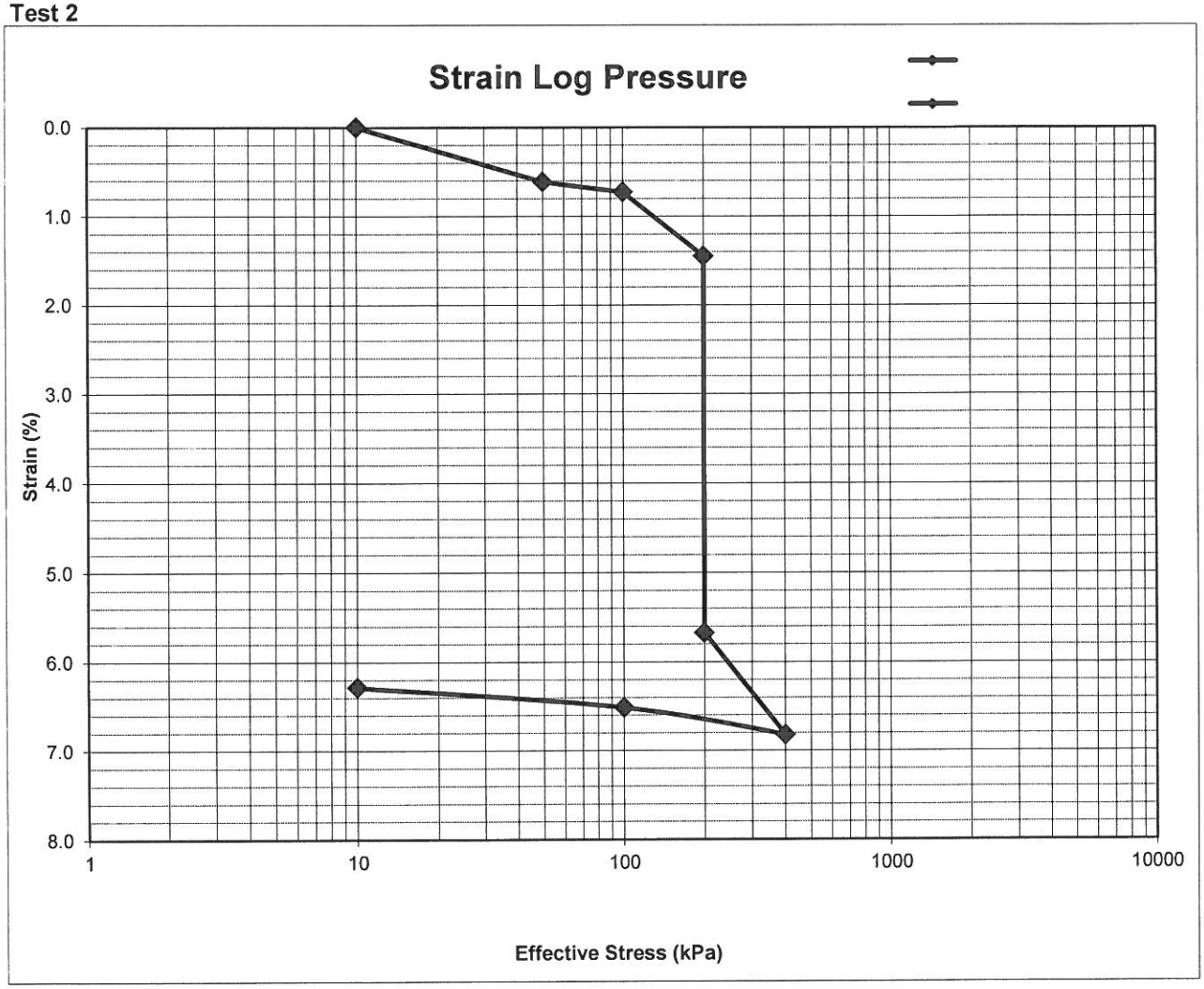
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-39
Borehole No:	TP 68	Depth:	0.6
Date Received:	07/07/2014	Date Tested:	01/08/2014

Test 1

Effect.Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.00	0.61	0.73	1.45	5.67	6.82	6.51	6.28			
Mv (1/MPa)		0.1530	0.0229	0.0721		0.0575	0.0103	0.0254			
Void Ratio	0.3377	0.3295	0.3279	0.3183	0.2618	0.2464	0.2505	0.2536			

Test 2



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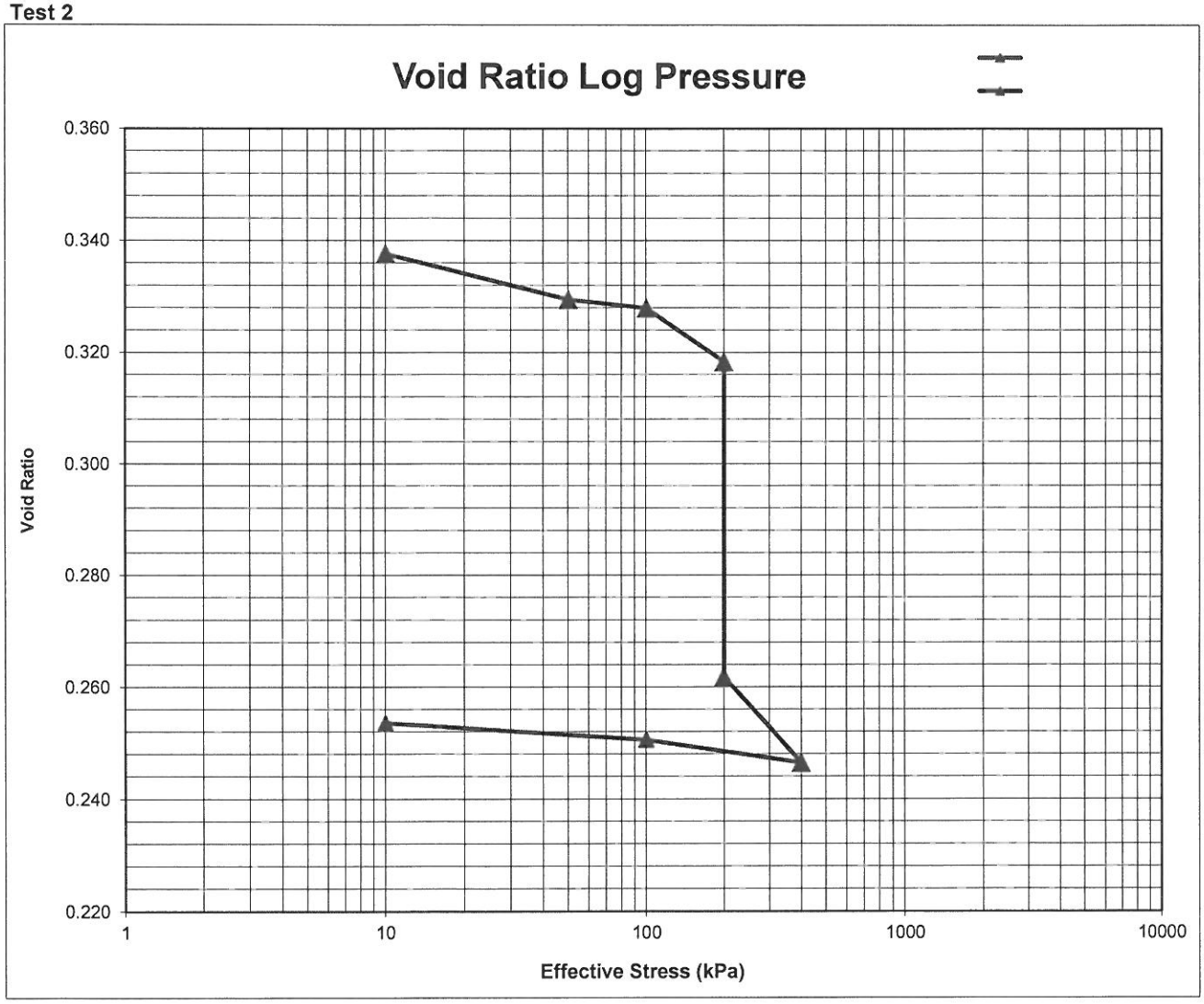
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-39
Borehole No:	TP 68	Depth:	0.6
Date Receive(	07/07/2014	Date Tested:	01/08/2014

Test 1

Effect. Stress (kPa)	10	50	100	200	200	400	100	10			
Strain (%)	0.00	0.61	0.73	1.45	5.67	6.82	6.51	6.28			
Mv (1/MPa)		0.1530	0.0229	0.0721		0.0575	0.0103	0.0254			
Void Ratio	0.3377	0.3295	0.3279	0.3183	0.2618	0.2464	0.2505	0.2536			

Test 2



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Project:	PTN 183 OLIFANTSFONTEIN						Test 1
Project No.:	2014-B-1295			Sample No.:	1295-43		
Borehole No:	TP 71			Depth:	1.8		
Date Received:	07/07/2014			Date Tested:	01/08/2014		
Remarks:	An undisturbed sample soaked @ 200kPa. Collapse Potential: 6.46%						
Machine No.	18	Ring No.	A	Height (mm)	18.2	Diameter (mm)	69.3

Masses for Water Content Determination (g)

Wet Sample and Ring		Dry Sample and Ring	Ring Only	Water Content	
Before Test	After Test			Before Test	After Test
200.6	204.6	185.6	74.93	13.6%	17.2%

Estimated Particle Specific Gravity	2.65

Initial Parameters

Void Ratio	0.6438	Degree of Saturation (%)	55.8	Dry Density (Kg/m3)	1612

Effect. Stress (kPa)		10	51	100	198	198	398	100	10	0	0	0
Dial Correction (u)		0	16	29	47	47	67	29	10	0	0	0
HH:MM:SS	√Minutes	Dial Readings in Microns									Initial Dial Reading	13794
00:00:00	0.00	13794										
16:00:00	30.98			13518								
20:00:00	34.64	13763	13607					11473				
22:00:00	36.33				13319	12144						
24:00:00	37.95								11723			
74:00:00	66.63						11343					
End of Primary Cons		13763	13607	13518	13319	12144	11343	11473	11723			
Number of Readings:		2	1	1	1	1	1	1	1	0	0	0

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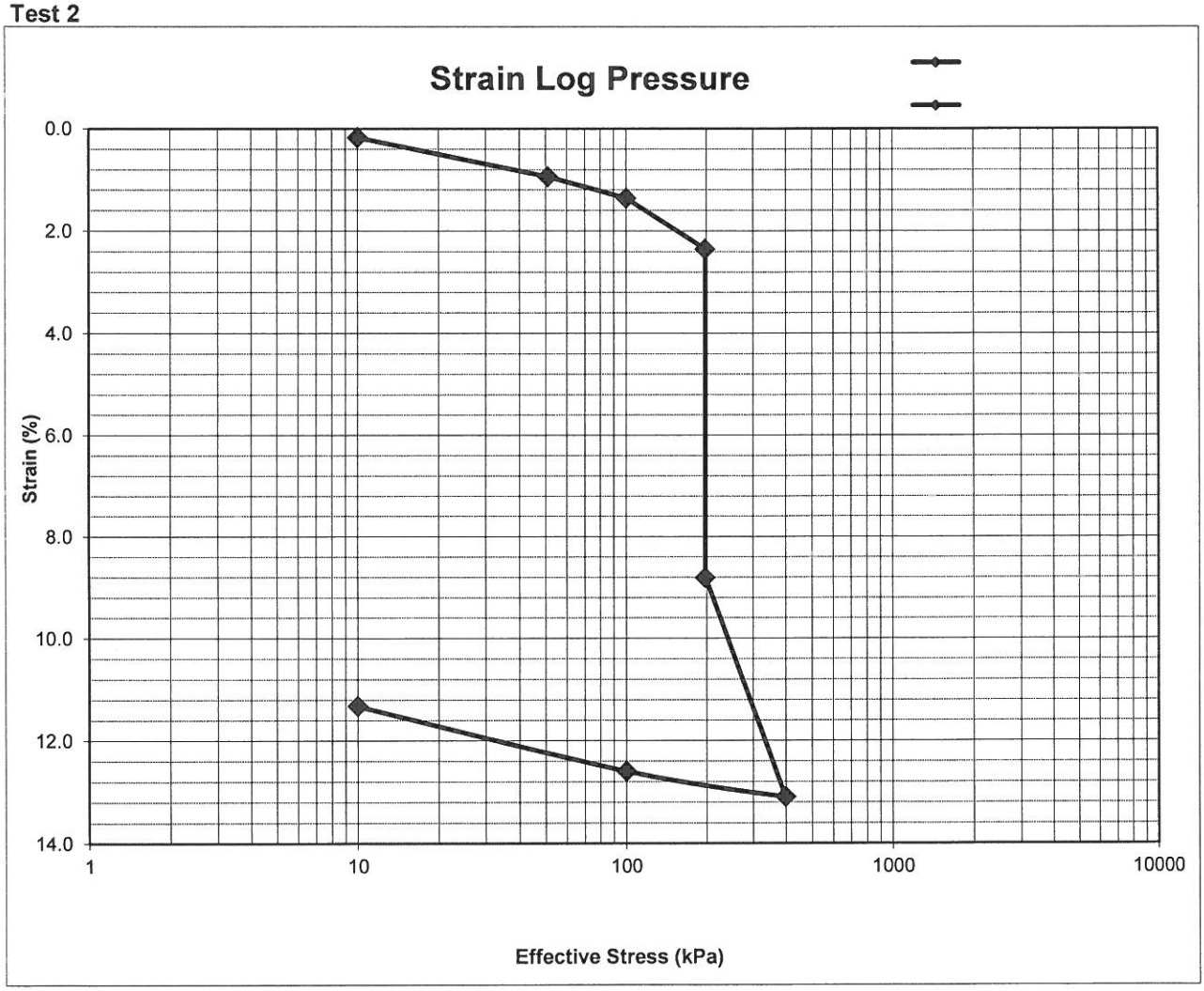
Consolidation Tests

Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-43
Borehole No:	TP 71	Depth:	1.8
Date Received:	07/07/2014	Date Tested:	01/08/2014

Test 1

Effect.Stress (kPa)	10	51	100	198	198	398	100	10			
Strain (%)	0.17	0.94	1.36	2.35	8.81	13.10	12.59	11.32			
Mv (1/MPa)		0.1876	0.0852	0.1015		0.2146	0.0170	0.1410			
Void Ratio	0.641	0.6283	0.6215	0.6051	0.499	0.4285	0.4368	0.4576			

Test 2



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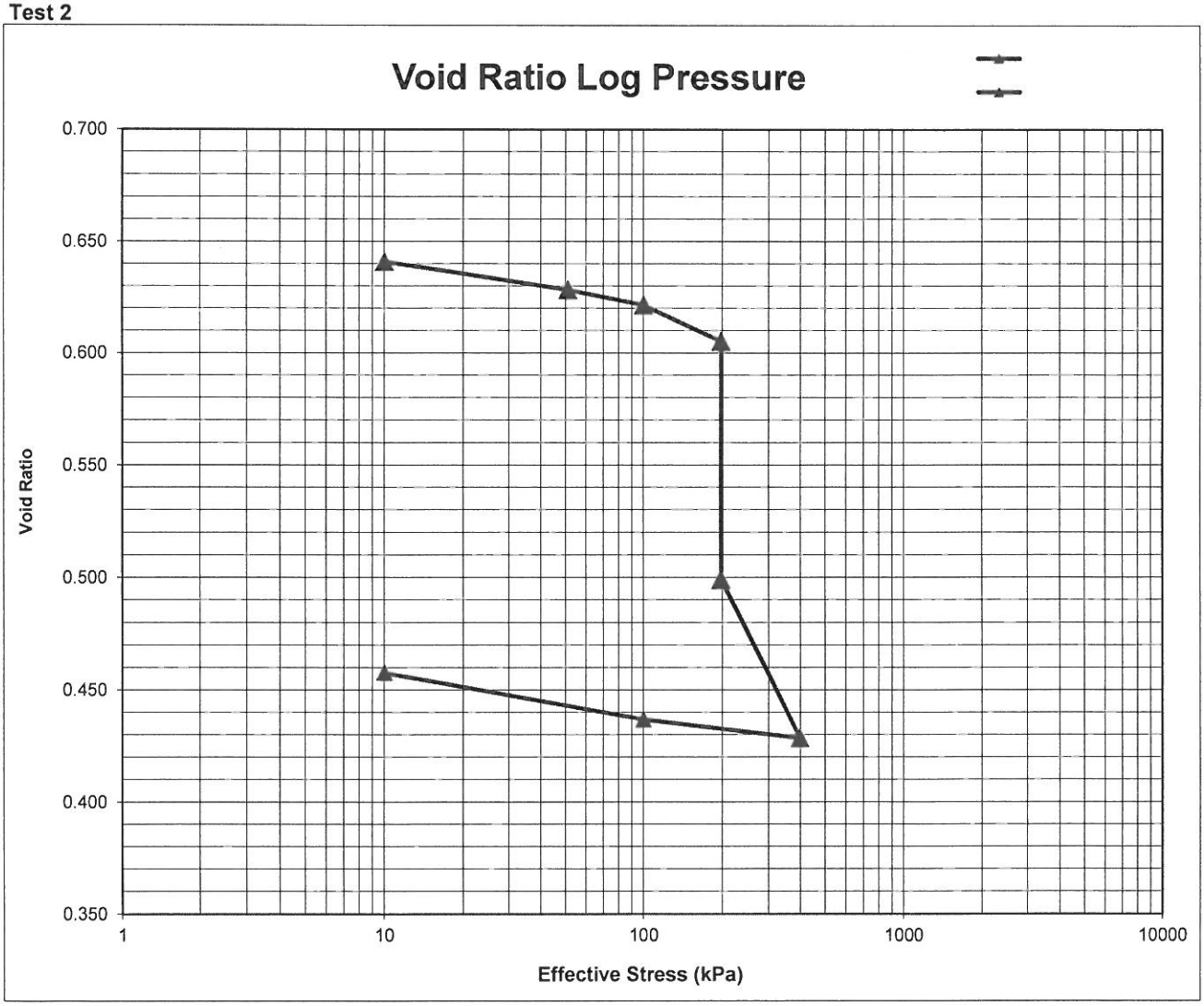
Project:	PTN 183 OLIFANTSFONTEIN		
Project No.:	2014-B-1295	Sample No.:	1295-43
Borehole No:	TP 71	Depth:	1.8
Date Receive(	07/07/2014	Date Tested:	01/08/2014

Test 1

Effect. Stress (kPa)	10	51	100	198	198	398	100	10			
Strain (%)	0.17	0.94	1.36	2.35	8.81	13.10	12.59	11.32			
Mv (1/MPa)		0.1876	0.0852	0.1015		0.2146	0.0170	0.1410			
Void Ratio	0.641	0.6283	0.6215	0.6051	0.499	0.4285	0.4368	0.4576			

Test 2



APPENDIX 3
PHOTOGRAPHIC RECORDS

PLATE 1

DRAINAGE GULLY SHOWING CEMENTED LEACHED HILLWASH

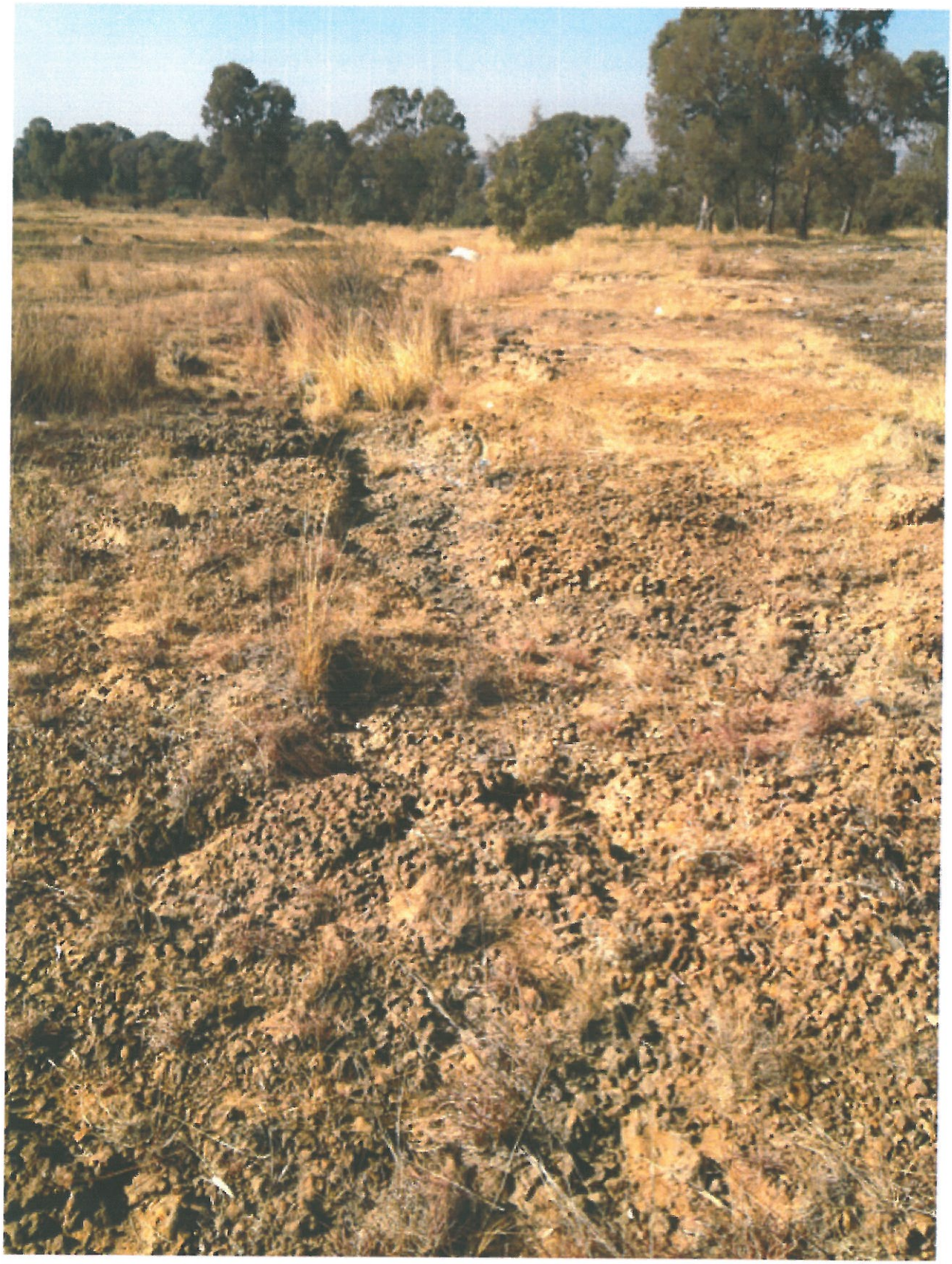
PLATE 2

TYPICAL GRANITE OUTCROP NEAR TEST PIT 53

PLATE 3

TYPICAL HILLWASH EXCAVATIONS

PLATE 4



TYPICAL GULLY ALONG SOUTHERN EDGE

PLATE 5

LARGE BORROW PIT EXCAVATION ALONG NORTH EAST CORNER

PLATE 6

SHOWING PAN AREA WEST OF TEST PIT 83

PLATE 7

VIEW WEST OVER LARGE PAN ALONG SOUT WESTERN BOUNDARY FROM TEST PIT 17

PLATE 8

TYPICAL WASTE ALONG SOUTHERN EDGE