

GEOTECHNICAL REPORT

PROPOSED NEW RESIDENTIAL AND COMMERCIAL DEVELOPMENT OF PORTIONS 59, 62 & 63 OF BRAKKLOOF 443, PLETTENBERG BAY

6 MAY 2011 (Rev 0)

Prepared by:






www.oudeniqua.co.za

Prepared for:

**CALIDRIS DEVELOPMENT MANAGEMENT
PO BOX 1201
PLETTENBERG BAY
6600**

Quality Control

	Prepared by:	Reviewed by:	Approved by:
Authorised Persons:	I.Paton Pr.Sci.Nat	D.McDonald Reg.Eng.Tech	I.Paton Pr.Sci.Nat
Date:	6.5.11	6.5.11	6.5.11
Signature:			

Outeniqua Geotechnical Services cc (OGS) is an independent consulting firm with no financial interest in the project, other than remuneration for work performed in the compilation of this report.

Table of Contents

1. Introduction	4
1.1 Background information	4
1.2 Terms of reference	4
2. The site investigation	4
2.1 Information available	4
2.2 Investigation methods	4
3. Results of the investigation	5
3.1 Site description	5
3.2 Regional geology	5
3.3 Local soil and rock types	5
3.3.1 Laboratory test results	7
3.3.2 <i>In situ</i> test results (DCP)	9
3.4 Assimilation of data	9
3.4.1 Bearing capacity	9
3.4.2 Excavatability	9
3.4.3 Swell potential	9
3.4.4 Shear properties of soil and slope stability	9
3.4.5 Soil permeability, groundwater and site drainage	10
4. Summary of geotechnical constraints	10
5. Recommendations	11
5.1 Earthworks and foundations	12
5.2 Access roads	12
6. Conclusions	13
7. References	13
Figure 1 – Locality map of the site	Appendix 1 – Soil profiles
Figure 2 – Aerial photo of site	Appendix 2 – Lab test results
Figure 3 – Geological map of the area	Appendix 3 – DCP test results
Figure 4 – Geotechnical map of the site	

1. Introduction

1.1 Background information

A new residential development is proposed on portions 59, 62 & 63 of Farm Brakkloof 443 in Plettenberg Bay (see **Figure 1** for a locality map). The proposed development consists of a mixture of low to medium density residential clusters and possibly a hotel cluster.

1.2 Terms of reference

A geotechnical site investigation has been commissioned by the project managers on behalf of the client for the tender design phase. The following broad scope of work was proposed by the authors and accepted by the project managers:

- Conduct a geotechnical site investigation on the site to determine geology, soil types and ground conditions by means of a series of test pits, *in situ* penetrometer tests and laboratory tests;
- Compile a geotechnical report providing all relevant information gained from the investigation and recommendations for the design of foundations for the proposed structures and civil services.

2. The site investigation

2.1 Information available

The following maps & plans were available for consultation:

- 1:250 000 Geological map of the area, obtained from the Council for Geoscience;
- Aerial imagery, obtained from Google Earth;
- 1:50 000 Topographical map of the area, obtained from the Directorate of Surveys & Mapping;
- Aerial photographs of the site, obtained from the Directorate of Surveys & Mapping;
- Conceptual town planning layout of the site, produced by S. McMillan Land Surveyors.
- Contour survey plan of the site, produced by S. McMillan Land Surveyors.

2.2 Investigation methods

An initial desk study of available information was carried out in order to plan and execute the site investigation. The site work involved a series of test pits, logging of the test pits, sampling of selected soil horizons and *in situ* penetrometer (DCP) tests. A total of twenty-two test pits were excavated on the site. From this exercise, important geotechnical information was uncovered regarding the nature of the ground conditions (soil types, moisture levels, etc.). The test pits were excavated using a Komatsu PC120 tracked excavator and were profiled by a registered professional engineering geologist according to the SAIEG standard method and sampled where required, as discussed below. The soil

profiles and photographs of the test pits are included in **Appendix 1** of this report.

Samples of soil were collected from test pits for laboratory testing which included Foundation Indicator, Mod/CBR/Indicator and Consolidometer tests. The tests were performed by SANAS-accredited civil engineering labs (Outeniqua Lab (Pty) Ltd in George and Controlab (Pty) Ltd in East London) in accordance with the TMH1 and ASTM methods. Details of the tests are included in **Appendix 2** of this report.

In situ Dynamic Cone Penetrometer (DCP) tests were conducted at each test pit position to aid the determination of soil consistency and estimate bearing capacity for foundation design. Details of the tests are included in **Appendix 3** of this report.

3. Results of the investigation

3.1 Site description

The site for the proposed development is located to the south of the CBD of Plettenberg Bay on the road to the Robberg Peninsula. The physical nature of the site is characterised by a central low-lying basin surrounded by gently undulating terrain which drains towards this central basin area. This basin was apparently worked as a quarry many years ago but now exists as an artificial "wetland" area in which rainwater periodically accumulates. This basin area drains towards the southeast into a well-defined drainage channel which leads off the site and towards the sea.

Access onto the site is possible along a narrow gravel track to the site of a demolished house. The vegetation cover on the site is very thick in most parts, which hampered access for testing. The eastern extremity of the site was too densely vegetated to gain access.

3.2 Regional geology

According to the 1:250 000 Geological map (see **Figure 3**), the Robberg Peninsula and the surrounding area immediately to the west of the peninsula (encompassing Farm Brakkloof 443) is underlain by Quaternary deposits (alluvium and aeolian sands) and Cretaceous Uitenhage Group sedimentary rocks, specifically the Robberg Formation, which unconformably overlie Peninsula Formation quartzites. The Robberg Formation sediments were deposited in a coastal environment at the time of Gondwana breakup. These sediments include talus breccia deposits, debris flow breccia, tsunamite deposits, river and beach conglomerates, as well as various sandy and muddy estuarine deposits.

3.3 Local soil and rock types

Observations of local soils and rock during the site investigation broadly concur with the official geological map. Exposures of slightly to moderately weathered sandstone rock of the Robberg Formation are visible in outcrops on the southern portion of the site (see **Figure 4**) at an altitude of approximately 80-90m above mean sea level (amsl). The remainder, and

majority of the site, with exception of the “old quarry” area, is covered by a residual soil profile (completely weathered Robberg Formation sandstone or siltstone). Generally speaking, the typical soil profile in these areas consists of a fine silty sand topsoil or colluvium with a thin organic-rich layer on surface (typically less than 200mm thick), underlain by sandy silty clay with a varying percentage of gravel-sized particles (mainly pedogenic ferricrete nodules). Scattered sub-rounded pebbles or cobbles are often seen suspended in the clayey soil matrix. As one would expect, the residual soil horizon becomes gradually more sandy and less clayey towards the bottom of the test pits. The upper clayey portion of the residual soil is micro-shattered and slickensided, indicating clay activity. The “old quarry” area is underlain by a thick accumulation of transported fine alluvial silty sand. This sand is probably what was being mined in the past.

No drilling was undertaken at this stage of the investigation and therefore the depth to intact rock below the soil cover was not confirmed, but this is not likely to be an important factor for the design of the proposed low-rise development. If any high-rise structures are planned on the site, drilling investigations may have to be considered.

A summary of the soil types and thicknesses is given in **Table 1**.

Table 1: Soil types and layer thicknesses (in mm)

TP No.	Transported soil	Residual soil	Rock	Total depth of test pit	Refusal
1	500	2400	-	2900	No
2	550	2450	-	3000	No
3	350	2500	-	2850	No
4	500	900	-	1400	Partial
5	400	2600	-	3000	No
6	500	1000	-	1500	No
7	400	2500	-	2900	No
8	350	2350	-	2700	No
9	3000	-	-	3000	No
10	1200	-	-	1200	Yes
11	3400	-	-	3400	No
12	-	2400	-	2400	No
13	2800	-	-	2800	No
14	-	1400	-	1400	Partial
15	400	2400	-	2800	No
16	400	2300	-	2700	No
17	1800	900	-	2700	No
18	1400	-	100	1500	Yes
19	500	1300	-	1800	Partial
20	1500	300	-	1800	Partial
21	400	-	-	400	Yes
22	500	1000	-	1500	Partial

3.3.1 Laboratory test results

Representative samples of the *in situ* soils were collected for Foundation Indicator tests to determine the geotechnical properties. The results are shown in **Table 2**.

Table 2: Summary of Foundation Indicator test results

Test Pit No	Sample Depth (mm)	Atterberg Limits			Particle Analysis (%)				MC*	PR**	USC***
		PI	LL	LS	Clay	Silt	Sand	Gravel			
1	900	17	38	9	43	43	14	0	22.7	1.8	CL
1	2100	22	47	11	58	24	12	6	20.9	1.9	CL
2	1200	20	44	10	54	24	10	12	20.6	1.8	CL
3	1200	24	47	12	52	34	11	3	21.2	2.0	CL
6	1000	24	53	12	62	27	11	0	19.6	1.8	MH
7	1300	22	44	11	67	27	4	2	20.6	2.0	CL
7	2500	16	34	8	70	21	7	2	19.9	1.9	CL
8	1200	19	35	9	71	26	0	3	19.7	2.2	CL
9	1600	NP	NP	0	50	21	29	0	13.1	0.0	ML
11	1200	NP	NP	0	27	44	27	2	7.3	0.0	ML
13	1500	NP	NP	0	15	25	60	0	7.0	0.0	ML
15	1000	26	51	13	62	22	11	5	21.2	2.0	CH
15	2500	NP	NP	0	27	51	22	0	8.4	0.0	ML
19	1500	25	47	12	62	22	9	7	19.1	2.1	CL
22	1000	16	30	8	56	37	7	0	13.8	2.1	CL

* *In situ* moisture content ** Plasticity ratio (LL/PL) *** Unified Soil Classification

RESIDUAL SOIL TRANSPORTED SOIL

The test results indicate that the near surface residual soils have high clay contents and medium to high plasticity. All the samples fall under the "Low" potential expansiveness as defined by Van der Merwe (1964). However, according to Kantey & Brink (1952), a potentially expansive soil has the following characteristics:

1. Linear shrinkage ≥ 8 ;
2. Liquid limit ≥ 30 ;
3. Plasticity index ≥ 12 .

If these criteria are applied to the test results, all of the samples with the exception of one (TP15@2500mm) meet all three criteria and are therefore considered to be potentially expansive. According to Savage (2007), swell potential can be determined using plasticity index and plasticity ratio (liquid limit/plastic limit). Using this method, all samples other than those which are considered non-plastic, fall within the medium to high swell potential category. This supports the visual observations in test pits of the structure of the clays, which are typically micro-shattered and slickensided, indicating that the clays are active.

Two undisturbed samples of residual completely weathered sandstone were collected for

standard consolidometer tests to predict swell potential and consolidation. The samples were loaded to the anticipated foundation load (approximately 75kPa) to observe the consolidation potential and then saturated at that load to observe for swell or collapse potential. The results of the tests are summarised in **Table 3**.

Table 3: Summary of consolidometer test results

TP No	Sample Depth (mm)	Initial void ratio	Load kPa	Final void ratio	Consolidation	Void ratio after saturation	Collapse(+) or swell (-) on saturation %	Total consolidation after saturation %
1	900	0.6689	84.02	0.6503	1.11	0.6448	0.33	1.45
3	1500	0.5228	67.05	0.5131	0.64	0.5284	-1.01	-0.37

The average consolidation before saturation under the average pressure of 75kPa is 0.875%. On saturation, the first sample displays a collapse potential of 0.3% and the second sample displays a swell potential of 1%. Interestingly, the sample that swelled had a lower PI than the sample that collapsed.

Samples of topsoil/colluvium were collected from below the organic layer for CBR & Indicator tests to determine the quality of road subgrade and as a source of general fill material. The results of the tests are summarised in **Table 4**.

Table 4: Summary of CBR/Indicator test results

Test Pit No	Sample Depth (mm)	CBR at					Swell (%)	PI (%)	GM	MOD	TRH14 Class
		100 %	98%	95%	93%	90%					
2	0-550	19	16	12	9	4	0.26	2	0.56	1978/6.6	G10
8	0-350	43	36	25	18	7	0.06	SP	0.58	2116/7.5	G9
22	0-500	39	33	23	17	7	0.24	SP	0.86	1958/7.3	G7

GM-Grading modulus SP-Slightly plastic

The test results indicate that the *in situ* near-surface soils are highly variable in terms of TRH14 classification system (G7-10) and are not suitable for use as a selected subgrade or backfilling material. The transported sandy soils in the low-lying "old quarry" area are a potential source of G7 fill material, but extraction of these sands may have environmental implications and this is not recommended. Structural fill and all road layerworks will have to be imported.

In terms of suitability for pipe bedding, blanket and backfilling (SABS 1200LB), the *in situ* soil is not suitable for use as Selected Granular Material (SGM) for pipe bedding due to the grading not meeting the specification, but may be used as blanket / Selected Fill Material (SFM) and trench backfilling. Pipe bedding (SGM) and some blanket (SFM) material will have to be imported.

3.3.2 *In situ* test results (DCP)

DCP tests in residual soils reflect penetration rates consistently less than 20mm per blow below 600mm, which indicates stiff soil conditions. The tests in transported soils are more variable, indicating medium dense to dense conditions.

3.4 Assimilation of data

3.4.1 Bearing capacity

Approximate design bearing capacities for the different soil/rock types are provided in **Table 5**.

Table 5: Design bearing capacities

Soil/Rock type	Bearing capacity (kPa)
Transported silty sands	30-75
Stiff residual clay	75-250
Very soft-soft rock	250-750
Medium-hard rock	>1000

3.4.2 Excavatability

Excavations to 1.5m are classified as “Soft” in terms of SABS 1200D over the entire site except for the areas delineated in **Figure 4** as “Hard sandstone rock”.

3.4.3 Swell potential

The majority of the site is underlain by approximately 2m of potentially active residual soil. A conservative estimate of total heave is 7.5-15mm.

3.4.4 Shear properties of soil and slope stability

The shear properties of the soils on site were not tested at this stage of the investigation and are estimated only for preliminary design purposes. The internal friction angle (ϕ) of the residual clay is estimated at 30-35° in a drained state, with an apparent cohesion of 20-30kPa.

The natural slopes on the site have low-medium gradients and are macro-stable in their present state. Some of the slopes around the “old quarry” area appear to have been artificially shaped in the past. Consequently the vegetation on some of these slopes is has been degraded and the slopes have been subjected to slow erosion and localised instability over the years.

3.4.5 Soil permeability, groundwater and site drainage

The fine grained topsoil has a medium to low permeability ($\sim 10^{-4} - 10^{-7}$ cm/s) and surface water will permeate slowly. The presence of residual clay or shallow rock will further restrict the downward permeation of groundwater. As a result, perched water tables may develop on residual clay or rock at a depth shallower than 1.5m, but only after periods of prolonged rainfall. Due to low ground permeability, run-off will tend to be high. Storm water naturally concentrates into the natural drainage lines indicated on **Figure 4**, which flow towards the eastern side of the site.

4. Summary of geotechnical constraints

A summary of the geotechnical constraints that potentially may affect the development of the site is tabulated in **Table 6**.

Table 6: Assessment of potential geotechnical constraints

<i>Geotechnical Constraint</i>	<i>Effect on the proposed development</i>	<i>Severity</i>	<i>Comment</i>
Collapsible & compressible soil	Soil horizons with a potentially collapsible or compressible fabric unsuitable for foundations.	Medium	Residual soils are generally stiff are potentially collapsible in saturation. After saturation the residual soils are significantly more compressible. Transported soils are moderately compressible and may be also be collapsible. Soils should be compacted if practical or removed and replaced with imported better material (soil improvement).
Differential settlement	Foundations placed in different soil types or rock may settle differentially.	Medium	Soil texture and consistency varies across the site and this can be problematic under foundations unless soil improvement is carried out.
Bearing capacity	Foundations placed on soils with low bearing capacity will display unsuitable settlement.	Medium	Soil improvement is recommended under foundations.
Groundwater	Seepage, permanent or perched water tables affecting excavations.	Low-Medium	Shallow perched water tables will only develop after prolonged periods of rainfall. Marshy or damp conditions are expected in parts of the "old quarry" area.
Active soil	Heaving clays affecting foundation stability	Medium	Residual soils have medium activity.
Excavations	Boulders or rock affecting excavations	Low-medium	Majority of site is underlain by thick residual or transported soil cover. Medium to hard rock expected in localised areas shown in Figure 4.
	Unstable excavations requiring shoring	Medium	Shore all excavations in soil deeper than 1m. Soil is potentially unstable on slopes steeper than 27°.
Slope stability	Geological instability causing damage to structures founded on slopes	Low	Natural slopes are stable in their present state.
	Soil creep or erosion	Low-Medium	Minor erosion of topsoil can be expected during construction in areas stripped of vegetation.

Geotechnical Constraint	Effect on the proposed development	Severity	Comment
Seismic activity	Structures at risk of damage due to seismicity	Low	Peak ground acceleration of less than 50cm/s ² and MMS of less than IV with a 10% chance of being exceeded in 50 years.
Flooding potential or storm water damage	Low lying areas affected by poor drainage.	Medium	Majority of site is well drained. Ponding of stormwater may occur after heavy rainfall in the old quarry
	Steep slopes affected by concentrated run-off	Low-medium	Steep slopes around the old quarry will be prone to erosion by run-off
Unconsolidated fill	Uncontrolled fill material affecting foundations	Low	No significant deposits of uncontrolled fill noted on the site. Some disturbed ground may exist in the old quarry area
Sources of construction material	Distance to sources of construction material affecting costs	Low	There is commercial quarry within a radius of 5km of the site.

The expected movements associated with the different soil types have been classified in terms of the Code of Practice for Foundations and Superstructures issued by the Joint Structural Division (JSD) of the South African Institution of Civil Engineering and Institution of Structural Engineers (SAICE/IStructE). This classification is representative for the entire site and is given in **Table 7**.

Table 7: SAICE soil classification

Soil types*	Main Geotechnical Constraints	Class	Maximum expected heave (mm)	Maximum expected settlement (mm)
Thick transported silty sand	Compressible soil	S1	-	10-20
Stiff residual clay	Active and collapsible soil	H1/C1	7.5-15	5-10
Medium-hard sandstone rock	Shallow rock (difficult excavations up to 1.5m)	R	-	-

*refer to figure 4 for spatial distribution

5. Recommendations

The design of the proposed structures lies within the architect's and engineer's commission and the following recommendations are provided as a guide only, based on information gained from the site investigation and experience of local geotechnical conditions. All information is to be confirmed during the construction process and any significant variations are to be brought to the attention of the authors for comment.

The low-lying basin "old quarry" area is poorly drained and is potentially an environmentally sensitive wetland area and is therefore not recommended for development. All other areas are considered to be developable, with the exception of natural drainage lines and any other areas that may be deemed to be environmentally sensitive by the consulting team.

5.1 Earthworks and foundations

- Reinforced strip foundations are recommended for single and double-storey structures. Heavier structures will require special attention;
- Trenches should be dug onto competent rock or to a minimum depth of 1m into residual clayey soil and backfilled with 300mm of imported G5, compacted to 93% of Mod AASHTO density;
- Foundation brickwork should be reinforced with brickforce every course up to floor slab level;
- Floor slabs should be cast on a minimum of 350mm of imported G7 backfilling (max. nominal size of 37.5mm), compacted to 95% Mod AASHTO;
- Foundations for structures to be constructed across cut & filled platforms should be dug through fill and into the *in situ* soil. All foundations should be constructed on the same soil type/horizon. Filled platforms should be compacted in layers to 93% of Mod AASHTO density;
- All excavations should be monitored by the engineer to assess stability;
- All foundations should be inspected by the engineer to assess founding conditions, such as soil/rock types, consistency in density and moisture levels.

5.2 Access roads

For simplicity sake, the road subgrade over the entire site is considered to be G10 quality. The pavement design engineer should also take into account that the site is located in a wet climatic region. Access roads that cross small drainage lines should allow for adequately-sized box culverts to cater for high run-off during storm events. The recommended layerworks for internal access roads is given in **Table 8**.

Table 8: Recommended layerworks for access roads and parking areas

Layer	Material	Thickness	Required Compaction
SSG	Imported G7 gravel	150mm	93% Mod AASHTO
SB	Imported G4 or G5 gravel	150mm	95% Mod AASHTO
Base	Imported G2	150mm	98% Mod AASHTO
Seal	Cape Seal or HMA		TBD By engineer
OR			
SSG	Imported G7 gravel	150mm	93% Mod AASHTO
SB	Imported G4 or G5 Gravel, stabilised with 2-3% cement to C4 Spec.	150mm	95% Mod AASHTO
Bedding sand	Bedding sand	20mm	100% Mod AASHTO
Pavers	25mPa or 35mPa Interlocking cement paver	60/80mm	

6. Conclusions

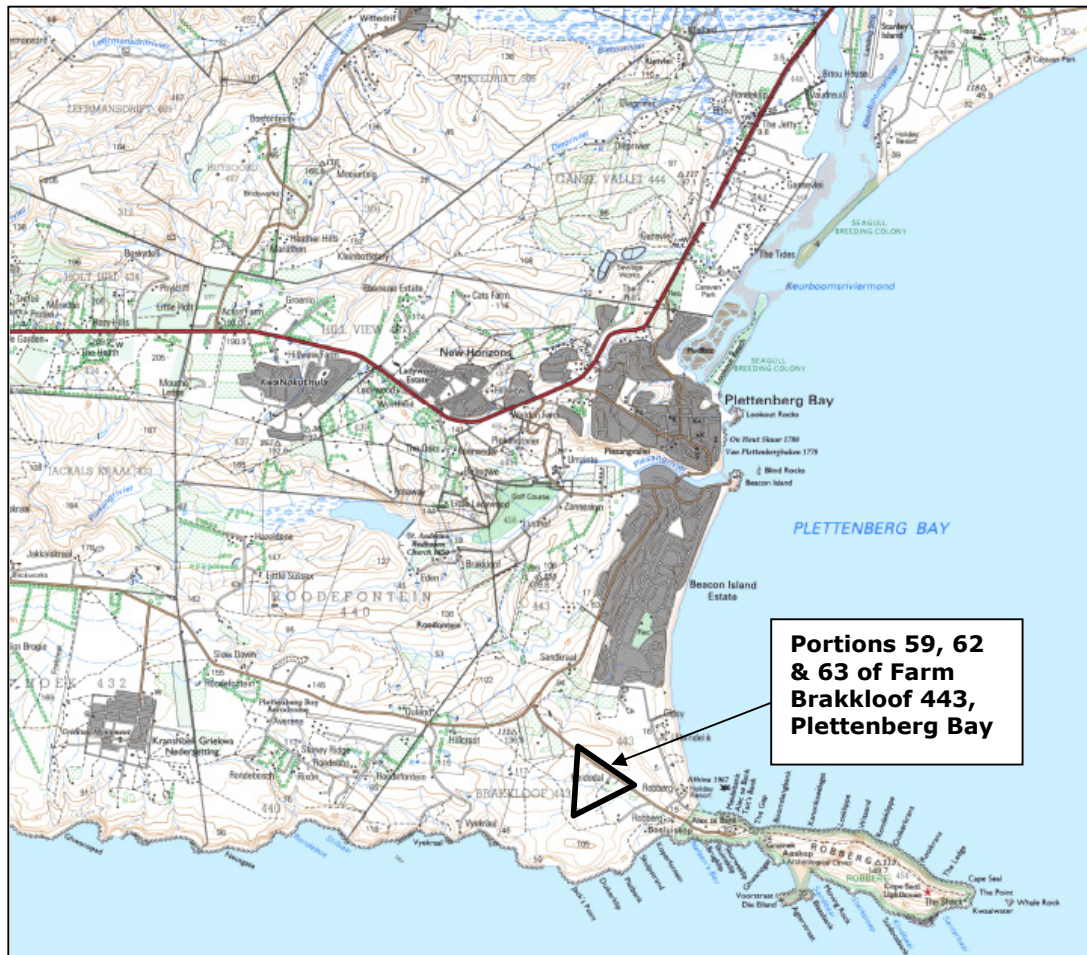
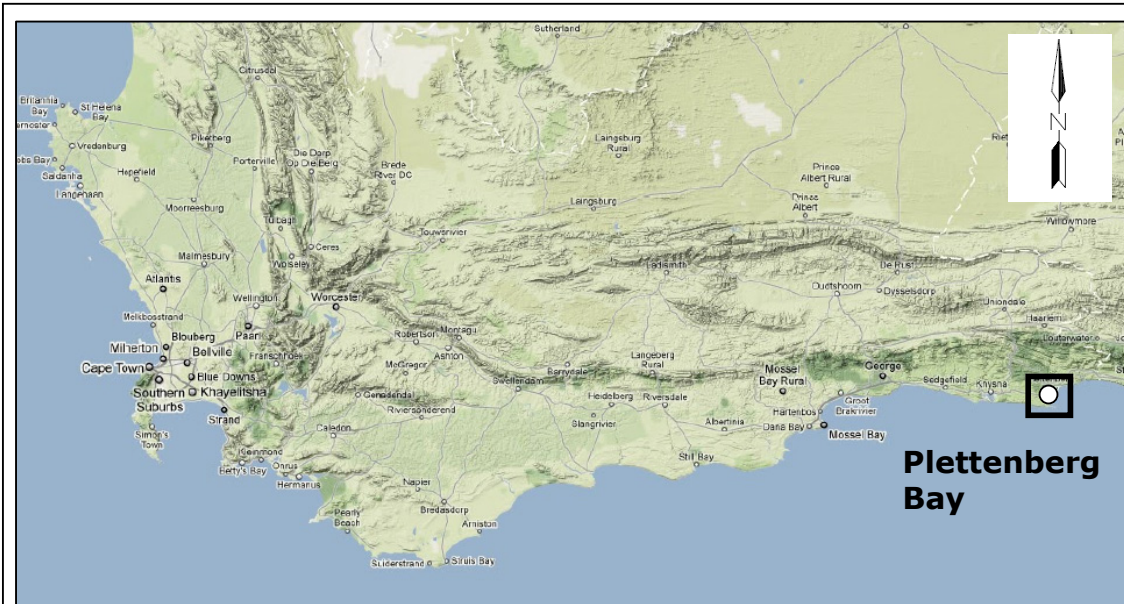
The majority of the site is considered to be fit for development with conventional construction methods. No special engineering is envisaged for low-rise structures and access roads but certain recommendations are provided in the report for the design engineer's consideration.

7. References

Savage, P.F. (2007). Evaluation of possible swelling potential of soil. Paper presented to the 26th Annual Southern African Transport Conference, South Africa, 9 - 12 July 2007. 6p

Kantey, B.A. & Brink, A.B.A. (1952). Laboratory criteria for the recognition of expansive soils. *Bull S. Afr. Bldg. Res. Inst.*, (9), 25-8

Van der Merwe, D.H. (1964). The prediction of heave from the plasticity index and the clay fraction. *The Civil Engineer in South Africa*, June 1964, pp 103-107.



TITLE:
Figure 1: Locality map of site

OUTENIQUA
GEOTECHNICAL SERVICES
CIVIL LABORATORIES

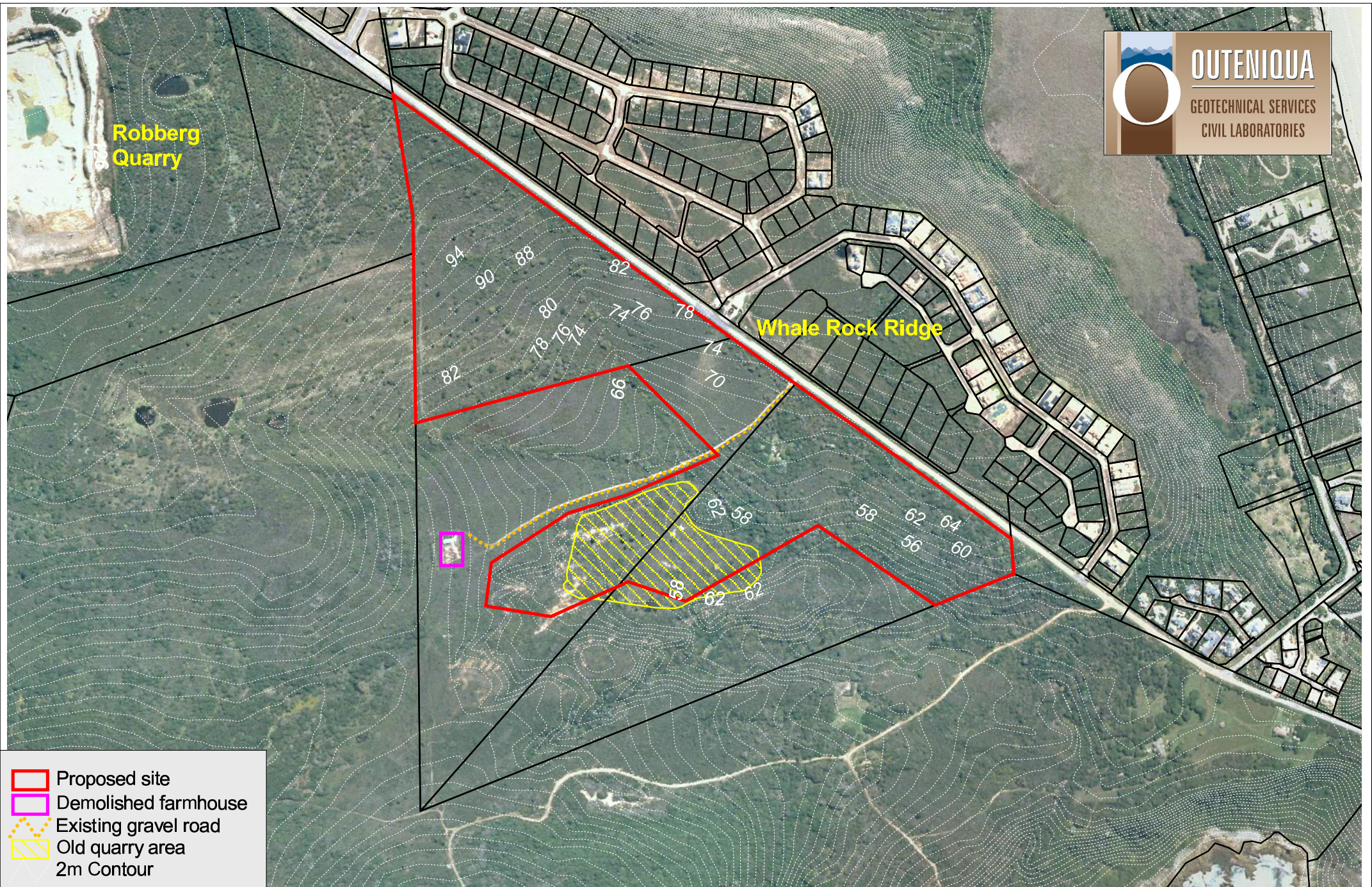


Figure 2: Aerial photo of site

100 0 100 200 300 400 500 Meters



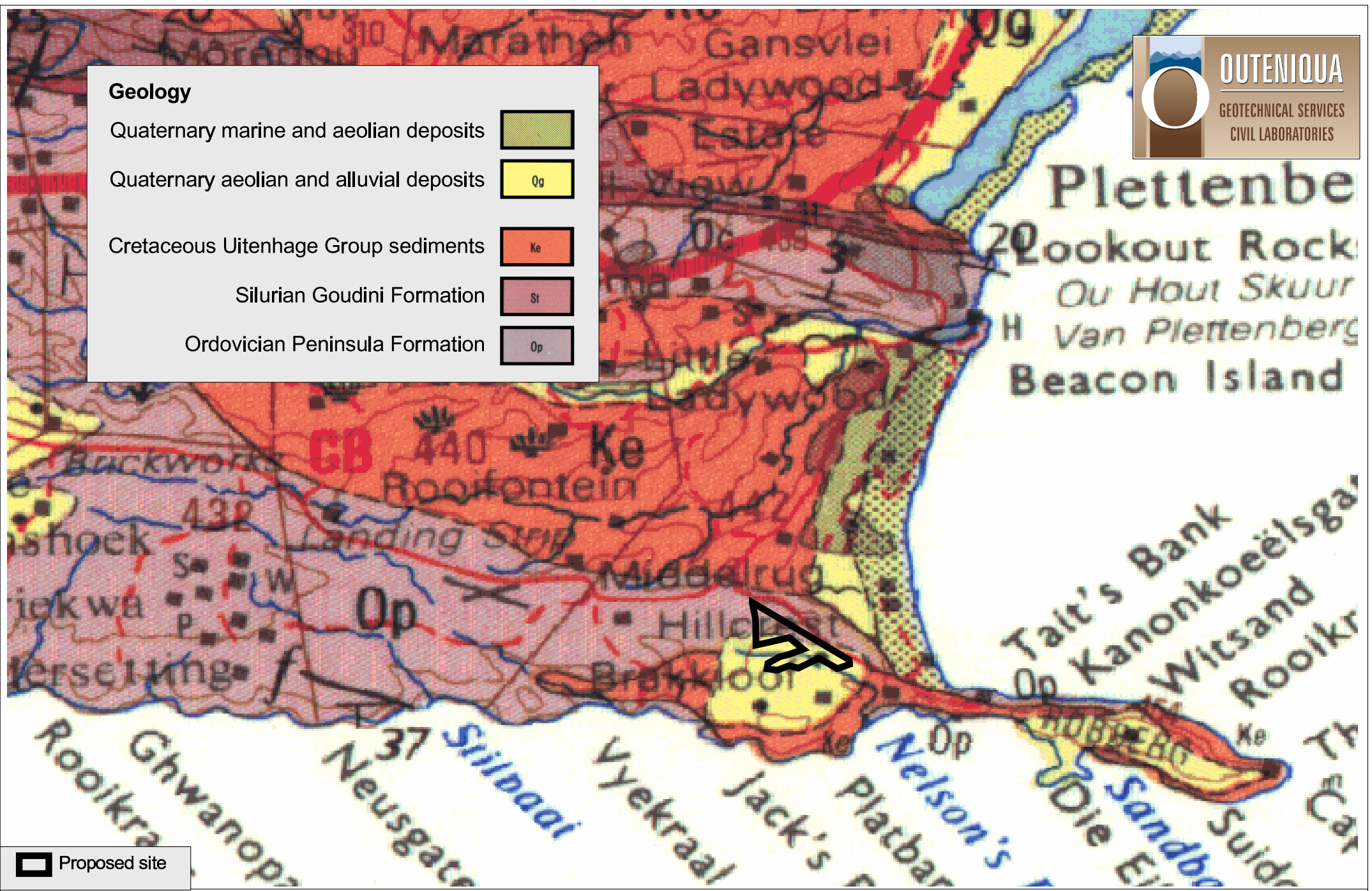





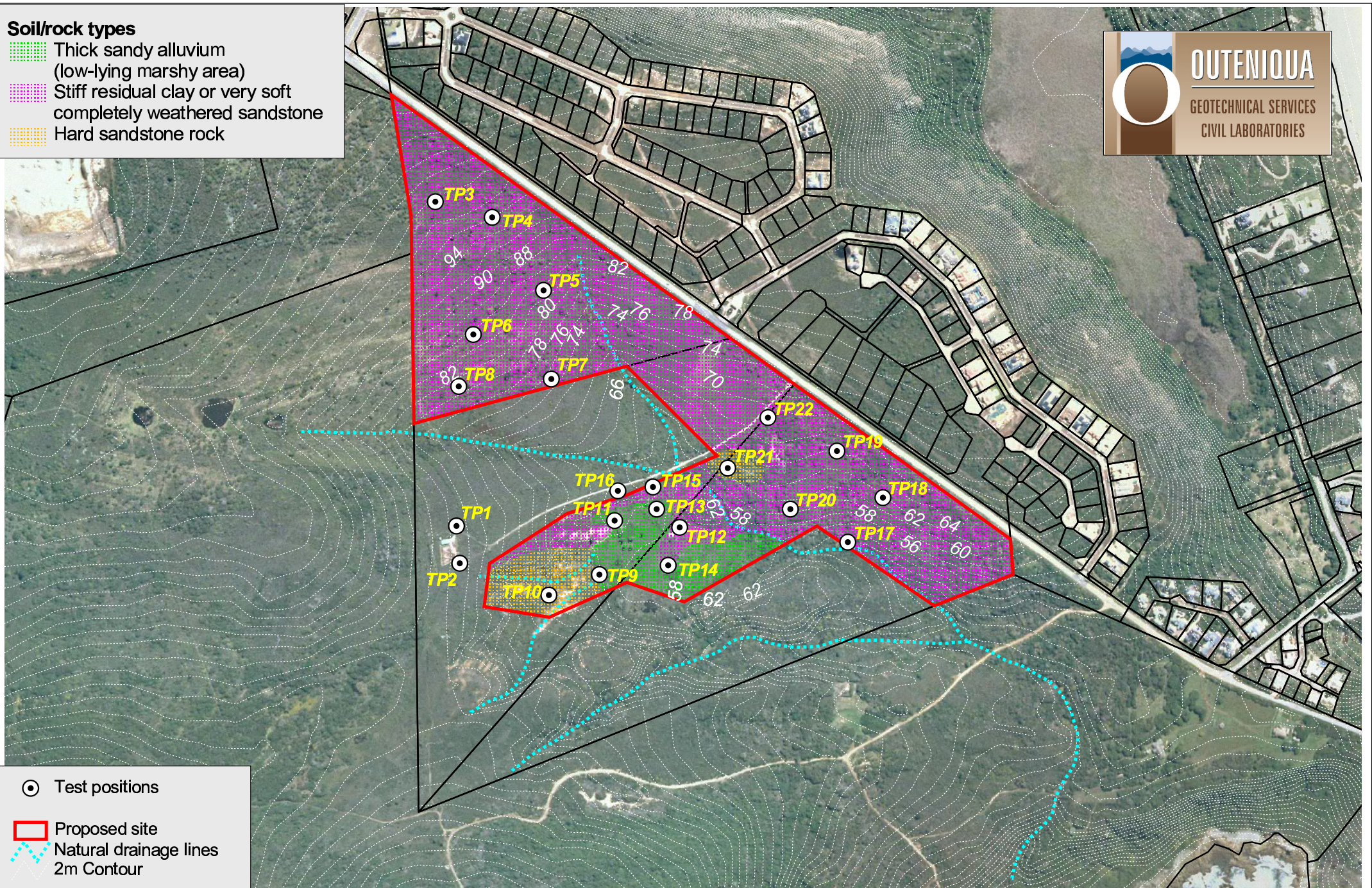
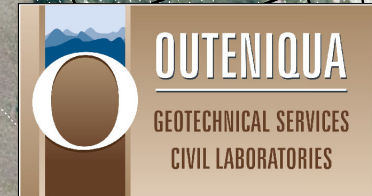
Figure 3: Geological map of the site


1 0 1 2 3 4 5 Kilometers



Soil/rock types

-  Thick sandy alluvium (low-lying marshy area)
-  Stiff residual clay or very soft completely weathered sandstone
-  Hard sandstone rock



 Test positions

 Proposed site

 Natural drainage lines

 2m Contour

Figure 4: Geotechnical map of site

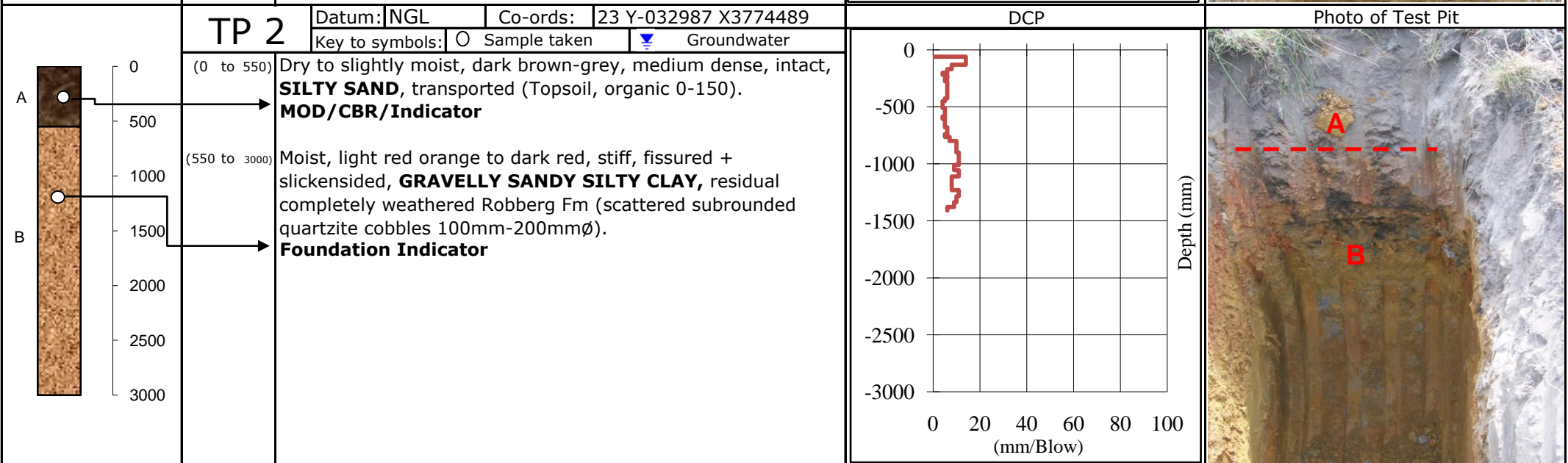
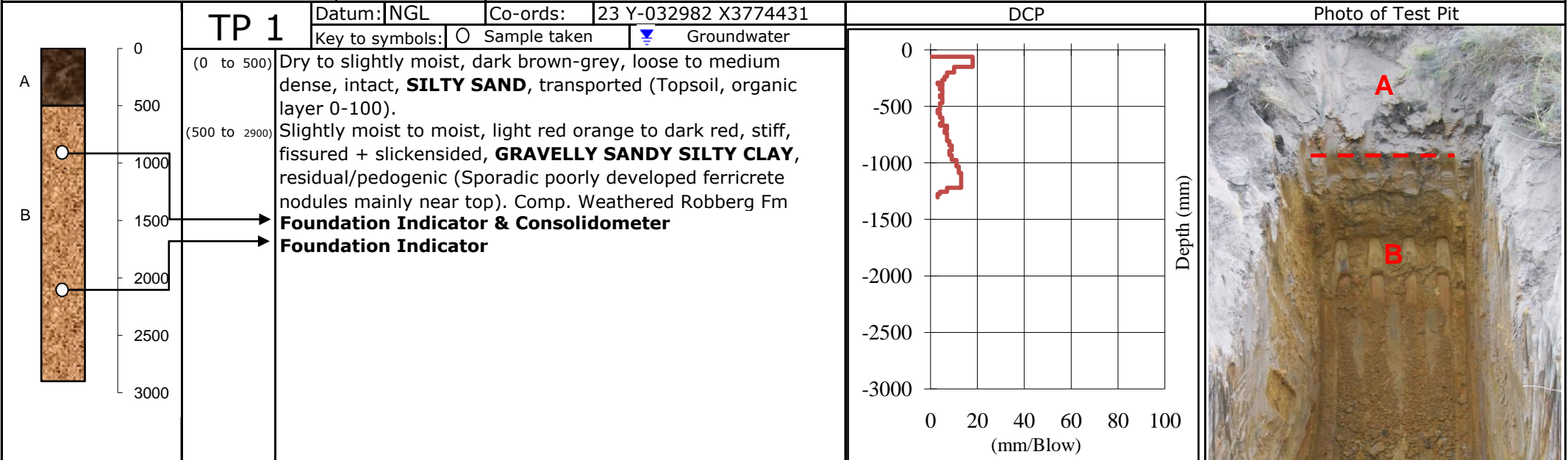
100 0 100 200 300 400 500 Meters



Appendix 1
Test Pit Profiles

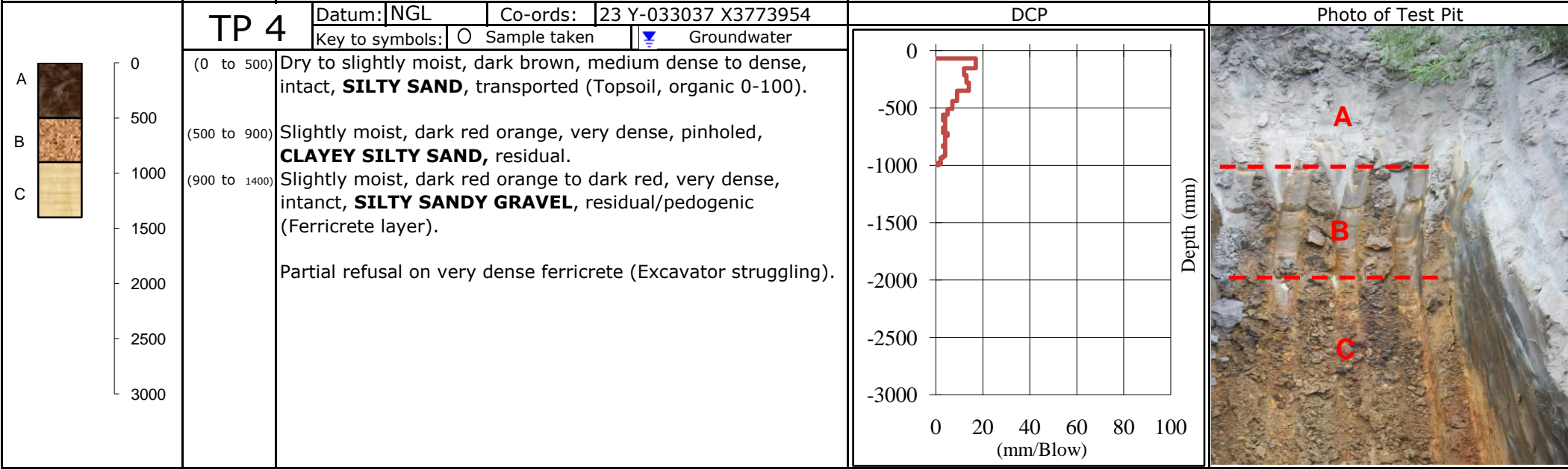
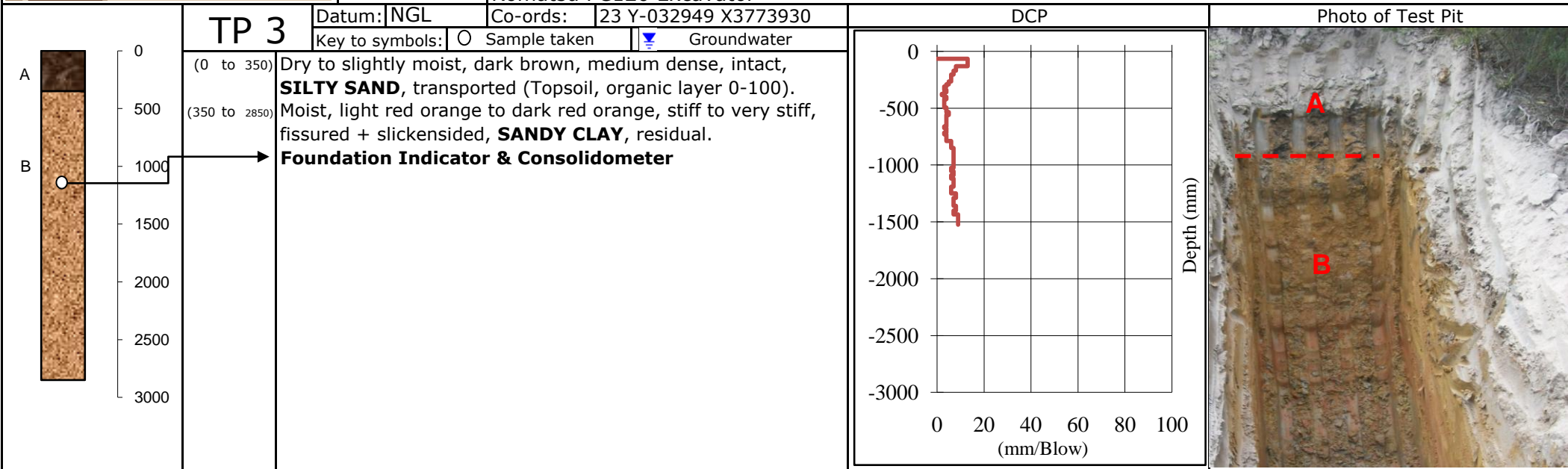
Geotechnical Soil Profile

Client:	Calidris
Project:	Brakkloof
Area:	Plettenberg Bay
Date:	17.03.11
Excavator:	Komatsu PC120 Excavator



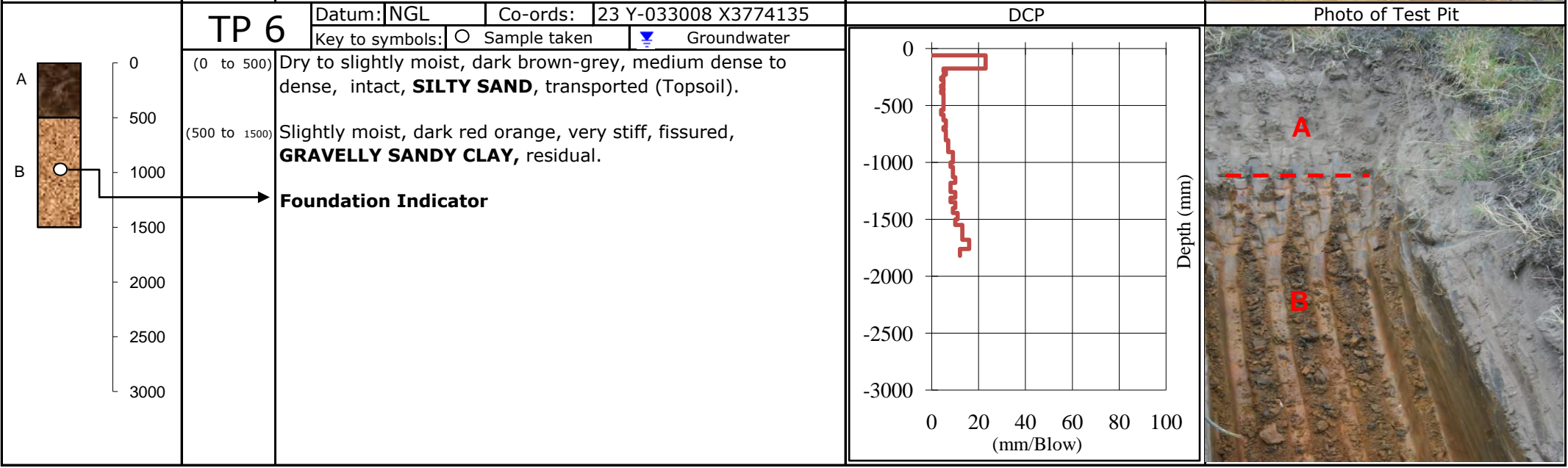
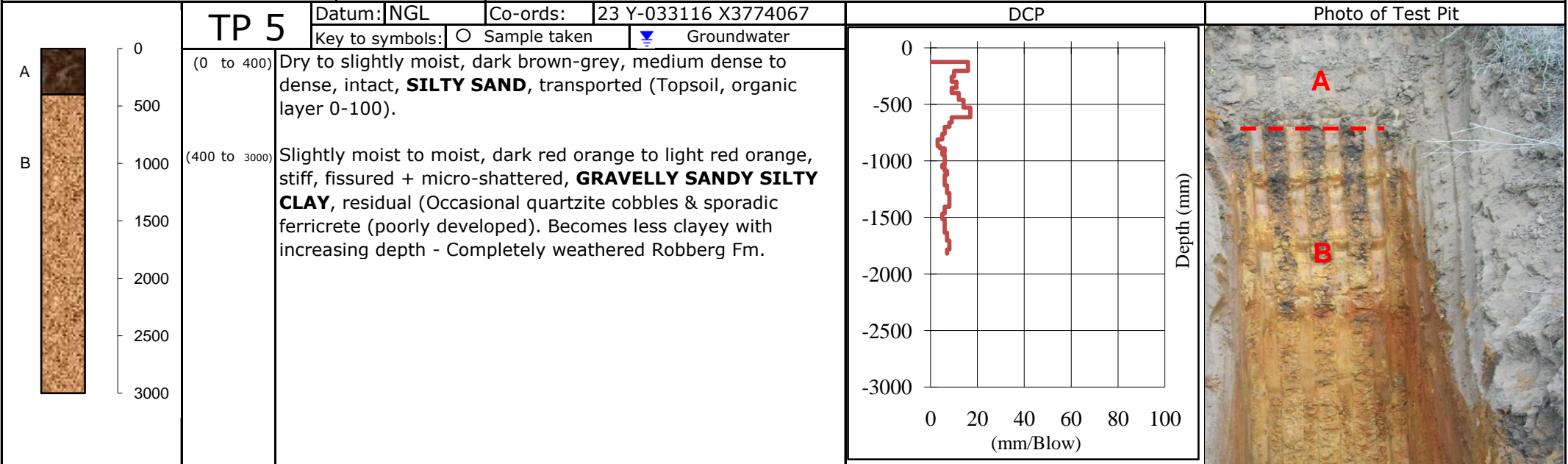
Geotechnical Soil Profile

Client:	Calidris
Project:	Brakkloof
Area:	Plettenberg Bay
Date:	17.03.11
Excavator:	Komatsu PC120 Excavator



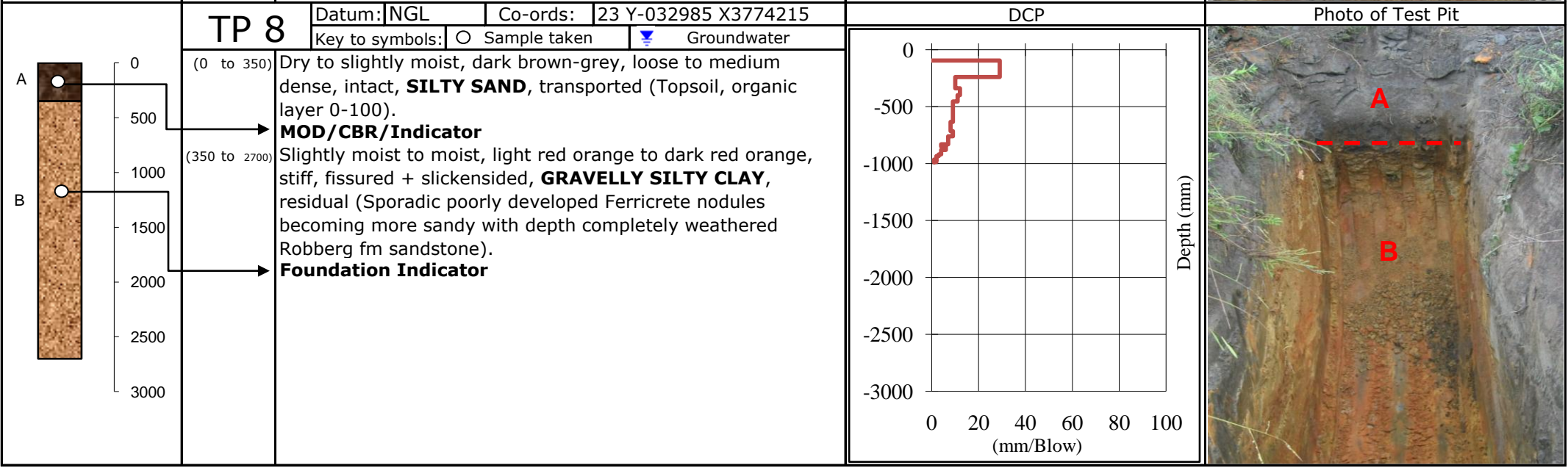
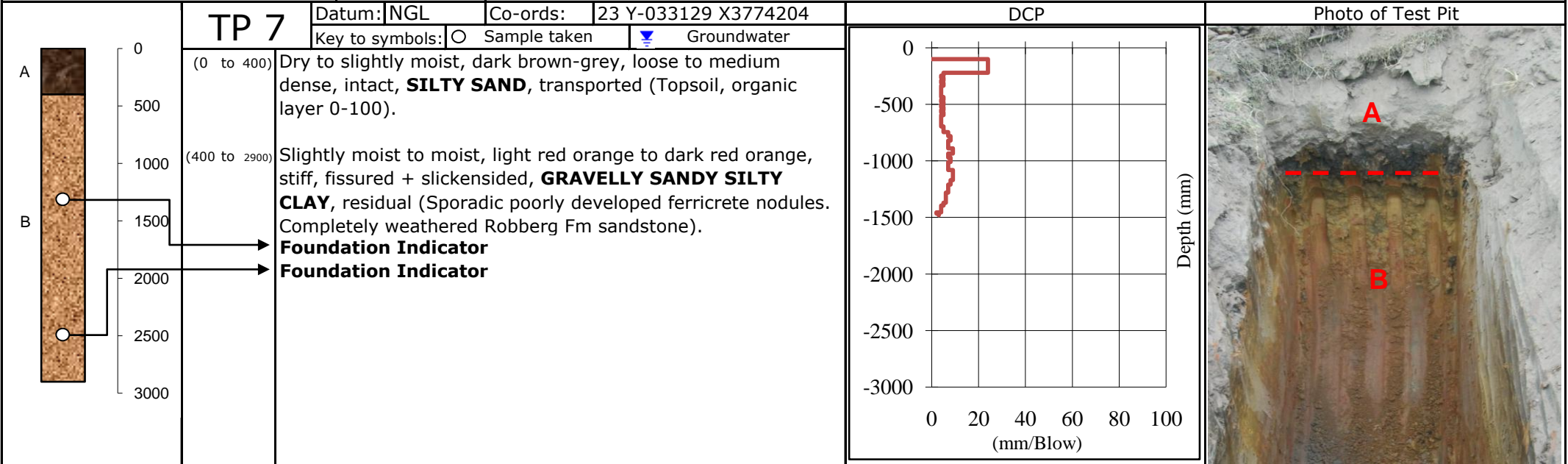
Geotechnical Soil Profile

Client:	Calidris
Project:	Brakkloof
Area:	Plettenberg Bay
Date:	17.03.11
Excavator:	Komatsu PC120 Excavator



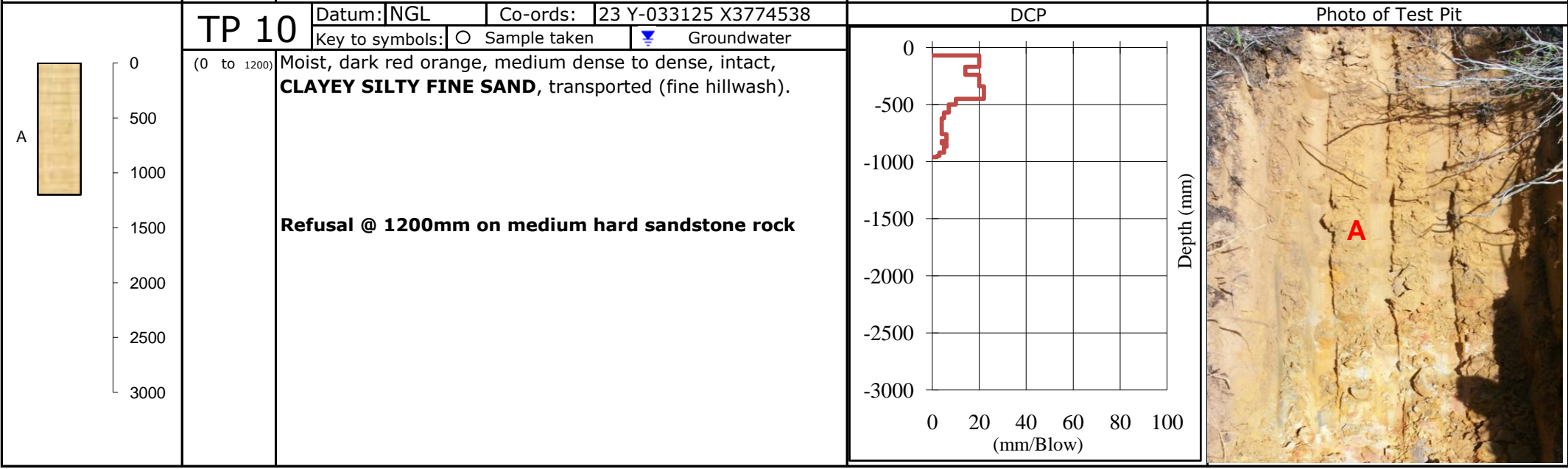
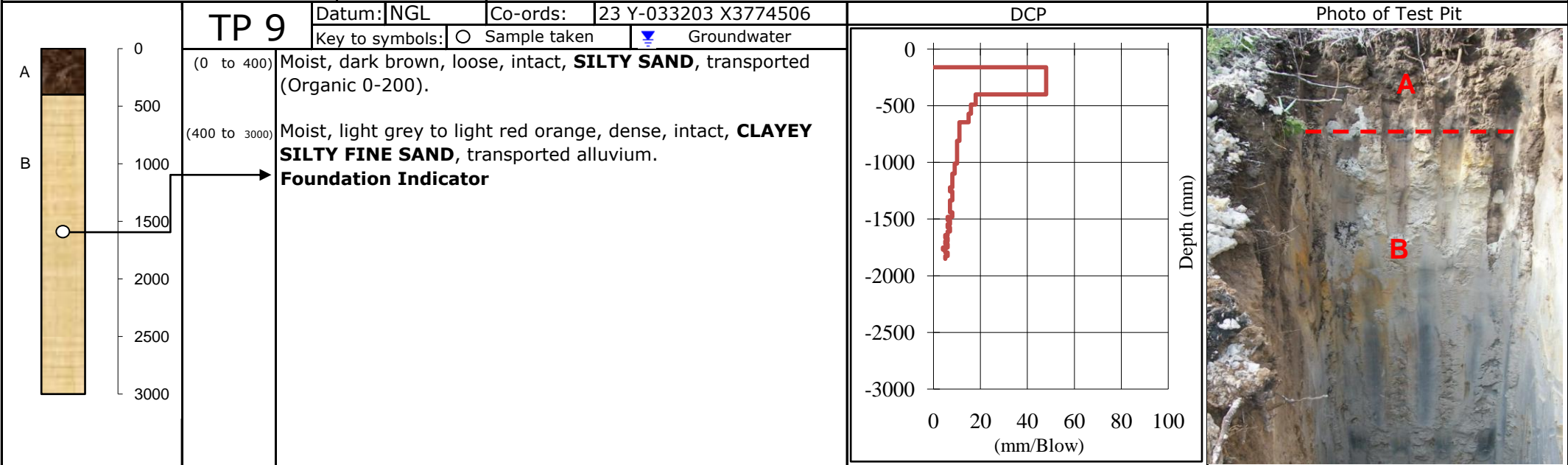
Geotechnical Soil Profile

Client:	Calidris
Project:	Brakkloof
Area:	Plettenberg Bay
Date:	17.03.11
Excavator:	Komatsu PC120 Excavator



Geotechnical Soil Profile

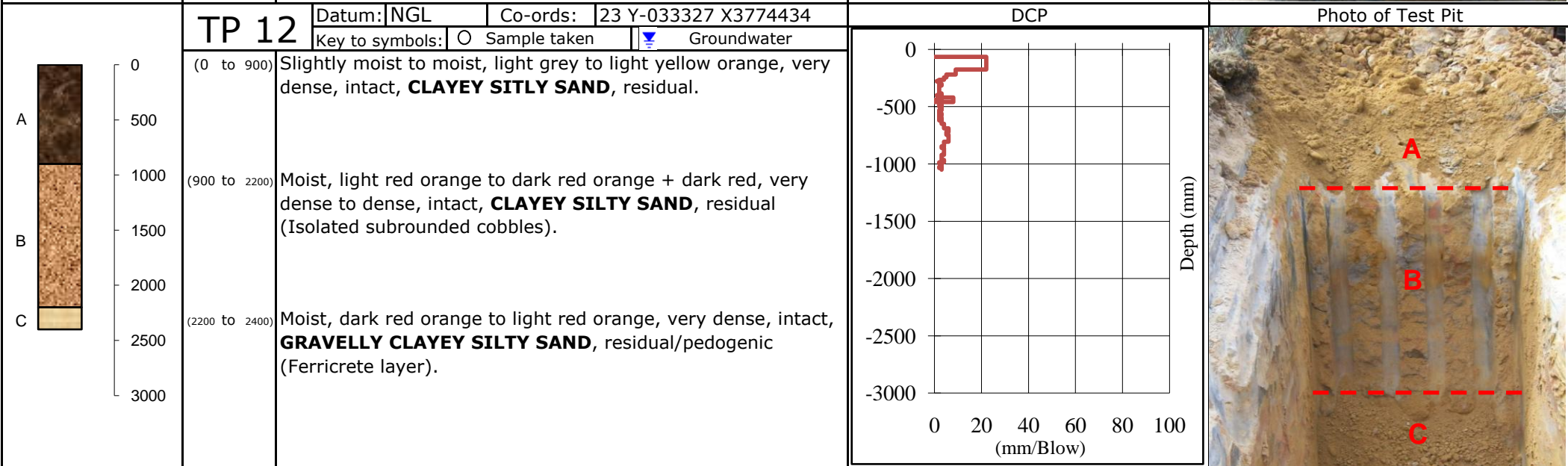
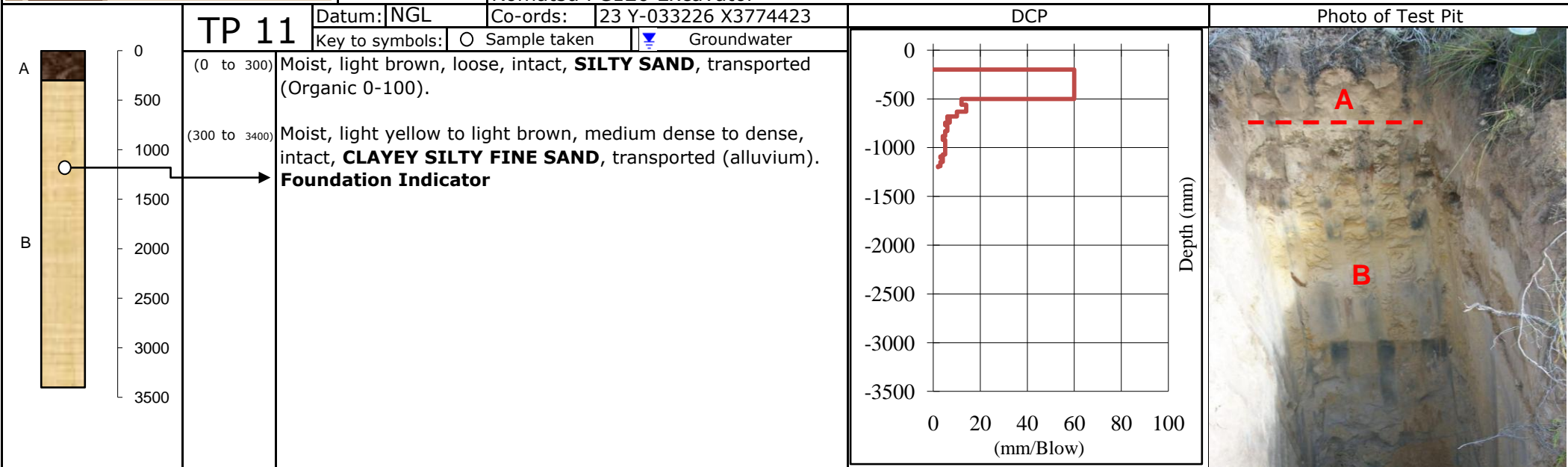
Client:	Calidris
Project:	Brakkloof
Area:	Plettenberg Bay
Date:	17.03.11
Excavator:	Komatsu PC120 Excavator



Geotechnical Soil Profile

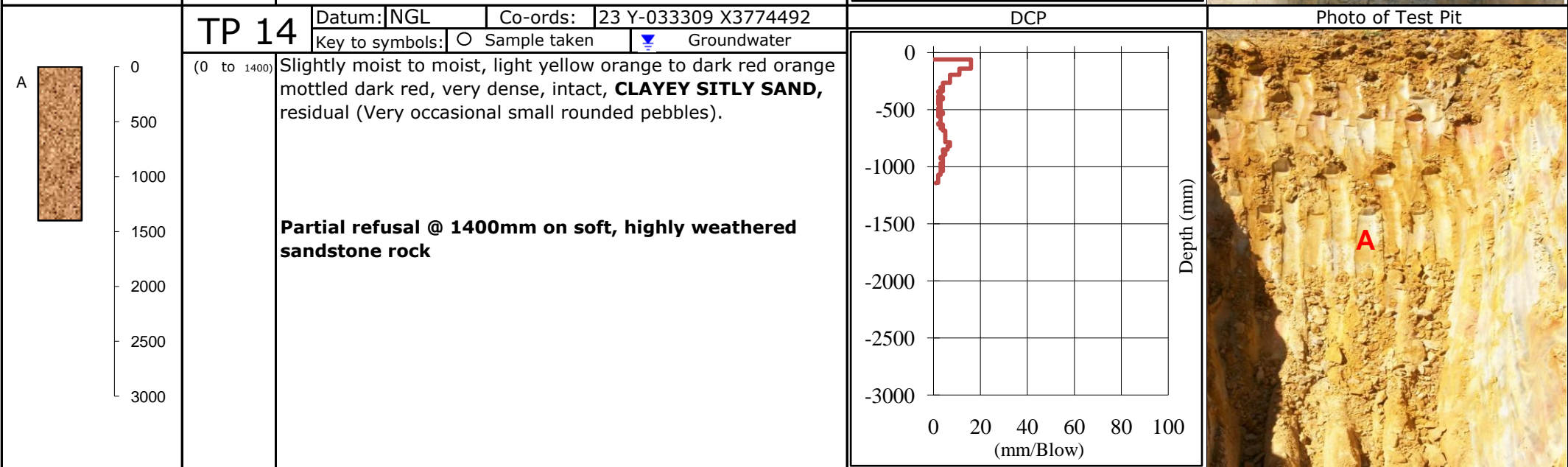
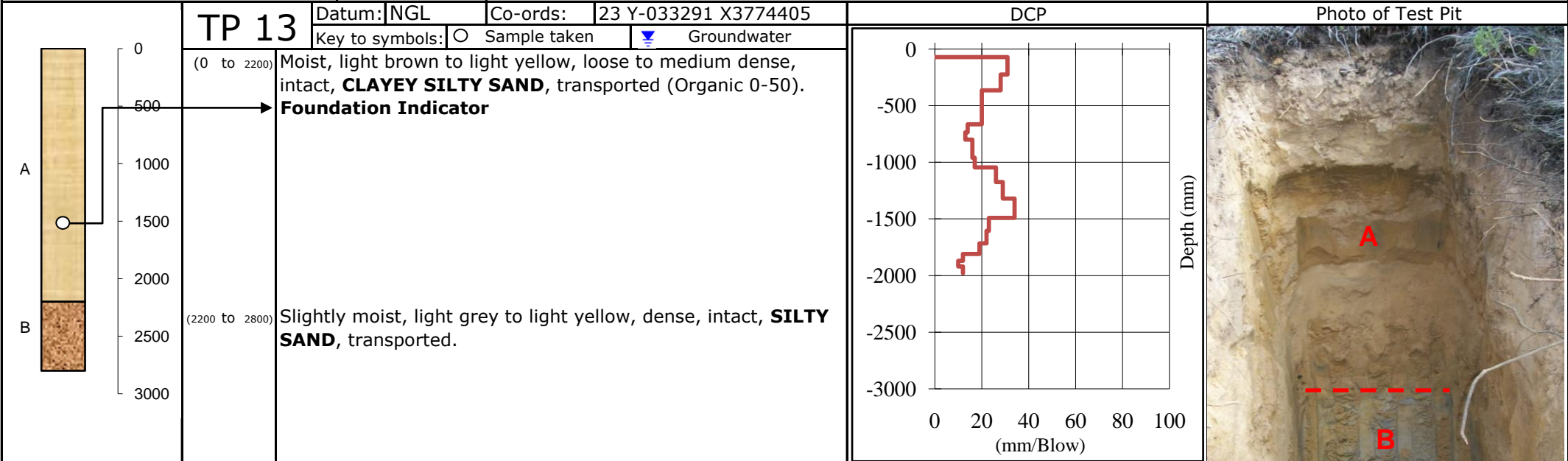
Client:	Calidris
Project:	Brakkloof
Area:	Plettenberg Bay
Date:	18.03.11
Excavator:	Komatsu PC120 Excavator

C



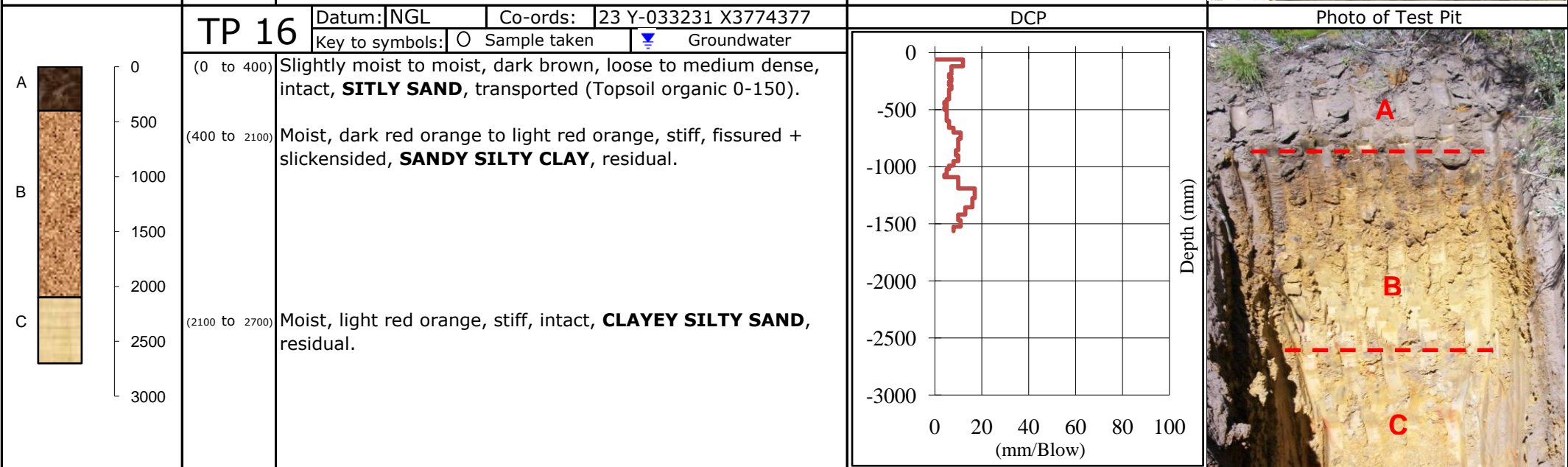
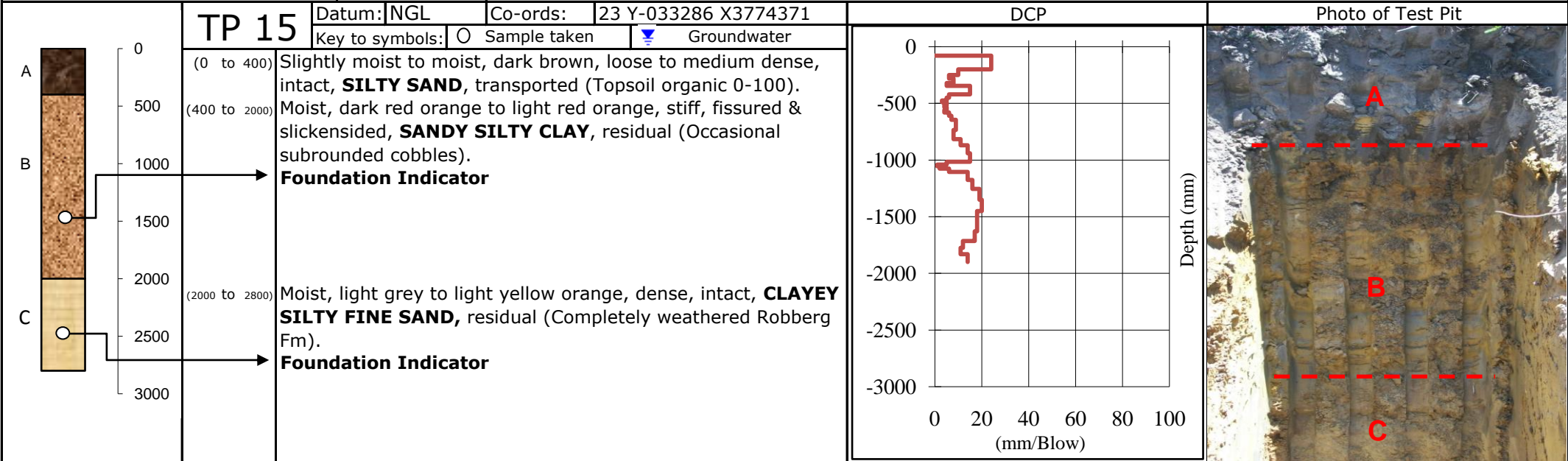
Geotechnical Soil Profile

Client:	Calidris
Project:	Brakkloof
Area:	Plettenberg Bay
Date:	18.03.11
Excavator:	Komatsu PC120 Excavator



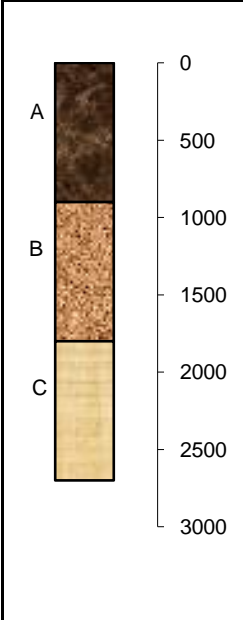
Geotechnical Soil Profile

Client:	Calidris
Project:	Brakkloof
Area:	Plettenberg Bay
Date:	18.03.11
Excavator:	Komatsu PC120 Excavator

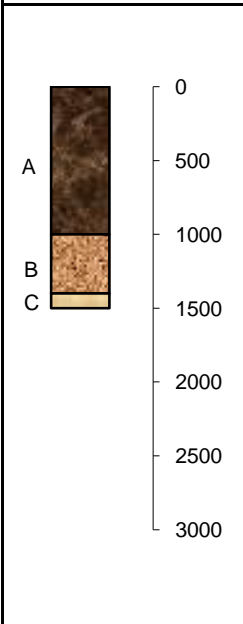
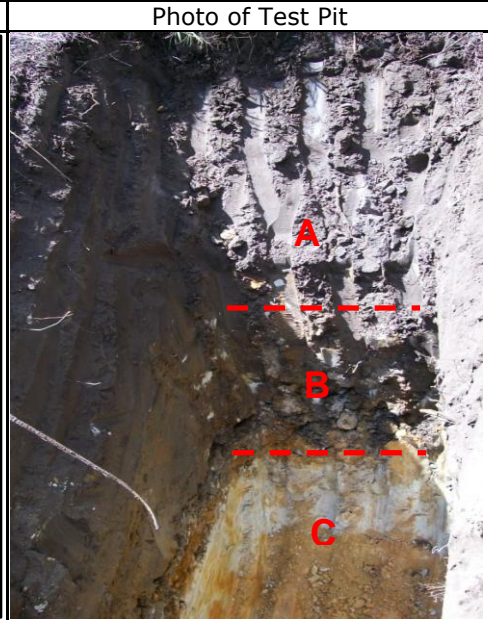
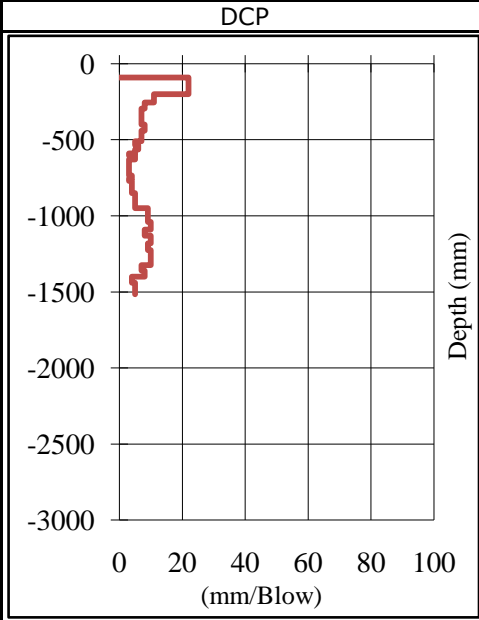


Geotechnical Soil Profile

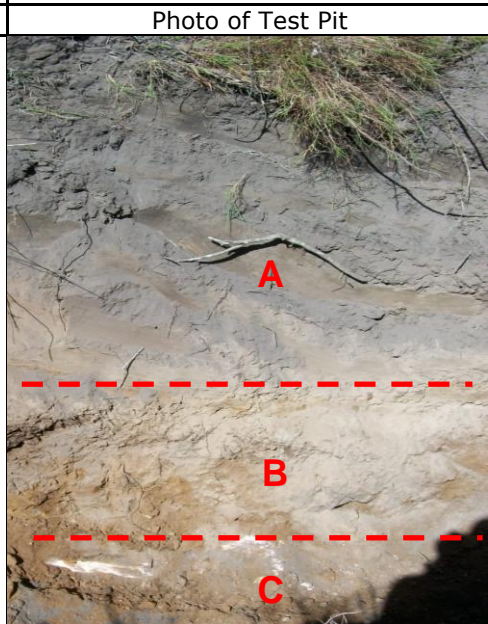
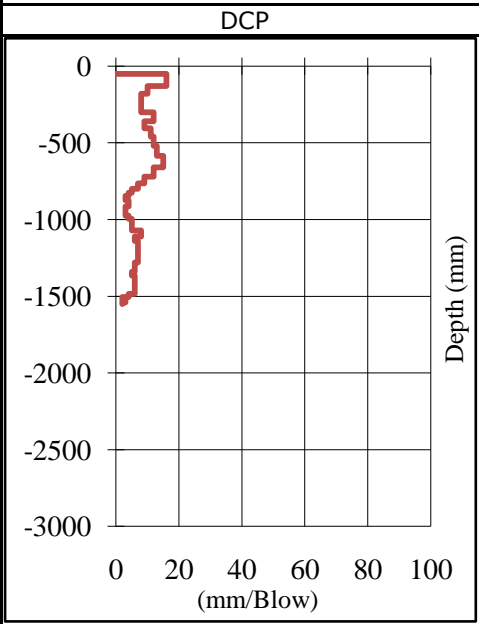
Client:	Calidris
Project:	Brakkloof
Area:	Plettenberg Bay
Date:	18.03.11
Excavator:	Komatsu PC120 Excavator



TP 17	Datum: NGL	Co-ords: 23 Y-033587 X3774457
	Key to symbols: ○ Sample taken ▽ Groundwater	
(0 to 900)	Slightly moist to moist, dark brown, loose to medium dense, intact, SILTY SAND , transported (Organic 0-100).	
(900 to 1800)	Moist, dark brown to dark red orange, stiff, fissured & slickensided, SILTY SANDY CLAY , transported (Cobbles & boulders @ base of layer).	
(1800 to 2700)	Moist, light grey to light red orange, very stiff to very dense, intact, CLAYEY SILT , residual (completely weathered siltstone)	

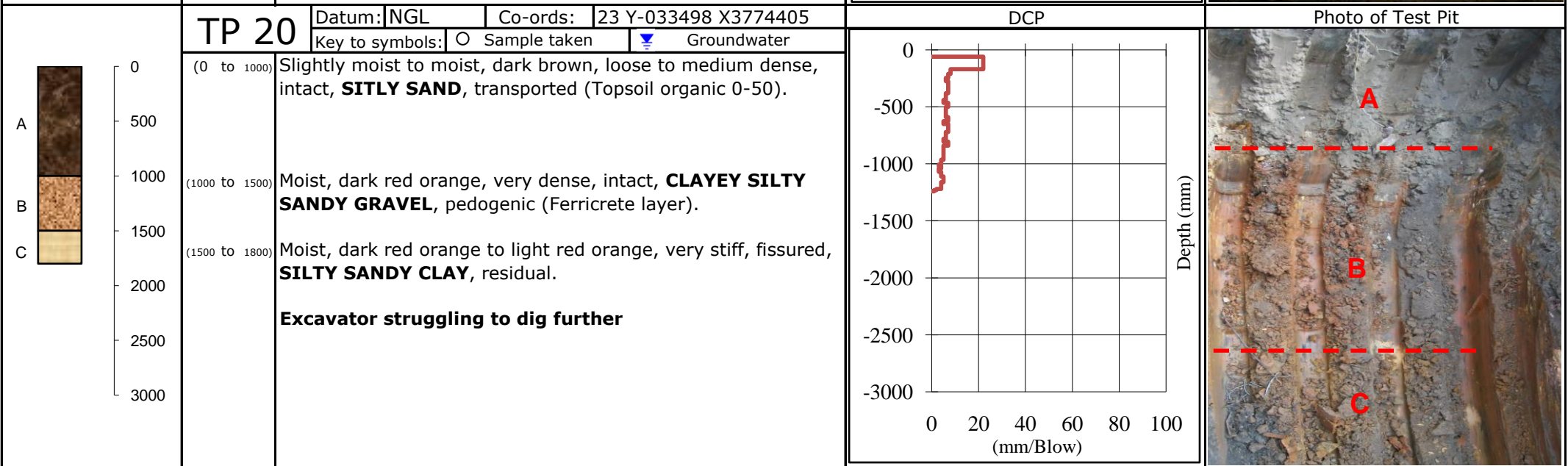
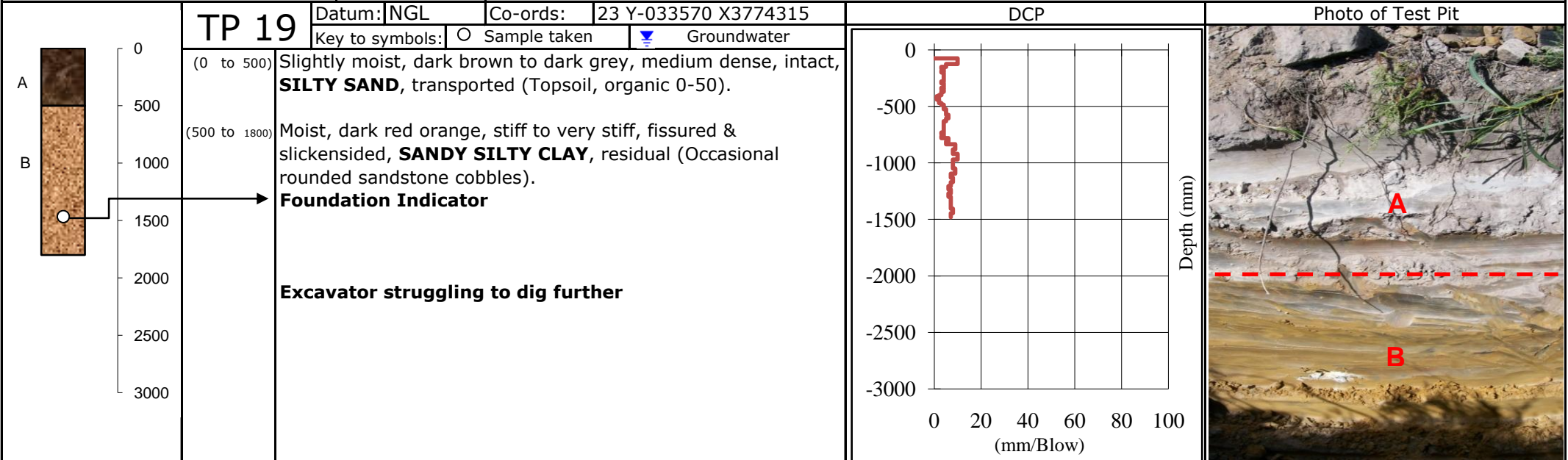


TP 18	Datum: NGL	Co-ords: 23 Y-033641 X3774388
	Key to symbols: ○ Sample taken ▽ Groundwater	
(0 to 1000)	Slightly moist to moist, dark brown, loose to medium dense, intact, SILTY SAND , transported (Topsoil, organic 0-100).	
(1000 to 1400)	Moist, dark brown dense, intact, SILTY SANDY GRAVEL , pedogenic (ferricrete layer).	
(1400 to 1500)	Light brown, moderately fractured, slightly weathered, medium hard, SANDSTONE (Robberg Fm).	
Refusal @ 1500mm on sandstone		



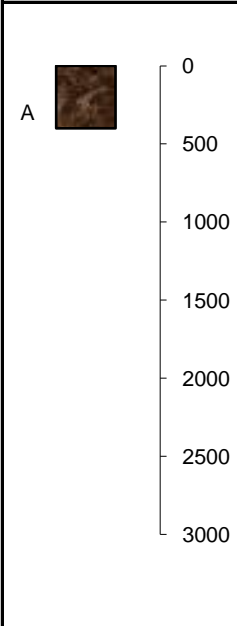
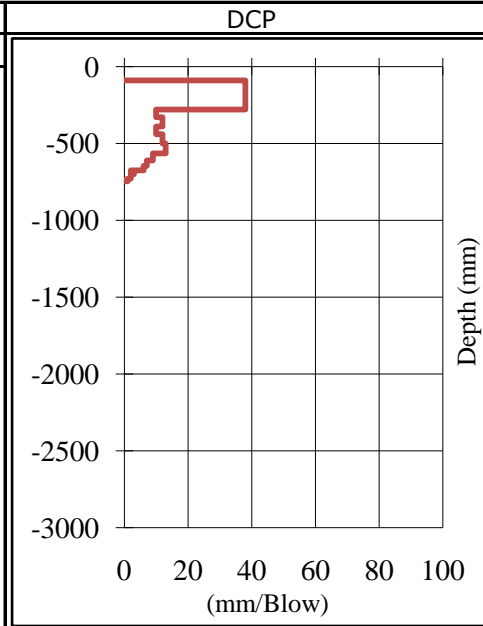

Geotechnical Soil Profile

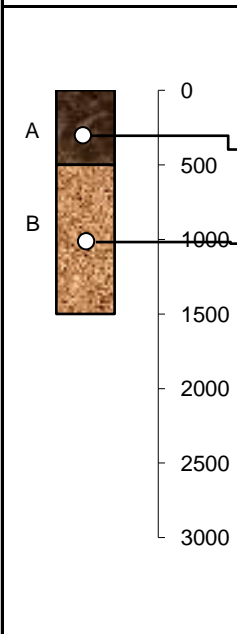
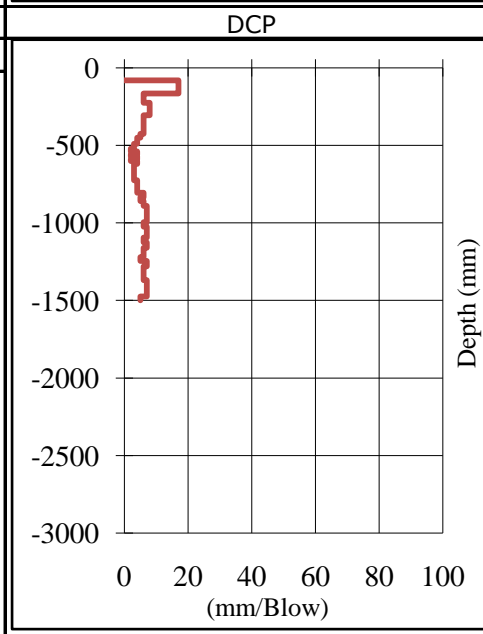

Client:	Calidris
Project:	Brakkloof
Area:	Plettenberg Bay
Date:	18.03.11
Excavator:	Komatsu PC120 Excavator



Geotechnical Soil Profile

Client:	Calidris
Project:	Brakkloof
Area:	Plettenberg Bay
Date:	18.03.11
Excavator:	TLB

	<p>TP 21</p> <p>(0 to 400)</p>	<p>Datum: NGL Co-ords: 23 Y-033401 X3774342</p> <p>Key to symbols: ○ Sample taken ▽ Groundwater</p>	<p>DCP</p> 	<p>Photo of Test Pit</p> 
	<p>Slightly moist to moist, dark brown, medium dense, intact, SILTY SAND + LARGE BOULDERS (1mØ), transported.</p> <p>Refusal @ 400mm on sandstone rock.</p>			

	<p>TP 22</p> <p>(0 to 500)</p>	<p>Datum: NGL Co-ords: 23 Y-033464 X3774264</p> <p>Key to symbols: ○ Sample taken ▽ Groundwater</p>	<p>DCP</p> 	<p>Photo of Test Pit</p> 
	<p>(500 to 1500)</p> <p>Slightly moist, dark brown, medium dense to dense, intact, SILTY SAND, transported, (Topsoil organic 0-50). MOD/CBR/Indicator</p> <p>Slightly moist, dark red orange, very stiff, fissured, SANDY SILTY CLAY, residual. Foundation Indicator</p> <p>Excavator struggling to dig further</p>			

Appendix 2

Lab Test Results



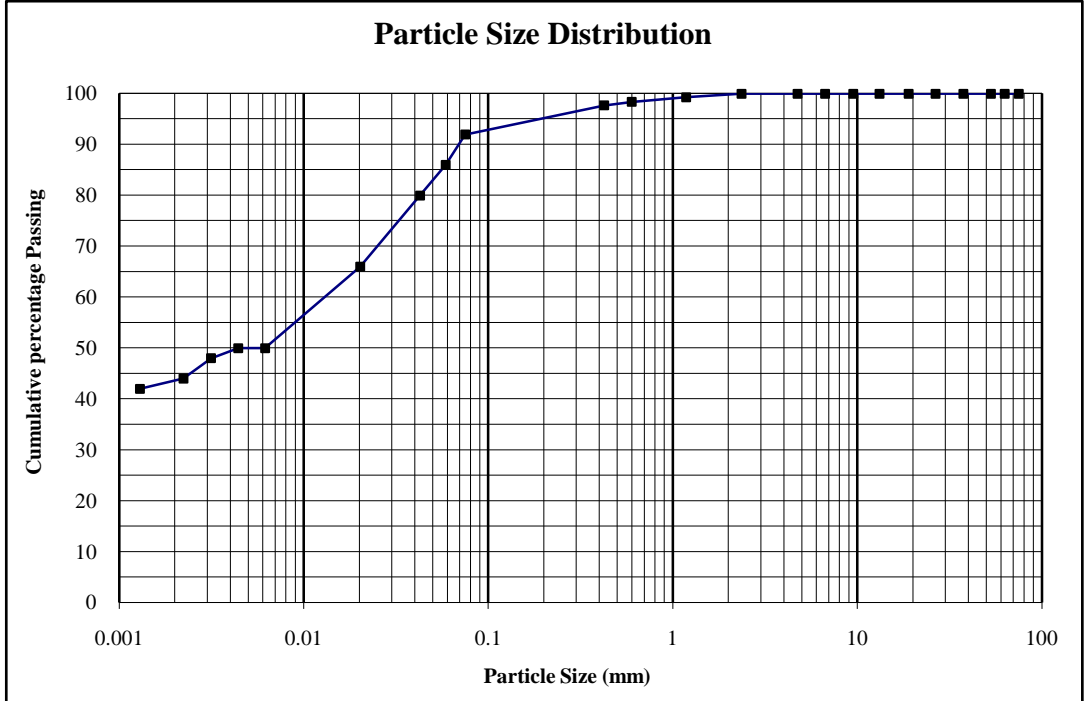
Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	Attention :	0	No. of Pages :	1/15	

TEST REPORT

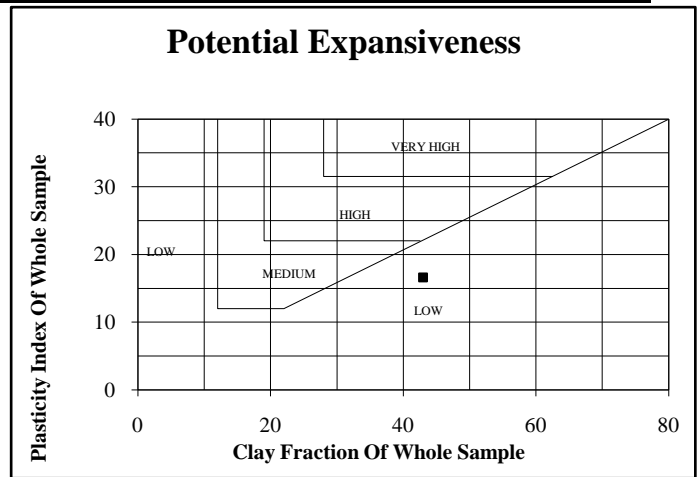
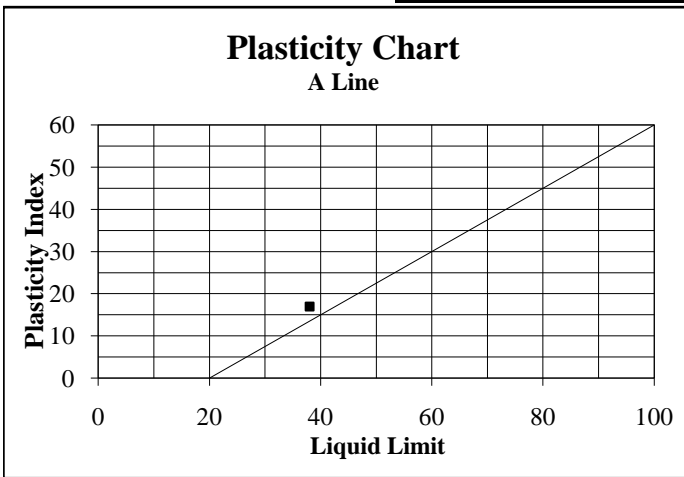
FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Sandy Clay-Silt	Sample Number:	42438		
Position:	TP1-Layer 2	Liquid Limit	38	Linear Shrinkage	9
Depth:	900	Plasticity Index	17	Insitu M/C%	22.7

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	100
9.5	100
6.7	100
4.75	100
2.36	100
1.18	99
0.600	98
0.425	98
0.075	92
0.0587	86
0.0426	80
0.0202	66
0.0062	50
0.0044	50
0.0032	48
0.0022	44
0.0013	42



% Clay	43	% Silt	43	% Sand	14	% Gravel	0
Unified Soil Classification		CL		PRA Soil Classification		A-6	



Notes:

• Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.



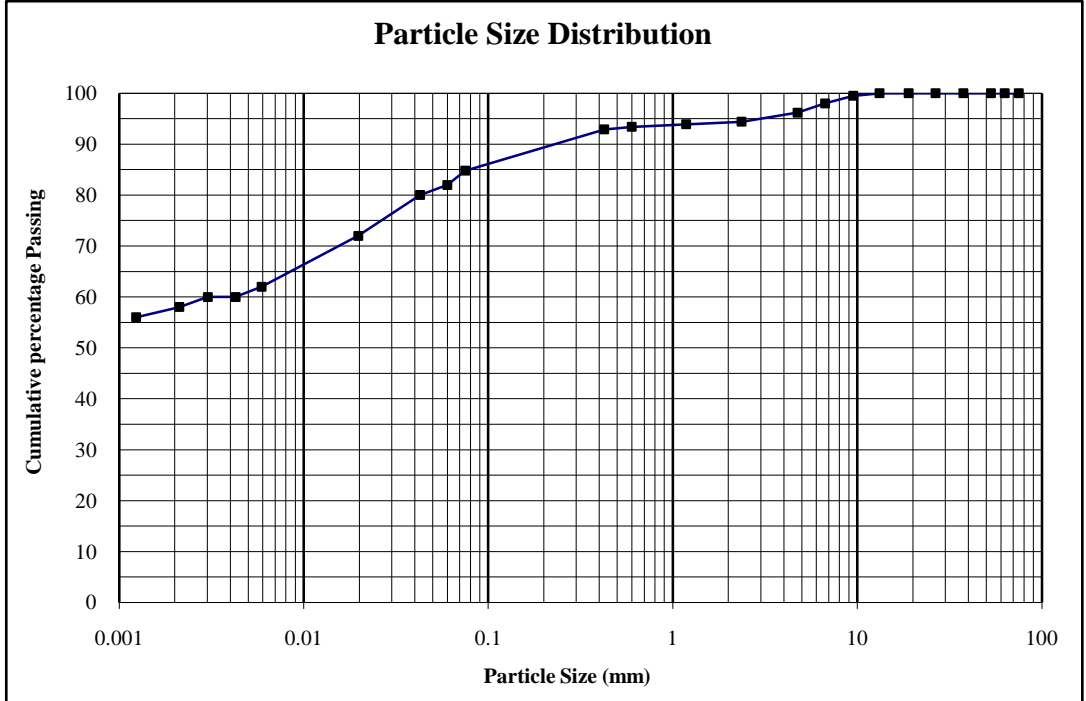
Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	0	No. of Pages :	2/15		
Attention :	0				

TEST REPORT

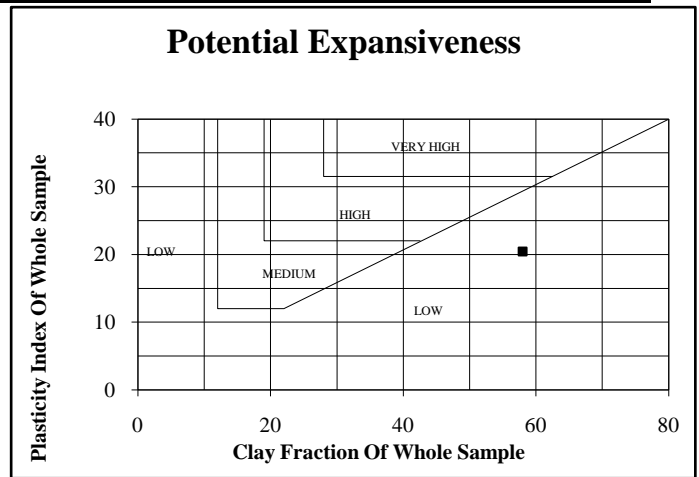
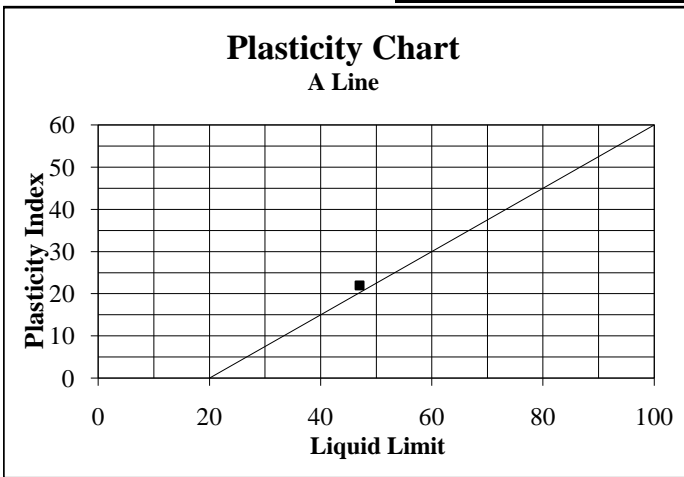
FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Sandy Silty Clay	Sample Number:	42439		
Position:	TP1-Layer2	Liquid Limit	47	Linear Shrinkage	11
Depth:	2100	Plasticity Index	22	Insitu M/C%	20.9

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	100
9.5	100
6.7	98
4.75	96
2.36	94
1.18	94
0.600	93
0.425	93
0.075	85
0.0600	82
0.0426	80
0.0197	72
0.0059	62
0.0043	60
0.0030	60
0.0021	58
0.0012	56



% Clay	58	% Silt	24	% Sand	12	% Gravel	6
Unified Soil Classification	CL		PRA Soil Classification	A-7-6			



Notes:

- Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.



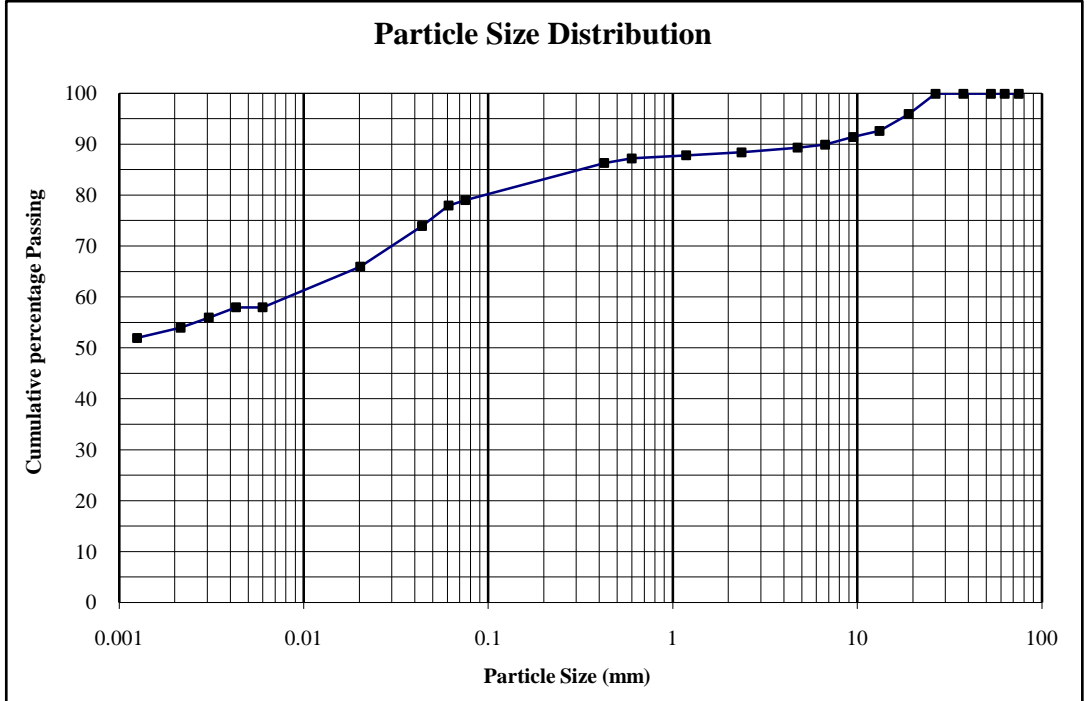
Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	0	No. of Pages :	3/15		
Attention :	0				

TEST REPORT

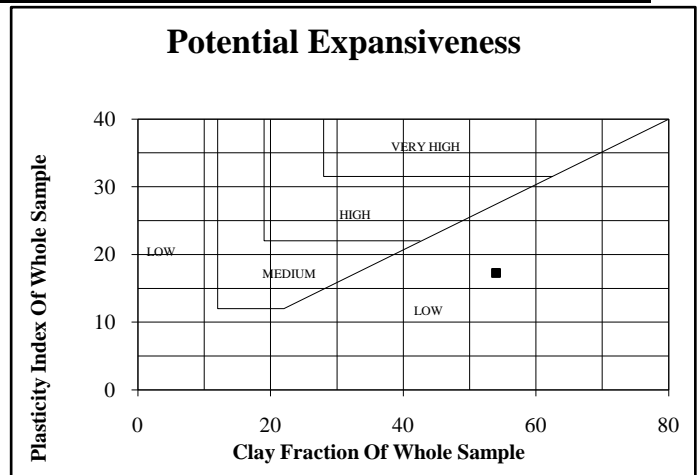
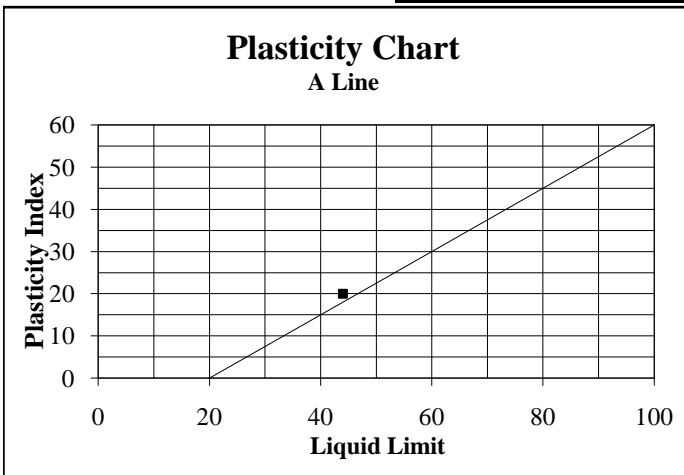
FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Gravelly Silty Clay	Sample Number:	42440		
Position:	TP2-Layer2	Liquid Limit	44	Linear Shrinkage	10
Depth:	1200	Plasticity Index	20	Insitu M/C%	20.6

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	96
13.2	93
9.5	91
6.7	90
4.75	89
2.36	88
1.18	88
0.600	87
0.425	86
0.075	79
0.0609	78
0.0437	74
0.0202	66
0.0060	58
0.0043	58
0.0031	56
0.0022	54
0.0012	52



% Clay	54	% Silt	24	% Sand	10	% Gravel	12
Unified Soil Classification		CL		PRA Soil Classification		A-7-6	



Notes:

• Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.

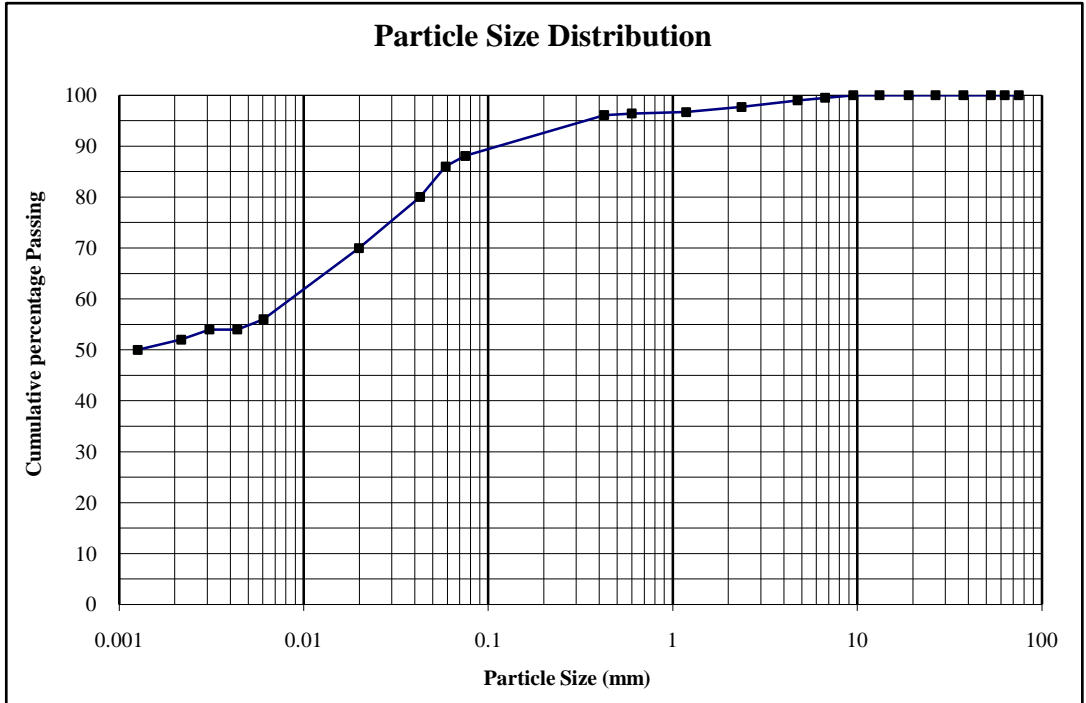


Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	Attention :	0	No. of Pages :	4/15	

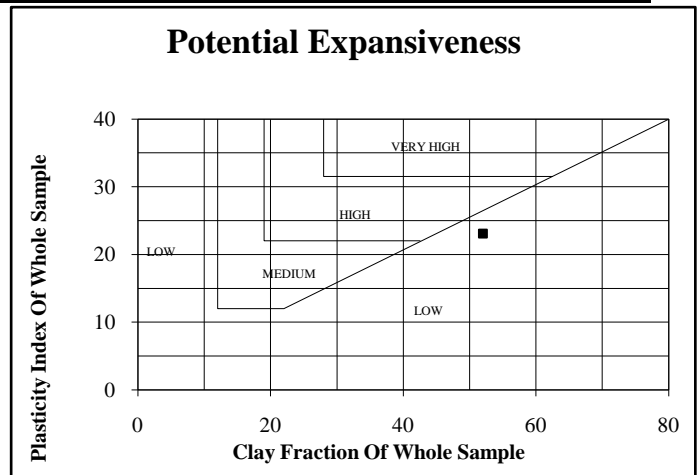
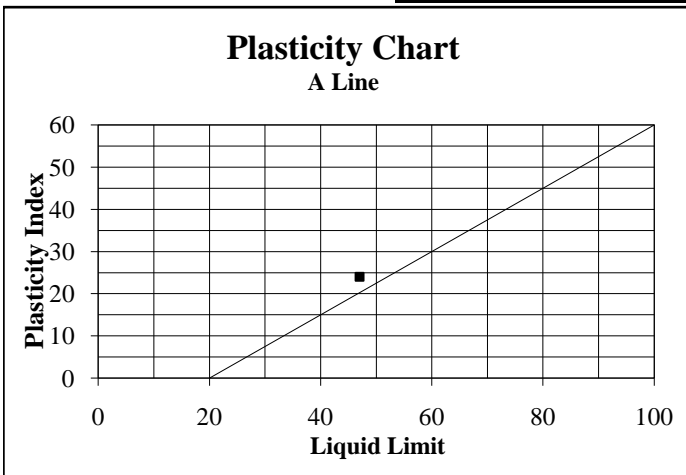
TEST REPORT FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Sandy Silty Clay	Sample Number:	42441		
Position:	TP3-Layer2	Liquid Limit	47	Linear Shrinkage	12
Depth:	1200	Plasticity Index	24	In situ M/C%	21.2

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	100
9.5	100
6.7	100
4.75	99
2.36	98
1.18	97
0.600	96
0.425	96
0.075	88
0.0587	86
0.0426	80
0.0199	70
0.0060	56
0.0044	54
0.0031	54
0.0022	52
0.0013	50



% Clay	52	% Silt	34	% Sand	11	% Gravel	3
Unified Soil Classification	CL		PRA Soil Classification	A-7-6			



Notes:

- Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.



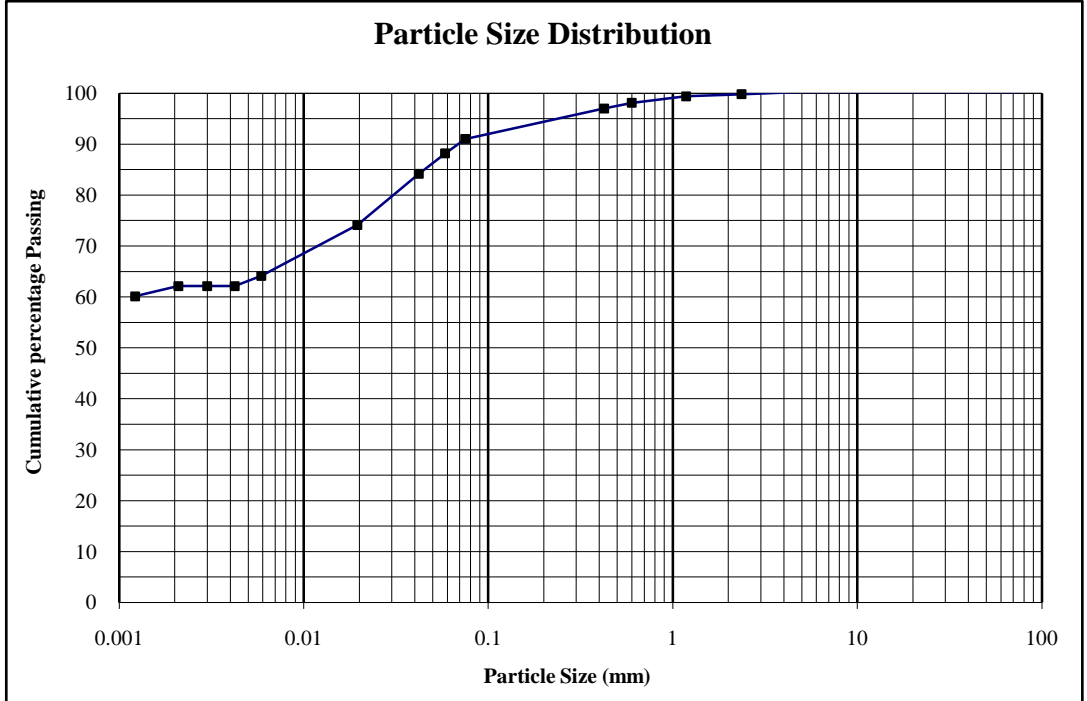
Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	Attention :	0	No. of Pages :	5/15	

TEST REPORT

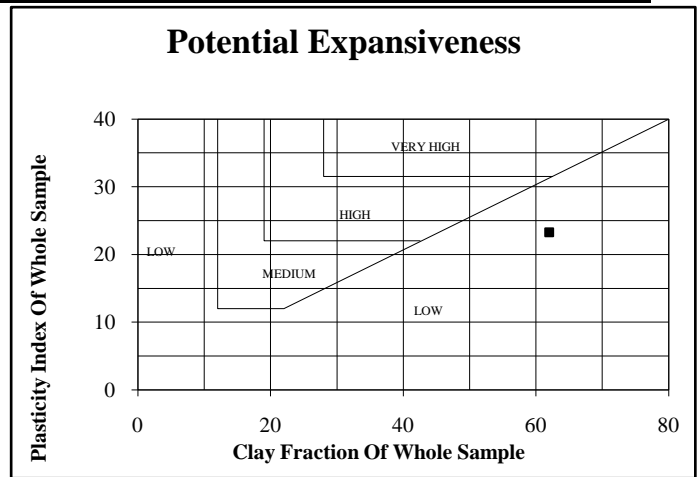
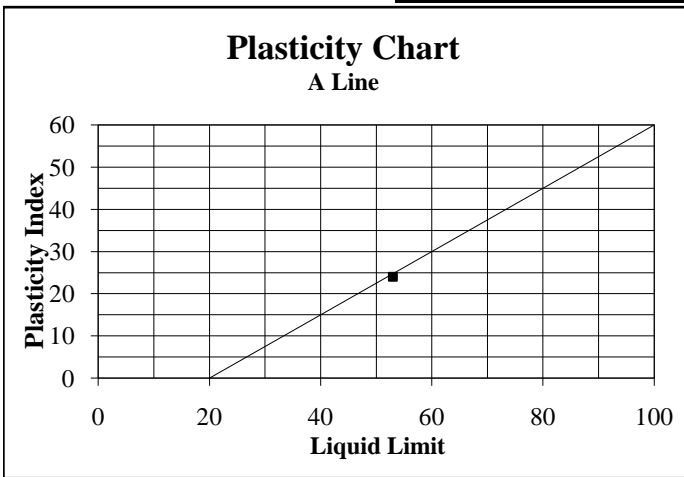
FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Sandy Silty Clay	Sample Number:	42442		
Position:	TP6-Layer2	Liquid Limit	53	Linear Shrinkage	12
Depth:	1000	Plasticity Index	24	In situ M/C%	19.6

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	100
9.5	100
6.7	100
4.75	100
2.36	100
1.18	99
0.600	98
0.425	97
0.075	91
0.0584	88
0.0420	84
0.0196	74
0.0059	64
0.0042	62
0.0030	62
0.0021	62
0.0012	60



% Clay	62	% Silt	27	% Sand	11	% Gravel	0
Unified Soil Classification	MH		PRA Soil Classification	A-7-6			



Notes:

- Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.



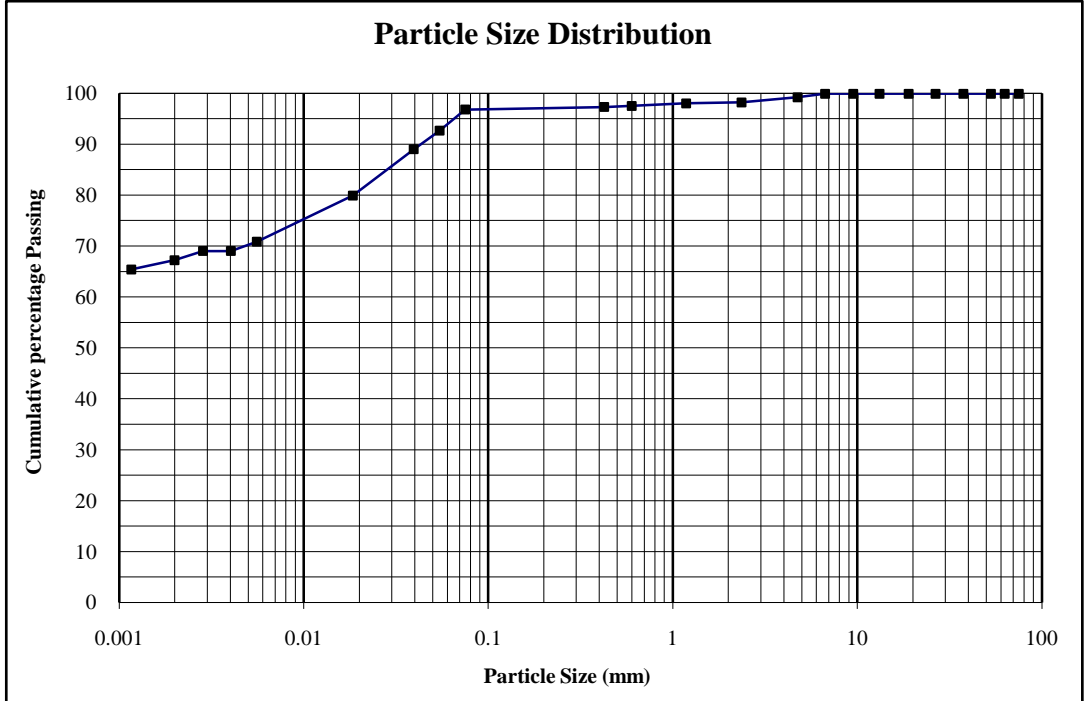
Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
Attention :	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	0	No. of Pages :	6/15		

TEST REPORT

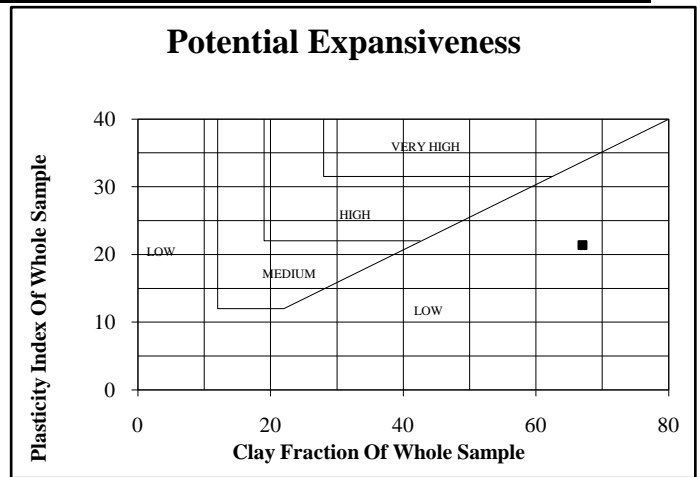
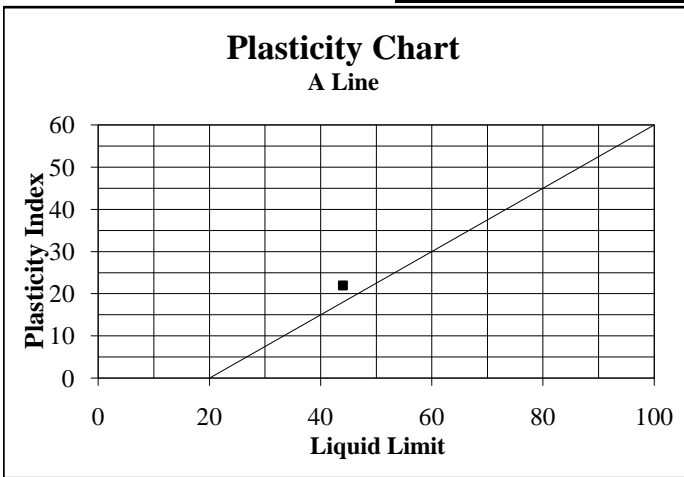
FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Silty Clay	Sample Number:	42443		
Position:	TP7-Layer2	Liquid Limit	44	Linear Shrinkage	11
Depth:	1300	Plasticity Index	22	Insitu M/C%	20.6

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	100
9.5	100
6.7	100
4.75	99
2.36	98
1.18	98
0.600	98
0.425	97
0.075	97
0.0544	93
0.0394	89
0.0185	80
0.0056	71
0.0040	69
0.0028	69
0.0020	67
0.0012	65



% Clay	67	% Silt	27	% Sand	4	% Gravel	2
Unified Soil Classification	CL		PRA Soil Classification	A-7-6			



Notes:

• Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.

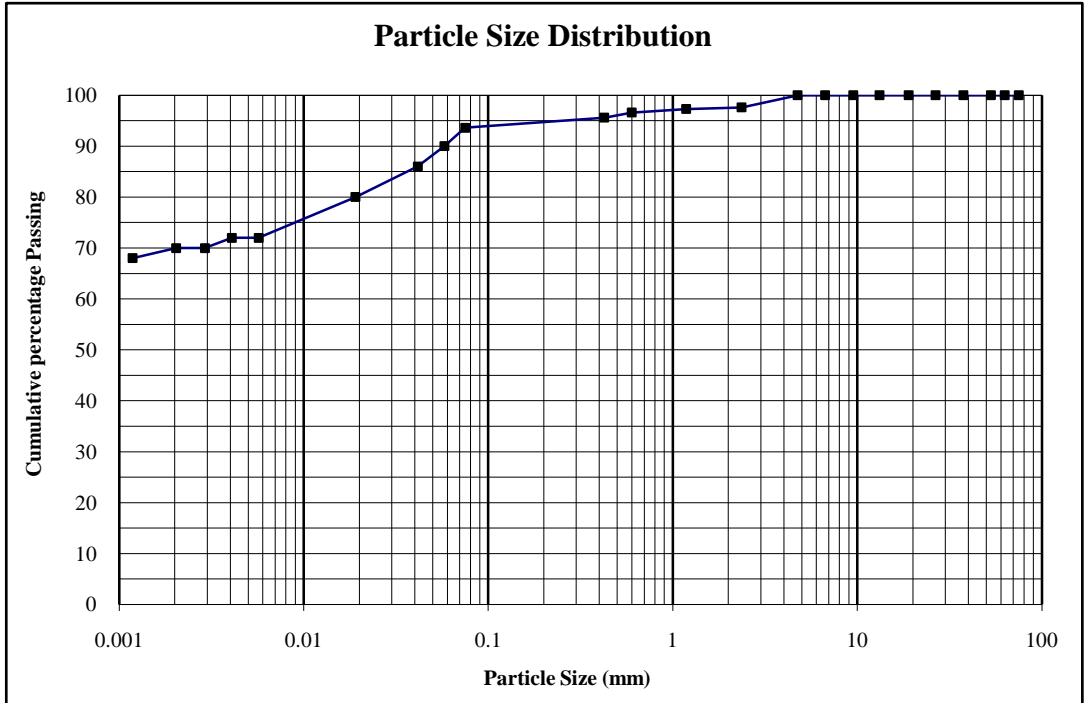


Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay	
	0	Date Received :	24/03/11	
Attention :	0	Date Reported :	11/04/11	
	0	Req. Number :	0614/11	
	0	No. of Pages :	7/15	

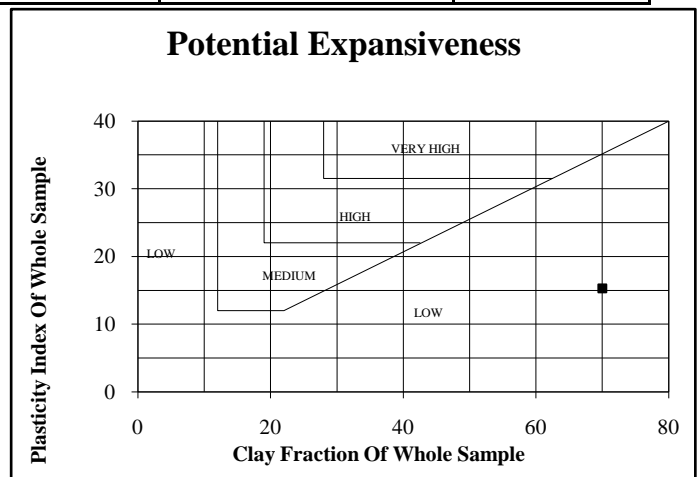
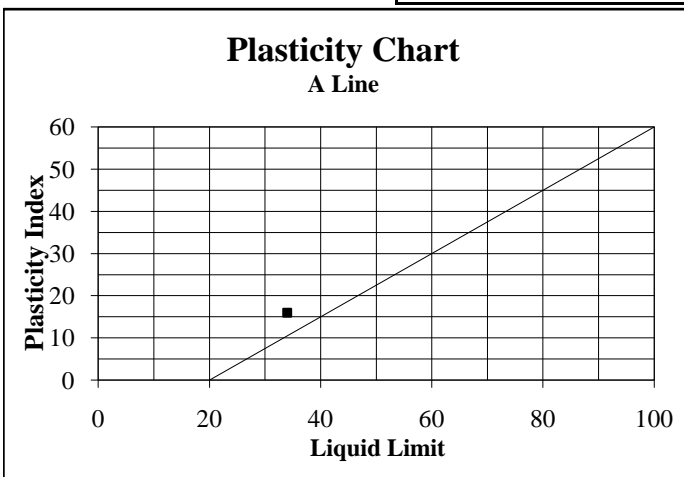
TEST REPORT FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Silty Clay	Sample Number:	42444		
Position:	TP7-Layer2	Liquid Limit	34	Linear Shrinkage	8
Depth:	2500	Plasticity Index	16	Insitu M/C%	19.9

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	100
9.5	100
6.7	100
4.75	100
2.36	98
1.18	97
0.600	97
0.425	96
0.075	94
0.0578	90
0.0415	86
0.0191	80
0.0057	72
0.0041	72
0.0029	70
0.0020	70
0.0012	68



% Clay	70	% Silt	21	% Sand	7	% Gravel	2
Unified Soil Classification		CL		PRA Soil Classification		A-6	



Notes:

- Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.

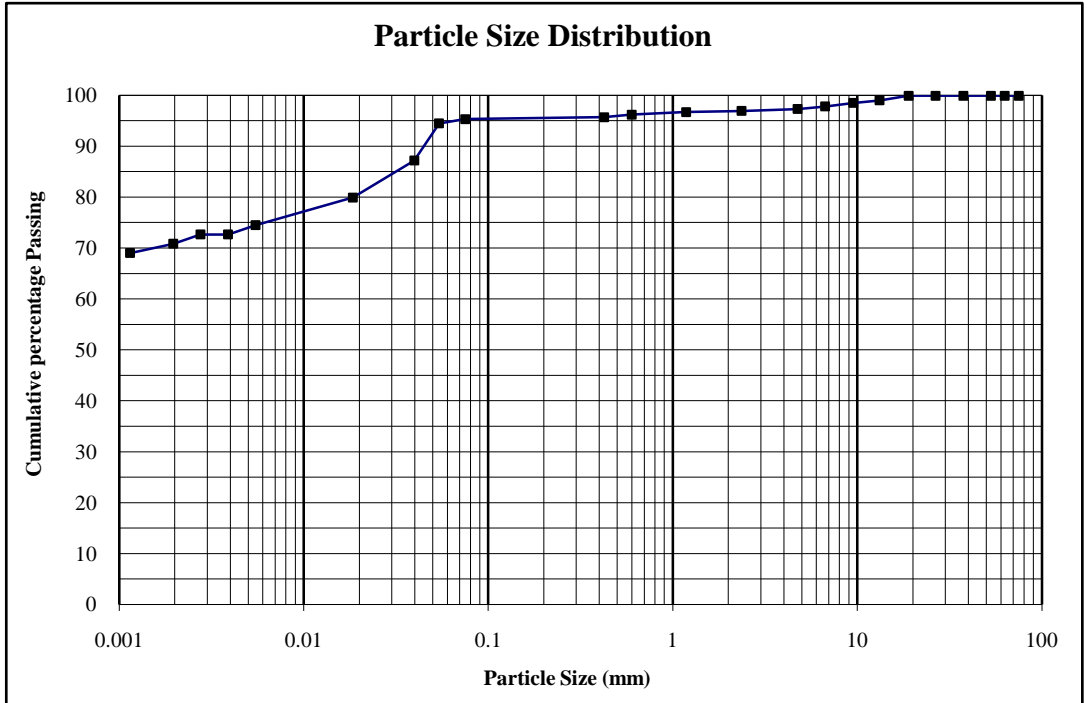


Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
Attention :	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	0	No. of Pages :	8/15		

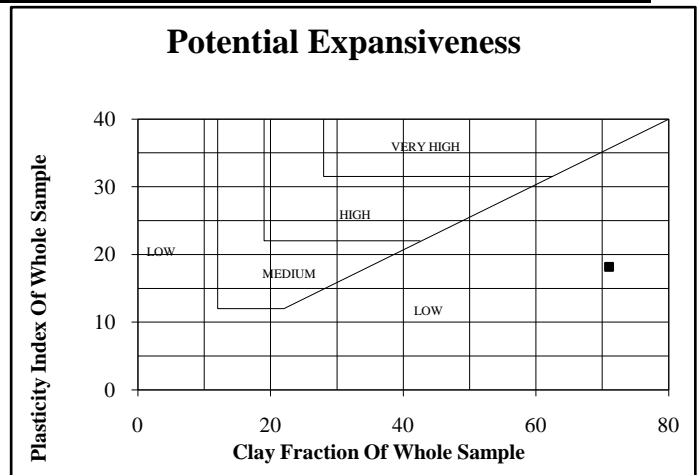
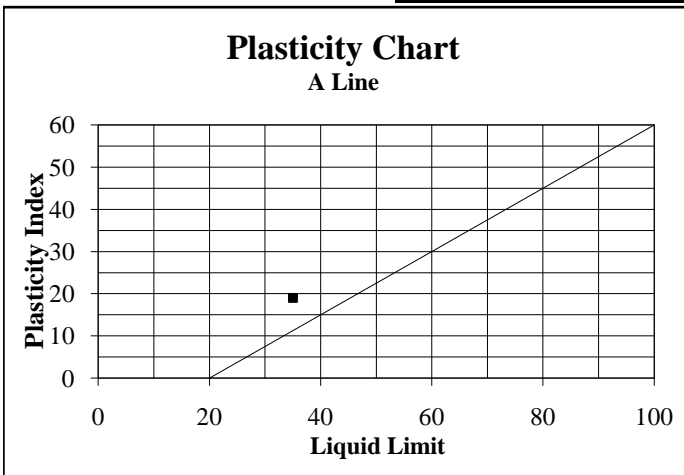
TEST REPORT FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Silty Clay	Sample Number:	42445		
Position:	TP8-Layer2	Liquid Limit	35	Linear Shrinkage	9
Depth:	1200	Plasticity Index	19	Insitu M/C%	19.7

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	99
9.5	99
6.7	98
4.75	97
2.36	97
1.18	97
0.600	96
0.425	96
0.075	95
0.0541	94
0.0397	87
0.0185	80
0.0055	74
0.0039	73
0.0028	73
0.0020	71
0.0011	69



% Clay	71	% Silt	26	% Sand	0	% Gravel	3
Unified Soil Classification		CL		PRA Soil Classification		A-6	



Notes:

• Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.



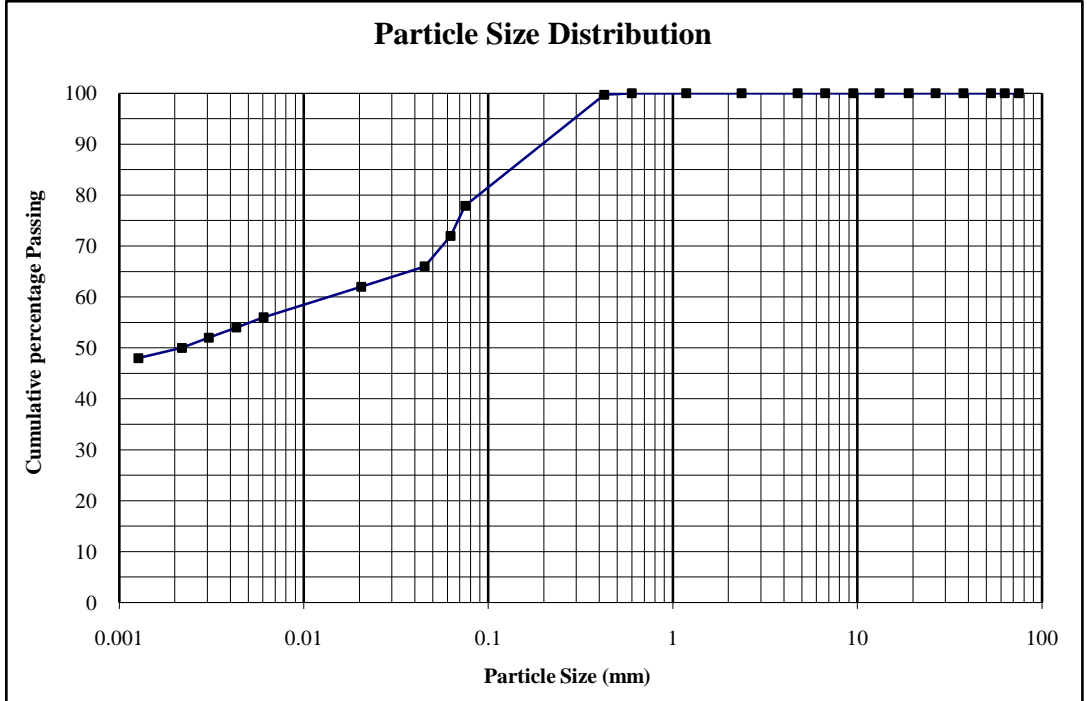
Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
Attention :	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	0	No. of Pages :	9/15		

TEST REPORT

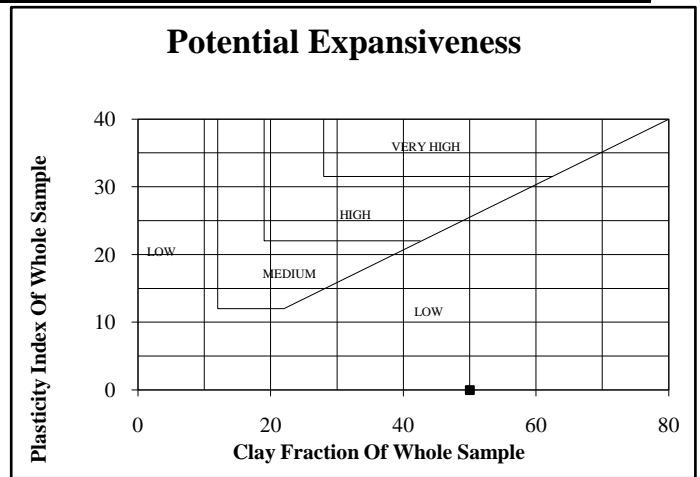
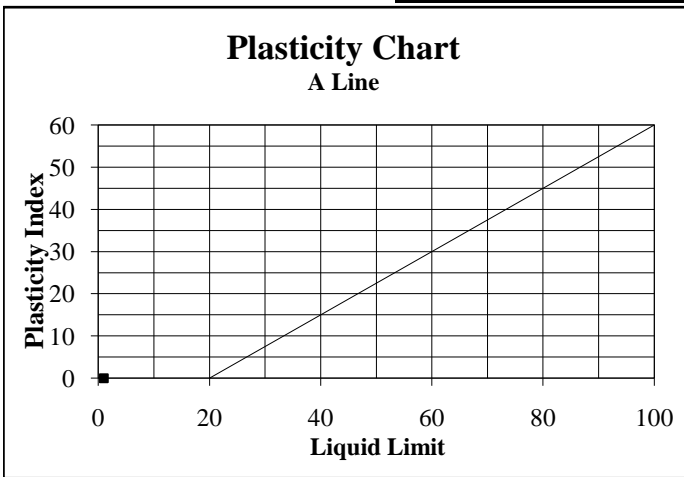
FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Silty Sandy Clay	Sample Number:	42446		
Position:	TP9-Layer2	Liquid Limit	NP	Linear Shrinkage	0
Depth:	1600	Plasticity Index	NP	In situ M/C%	13.1

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	100
9.5	100
6.7	100
4.75	100
2.36	100
1.18	100
0.600	100
0.425	100
0.075	78
0.0624	72
0.0452	66
0.0205	62
0.0060	56
0.0043	54
0.0031	52
0.0022	50
0.0013	48



% Clay	50	% Silt	21	% Sand	29	% Gravel	0
Unified Soil Classification	ML		PRA Soil Classification	A-4			



Notes:

- Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.



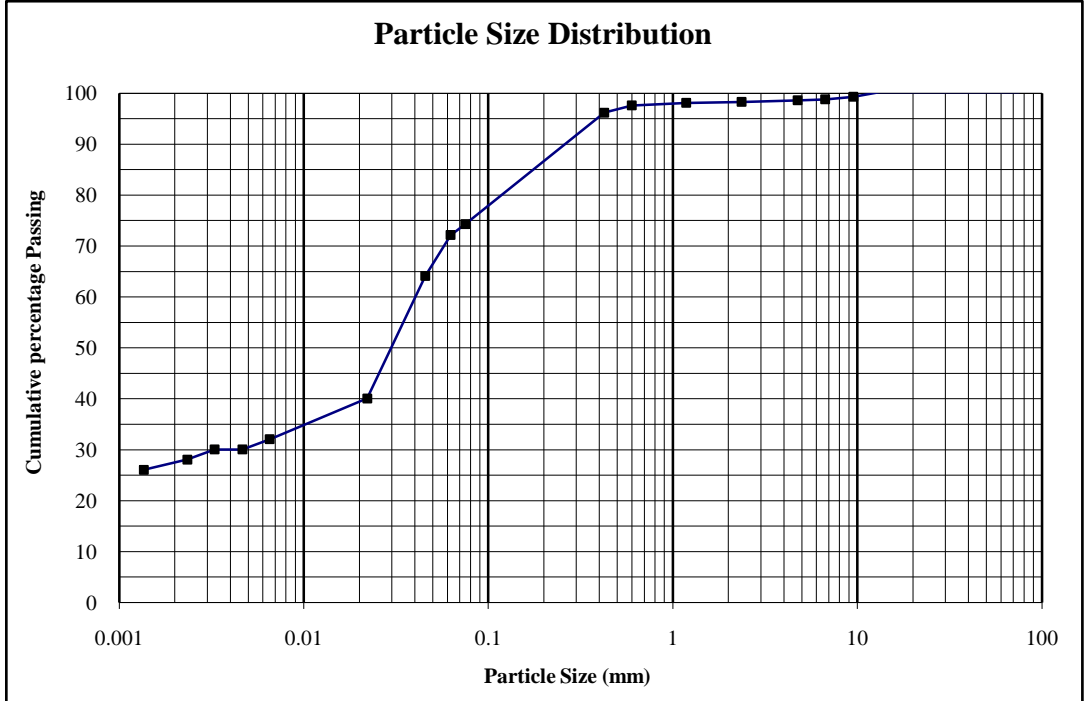
Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	Attention :	0	No. of Pages :	10/15	

TEST REPORT

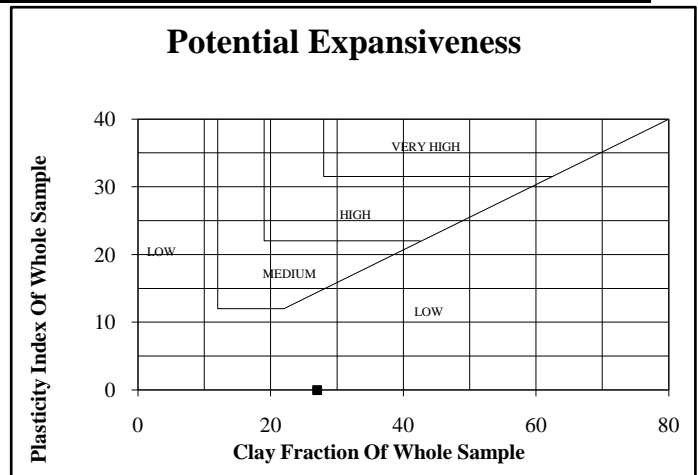
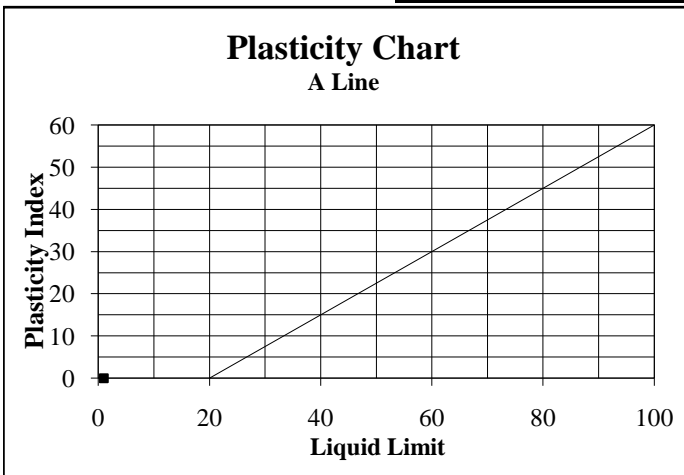
FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Clayey-Sandy Silt	Sample Number:	42447		
Position:	TP11-Layer2	Liquid Limit	NP	Linear Shrinkage	0
Depth:	1200	Plasticity Index	NP	Insitu M/C%	7.3

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	100
9.5	99
6.7	99
4.75	99
2.36	98
1.18	98
0.600	98
0.425	96
0.075	74
0.0624	72
0.0456	64
0.0221	40
0.0065	32
0.0046	30
0.0033	30
0.0023	28
0.0014	26



% Clay	27	% Silt	44	% Sand	27	% Gravel	2
Unified Soil Classification		ML		PRA Soil Classification		A-4	



Notes:

- Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.



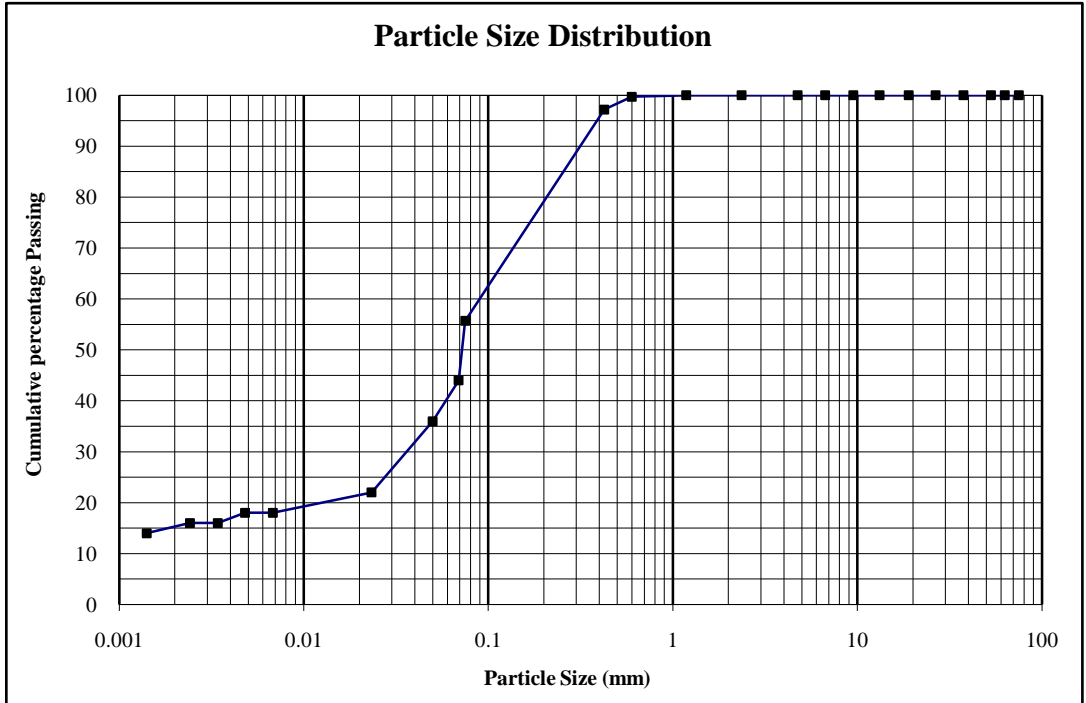
Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
Attention :	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	0	No. of Pages :	11/15		

TEST REPORT

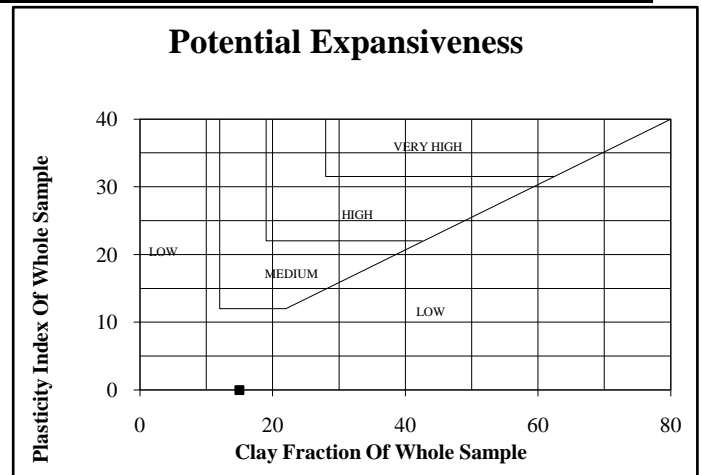
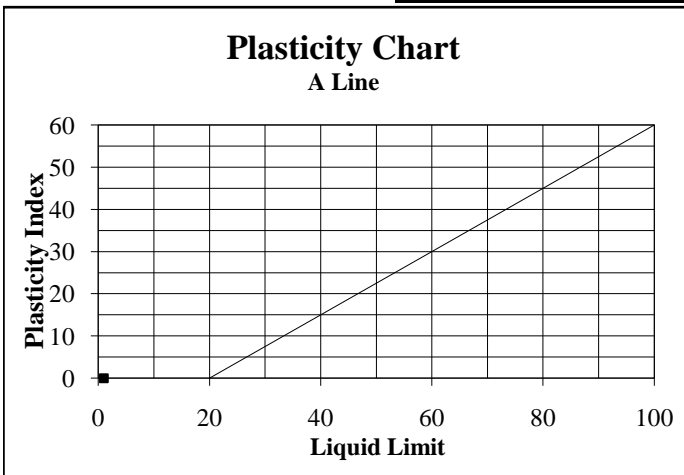
FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Clayey Silty Sand	Sample Number:	42448		
Position:	TP13-Layer1	Liquid Limit	NP	Linear Shrinkage	0
Depth:	1500	Plasticity Index	NP	Insitu M/C%	7

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	100
9.5	100
6.7	100
4.75	100
2.36	100
1.18	100
0.600	100
0.425	97
0.075	56
0.0690	44
0.0499	36
0.0233	22
0.0068	18
0.0048	18
0.0034	16
0.0024	16
0.0014	14



% Clay	15	% Silt	25	% Sand	60	% Gravel	0
Unified Soil Classification		ML		PRA Soil Classification		A-4	



Notes:

- Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.



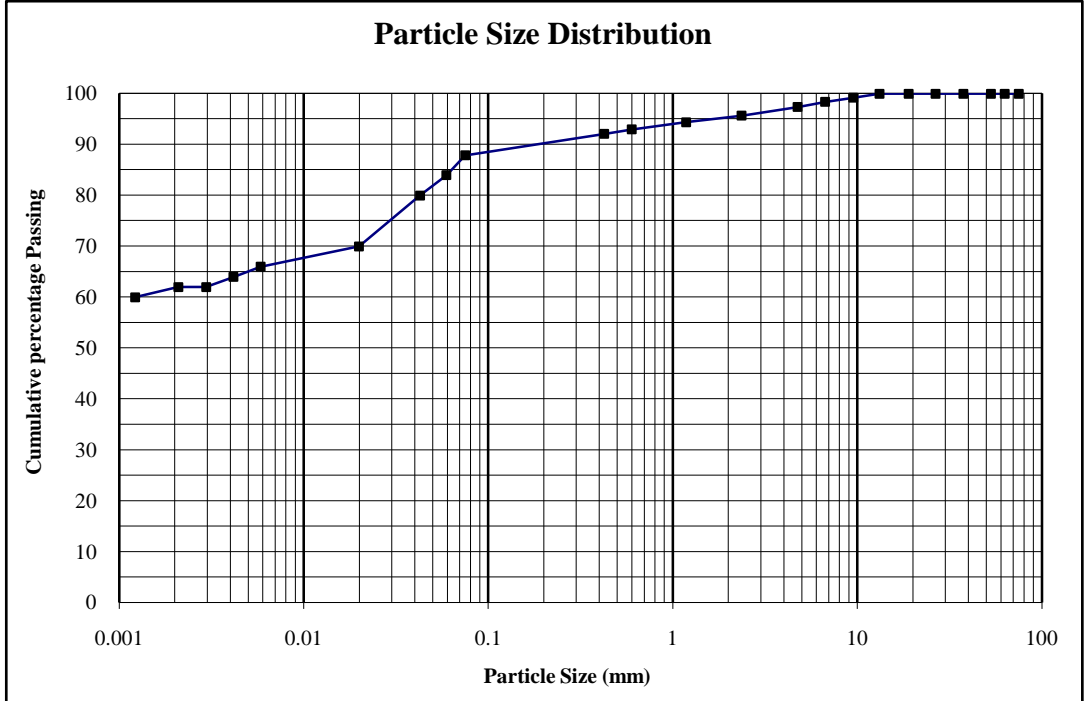
Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	Attention :	0	No. of Pages :	12/15	

TEST REPORT

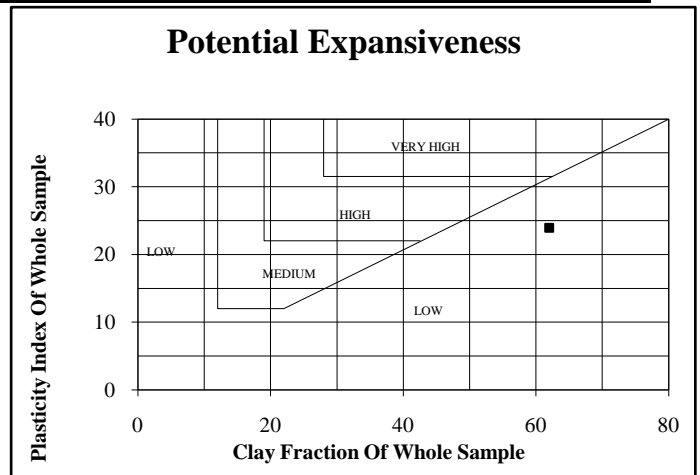
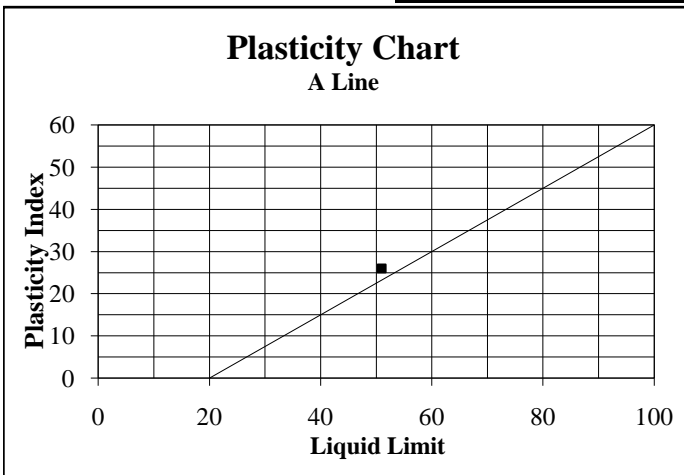
FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Sandy Silty Clay	Sample Number:	42449		
Position:	TP15-Layer2	Liquid Limit	51	Linear Shrinkage	13
Depth:	1000	Plasticity Index	26	Insitu M/C%	21.2

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	100
9.5	99
6.7	98
4.75	97
2.36	96
1.18	94
0.600	93
0.425	92
0.075	88
0.0594	84
0.0426	80
0.0199	70
0.0058	66
0.0042	64
0.0030	62
0.0021	62
0.0012	60



% Clay	62	% Silt	22	% Sand	11	% Gravel	5
Unified Soil Classification		CH		PRA Soil Classification		A-7-6	



Notes:

• Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.



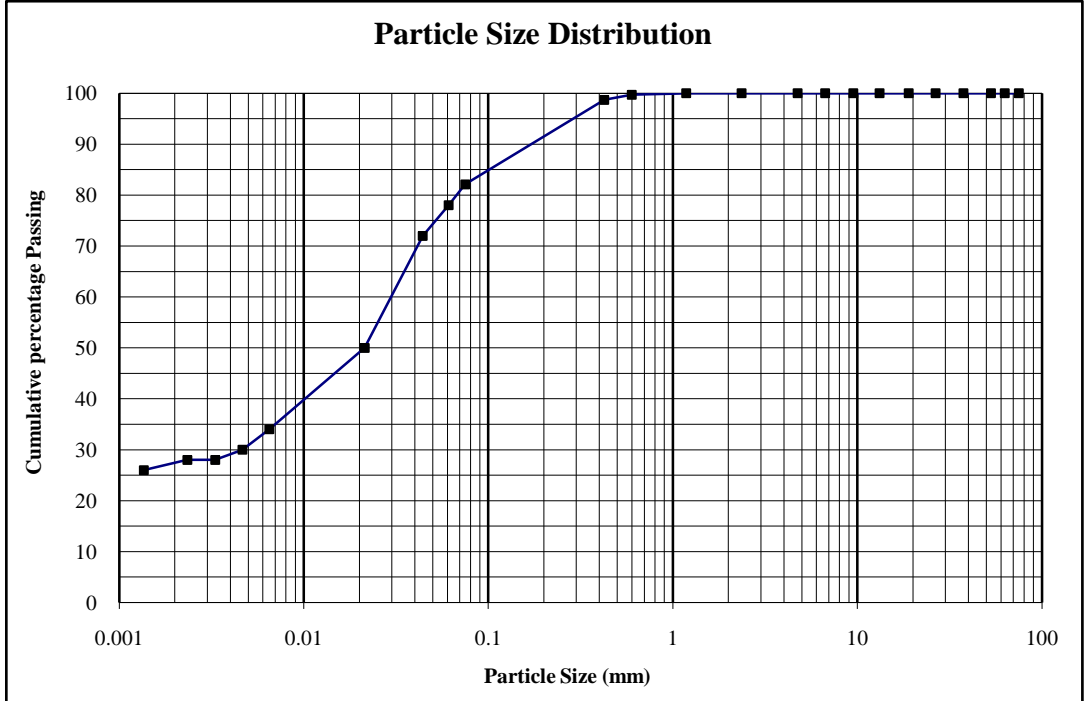
Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
Attention :	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	0	No. of Pages :	13/15		

TEST REPORT

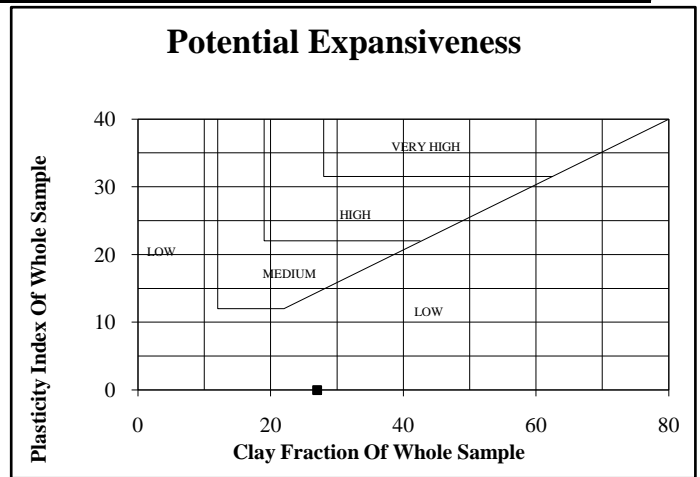
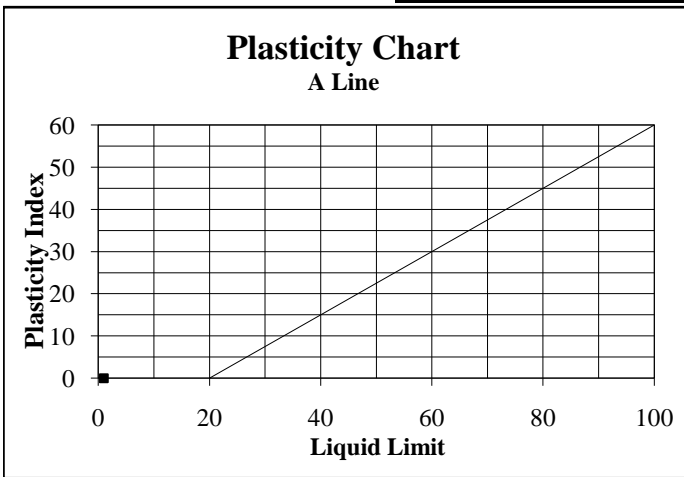
FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Sandy Clayey Silt	Sample Number:	42450		
Position:	TP15-Layer3	Liquid Limit	NP	Linear Shrinkage	0
Depth:	2500	Plasticity Index	NP	Insitu M/C%	8.4

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	100
9.5	100
6.7	100
4.75	100
2.36	100
1.18	100
0.600	100
0.425	99
0.075	82
0.0609	78
0.0441	72
0.0214	50
0.0065	34
0.0046	30
0.0033	28
0.0023	28
0.0014	26



% Clay	27	% Silt	51	% Sand	22	% Gravel	0
Unified Soil Classification		ML		PRA Soil Classification		A-4	



Notes:

- Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.

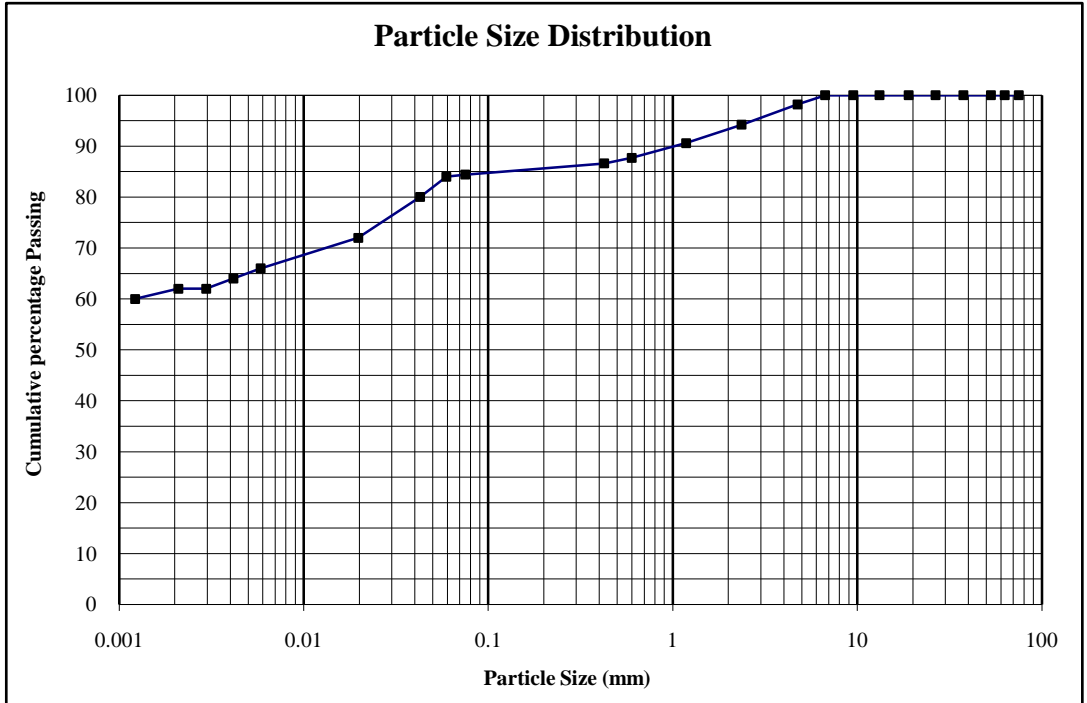


Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	Attention :	0	No. of Pages :	14/15	

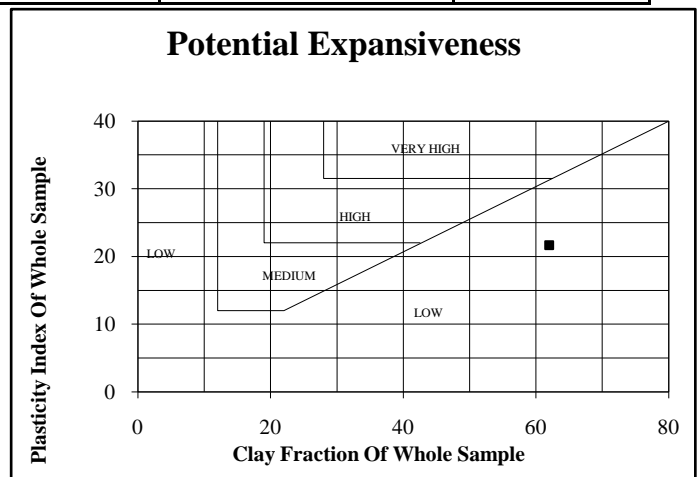
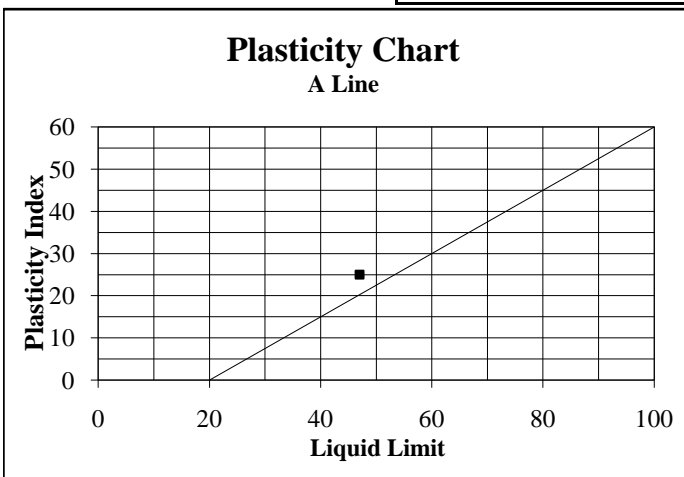
TEST REPORT FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Silty Clay	Sample Number:	42451		
Position:	TP19-Layer2	Liquid Limit	47	Linear Shrinkage	12
Depth:	1500	Plasticity Index	25	Insitu M/C%	19.1

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	100
9.5	100
6.7	100
4.75	98
2.36	94
1.18	91
0.600	88
0.425	87
0.075	84
0.0594	84
0.0426	80
0.0197	72
0.0058	66
0.0042	64
0.0030	62
0.0021	62
0.0012	60



% Clay	62	% Silt	22	% Sand	9	% Gravel	7
Unified Soil Classification	CL		PRA Soil Classification	A-7-6			



Notes:

- Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.



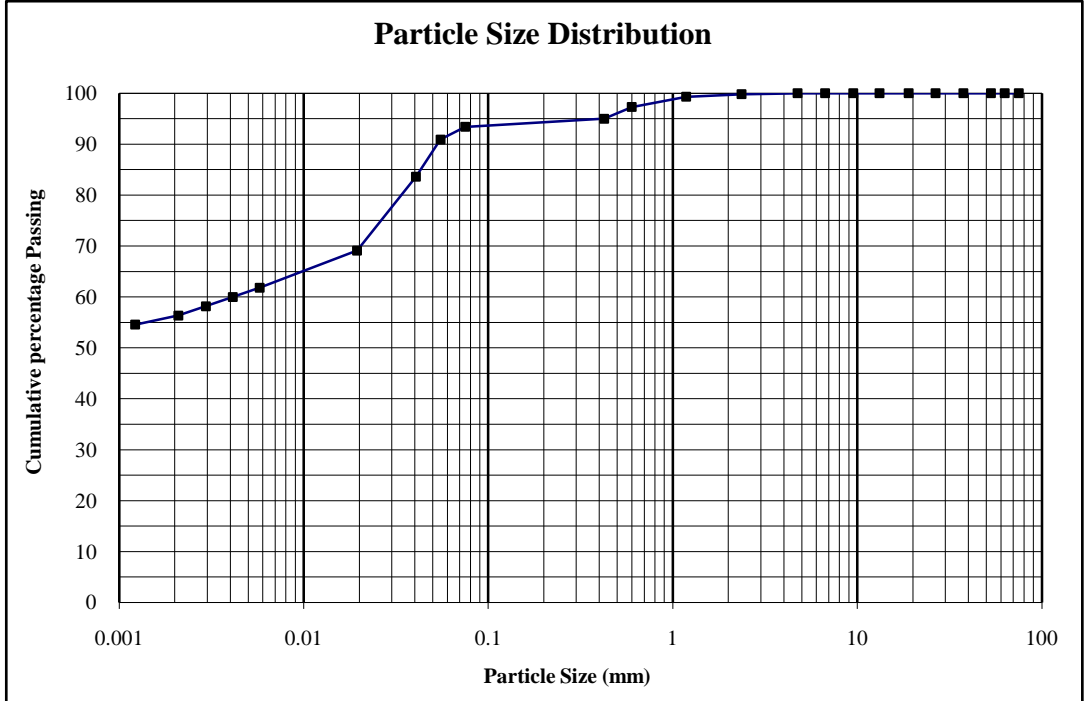
Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay		
	0	Date Received :	24/03/11		
	0	Date Reported :	11/04/11		
	0	Req. Number :	0614/11		
	0	No. of Pages :	15/15		
Attention :	0				

TEST REPORT

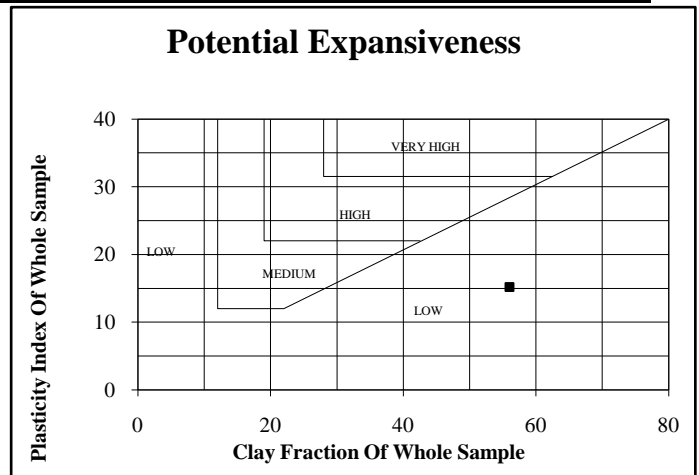
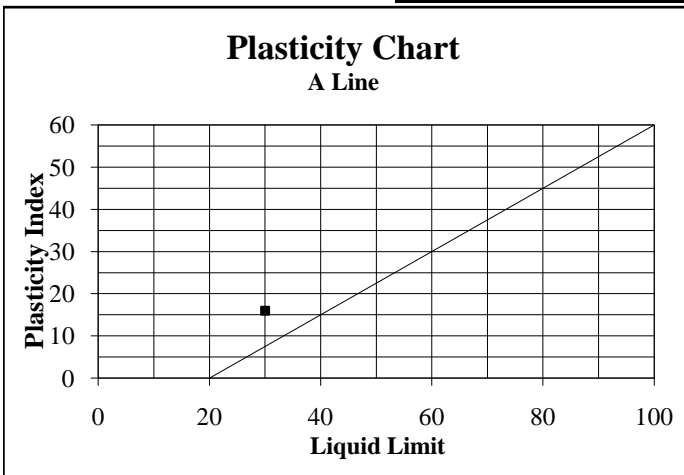
FOUNDATION INDICATOR - (TMH 1 Method A1(a),A2,A3,A4,A5) & (ASTM Method D422)

Material Description:	Silty Clay	Sample Number:	42452		
Position:	TP22-Layer2	Liquid Limit	30	Linear Shrinkage	8
Depth:	1000	Plasticity Index	16	Insitu M/C%	13.8

Sieve Size(mm)	% Passing
75.0	100
63.0	100
53.0	100
37.5	100
26.5	100
19.0	100
13.2	100
9.5	100
6.7	100
4.75	100
2.36	100
1.18	99
0.600	97
0.425	95
0.075	93
0.0551	91
0.0406	84
0.0195	69
0.0058	62
0.0041	60
0.0029	58
0.0021	56
0.0012	55



% Clay	56	% Silt	37	% Sand	7	% Gravel	0
Unified Soil Classification	CL		PRA Soil Classification	A-6			



Notes:

• Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd.

1. Sampling falls outside the scope of Outeniqua Lab's SANAS accreditation.
2. The test results are reported with an approximate 95% level of confidence.
3. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
4. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
5. Measuring Equipment, traceable to National Standards is used where applicable.
6. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn therefrom or for any consequence thereof.



HEAD OFFICE : 60 Bonza Bay Road, Beacon Bay, 5241, Tel: 043 748 2568, Fax: 043 748 2718

CENTRAL LABORATORY : 10 St Pauls Road, East London, 5201, Tel: 043 722 5420 / 722 8565, Fax: 043 743 9942, P O Box 346, East London, 5200

OTHER BRANCH OFFICES: Cape Town, Kokstad, Mithalha, Port Elizabeth, Lusaka - Zambia

CLIENT: Outeniqua Geotech Services
P O Box 3186
GEORGE INDUSTRIA
6536
ATT : Mr I Paton

PROJECT: BRAKKLOOF - PLETTENBERG BAY
DATE RECEIVED: 2011-03-29
DATE TESTED: 2011-04-11
DATE REPORTED: 2011-04-22
TEST REPORT NO.: 55174

FOUNDATION INDICATOR REPORT

NON-ACCREDITED TEST

SAMPLE NO	2448	2449			
POSITION	UD1	UD2			
	TP 1	TP 3			
DEPTH	900mm	1500			
DESCRIPTION	dk Y O	lt R O			
	sdY cl	sdY cl			

SIEVE ANALYSIS % PASSING SIEVES: Method :TMH1 A1(a) & A5

% PASSING	75 mm				
	37.5 mm				
	19 mm				
	9.5 mm				
	4.75 mm				
	2.36 mm				
	1.18 mm				
	0.600 mm				
	0.425 mm	100	100		
	0.300 mm	78	97		
	0.150 mm	63	81		
	0.075 mm	61.1	65.4		

HYDROMETER ANALYSIS: Method ASTM D422

	0.06 mm	56	58		
	0.02 mm	50	42		
	0.006 mm	44	34		
	0.002 mm	41	31		

ATTERBERG LIMITS: Method: TMH1 A2 ; A3 & A4

LIQUID LIMIT	44	36		
PLASTICITY INDEX	24	18		
LINEAR SHRINKAGE	10.0	8.5		

PREDICTION OF HEAVE (VAN DER MERWE METHOD)

PI WHOLE SAMPLE	24.0	18.0		
POTENTIAL EXPANSIVENESS	MED	MED		

The above test results are pertinent to the samples received and tested only.

While the tests are carried out according to recognized standards Controlab shall not be liable for erroneous testing or reporting thereof. This report may not be reproduced except in full without prior consent of Controlab.

Remarks:

Samples Delivered by Customer: YES

Sampled by Controlab

Technical Signatory:

J Atterbury



Controlab South Africa (Pty) Ltd

CIVIL ENGINEERING MATERIALS AND GEOTECHNICAL LABORATORY

www.controlab.co.za

HEAD OFFICE : 60 Bonza Bay Road, Beacon Bay, 5241, Tel: 043 748 2568, Fax: 043 748 2718

CENTRAL LABORATORY : 10 St Pauls Road, East London, 5201, Tel: 043 722 5420 / 722 8565, Fax: 043 743 9942, P O Box 346, East London, 5200

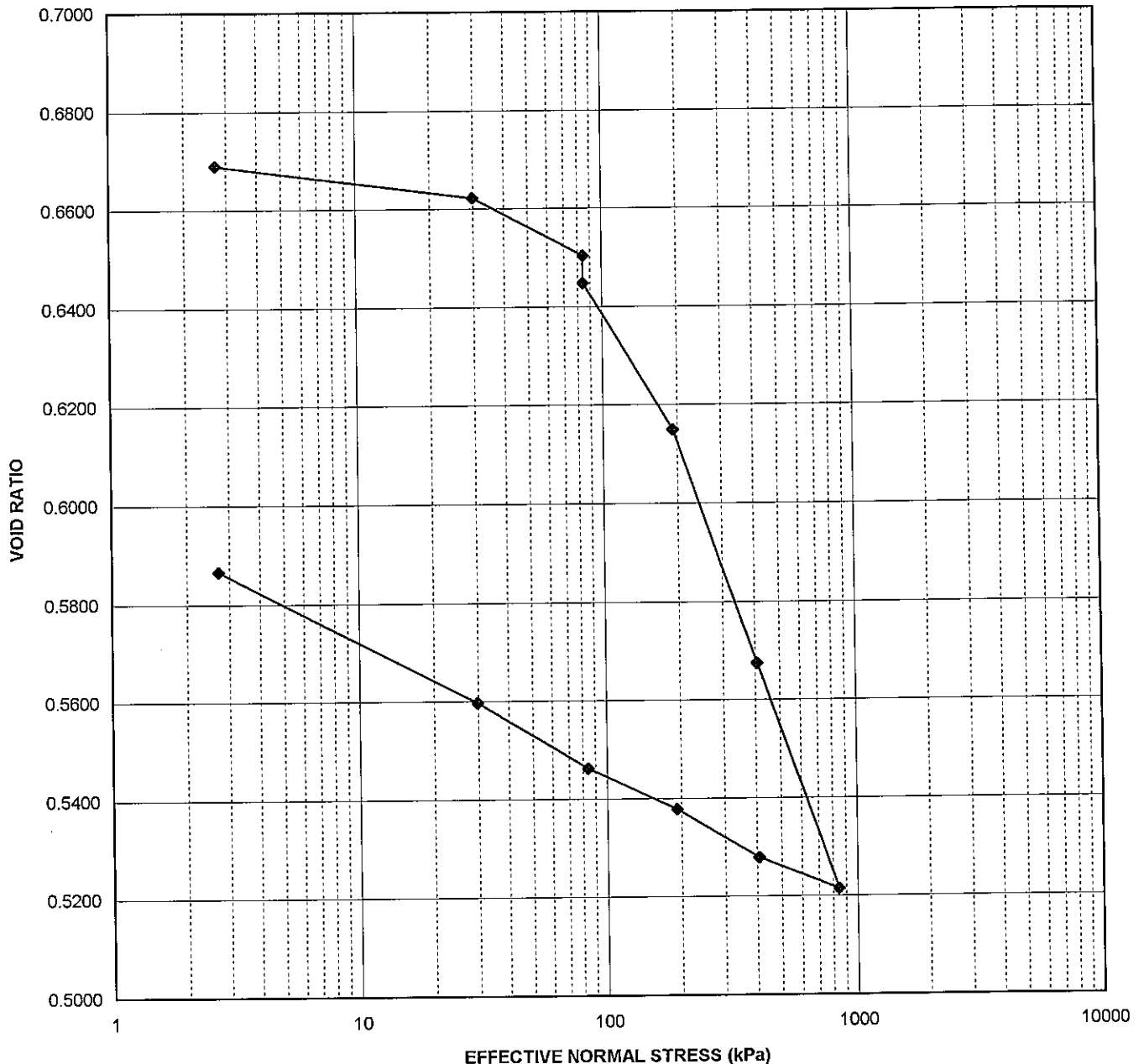
OTHER BRANCH OFFICES: Cape Town, Kokstad, Mthatha, Port Elizabeth, Lusaka - Zambia

CONSOLIDATION TEST

CLIENT: Outeniqua Geotech Services
PROJECT : Brakkloof - Plettenberg Bay

PROJECT NO : 55174
SAMPLE NO : 2448 - retest
POSITION UD1
DEPTH: 900mm

SAMPLE DESCRIPTION	: dk OI O - cly st	SPECIFIC GRAVITY (est)	= 2.69
STATE OF SAMPLE	: Undisturbed	VOL VOIDS	= 0.40081
BULK DENSITY	= 1910	VOL SOILDS	= 0.59919
DRY DENSITY	= 1612 Kg/m ³	FINAL SATURATION	= 1.01
INITIAL SATURATION	= 0.74	FINAL MOISTURE CONTENT	= 25 %
INITIAL MOISTURE CONTENT	= 18.50 %	FINAL VOID RATIO	= 0.5866
INITIAL VOID RATIO	= 0.6689		
% COLLAPSE	0.3		





Controlab South Africa (Pty) Ltd

CIVIL ENGINEERING MATERIALS AND GEOTECHNICAL LABORATORY

www.controlab.co.za

HEAD OFFICE : 60 Bonza Bay Road, Beacon Bay, 5241, Tel: 043 748 2568, Fax: 043 748 2718

CENTRAL LABORATORY : 10 St Pauls Road, East London, 5201, Tel: 043 722 5420 / 722 8565, Fax: 043 743 9942, P O Box 346, East London, 5200

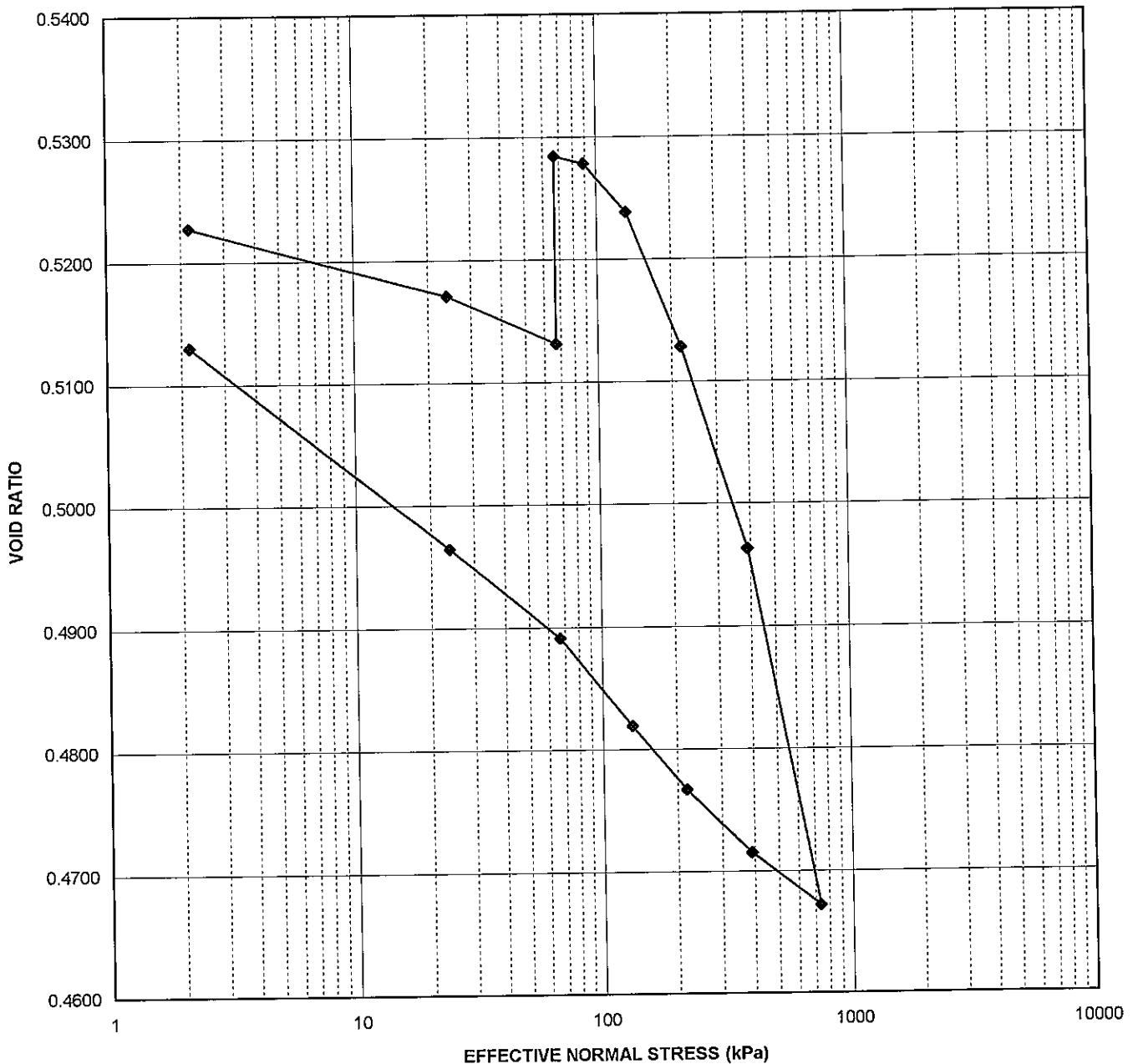
OTHER BRANCH OFFICES: Cape Town, Kokstad, Mthatha, Port Elizabeth, Lusaka - Zambia

CONSOLIDATION TEST

CLIENT: Outeniqua Geotech Services
PROJECT : Brakkloof - Plettenberg Bay

PROJECT NO : 55174
SAMPLE NO : 2449
POSITION UD2 - TP3
DEPTH: 1500mm

SAMPLE DESCRIPTION	: dk O Ol - cly st	SPECIFIC GRAVITY (est)	= 2.69
STATE OF SAMPLE	: Undisturbed	VOL VOIDS	= 0.3433
BULK DENSITY	= 2058	VOL SOILDS	= 0.6567
DRY DENSITY	= 1767 Kg/m ³	FINAL SATURATION	= 1.17
INITIAL SATURATION	= 0.85	FINAL MOISTURE CONTENT	= 22.8 %
INITIAL MOISTURE CONTENT	= 16.50 %	FINAL VOID RATIO	= 0.4819
INITIAL VOID RATIO	= 0.5228	SWELL PRESSURE kPa	= 158
% FREE SWELL	1.0		



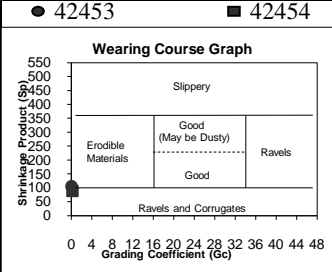
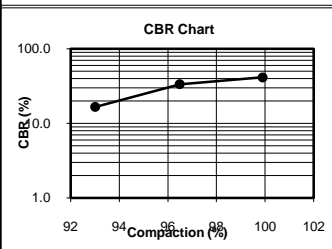
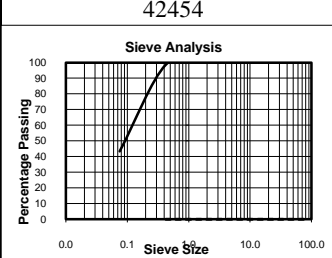
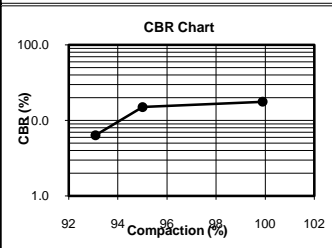
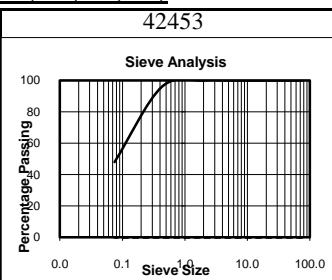


Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay
	0	Date Received :	24/03/11
	0	Date Reported :	11/04/11
	0	Req. Number :	0614/11
	Attention :	0	No. of Pages :

TEST REPORT

CALIFORNIA BEARING RATIO - (TMH 1 Method A1(a),A2,A3,A4,A5,A7,A8)

Material Indicators						
Sample Position (SV)	TP2-Layer1	Spec.	Opinion	TP8-Layer1	Spec.	Opinion
Depth (mm)	0-550	G10 -		0-350	G9 -	
Sample No	42453	TRH 14		42454	TRH 14	
Materials Description	Source	Trial Pit		Trial Pit		
	Colour	Dark Brown		Dark Brown		
	Soil Type	Silty Sand		Silty Sand		
	Classification	Insitu		Insitu		
Max. Stone size in hole (mm)						
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	100		100		
	0.425 mm	96		99		
0.075 mm	48.0		43.4			
Soil Mortar & Constants						
Grading Modulus		0.56		0.58		
Coarse Sand <2.0 >0.425		4.1		1.3		
Med. <0.250 >0.150		47.9		55.3		
Silt <0.075		48.0		43.4		
Liquid Limit (%)		15		SP		
Plasticity Index (%)		2		SP		
Linear Shrinkage (%)		1.0		0.5		
CBR / Density Relationship						
MOD	Max Dry Density (kg/m ³)	1978		2116		
	Opt Moisture Content (%)	6.6		7.5		
	Mould Moisture Con. (%)	6.3		7.2		
	@ 100% Mod AASHTO	99.9		99.9		
	Swell (%)	0.26	≤1.5	✓	0.06	≤1.5
NRB	100% NRB	95.0		96.5		
	Swell (%)	0.41		0.14		
Proctor	100% Proctor	93.1		93.0		
	Swell (%)	0.51		0.15		
CBR	@ 100% Mod AASHTO	19		43		
	@ 98% Mod AASHTO	16		36		
	@ 95% Mod AASHTO	12		25		
	@ 93% Mod AASHTO	9		18		
	@ 90% Mod AASHTO	4	≥3	*	7	≥7
Insitu Moisture Content (%)						
Soil Classification						
TRH 14		G10		G9		
PRA System		A-4		A-4		
Unified System		SM		SM		



Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd
Technical Signatory

- Opinions and interpretations expressed herein are outside the scope of SANAS accreditation.
- The opinion column is an interpretation of the direct comparison between the quoted specification and the single test sample results obtained. The compliant (✓), non compliant (×) and uncertain (*) opinion indicators are based on an approximate 95% level of confidence with reference to SAMM GUIDANCE 1, Issue 2 : 20 June 2007 Section 2.
- The uncertain (*) indicates that the test result is either equal to or is above / below the specified limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliant (✓) or non compliant (×) based on a 95% level of confidence with reference to SAMM GUIDANCE 1, Issue 2 : 20 June 2007 Section 2.
- This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
- Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
- While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.



Customer :	Calidris	Project :	Brakkloof - Plettenberg Bay
	0	Date Received :	24/03/11
Attention :	0	Date Reported :	11/04/11
	0	Req. Number :	0614/11
	0	No. of Pages :	2/2

TEST REPORT

CALIFORNIA BEARING RATIO - (TMH 1 Method A1(a),A2,A3,A4,A5,A7,A8)

Material Indicators				Opinion		42473		
Sample Position (SV)	TP22-Layer1	Spec.				Sieve Analysis		
Depth (mm)	0-500	G7 -						
Sample No	42473	TRH 14						
Materials Description	Source Colour Soil Type Classification	Trial pit Dark Brown Silty Sand Insitu						
Max. Stone size in hole (mm)								
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	100						
	4.75 mm	94						
	2.00 mm	89						
	0.425 mm	84						
0.075 mm	40.4							
Soil Mortar & Constants								
Grading Modulus	0.86	≥0.75	✓					
Coarse Sand <2.0 >0.425	5.7							
Med. <0.250 >0.150	49.0							
Silt <0.075	45.2							
Liquid Limit (%)	SP							
Plasticity Index (%)	SP	≤12	✓					
Linear Shrinkage (%)	0.5							
CBR / Density Relationship								
MOD	Max Dry Density (kg/m³)	1958						
	Opt Moisture Content (%)	7.3						
	Mould Moisture Con. (%)	7.0						
	@ 100% Mod AASHTO	99.9						
	Swell (%)	0.24	≤1.5	✓				
NRB	100% NRB	95.0						
	Swell (%)	0.28						
Pro	100% Proctor	92.3						
	Swell (%)	0.30						
CBR	@ 100% Mod AASHTO	39						
	@ 98% Mod AASHTO	33						
	@ 95% Mod AASHTO	23						
	@ 93% Mod AASHTO	17	≥15	*				
	@ 90% Mod AASHTO	7						
Insitu Moisture Content (%)								
Soil Classification								
TRH 14		G7						
PRA System		A-4						
Unified System		SM						

• Specimens delivered to Outeniqua Lab in good order.

L Heathcote (Director)
For Outeniqua Lab (Pty) Ltd
Technical Signatory

- Opinions and interpretations expressed herein are outside the scope of SANAS accreditation.
- The opinion column is an interpretation of the direct comparison between the quoted specification and the single test sample results obtained. The compliant (✓), non compliant (×) and uncertain (*) opinion indicators are based on an approximate 95% level of confidence with reference to SAMM GUIDANCE 1, Issue 2 : 20 June 2007 Section 2.
- The uncertain (*) indicates that the test result is either equal to or is above / below the specified limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliant (✓) or non compliant (×) based on a 95% level of confidence with reference to SAMM GUIDANCE 1, Issue 2 : 20 June 2007 Section 2.
- This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Technical Director of Outeniqua Lab (Pty) Ltd.
- Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
- While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

Appendix 3

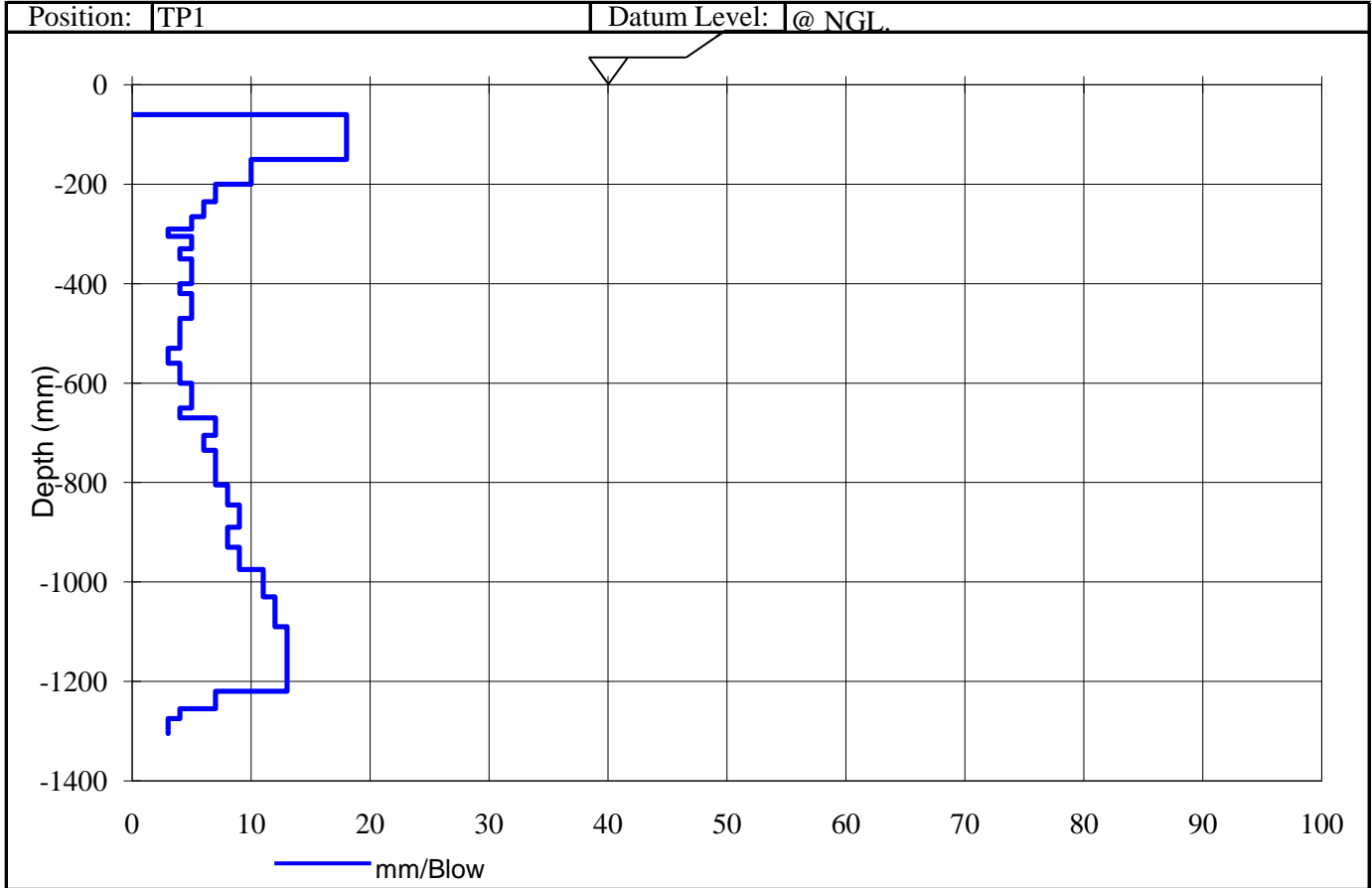
DCP tests



Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	1 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

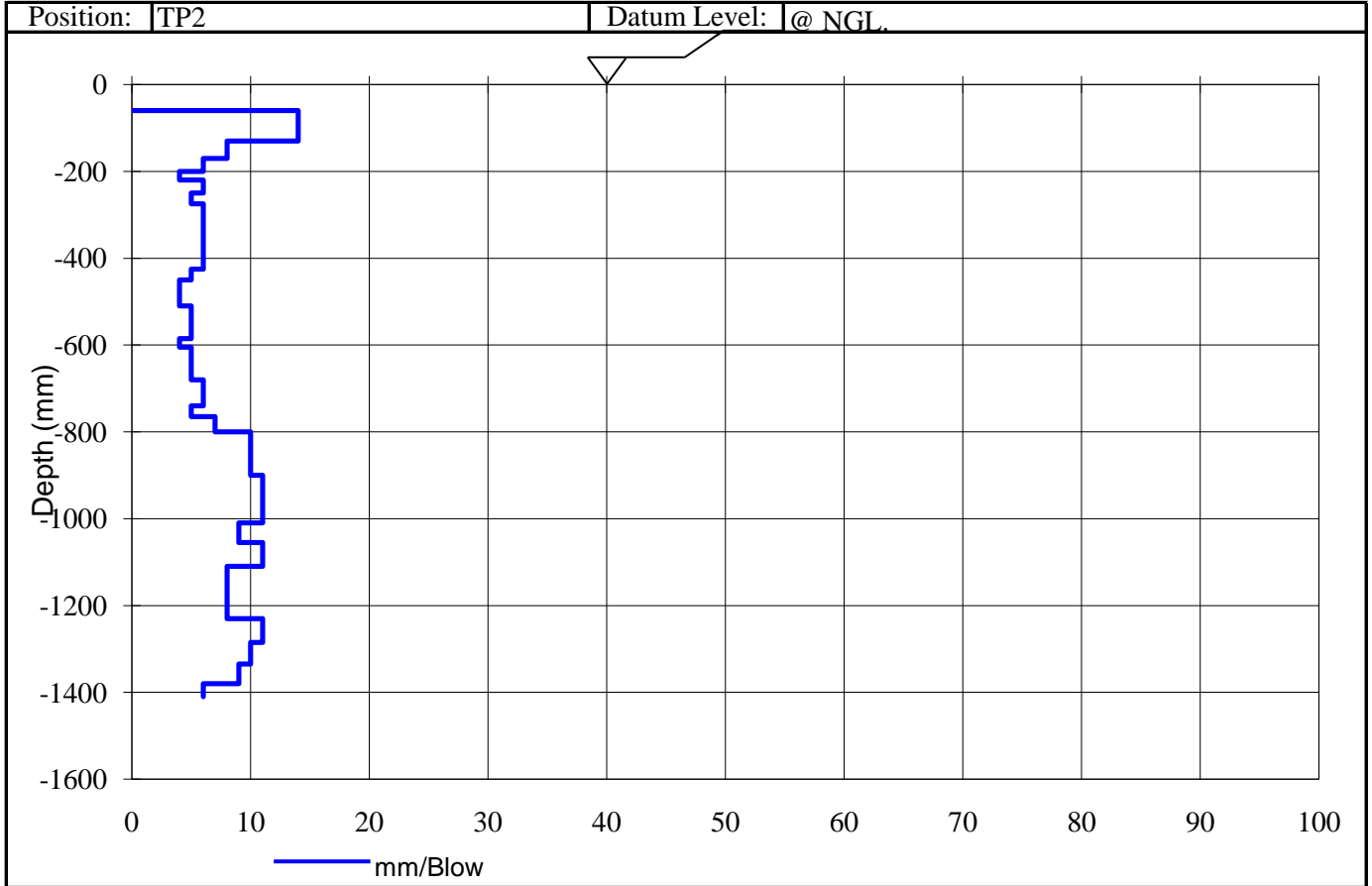
L Malgraff
For Outeniqua Geotech. Services cc.



Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	2 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

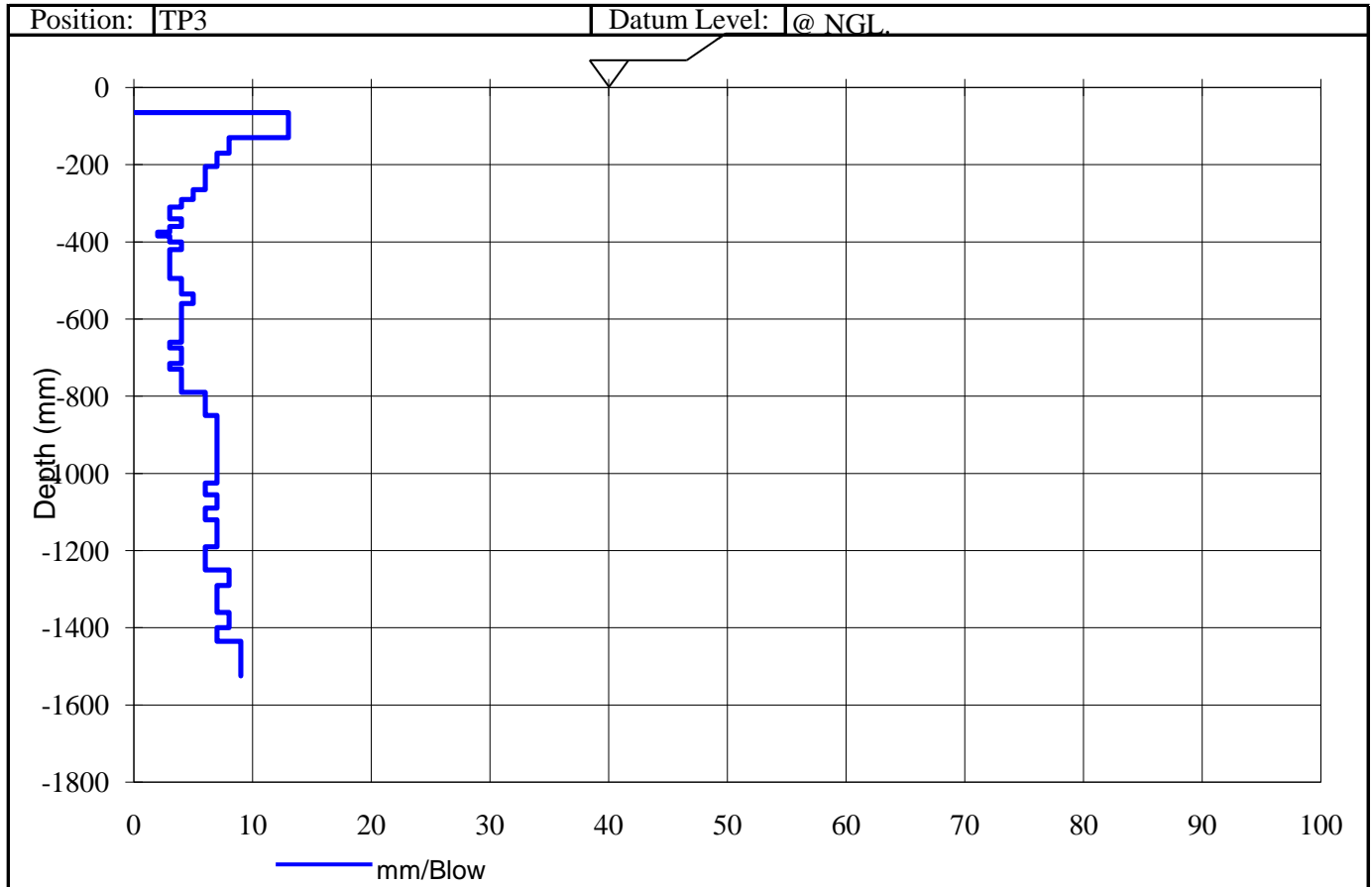


Registration No. 1999/062743/23

26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	3 of 22

TEST REPORT**Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)****Notes:**

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

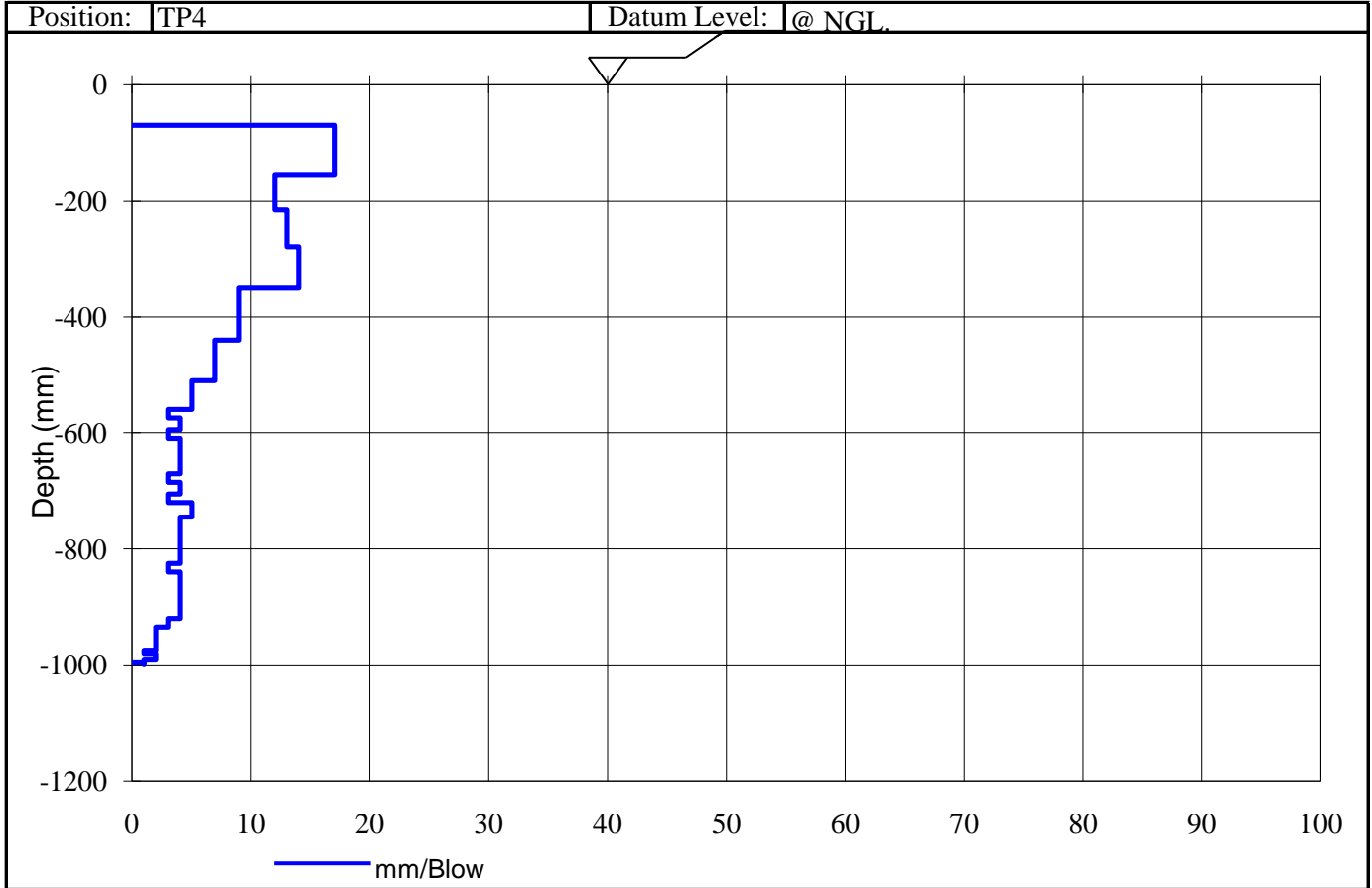
Members: D McDonald Reg. Eng. Tech I Paton Pr.Sci.Nat (Geol) L Heathcote B-Tech. Civil Miss A Govender
Associates: A Cook Pr. Eng. T Green Pr. Eng.



Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	4 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

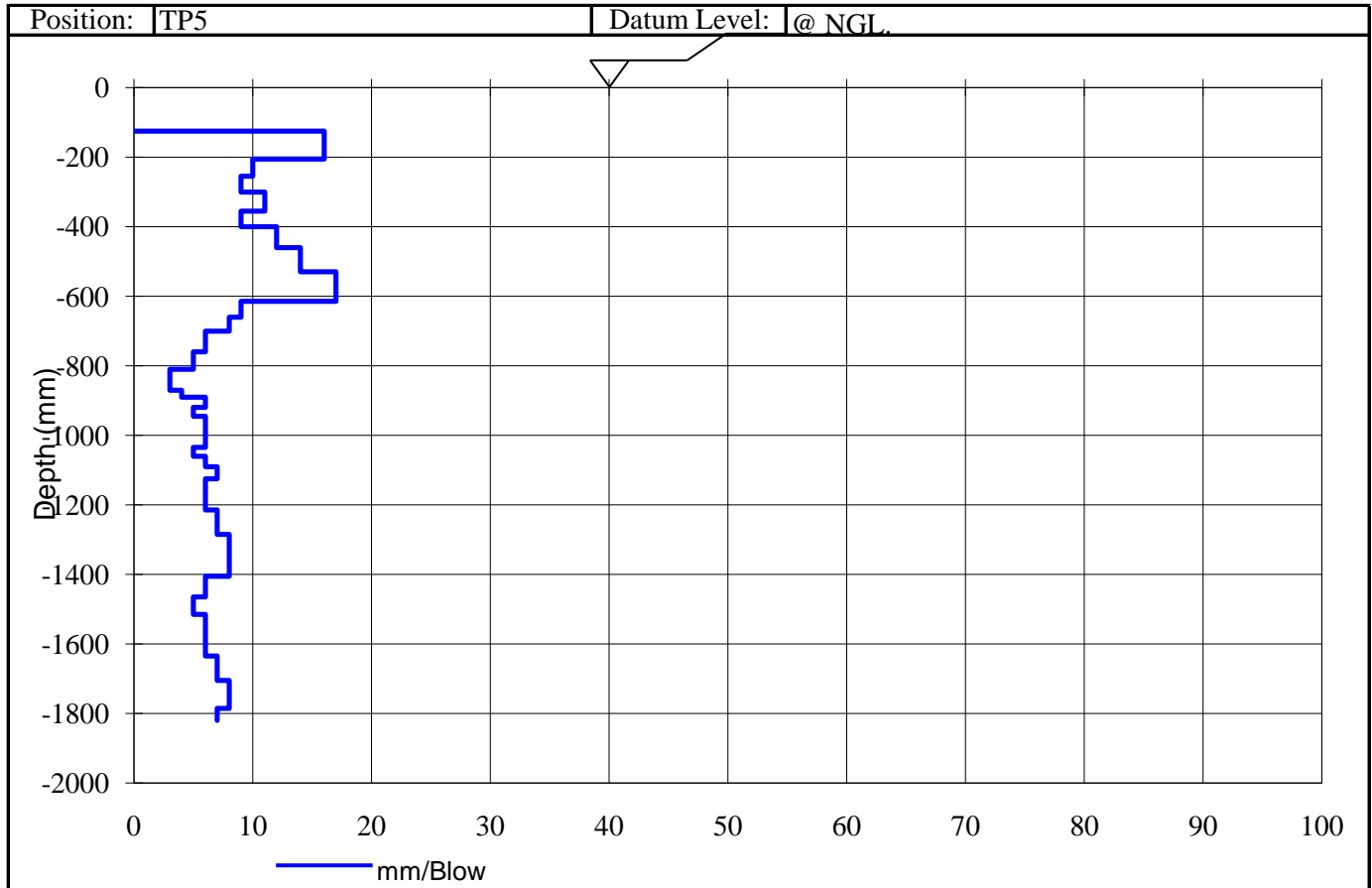


Registration No. 1999/062743/23

26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	5 of 22

TEST REPORT**Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)****Notes:**

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

Members: D McDonald Reg. Eng. Tech I Paton Pr.Sci.Nat (Geol) L Heathcote B-Tech. Civil Miss A Govender
Associates: A Cook Pr. Eng. T Green Pr. Eng.

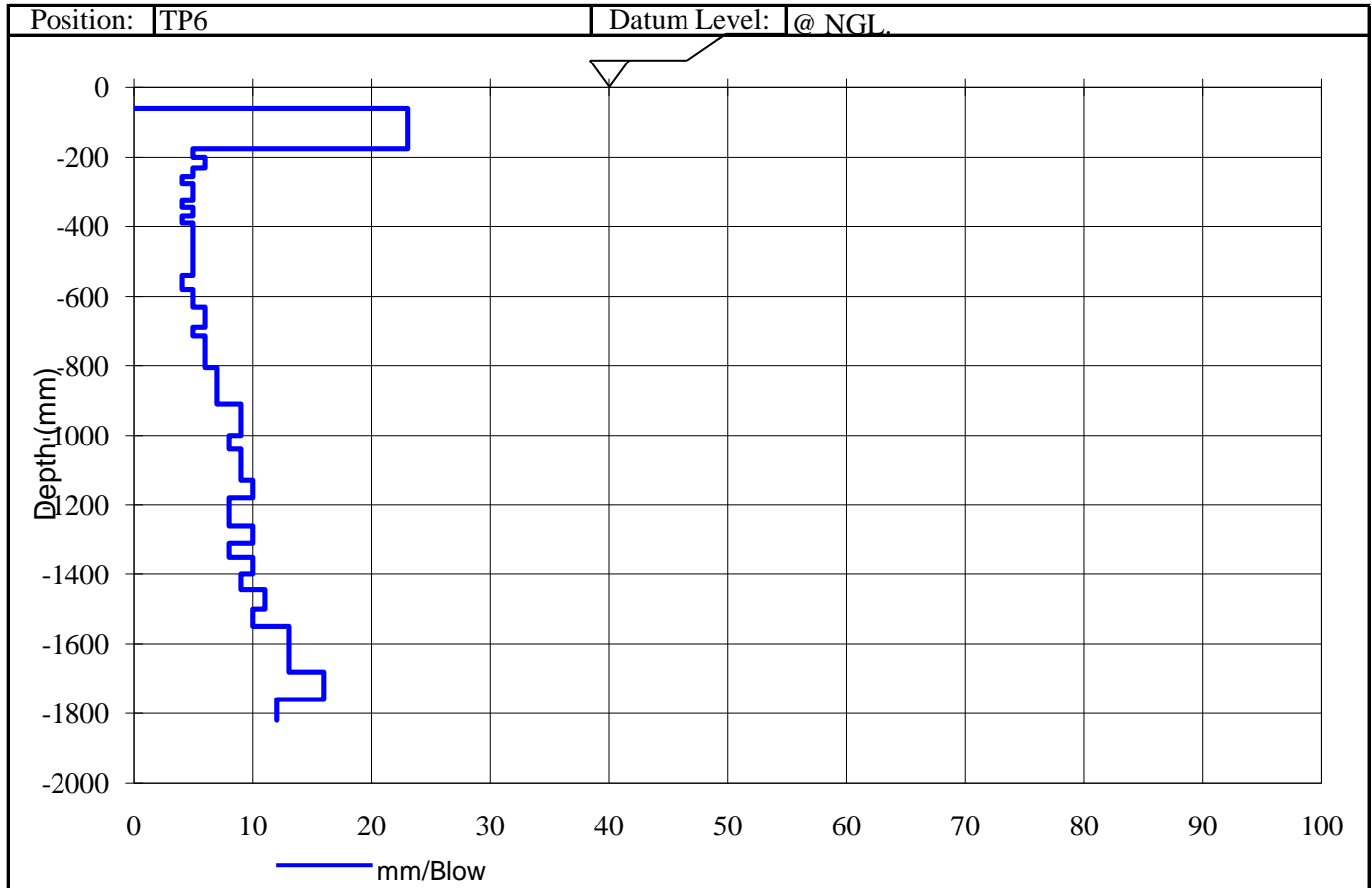


Registration No. 1999/062743/23

26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	6 of 22

TEST REPORT**Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)****Notes:**

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

Members: D McDonald Reg. Eng. Tech I Paton Pr.Sci.Nat (Geol) L Heathcote B-Tech. Civil Miss A Govender
Associates: A Cook Pr. Eng. T Green Pr. Eng.



Outeniqua Geotechnical Services cc.

Geotechnical Engineering Consultants

R-DCP-1-4

May 10

Registration No. 1999/062743/23

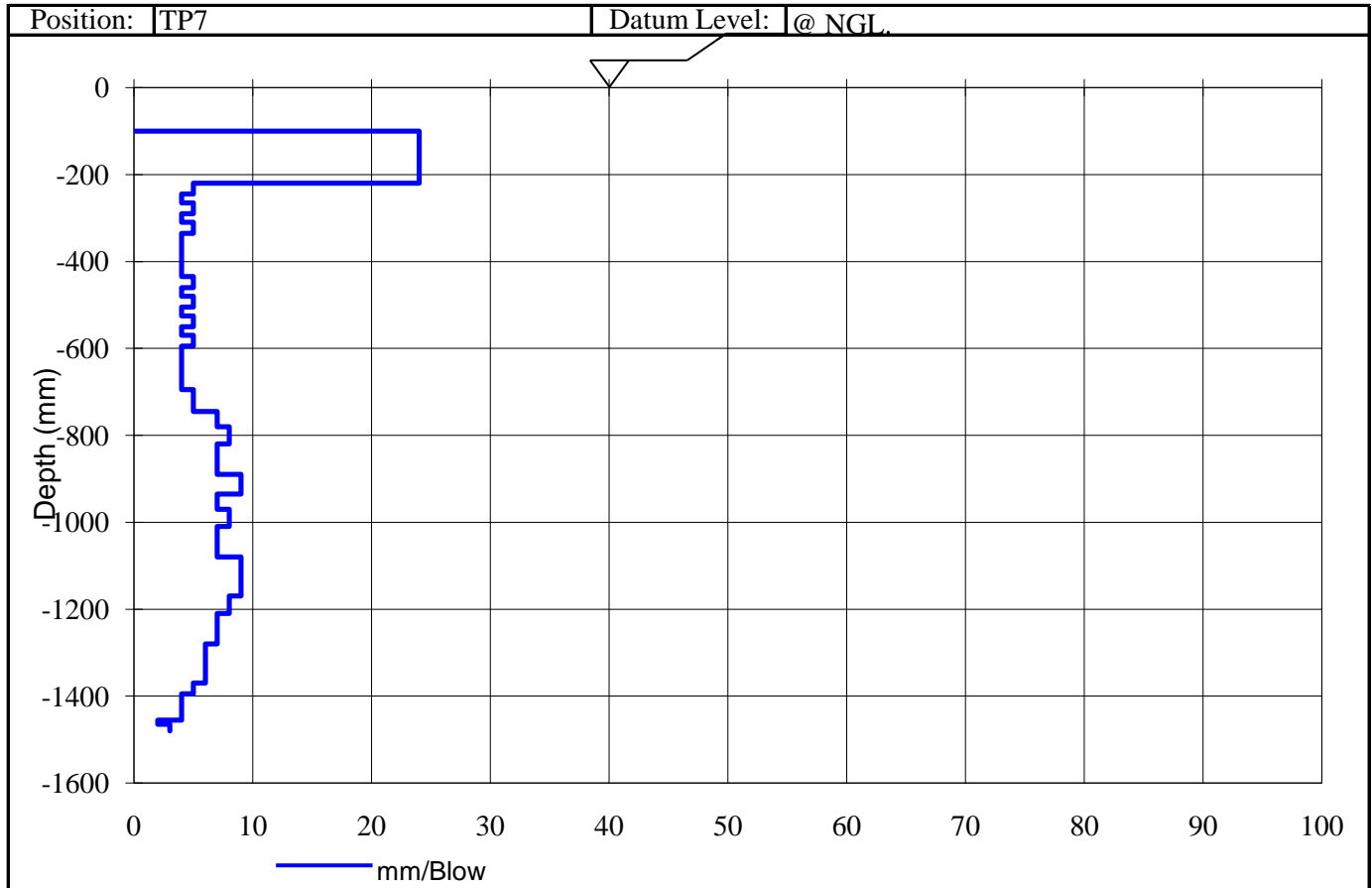
26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Dupre Lombard	No. of Pages :	7 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

Members: D McDonald Reg. Eng. Tech I Paton Pr.Sci.Nat (Geol) L Heathcote B-Tech. Civil Miss A Govender
Associates: A Cook Pr. Eng. T Green Pr. Eng.



Registration No. 1999/062743/23

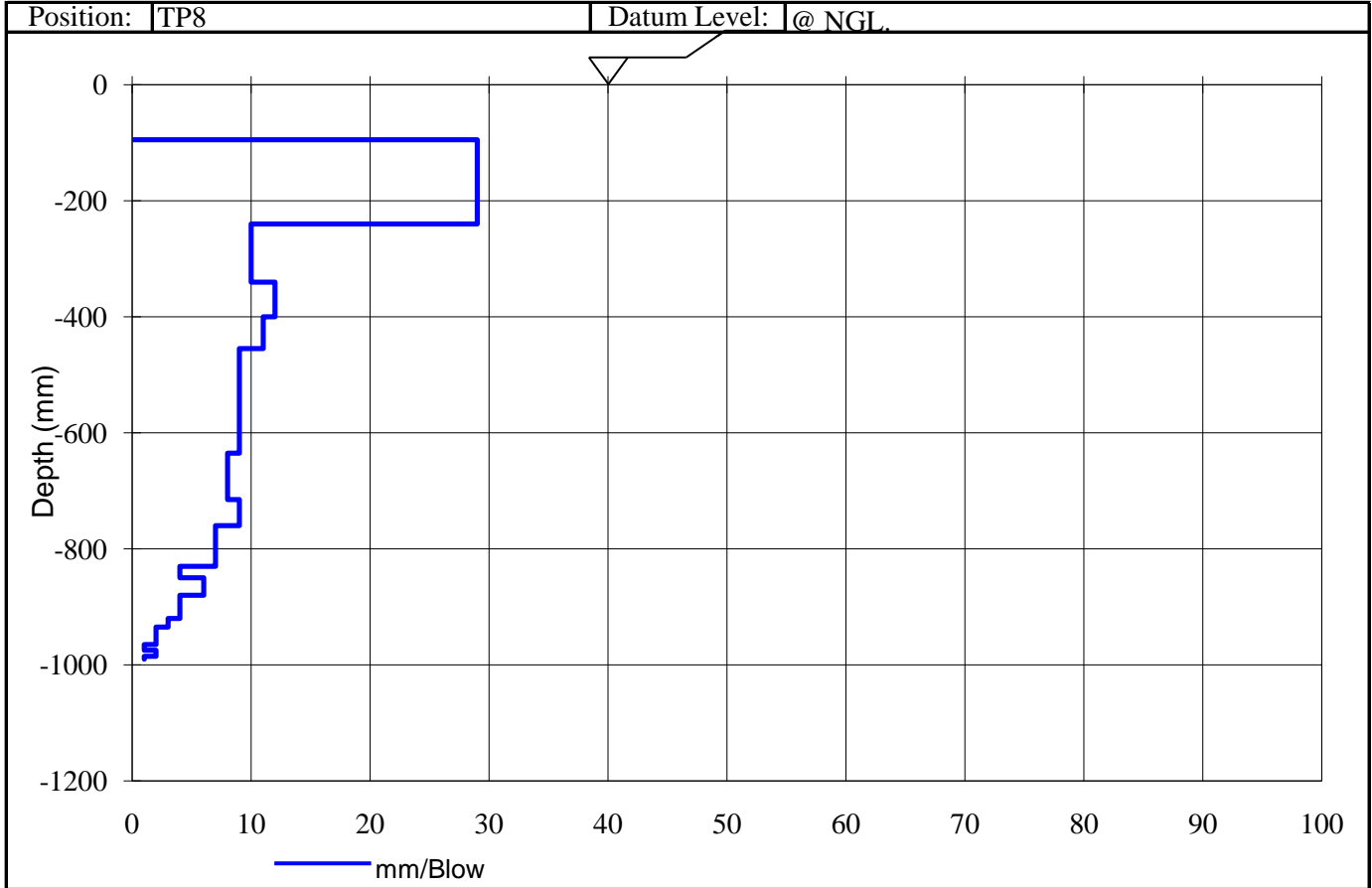
26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	8 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
 For Outeniqua Geotech. Services cc.

Members: D McDonald Reg. Eng. Tech I Paton Pr.Sci.Nat (Geol) L Heathcote B-Tech. Civil Miss A Govender
 Associates: A Cook Pr. Eng. T Green Pr. Eng.

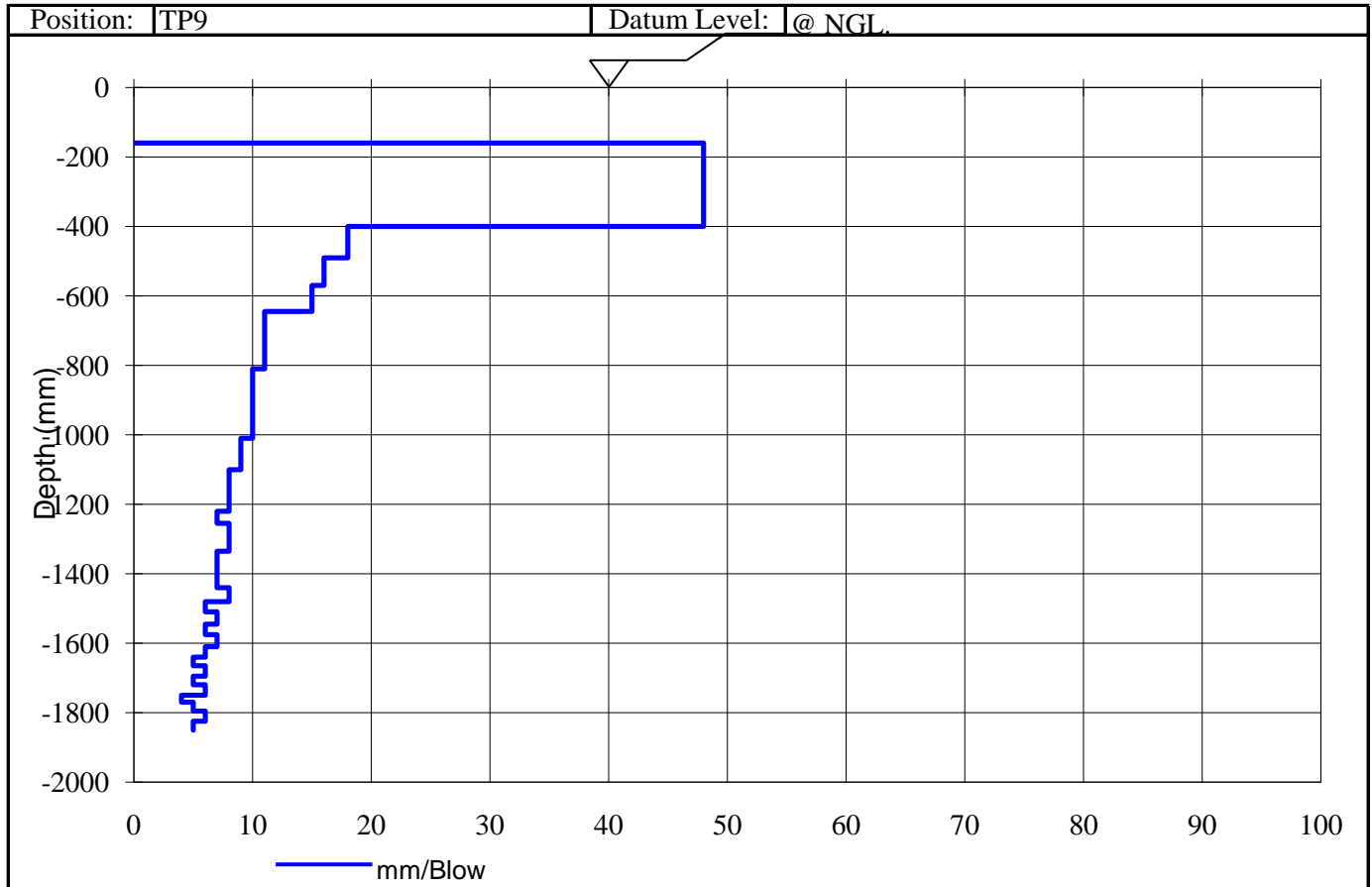


Registration No. 1999/062743/23

26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	9 of 22

TEST REPORT**Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)****Notes:**

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.



Registration No. 1999/062743/23

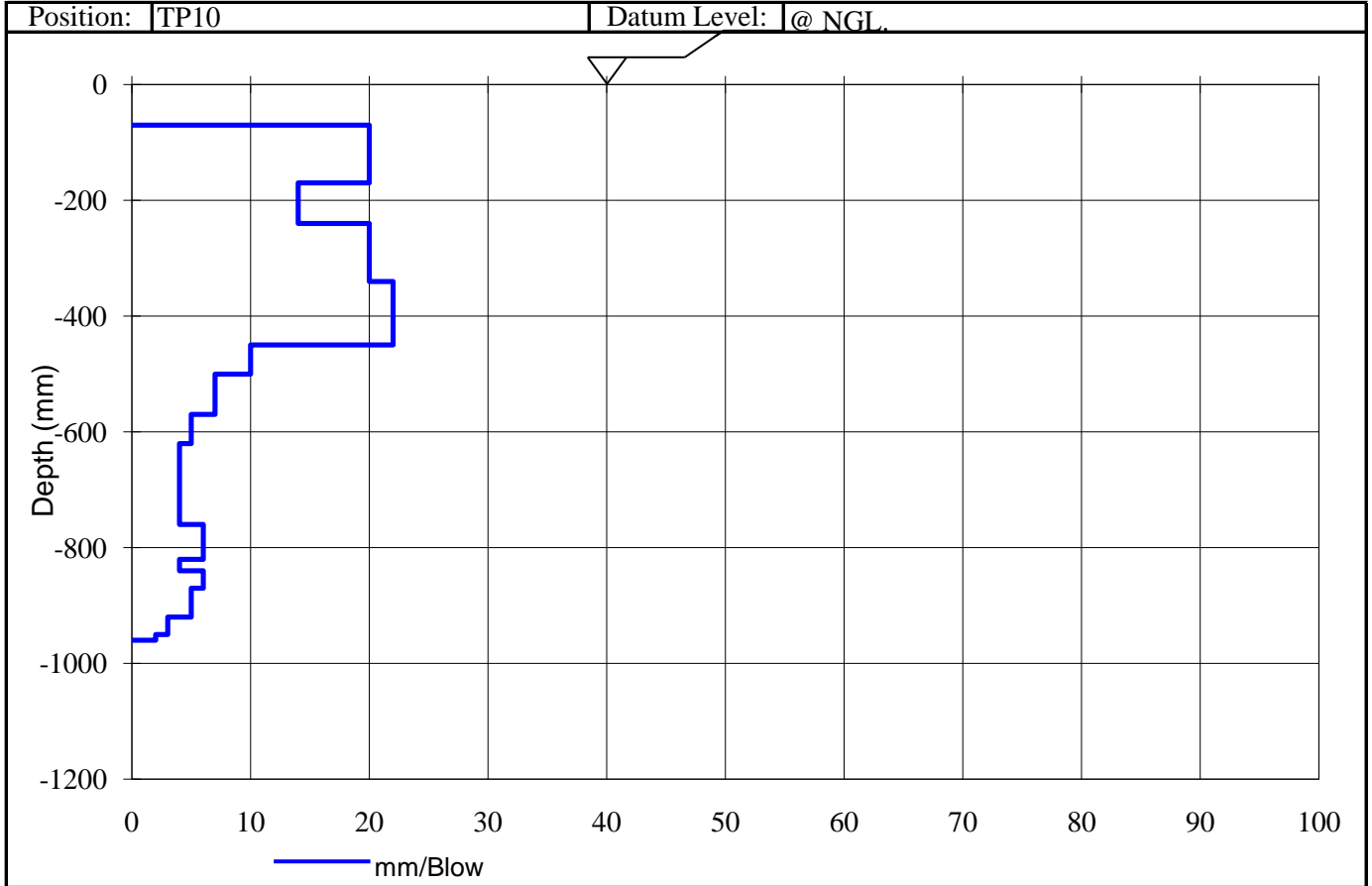
26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	10 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
 For Outeniqua Geotech. Services cc.

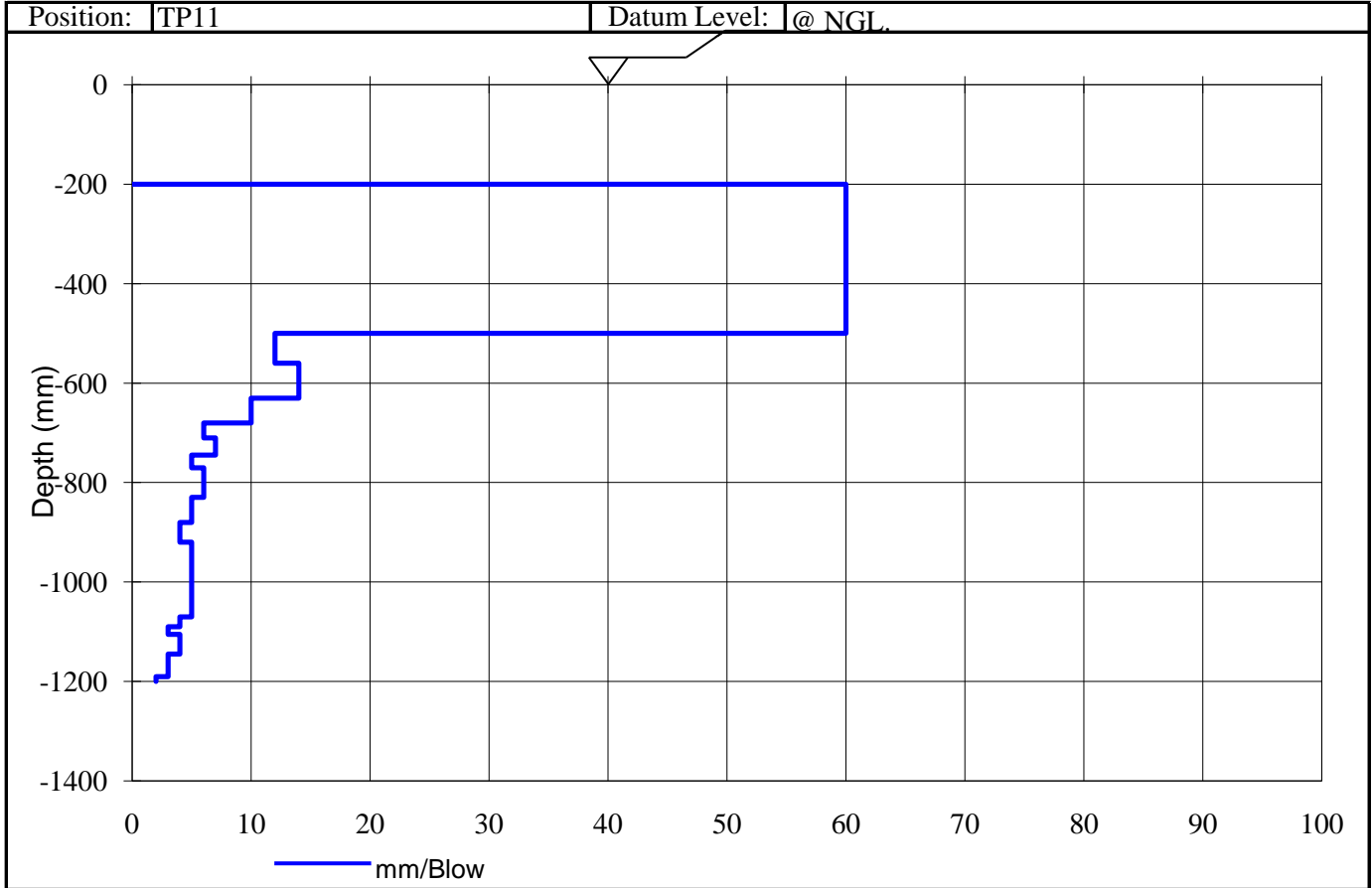
Members: D McDonald Reg. Eng. Tech I Paton Pr.Sci.Nat (Geol) L Heathcote B-Tech. Civil Miss A Govender
 Associates: A Cook Pr. Eng. T Green Pr. Eng.



Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	11 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.



Registration No. 1999/062743/23

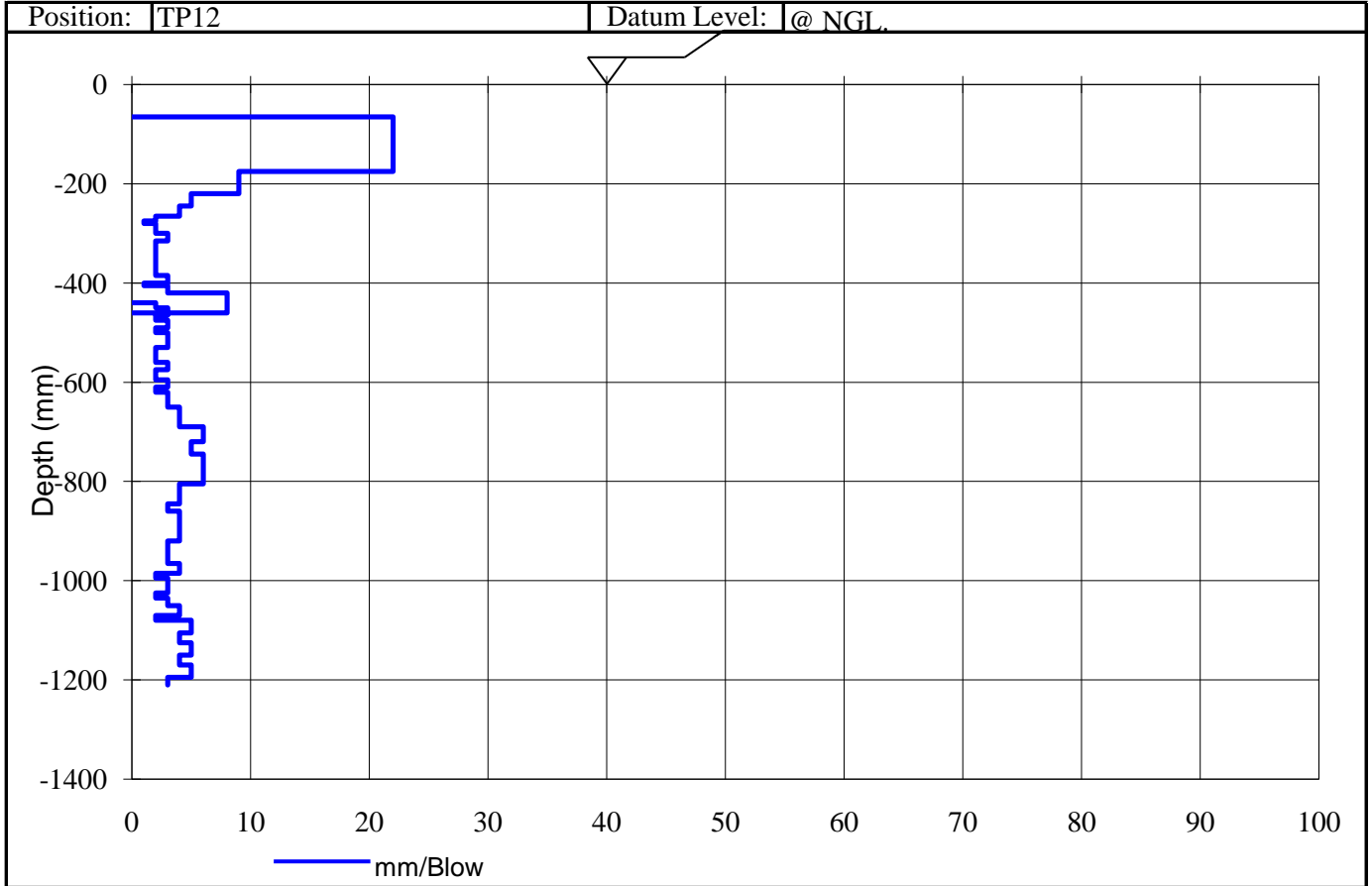
26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	12 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
 For Outeniqua Geotech. Services cc.

Members: D McDonald Reg. Eng. Tech I Paton Pr.Sci.Nat (Geol) L Heathcote B-Tech. Civil Miss A Govender
 Associates: A Cook Pr. Eng. T Green Pr. Eng.

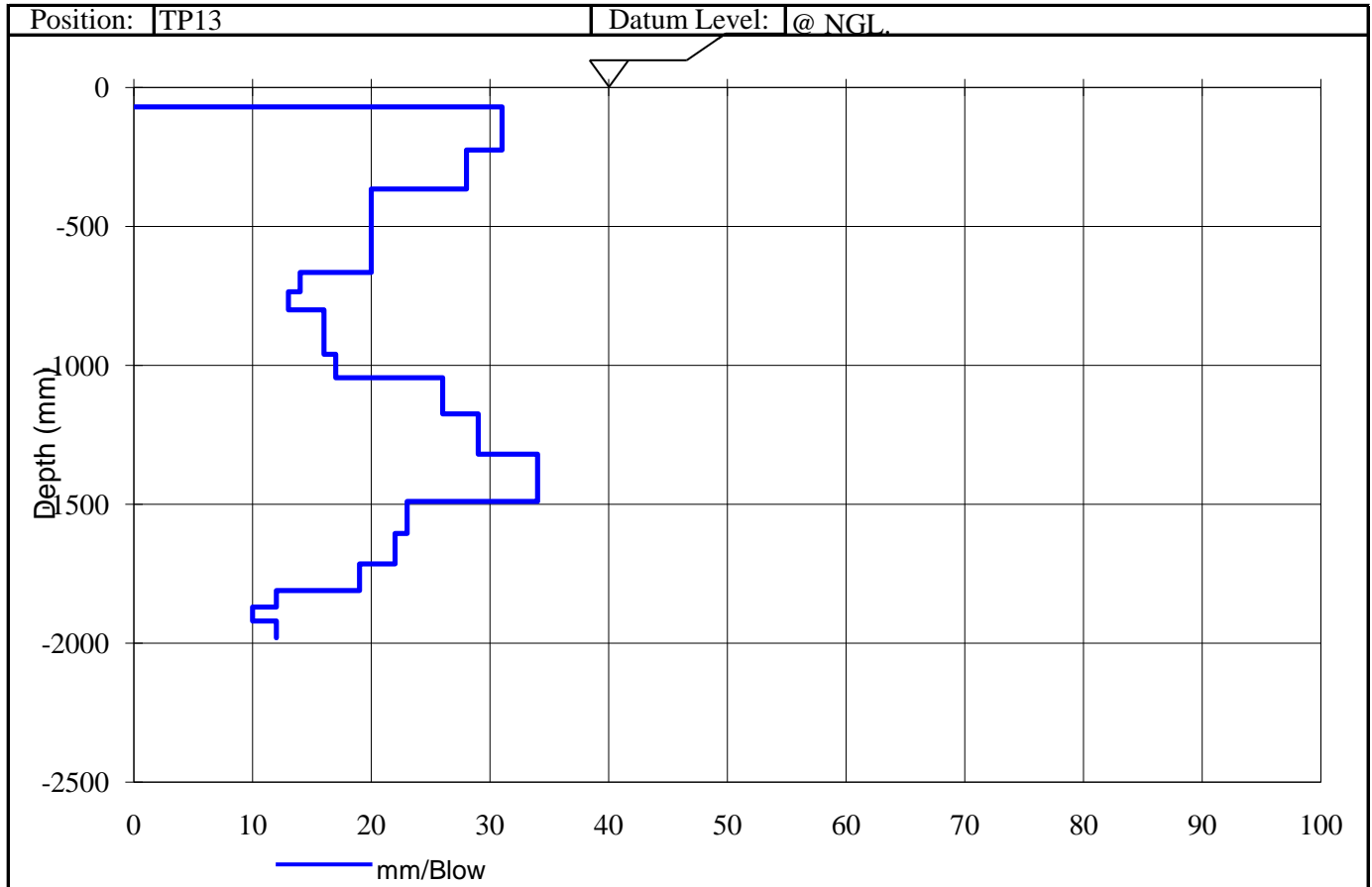


Registration No. 1999/062743/23

26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	13 of 22

TEST REPORT**Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)****Notes:**

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

Members: D McDonald Reg. Eng. Tech I Paton Pr.Sci.Nat (Geol) L Heathcote B-Tech. Civil Miss A Govender
Associates: A Cook Pr. Eng. T Green Pr. Eng.



Registration No. 1999/062743/23

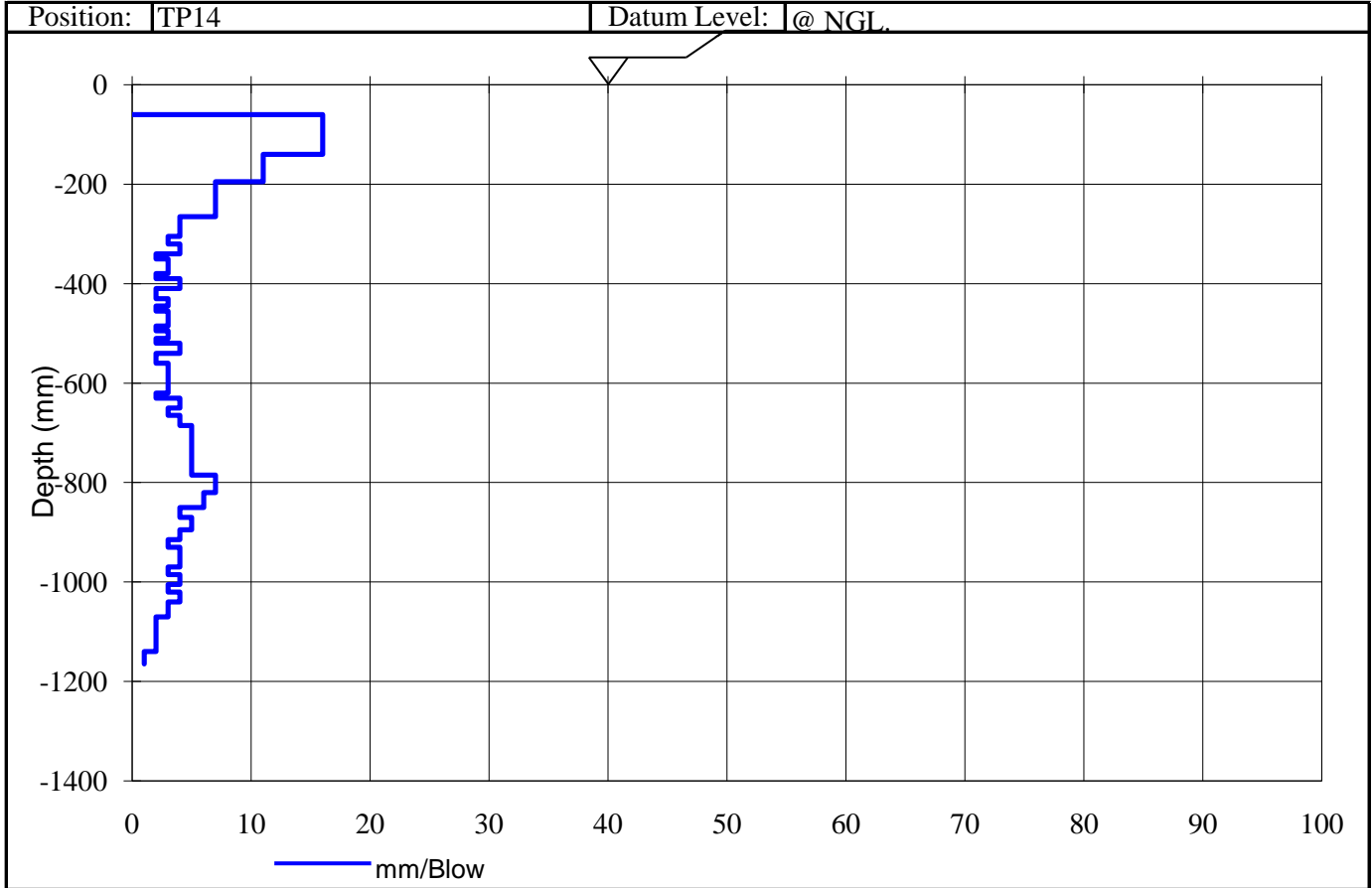
26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	14 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

Members: D McDonald Reg. Eng. Tech I Paton Pr.Sci.Nat (Geol) L Heathcote B-Tech. Civil Miss A Govender
 Associates: A Cook Pr. Eng. T Green Pr. Eng.



Registration No. 1999/062743/23

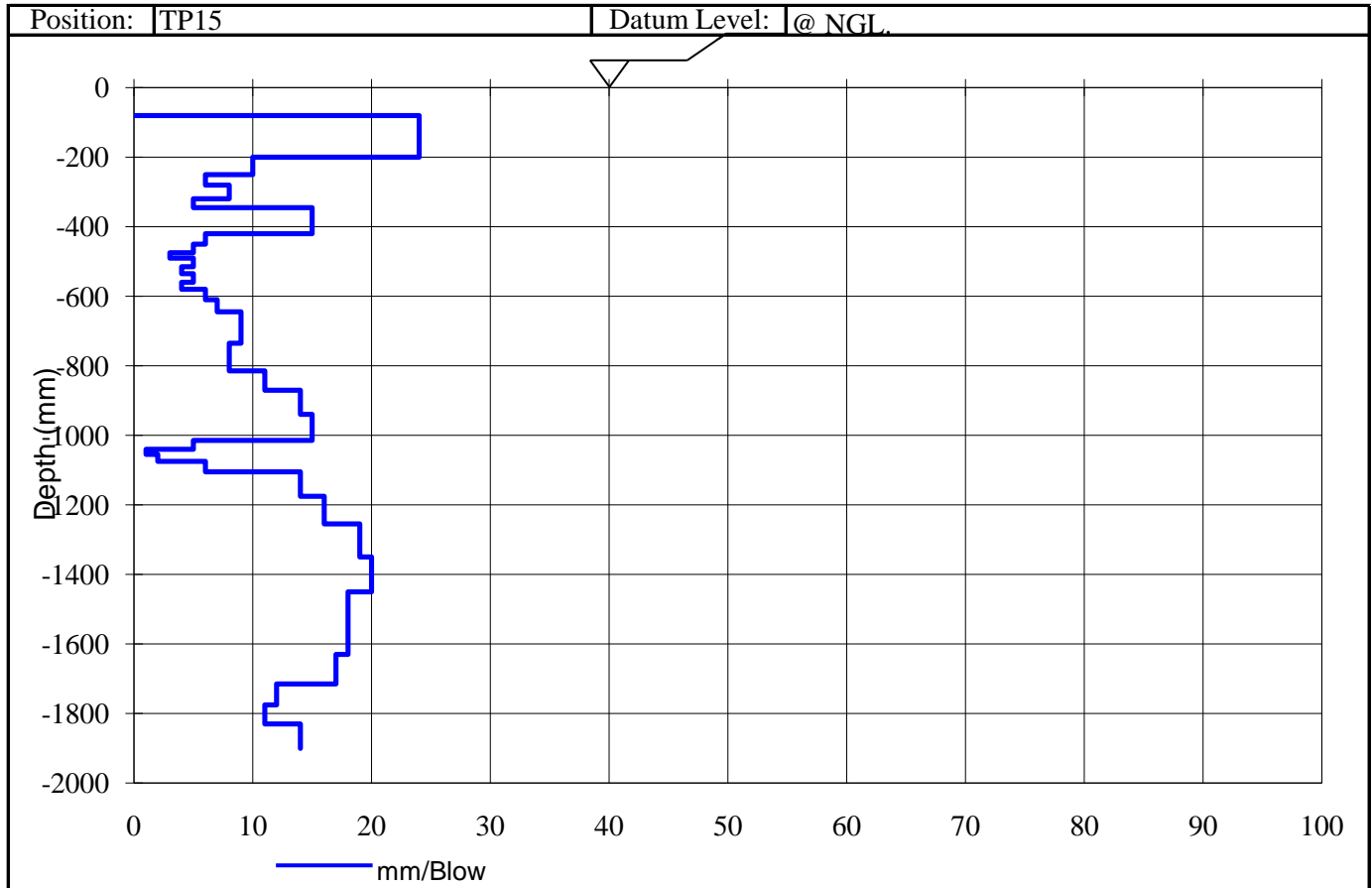
26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	15 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

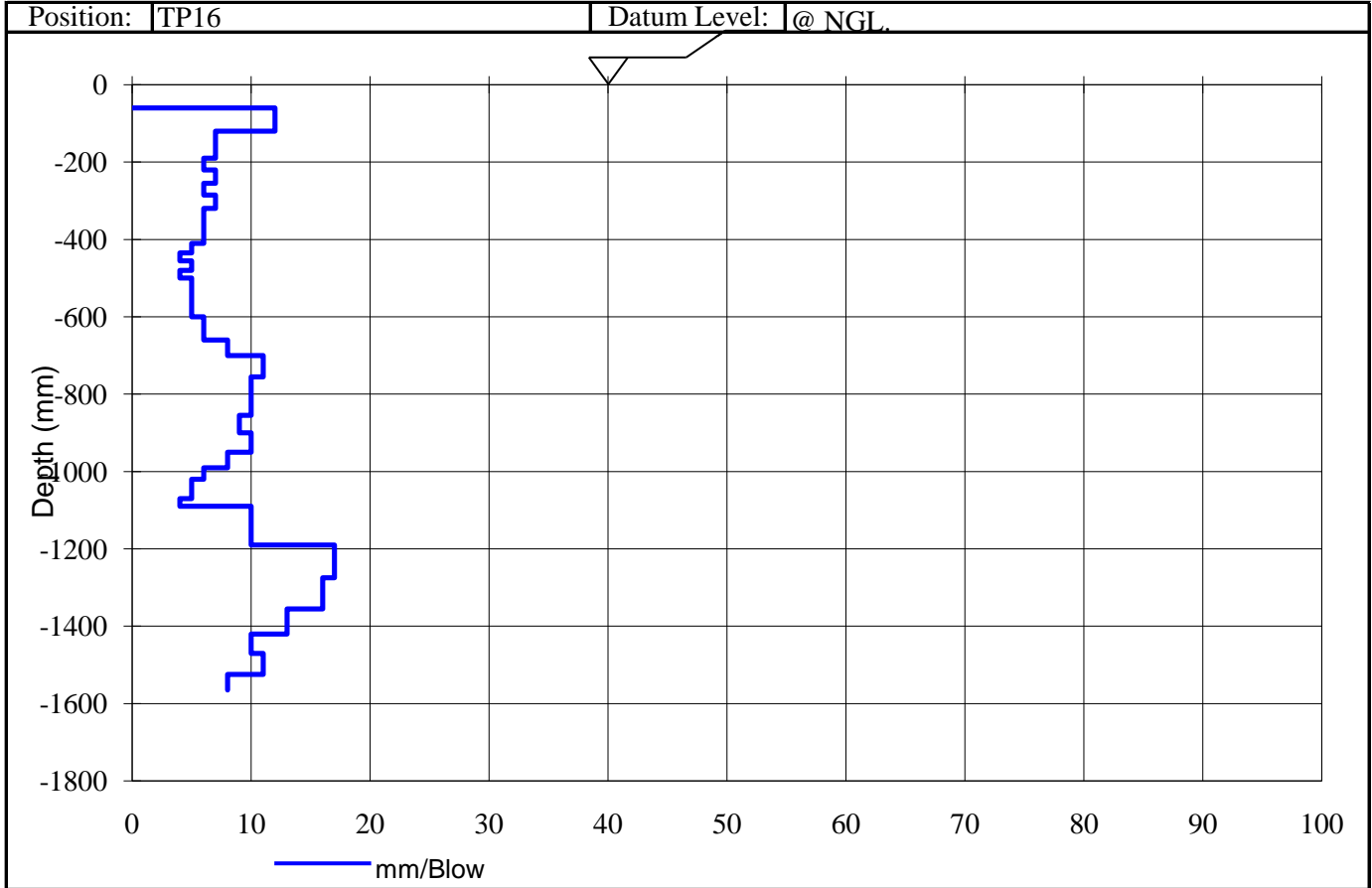
Members: D McDonald Reg. Eng. Tech I Paton Pr.Sci.Nat (Geol) L Heathcote B-Tech. Civil Miss A Govender
Associates: A Cook Pr. Eng. T Green Pr. Eng.



Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	16 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

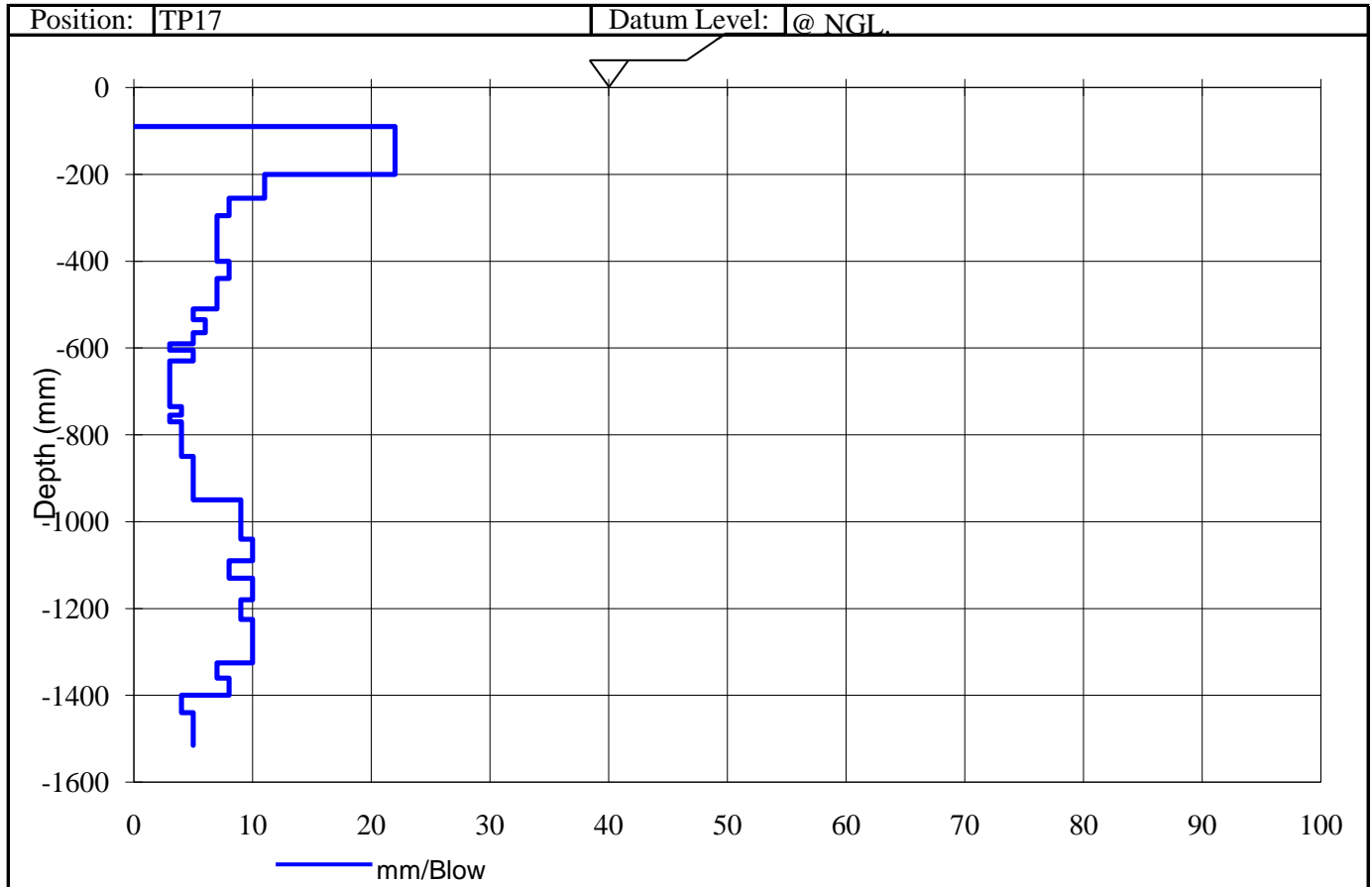


Registration No. 1999/062743/23

26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	17 of 22

TEST REPORT**Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)****Notes:**

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.



Registration No. 1999/062743/23

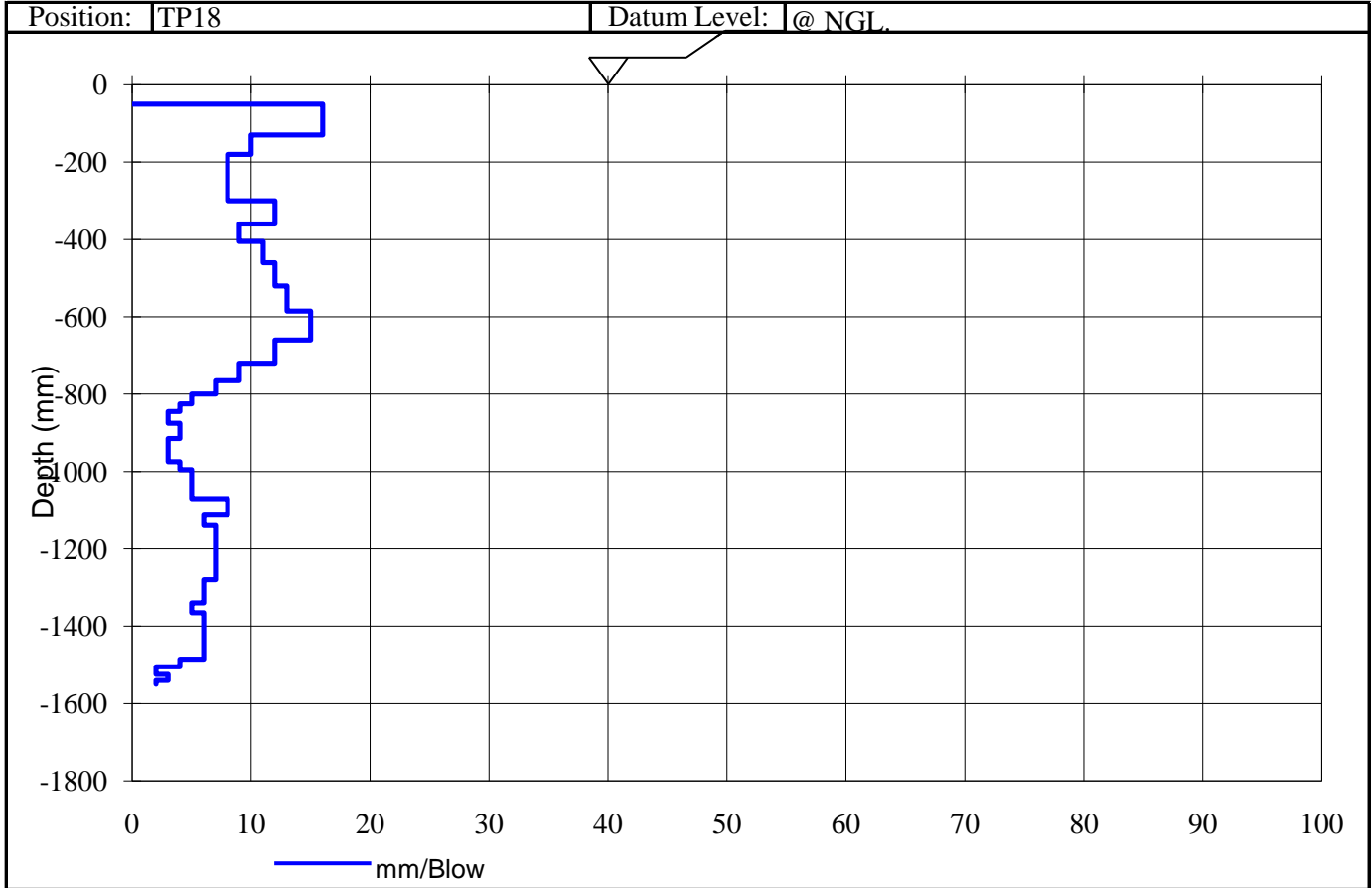
26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	18 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

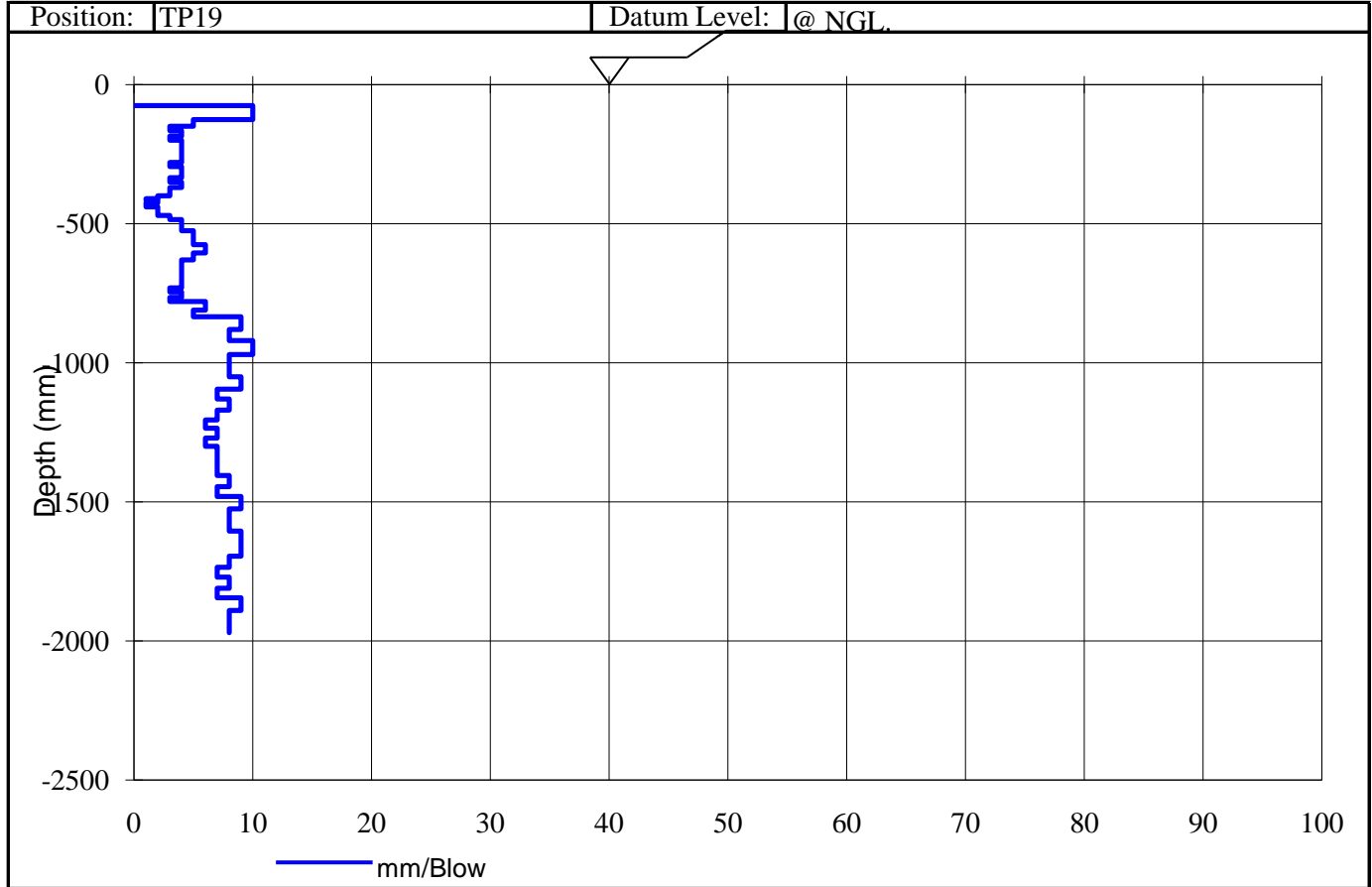
Members: D McDonald Reg. Eng. Tech I Paton Pr.Sci.Nat (Geol) L Heathcote B-Tech. Civil Miss A Govender
 Associates: A Cook Pr. Eng. T Green Pr. Eng.



Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	19 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

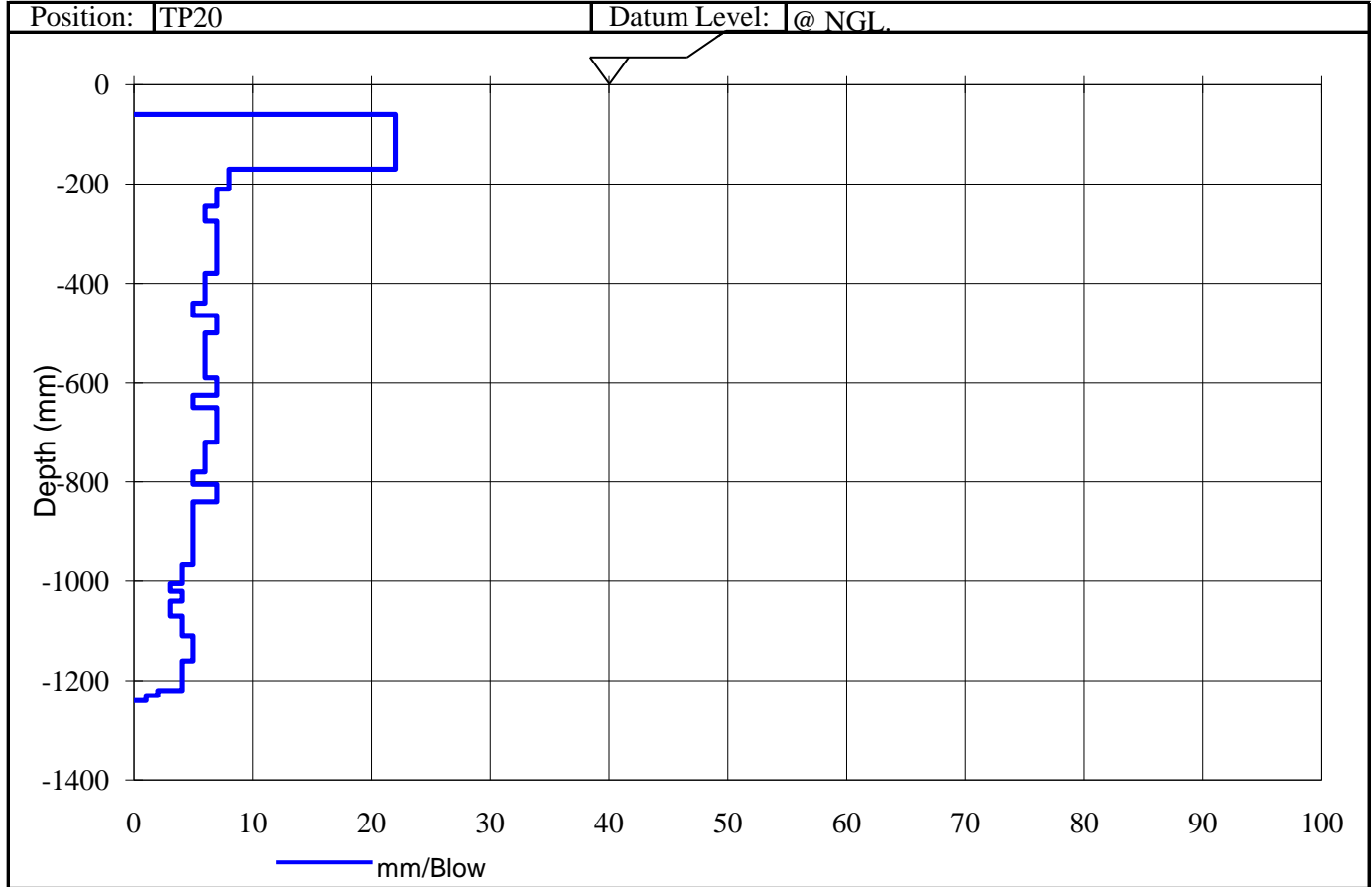
Members: D McDonald Reg. Eng. Tech I Paton Pr.Sci.Nat (Geol) L Heathcote B-Tech. Civil Miss A Govender
Associates: A Cook Pr. Eng. T Green Pr. Eng.



Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	20 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

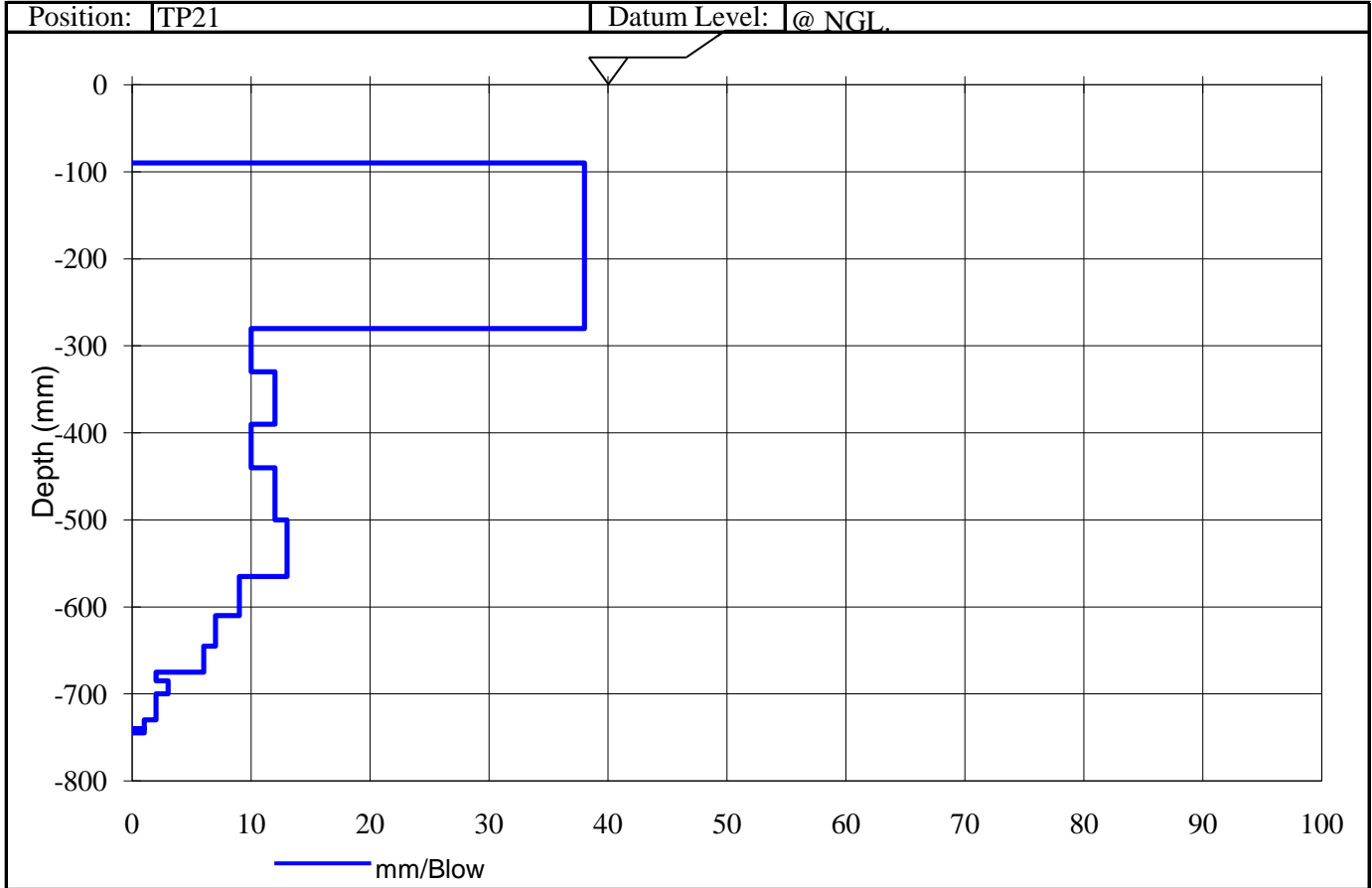
L Malgraff
For Outeniqua Geotech. Services cc.



Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	21 of 22

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



Notes:

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

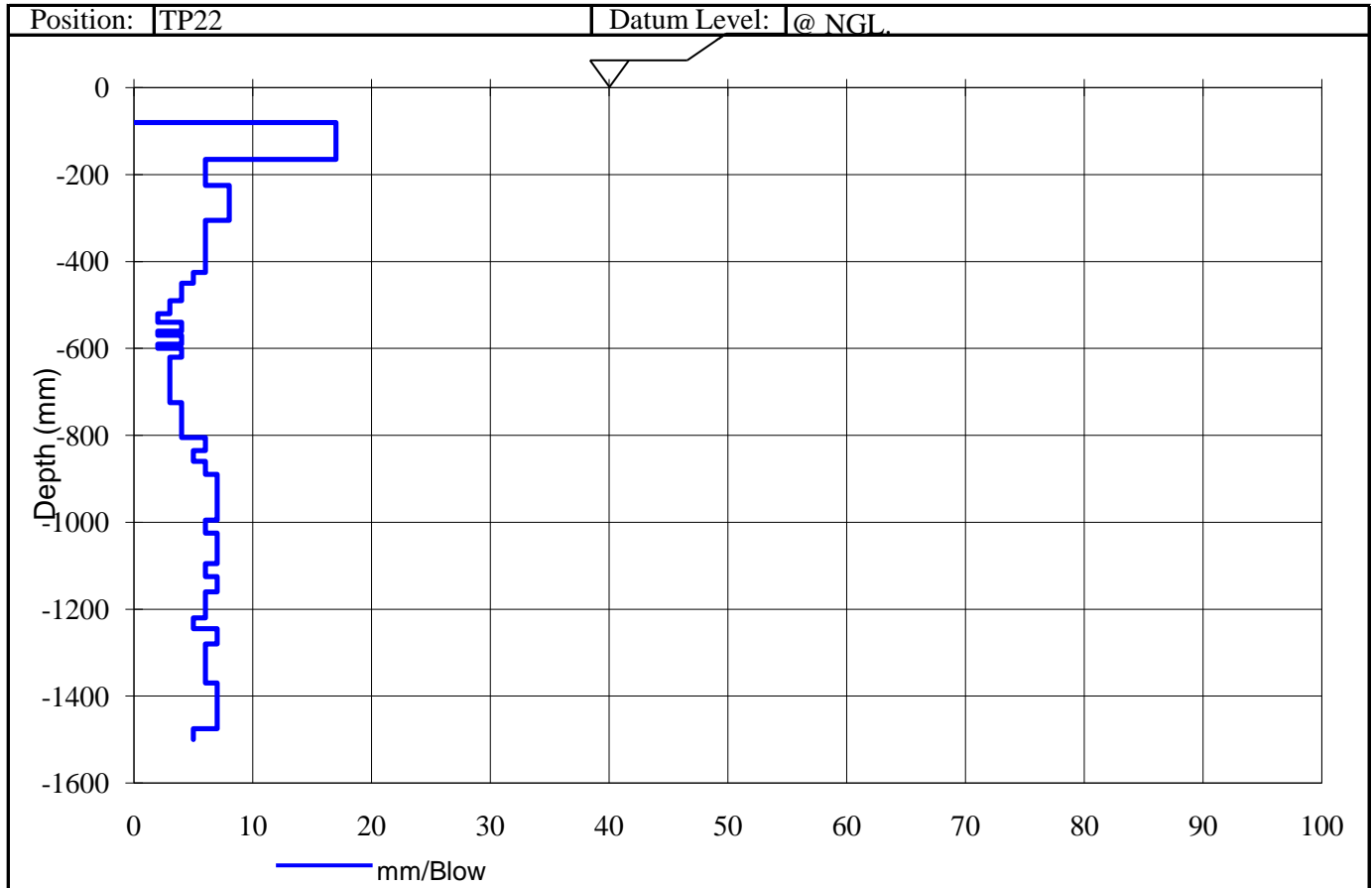


Registration No. 1999/062743/23

26 Cove Street, Knysna : PO Box 3186, George Industria, 6536

Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Calidris Development Management Po Box 1201 Plettenber Bay 6600	Project :	Brakkloof - Plettenberg Bay
		Date Received :	
		Date Reported :	05/05/11
		Req. Number :	
Attention :	Du Pre Lombard	No. of Pages :	22 of 22

TEST REPORT**Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)****Notes:**

1. This report (with attachments) is the correct record of all measurements made, and may not be reproduced other than with full written approval from the Members of Outeniqua Geotechnical Services cc.
2. Measuring Equipment, traceable to National Standards is used where applicable. Results reported in this Test Report relate only to the items tested and are an indication only of the sample provided and/or taken.
3. While every care is taken to ensure the correctness of all tests and reports, neither Outeniqua Lab nor its employees shall be liable in any way whatever for any error made in the execution or reporting of tests or any erroneous conclusions drawn there from or for any consequence thereof.

L Malgraff
For Outeniqua Geotech. Services cc.

Members: D McDonald Reg. Eng. Tech I Paton Pr.Sci.Nat (Geol) L Heathcote B-Tech. Civil Miss A Govender
Associates: A Cook Pr. Eng. T Green Pr. Eng.