GEOTECHNICAL REPORT

PROPOSED NEW RESIDENTIAL DEVELOPMENT ON PORTION 91 OF MATJIESFONTIEN 304, KEURBOOMSTRAND, PLETTENBERG BAY

8 March 2023 (Rev 0)

Prepared by:

OUTENIQUA GEOTECHNICAL SERVICES
23 CLYDE ST
KNYSNA
6571

Prepared for:

FAMILIE ROUX EINDOMME (PTY) LTD
PO BOX 12670
QUEENSWOOD
0121

Ref No: 2022\Poise\Report\Geotechnical Report 8.3.2023 Rev0

Report review history:

Revision No	Date	Prepared by:	Reviewed by:	Approved by:
0	8.3.2023	I Paton Pr Sci Nat Pr Tech Eng	S Ntanzi BSc Geology	I Paton Pr Sci Nat Pr Tech Eng
				

Authors qualifications and affiliations:

Iain Paton has postgraduate degrees in Geology and Geotechnical Engineering and has over 25 years' experience in the mining, energy and construction industries. Iain Paton is a registered professional with the Engineering Council of South Africa (ECSA) and the South African Council for Natural and Scientific Professions (SACNSP). Iain Paton is a member of the South African Institute of Engineering and Environmental Geologists (SAIEG), the Geotechnical Division of the South African Institute of Civil Engineering (SAICE) and the Institute of Municipal Engineering of South Africa (IMESA).

Declaration of independence:

The author of this report is independent professional consultant with no vested interest in the project, other than remuneration for work associated with the compilation of this report.

General limitations:

1. The investigation has been conducted in accordance with generally accepted engineering practice, and the opinions and conclusions expressed in the report are made in good faith based on the information at hand at the time of the investigation.
2. The contents of this report are valid as of the date of preparation. However, changes in the condition of the site can occur over time as a result or either natural processes or human activity. In addition, advancements in the practice of geotechnical engineering and changes in applicable practice codes may affect the validity of this report. Consequently, this report should not be relied upon after an eclipsed period of one year without a review by this firm for verification of validity. This warranty is in lieu of all other warranties, either expressed or implied.
3. Unless otherwise stated, the investigation did not include any specialist studies, including but not limited to the evaluation or assessment of any potential environmental hazards or groundwater contamination that may be present.
4. The investigation is conducted within the constraints of the budget and time and therefore limited information was available. Although the confidence in the information is reasonably high, some variation in the geotechnical conditions should be expected during and after construction. The nature and extent of variations across the site may not become evident until construction. If variations then become apparent this could affect the proposed project, and it may be necessary to re-evaluate recommendations in this report. Therefore, it is recommended that Outeniqua Geotechnical Services is retained to provide specialist geotechnical engineering services during construction in order to observe compliance with the design concepts, specifications and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction. Any significant deviation from the expected geotechnical conditions should be brought to the author's attention for further investigation.
5. The assessment and interpretation of the geotechnical information and the design of structures and services and the management of risk is the responsibility of the appointed engineer.

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1. Introduction

1.1 Background information

A new residential development has been proposed on Portion 91 Of Matjiesfontien 304, Keurboomstrand, Plettenberg Bay. Refer to locality map in **Figure 1**. Outeniqua Geotechnical Services was appointed by the developer to conduct a broad-scope geotechnical investigation of the site. The proposed development consisted of new dwellings, internal access roads and bulk services. The physical and geotechnical nature of the site was investigated in order to facilitate the civil engineering design and project planning.

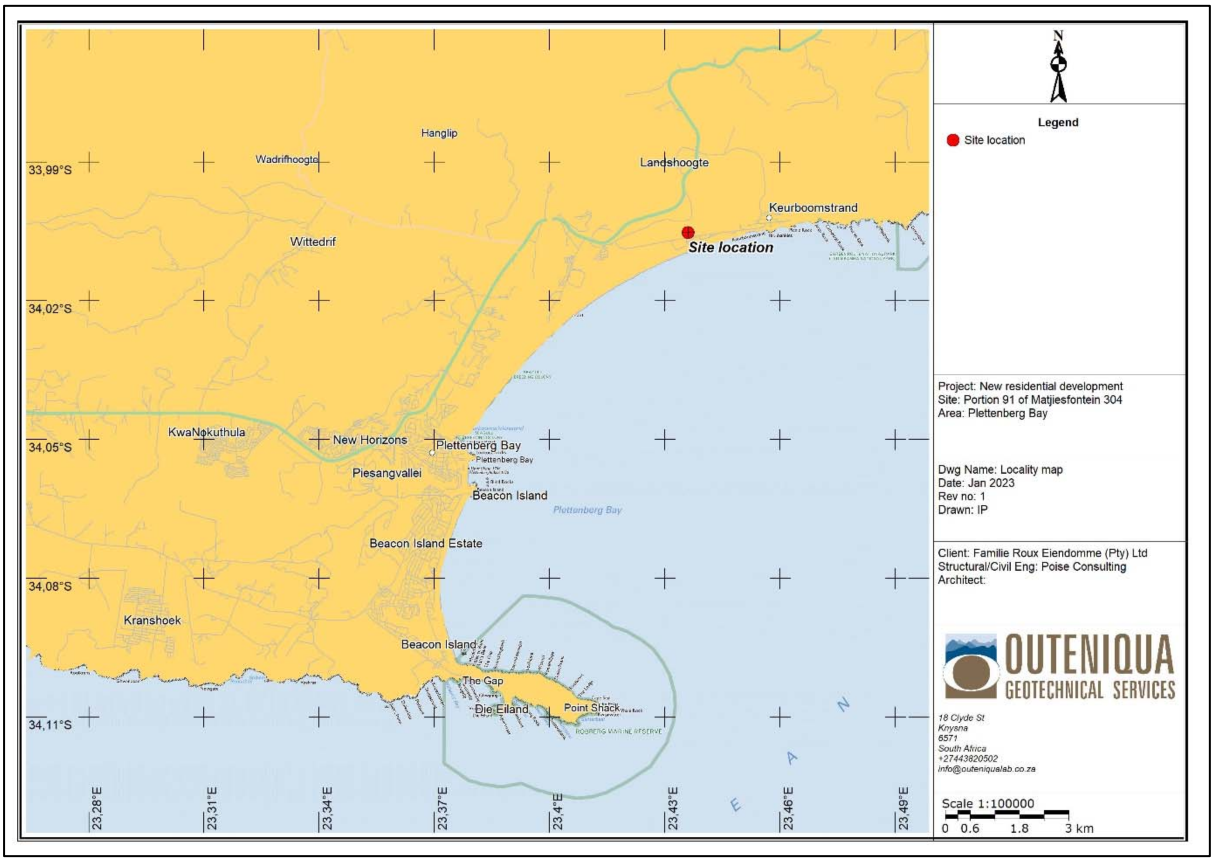

Figure 1: Locality map

1.2 Scope of work

The scope of work was to conduct a broad-scope geotechnical investigation in accordance with the SAICE Code of Practice for Site Investigations, including the following:

Desk Study:

- A desk-top review of all available information of the location, topography and geology of the site.

Site Work:

- A site reconnaissance survey to assess the general terrain and any obvious geotechnical risks associated with development of the site;
- A subsurface investigation including the excavation and profiling of a limited

number of test pits across the site with a TLB/Backactor to a depth of 2-3m or shallower refusal, to obtain an indication of the expected geotechnical conditions;

- The collection and packaging of soil samples for laboratory testing, including:
  - Foundation Indicator tests determine gradings, Atterberg limits and potential expansiveness.
  - Modified AASHTO density, CBR & Indicator tests to determine the compaction/strength properties.
- Insitu testing, including dynamic cone penetrometer (DCP).

Professional assessment & reporting:

The assessment of data by a geotechnical engineering professional, and the preparation of a concise factual and interpretive report recommendations for:

- Foundation design for structures (including founding depths, estimated allowable safe bearing pressures).
- Any other precautions to be taken with regards to the geotechnical conditions for the proposed development.

1.3 Available information

The following maps & plans were available for consultation:

- A site locality map, provided by the developer.
- 1: 250 000 Geological Series maps of the area, obtained from the Council for Geoscience;
- Topo-cadastral data for the area, obtained from the National Geospatial Institute (NGI).
- Aerial photos of the area, obtained from the NGI and Google Earth.

2. Site description

The proposed site was located on semi-rural land in close proximity to the up-market residential area of Keurboomstrand. At the time of the investigation the site was easily accessible from the existing municipal road along the southern boundary of the site. See **Figure 2**. The site was largely vacant but was being used as a horse-riding facility with several temporary stable structures. The topography was broadly characterised by very gently sloping ground on the southern portion of the site (the proposed development portion) with an average gradient of ~1:50, and a steep northern portion (not intended for development). The ground surface on the development portion was covered in patchy short grass and a few scattered bushes and trees. The northern slopes were densely vegetated with indigenous bush (see **Figure 3 & 4**). The climate of the area was typically wet with a Weinert Climatic N-value of 2.

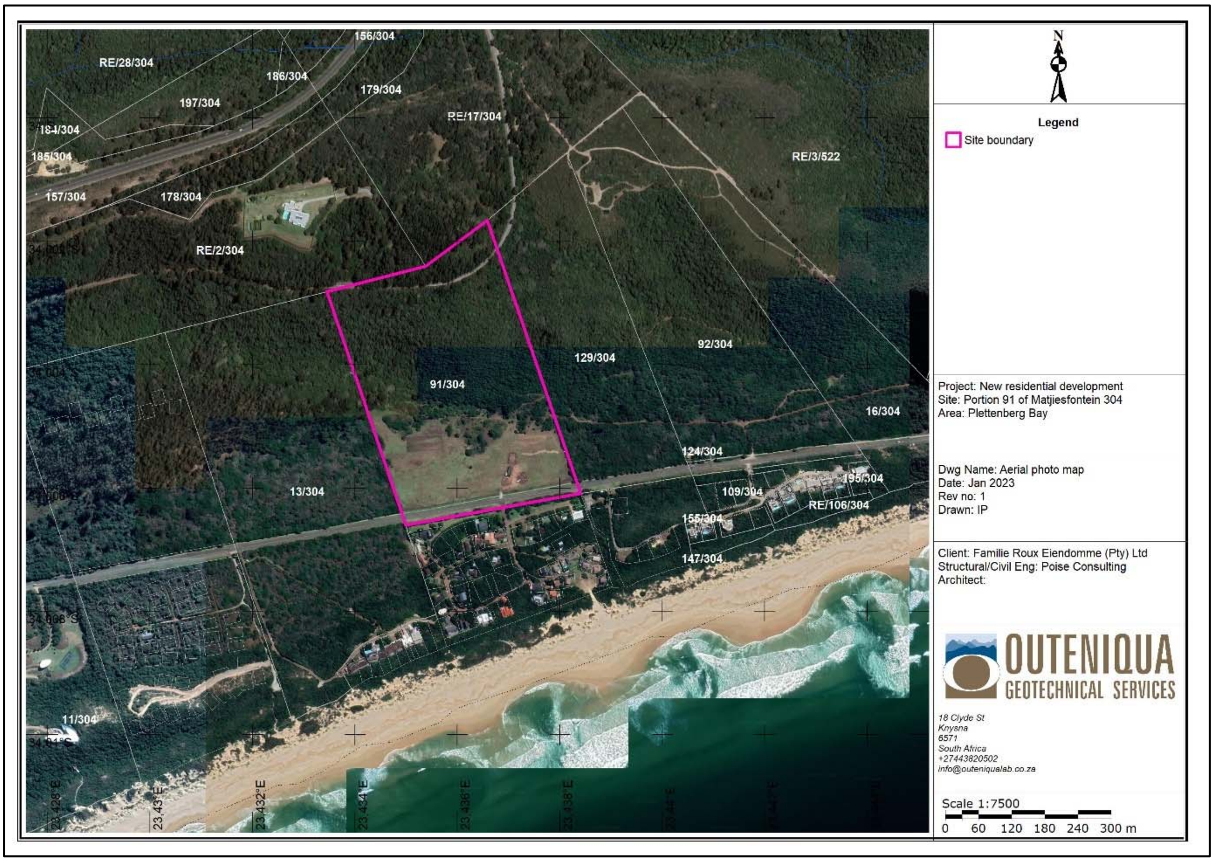

Figure 2: Aerial photo map

Figure 3: View of the southern portion of the site looking south-east

Figure 4: View of the site looking north-west

3. Methods of investigation

An initial site walk-over of the site was conducted to assess the site terrain, topographic features and any obvious geotechnical issues. This was followed by a subsurface investigation consisting of several test pits, which were excavated random fashion across the site using a TLB/Backactor. This exercise was aimed at gathering geotechnical information regarding the nature of the ground conditions (soil moisture, texture, consistency, groundwater levels, etc.). The soil profiles and photographs of the test pits were included in **Appendix 2** of this report.

Representative samples of different soil types were collected from test pits for Foundation Indicator tests and Mod/CBR/Indicator tests. The tests were performed at a SANAS-Accredited laboratory (Outeniqua Lab), in accordance with the TMH1 and ASTM methods. Details of the tests were included in **Appendix 3** of this report.

In situ dynamic cone penetrometer (DCP) tests were conducted at each test pit position from NGL to a maximum depth of 2-4m or shallower refusal. Details of the tests were included in **Appendix 4** of this report.

4. Results of the site investigation

4.1 Regional geology

The official geological mapping of the area indicated that the lower/southern portion of the site was underlain by estuarine/alluvial sand deposits of Quaternary age (yellow on map in **Figure 5**) which overlie sandstone and conglomerate of the Enon Formation (red/orange on map) of the Uitenhage Group on the northern slopes. The Enon Formation then overlies shale of the Gydo Formation and sandstone and shale of Baviaanskloof Formation which outcrop along the Keurboomstrand road to the east of the site. No major geological faults were mapped in the vicinity of the site and the risk of seismic activity was low. The geology was generally considered macro stable for development purposes with due consideration paid to local geotechnical constraints.

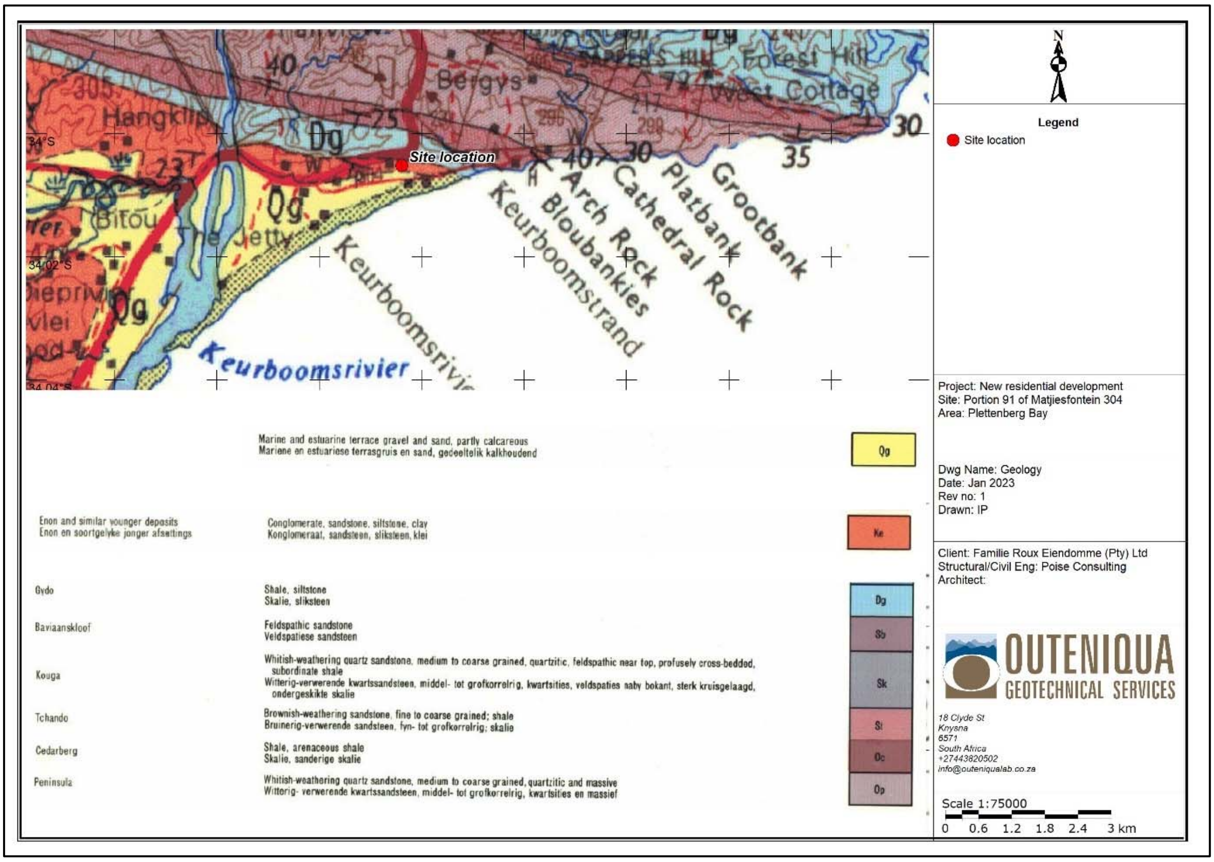

Figure 5: Geological map of site

4.2 Local soil and rock types

The soil profile was broadly consistent across the site, and dominated by estuarine sandy soil (see **Figure 6**). The profile broadly included a sporadic upper horizon of imported fill soil (disturbed or dumped soil), underlain by an insitu topsoil horizon, consisting of silty sand, roots and organic humus, which was underlain by unconsolidated to semi consolidated sand with scattered marine shell fragments. At TP5, a pedogenic calcrete hardpan layer (very soft rock) was encountered just below the topsoil horizon (see **Figure 7**). The calcrete was highly to completely weathered in places to a sandy gravel, angular cobbles and/or small boulders. A summary of the soil profiles was provided in **Table 1**.

Figure 6: Typical sandy soil types encountered in test pits

Figure 7: Calcrete hardpan layer encountered in test pit TP5

Table 1: Test pit summary - Soil horizon thickness (in mm)

Test pos. No.	***Soil***				***Rock***	***Final depth of test pit***	***Refusal***
	Imported (fill)	***Transported***	***Pedogenic***	***Residual***			
TP1	0-300	2000	-	-	-	2000	None
TP2	0-800	800-2600	-	-	-	2600	None
TP3	-	0-1700	-	-	-	1700	None
TP4	-	0-2600	-	-	-	1800	None
TP5	-	0-400 & 700-2500	400-700	-	-	2500	None
TP11	0-400	400-900	-	-	-	3000	None

4.3 Laboratory tests

Representative samples of different soil horizons were collected for Foundation Indicator tests in order to determine their basic geotechnical properties, estimate potential expansivity and evaluate their suitability as founding mediums. Abbreviated results of the tests were shown in **Table 2**.

The tests indicated that all the soil was dominated by fine granular soils (silty sands). All samples were non-plastic and the potential expansiveness was therefore zero. Some samples showed a measurable clay content but since the soils were non-plastic this was deemed to be from non-clay colloids, possibly including calcium carbonate. The samples tested were classified into the following categories under the Universal Soil Classification system as ML (Inorganic silts, non-plastic silts) and SM (Silty sands).

The results of the Foundation Indicator tests were summarised in **Table 2**.

Table 2: Summary of Foundation Indicator test results

Test Pit No	Sample Depth (mm)	Atterberg Limits			Particle Analysis (%)				MC*	PE**	USC ***
		PI	LL	LS	Clay	Silt	Sand	Gravel			
TP2	1500-2200	NP	NP	NP	16	21	63	0	1.5	NP	ML
TP4	800-2600	NP	NP	NP	12	13	75	0	3.2	NP	SM
TP5	700-2500	NP	NP	NP	14	42	44	0	10.7	NP	ML

* Insitu Moisture Content ** Potential Expansiveness *** Unified Soil Classification

Representative samples of insitu soils were collected for Modified AASHTO density, CBR and Road Indicator tests to determine the potential for general filling under and around structures and in roadbeds. The results of the tests were summarised in **Table 3**.

Table 3: Summary of Mod. AASHTO, CBR & Road Indicator test results

Test Pit No	Sample Depth (mm)	CBR at					Swell (%)	PI (%)	GM	MDD OMC	COLTO Class
		100 %	98%	95%	93%	90%					
TP2	500-2000	12	10	9	8	6	0	NP	1.4	1669/11.6	G8
TP3	0-700	20	14	8	6	3	0	NP	1.0	1751/12.2	G9
TP4	800-2600	17	14	11	9	7	0	NP	1.22	1614/11.2	G8

The test results indicated that the insitu material was dominated by silty fine sand with marginal strength properties but was generally suitable as bulk filling under and around structures or for road subgrade fill. Recommendations were given in **Chapter 6**.

4.4 Insitu tests

In situ penetration tests (DCP) indicated significant variation in the consistency of the soil in the upper 0.7m of the profile, but consistently dense conditions below this level.

Table 4: Summary of DCP tests

Test Pos No	0-1m			1-2m			2-3m			3-4m		
	DN	Con	φ′°	DN	Con	φ′°	DN	Con	φ′°	DN	Con	φ′°
1	40	L	28	29	MD	30	n/a	-	-	n/a	-	-
2	25	MD	32	21	MD	32	n/a	-	-	n/a	-	-
3	33	MD	30	31	MD	30	n/a	-	-	n/a	-	-
4	34	MD	30	26	MD	32	20	MD	33	11	D	
5	40	L	28	10	D	36	n/a	-	-	n/a	-	-
6	45	L	28	22	MD	32	n/a	-	-	n/a	-	-
7	27	MD	32	24	MD	32	11	D		23	MD	32
8	42	L	28	26	MD	32	20	MD	33	16	D	34
9	52	L	28	25	MD	32	21	MD	32	23	MD	32
10	38	MD	30	21	MD	32	14	D	35	16	D	34

*DN – Max penetration rate Con - Consistency

DCP tests indicated a general improvement in density and bearing capacity with increasing depth with some minor variations. The tests confirmed that shallow foundations would be generally suitable but good compaction would be required to mitigate settlement, particularly in the foundation influence zone within a depth range of up to 2m below NGL.

5. Geotechnical assessment

5.1 Site classification

The site was mapped according to the site class designations provided in SANS10400-H (refer to **Table 5**). Due to the broadly consistent conditions observed in the investigation, the majority of the proposed development footprint area was mapped as a single geotechnical terrain with the site class designation of **S1** (potentially compressible sandy soils). Minor superficial deposits of uncontrolled fill (**P**) were also mapped as indicated in **Figure 8**.

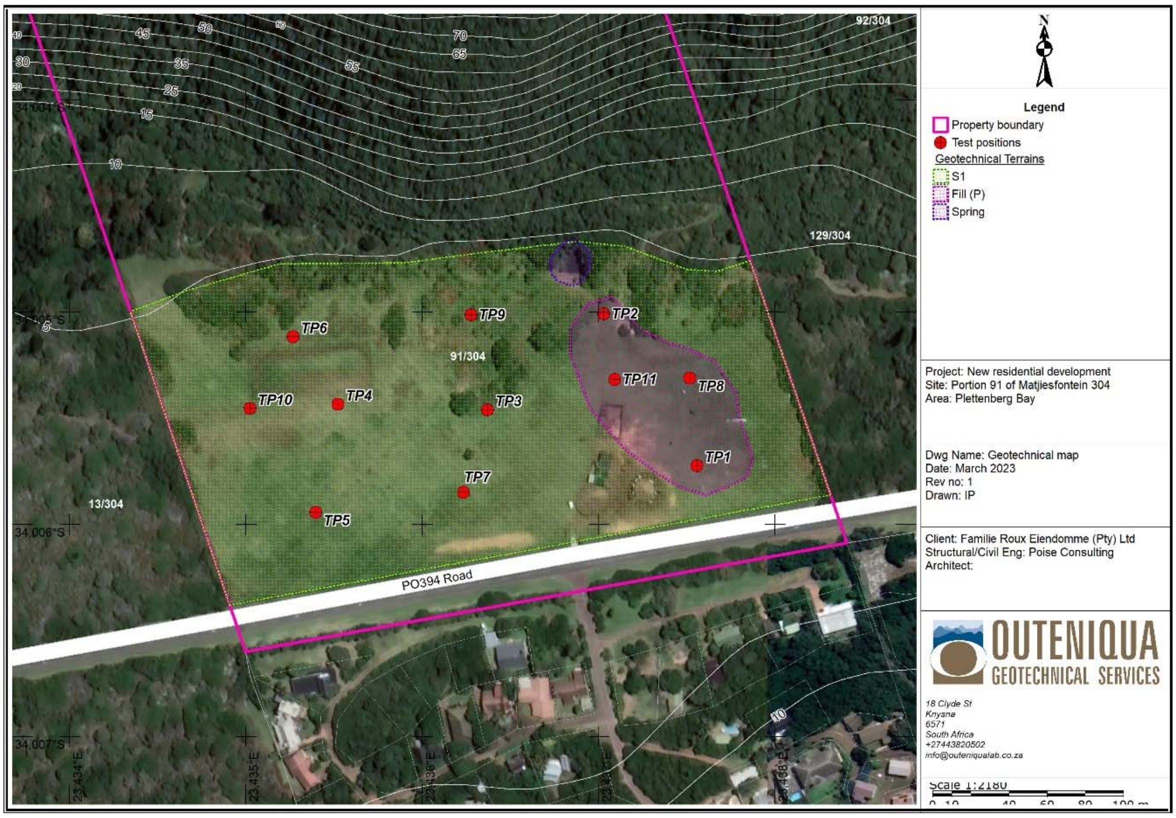

Figure 8: Geotechnical map

Table 4: SANS 10400-H Geotechnical site class designations

1	2	3	4	5
Typical founding material	**Nature of founding material**	**Expected range of total soil movements** mm	**Assumed differential movement** % of total	**Site class designation**
Rock (excluding mud rocks which might exhibit swelling to some depth)	Stable	Negligible	–	R
Fine-grained soils with moderate to very high plasticity (clays, silty clays, clayey silts and sandy clays)	Expansive soils	< 7,5 7,5 to 15 15 to 30 > 30	50 50 50 50	H H1 H2 H3
Silty sands, clayey sands, sands, sandy and gravelly soils	Compressible and potentially collapsible soils	< 5 5 to 10 > 10	75 75 75	C C1 C2
Fine-grained soils (clayey silts and clayey sands of low plasticity), sands, sandy and gravelly soils	Compressible soils	< 10 10 to 20 > 20	50 50 50	S S1 S2
Contaminated soils[a], controlled fill, dolomite land, landslip, landfill, marshy areas, mine waste fill, mining subsidence reclaimed areas, uncontrolled fill, very soft silts/silty clays	Variable	Variable	–	P[b]

Standard

5.2 Bearing capacity and settlement of structures

Observations made during the site investigations and analysis of test results indicated that the natural soils at normal shallow levels (0.5-1m) was dominated by potentially compressible fine sand. The soil would require improvement (compaction) to safely support type 1 residential structures on conventional shallow spread foundations with typical bearing pressures of up to 150kPa. Beyond this maximum typical load, the depth of improvement or type of foundation would require further consideration.

Other geotechnical constraints which could affect earthworks or foundations, such as uncontrolled fill, surface water bodies and ground water were also identified. Earthworks and foundation design recommendations were provided in **Chapter 6**.

5.3 Heave

The soil profile was not expected to display any significant expansivity and no special measures would be required to cater for heave.

5.4 Groundwater and site drainage

The fine sandy soil conditions generally had moderate permeability and drainage characteristics, but surface water was expected to accumulate temporarily after heavy rainfall events. A surface water body, fed by a perennial spring, was also identified at the base of the slope on the eastern side of the site. Groundwater was identified in test pits on the southern (lower) side of the site (TP1 & TP5) at an average depth of 2m. Seepage and run-off from the slopes to the north were therefore expected to have an influence on the engineering design. Groundwater was also expected to affect deep excavations (>1.5m below NGL) in some areas.

5.5 Slopes

No slope stability problems were observed on the steep slopes above (to the north) of the proposed development area. The maximum gradient of the slopes was estimated from contour data at 1:1.5. The slopes were covered in dense vegetation and generally inaccessible for detailed inspection but according to the geological map, the slopes were underlain by dense conglomerate and sandstone of the Enon Formation, which was well exposed in near-vertical road cuttings to the northwest of the site. The slopes had been enjoying a state of general stability for many years and this was deemed to be due to the stable underlying geology and was therefore not considered to present a significant risk to the site.

5.6 Excavations

All excavations to 2m were provisionally classified as "Soft" in terms of SABS1200D, and easily excavatable by hand or with light machinery (TLB). Sidewalls of temporary excavations (trenches) were expected to be highly unstable, even for short periods, due to the loose sandy soil types.

5.7 Natural construction materials

The sandy soils that were encountered in test pits were classified as G8-9 and were deemed to be potentially suitable as general structural fill material under foundations and floors or behind retaining walls, when placed and compacted to the engineer's specifications.

6. Recommendations

The following recommendations are based on limited information gained from the site investigation and although the confidence in the information is high, significant variation is likely to occur between information points. All geotechnical information should be verified during construction and any significant variations should be brought to the attention of the geotechnical engineer for comment or further recommendations. It is recommended that the structural & civil engineers discuss their designs with the geotechnical engineer to ensure that the designs are compatible with the expected geotechnical conditions.

6.1 Earthworks and structural foundations

Earthworks should be designed and constructed in accordance with SABS 1200D and/or any site-specific specifications provided by the civil engineer. Foundations should be designed and constructed in accordance with SANS 10400-H or as specified by the structural engineer.

To clear and prepare site for earthworks and construction, it was recommended that at least 150mm of topsoil and vegetation cover be removed from the footprint area. Large roots be grubbed and platform levels established by cutting and/or filling with insitu soil obtained from site. Bulk fill should be compacted to minimum 93%MDD. Low retaining walls may be required in some areas, depending on site levels. The insitu sandy soils were generally suitable for use as general fill on platforms, in roadbeds and as trench backfill. Any organic matter or unsuitable soil should be removed from potential fill material.

Unsuitable ground conditions exposed during earthworks should be referred to the engineer for further investigation and consideration on appropriate action.

The recommended foundation system for the proposed single/double storey residential structures included the following:

a. RC strips/bases – clear and level site to PL, excavate trenches to PL-1m, wet and compact base of trench with 6 passes of mechanical rammer, such that DCP penetrates at less than 30mm/blow to a depth of 1m below the base of the excavation, backfill the trench to PL-0.7m (recommended final founding level) in layers with compacted sand ex-insitu to 100%MDD or <20mm/blow of DCP. Limit bearing pressures to max 150kPa. Alternatively, excavate trenches to PL-0.7m, compact base of trench such that DCP penetrates at less than 30mm/blow and limit bearing pressures to 100kPa.
b. Raft foundations on a compacted insitu platform – excavate ~0.6m of insitu soils below entire platform area, compact base of excavation with roller, replace compacted soil in layers back up to platform level such that DCP penetrates at <30mm/blow, construct light raft foundation with max bearing pressures of 75kPa.

Additional measures can be considered for heavier structures.

Regular supervision by the structural engineer was highly recommended to ensure suitable founding conditions.

6.2 Site drainage

The design and construction of storm water drainage should be carried out in accordance with SABS 1200LE, COLTO, The Red Book or other applicable standards, as determined by the civil engineer.

Consideration should be paid to stormwater drainage due to the low gradient on the site and the likelihood of stormwater accumulating on surface after heavy downpours. Stormwater from roofs can generally be handled in gutters, downpipes and open channels or underground pipes, with suitable discharge locations on the southern side of the site. A well designed road layout can assist in management of stormwater run-off from site, with minor flood events being accommodated within the road prism with raised barrier kerbs and/or side channels.

Allowances should be made for stormwater handling from slopes above the site (including continual seepage at/near spring area).

6.3 Roads

It is recommended that road layerworks, including G4-G6 subbase and G1-G4 base layers (for asphalt-sealed roads) be imported from local commercial quarries. The insitu sandy soil can be used for roadbed and SSG layerworks in lightly trafficked internal estate roads.

7. Conclusions

The investigations have indicated that the site was potentially suitable for the proposed development but there were some moderate geotechnical constraints which required consideration in the structural design. Some preliminary recommendations were provided but all geotechnical information should be verified during construction.

Appendix 1

Maps

N

Legend

Site location

Project: New residential development
Site: Portion 91 of Matjiesfontein 304
Area: Plettenberg Bay

Dwg Name: Locality map
Date: Jan 2023
Rev no: 1
Drawn: IP

Client: Familie Roux Eiendomme (Pty) Ltd
Structural/Civil Eng: Poise Consulting
Architect:

OUTENIQUA GEOTECHNICAL SERVICES

18 Clyde St
Knysna
6571
South Africa
+27443820502
info@outeniqualab.co.za

Scale 1:100000

0 0,6 1,8 3 km

N

Legend

Site boundary

Project: New residential development
Site: Portion 91 of Matjiesfontein 304
Area: Plettenberg Bay

Dwg Name: Aerial photo map
Date: Jan 2023
Rev no: 1
Drawn: IP

Client: Familie Roux Eiendomme (Pty) Ltd
Structural/Civil Eng: Poise Consulting
Architect:

OUTENIQUA
GEOTECHNICAL SERVICES

18 Clyde St
Knysna
6571
South Africa
+27443820502
info@outeniqualab.co.za

Scale 1:7500

0 60 120 180 240 300 m

N

Legend

Site boundary

Site location

Project: New residential development
Site: Portion 91 of Matjiesfontein 304
Area: Plettenberg Bay

Dwg Name: Topographical map
Date: Jan 2023
Rev no: 1
Drawn: IP

Client: Familie Roux Eiendomme (Pty) Ltd
Structural/Civil Eng: Poise Consulting
Architect:

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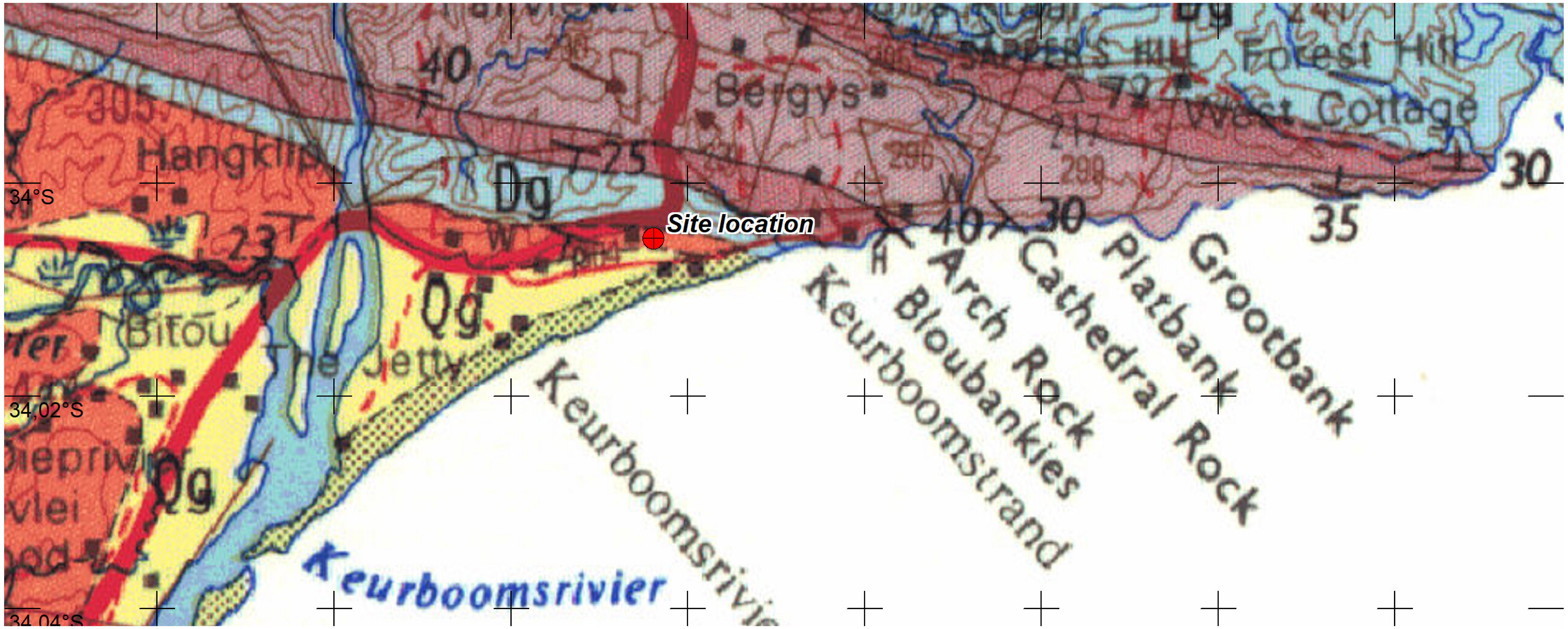
18 Clyde St
Knysna
6571
South Africa
+27443820502
info@outeniqualab.co.za

Scale 1:20000

0 150 300 450 600 750 m



	Marine and estuarine terrace gravel and sand, partly calcareous Mariene en estuariese terrasgruis en sand, gedeeltelik kalkhoudend	Qg
Enon and similar younger deposits Enon en soortgelyke jonger afsettings	Conglomerate, sandstone, siltstone, clay Konglomeraat, sandsteen, sliksteen, klei	Ke
Gydo	Shale, siltstone Skalie, sliksteen	Dg
Baviaanskloof	Feldspathic sandstone Veldspatiese sandsteen	Sb
Kouga	Whitish-weathering quartz sandstone, medium to coarse grained, quartzitic, feldspathic near top, profusely cross-bedded, subordinate shale Witterig-verwerende kwartssandsteen, middel- tot grofkorrelrig, kwartsities, veldspaties naby bokant, sterk kruisgelaagd, ondergeskikte skalie	Sk
Tchando	Brownish-weathering sandstone, fine to coarse grained; shale Bruinerig-verwerende sandsteen, fyn- tot grofkorrelrig; skalie	St
Cedarberg	Shale, arenaceous shale Skalie, sanderige skalie	Oc
Peninsula	Whitish-weathering quartz sandstone, medium to coarse grained, quartzitic and massive Witterig- verwerende kwartssandsteen, middel- tot grofkorrelrig, kwartsities en massief	Op

N

Legend

Site location

Project: New residential development
Site: Portion 91 of Matjiesfontein 304
Area: Plettenberg Bay

Dwg Name: Geology
Date: Jan 2023
Rev no: 1
Drawn: IP

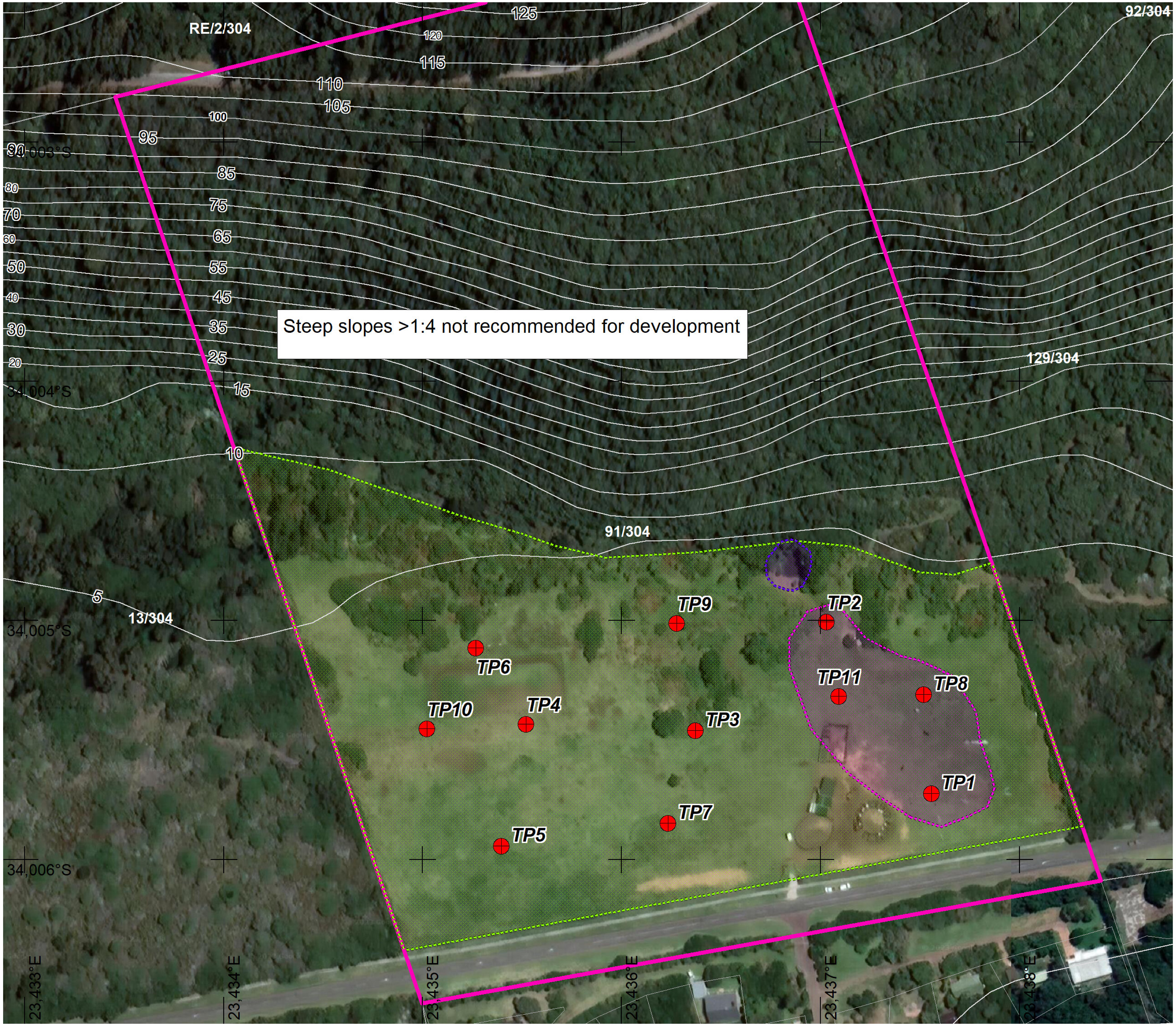
Client: Familie Roux Eiendomme (Pty) Ltd
Structural/Civil Eng: Poise Consulting
Architect:

OUTENIQUA GEOTECHNICAL SERVICES

18 Clyde St
Knysna
6571
South Africa
+27443820502
info@outeniqualab.co.za

Scale 1:75000

0 0,6 1,2 1,8 2,4 3 km



N

Legend

- Property boundary
- Test positions

Geotechnical Terrains

- S1
- Fill (P)
- Spring

Project: New residential development
Site: Portion 91 of Matjiesfontein 304
Area: Plettenberg Bay

Dwg Name: Geotechnical map
Date: March 2023
Rev no: 1
Drawn: IP

Client: Familie Roux Eiendomme (Pty) Ltd
Structural/Civil Eng: Poise Consulting
Architect:

OUTENIQUA GEOTECHNICAL SERVICES

18 Clyde St
Knysna
6571
South Africa
+27443820502
info@outeniqualab.co.za

Scale 1:2500

0 20 40 60 80 100 m

Appendix 2

Test pit profiles

Geotechnical Soil Profile

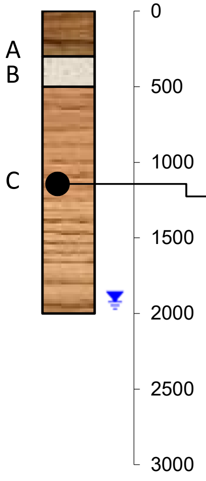
OUTENIQUA GEOTECHNICAL SERVICES

Client:	Poise Consulting Engineers
Project:	Portion 91 of Matjiesfontien 304
Area:	Keurboomstrand
Date:	01.02.2023
Excavator:	TLB

TP 1

Datum: NGL | Co-ords: 23 Y-040421 X3764383

Key to symbols: ● Sample taken | Groundwater



(0 to 300) Moist, dark reddish brown, medium dense, intact, **SANDY SILT**, imported (fill made ground)

(300 to 500) Moist light gey, loose, intact, **SILTY SAND**, transported.

(500 to 2000) Moist, dark yellowish orange, medium dense, intact, **SAND**, transported.

MOD / CBR / Indicator

TP Stopped-sidewall collapse
Rapid water seepage @1950mm

Dynamic Cone Penetrometer (DCP)

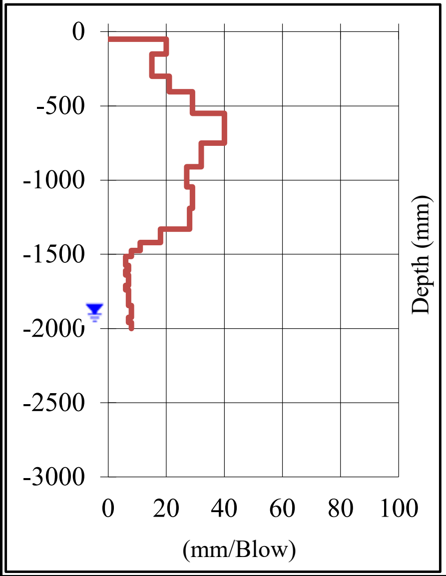
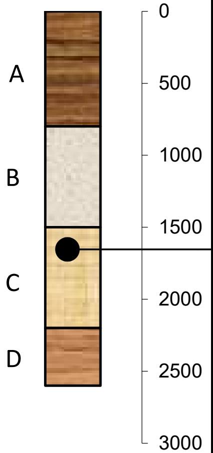


Photo of Test Pit

TP 2

Datum: NGL | Co-ords: 23 Y-040373 X3764303

Key to symbols: ● Sample taken | Groundwater



(0 to 800) Slightly moist, dark reddish brown, medium dense, pinholed, **GRAVELLY SILTY SAND**, (Minor – 10 to 25% Gravels fine grained elongated, angular, smooth surface, soft gravels), Imported (filled ground)

(800 to 1500) Slightly moist, light grey, medium dense, pinholed, **SILTY SAND**, transported

(1500 to 2200) Moist, light yellowish orange, medium dense, intact, **SAND**, transported.
Foundation Indicator

(2200 to 2600) Moist, dark yellowish orange, medium dense, intact, **SAND**, transported.

TP Stopped-sidewall collapse
No Water

Dynamic Cone Penetrometer (DCP)

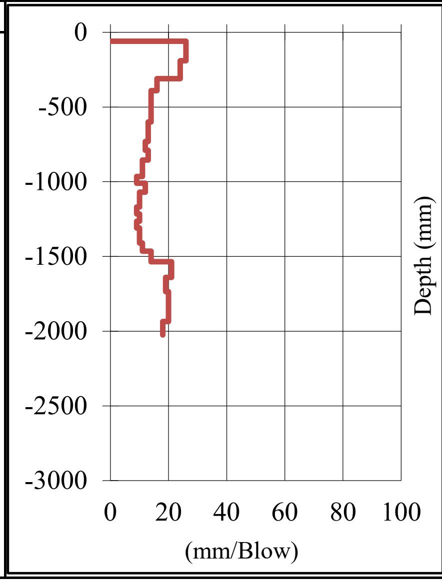
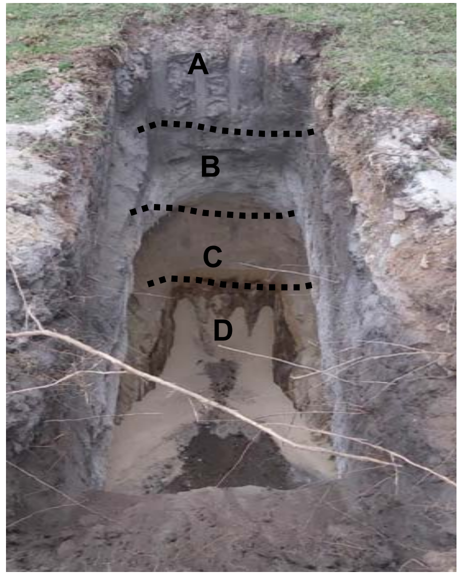


Photo of Test Pit



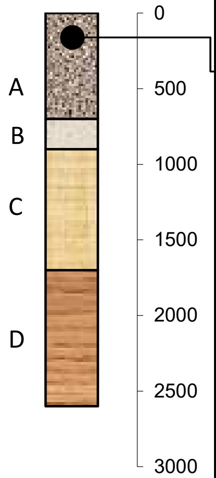
Geotechnical Soil Profile

OUTENIQUA GEOTECHNICAL SERVICES

Client:	Poise Consulting Engineers
Project:	Portion 91 of Matjiesfontien 304
Area:	Keurboomstrand
Date:	01.02.2023
Excavator:	TLB

TP 3

Datum:	NGL	Co-ords:	23 Y-040312 X3764353
Key to symbols:	● Sample taken		Groundwater



(0 to 700) Moist, dark grey, loose, voided (open root channels), **SILTY SAND**, transported.
MOD / CBR / Indicator

(700 to 900) Moist light grey, medium dense, intact, **SILTY SAND**, transported.

(900 to 1700) Moist, light reddish orange, medium dense, intact, **SAND with traces of Calcrete nodules**, transported.

(900 to 1700) Very moist, dark yellowish orange, medium dense, intact, **SAND**, transported.

TP Stopped-sidewall collapse
No Water

Dynamic Cone Penetrometer (DCP)

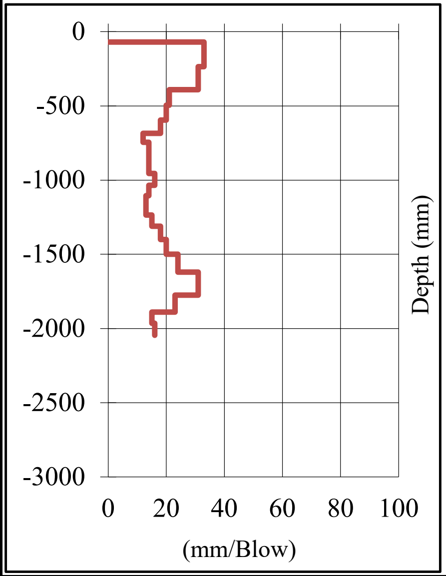
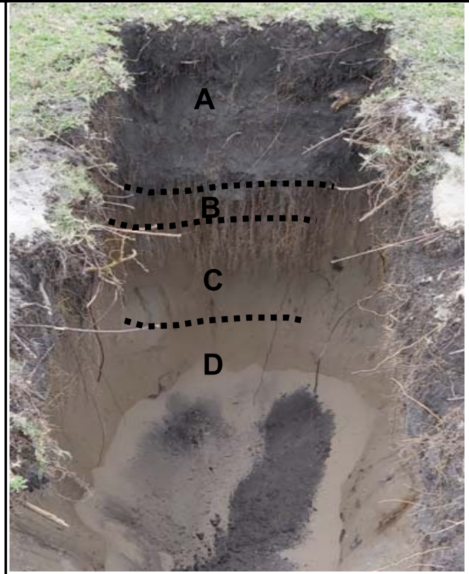
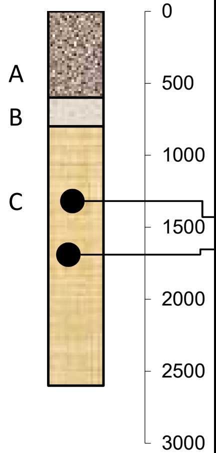


Photo of Test Pit



TP 4

Datum:	NGL	Co-ords:	23 Y-040233 X3764350
Key to symbols:	● Sample taken		Groundwater



(0 to 600) Moist, dark grey, loose, intact, **SAND**, transported.

(600 to 800) Moist light grey, medium dense, intact, **SILTY SAND**, transported.

(800 to 2600) Moist, light yellowish orange, medium dense, intact, **SAND**, transported.

Foundation Indicator
MOD / CBR / Indicator

TP Stopped-sidewall collapse
No Water

Dynamic Cone Penetrometer (DCP)

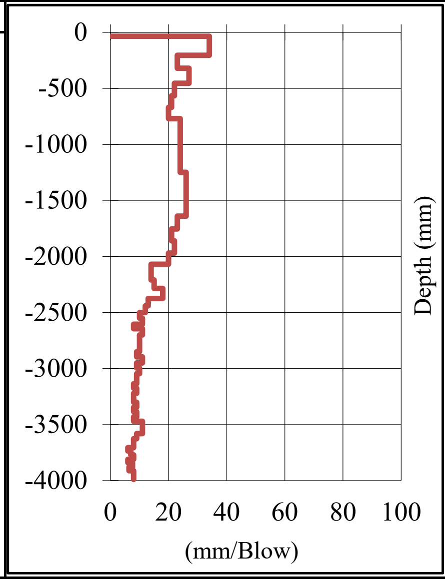
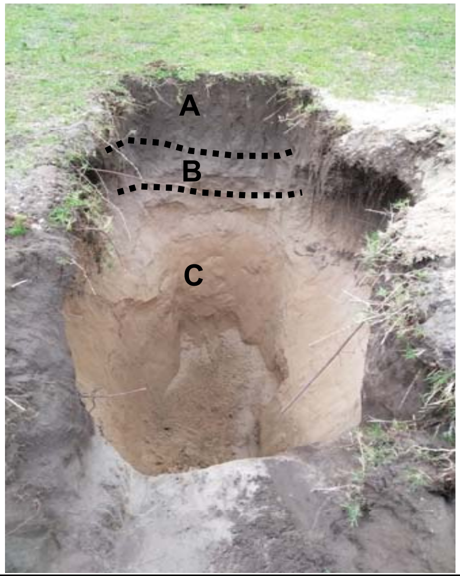


Photo of Test Pit



Geotechnical Soil Profile

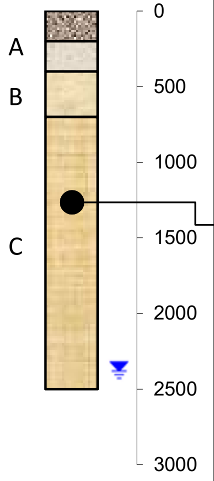
OUTENIQUA GEOTECHNICAL SERVICES

Client:	Poise Consulting Engineers
Project:	Portion 91 of Matjiesfontien 304
Area:	Keurboomstrand
Date:	01.02.2023
Excavator:	TLB

TP 5

Datum: NGL | Co-ords: 23 Y-040221 X3764406

Key to symbols: ● Sample taken | Groundwater



Depth (mm)	Description
(0 to 200)	Moist, dark grey, loose, intact, **SILTY SAND**, transported.
(200 to 400)	Slightly moist, light grey, dense, pinholed, **GRAVELLY SAND**, pedogenic.
(400 to 700)	Slightly moist, light yellow, very dense (cemented/calcified), pinholed, **GRAVELLY SAND**, pedogenic (Calcrete hardpan)
(700 to 2500)	Very moist to wet, light yellowish orange, medium dense, intact, **SAND**, transported.

Foundation Indicator

TP Stopped
Rapid water seepage @2300

Dynamic Cone Penetrometer (DCP)

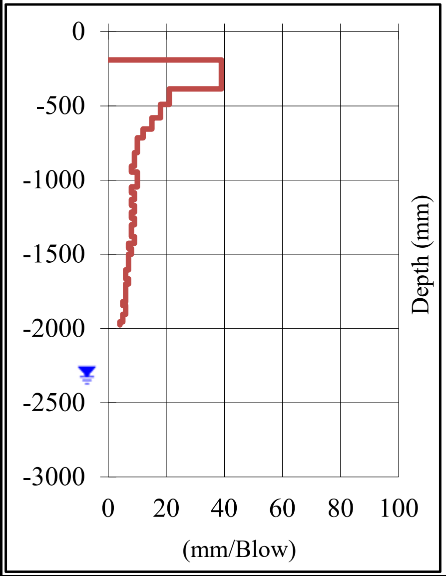
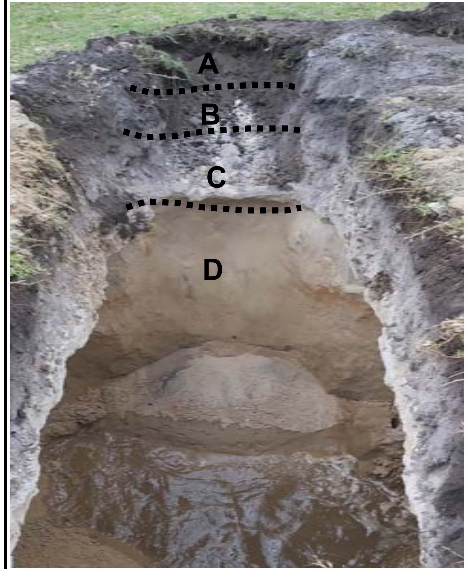


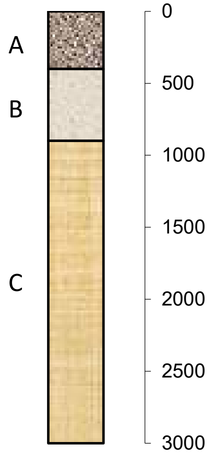
Photo of Test Pit



TP 11

Datum: NGL | Co-ords: 23 Y-040378 X3764337

Key to symbols: ● Sample taken | Groundwater



Depth (mm)	Description
(0 to 400)	Slightly moist, dark grey, very loose, voided, **SILTY SAND with traces of Shells**, imported (fill, infilled ground)
(400 to 900)	Slightly moist, light grey, loose, pinholed, **SILTY SAND**, transported.
(900 to 3000)	Slightly moist, light yellowish orange, medium dense, intact, **SAND with traces of calcrete**, transported.

TP Stopped-sidewall collapse
No Water

Dynamic Cone Penetrometer (DCP)

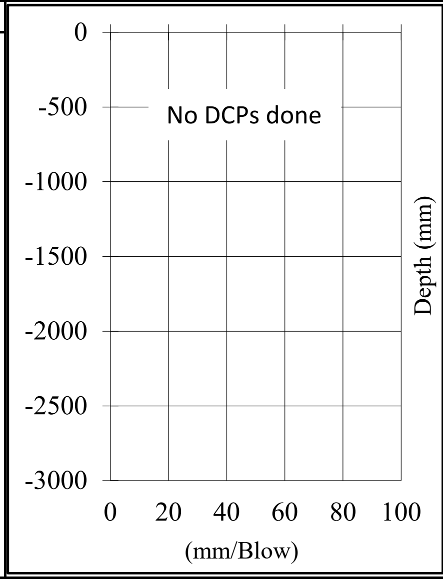
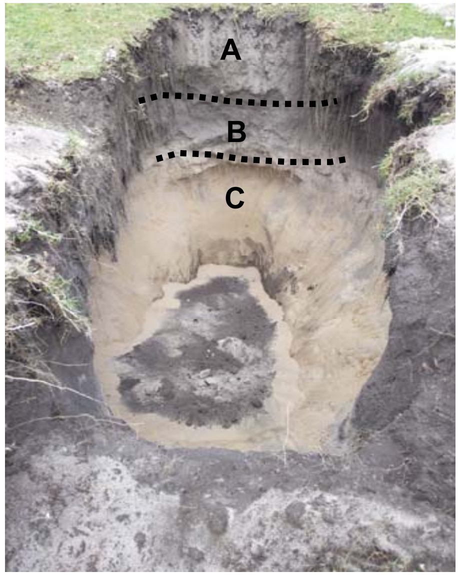


Photo of Test Pit



Appendix 3

Lab test data

OUTENIQUA LAB (Pty) Ltd.
Registration No. 95/07742/07
Materials Testing Laboratory
6 Mirrorball Street, George : PO Box 3186, George Industria, 6536
Tel: 044 8743274 : Fax: 044 8745779 : e-mail: llewelyn@outeniqualab.co.za

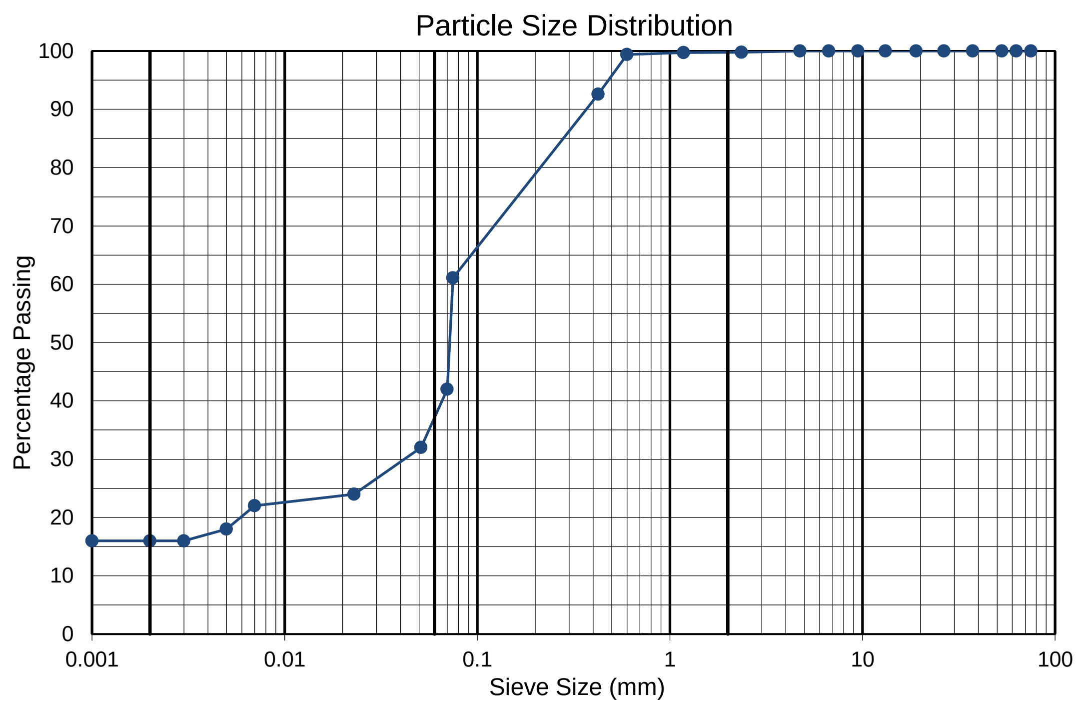
Customer :	Outeniqua Geotechnical Services P O Box 964 Knysna 6570	Project :	Portion 91 of Matjiesfontein 304 - Keurboomstrand
		Date Received :	08/02/2023
		Date Reported :	06/03/2023
		Req. Number :	0322/22
Attention :	Iain Paton	No. of Pages :	1/3

TEST REPORT

FOUNDATION INDICATOR - (ASTM Method D422)

Sample Position (SV)		TP2
Depth (mm):		1500-2200
Sample No.:		85881
Materials Description	Source	In-situ
	Colour	Dark Yellowish Orange
	Soil Type	Sandy Silt
	Classification	Existing

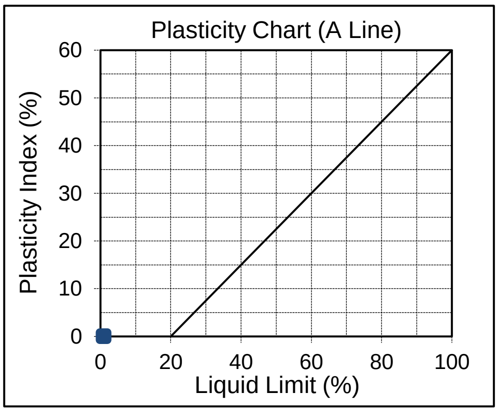
Percentage Passing		
	75.0mm	100
	63.0mm	100
	53.0mm	100
	37.5mm	100
	26.5mm	100
	19mm	100
	13.2mm	100
	9.5mm	100
	6.7mm	100
	4.75mm	100
	2.36mm	100
	1.18mm	100
	0.6mm	99
	0.425mm	93
	0.075mm	61
	0.07mm	42
	0.051mm	32
	0.023mm	24
	0.007mm	22
	0.005mm	18
	0.003mm	16
	0.002mm	16
	0.001mm	16

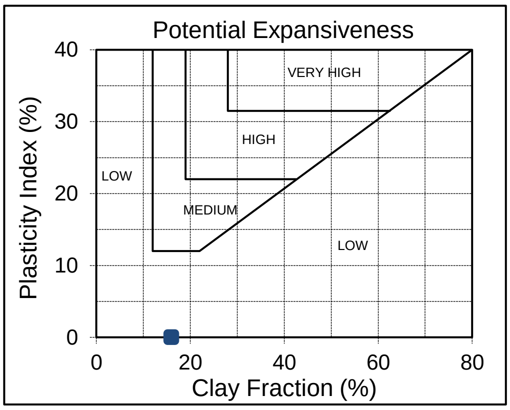


Liquid Limit (%)	NP
Plasticity Index (%)	NP
Linear Shrinkage (%)	NP
Moisture Content (%)	1.5

% Clay	16
% Silt	21
% Sand	63
% Gravel	0

Unified Soil Classification	ML
AASHTO Soil Classification	A-4





- **Specimen delivered to Outeniqua Lab in good order.**

Ruaan Lesch
Technical Signatory
For Outeniqua Lab (Pty) Ltd.

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OUTENIQUA LAB (Pty) Ltd.

R-FIND-1-6 Jan-22

Registration No. 95/07742/07

Materials Testing Laboratory

6 Mirrorball Street, George : PO Box 3186, George Industria, 6536

Tel: 044 8743274 : Fax: 044 8745779 : e-mail: llewelyn@outeniqualab.co.za T0347

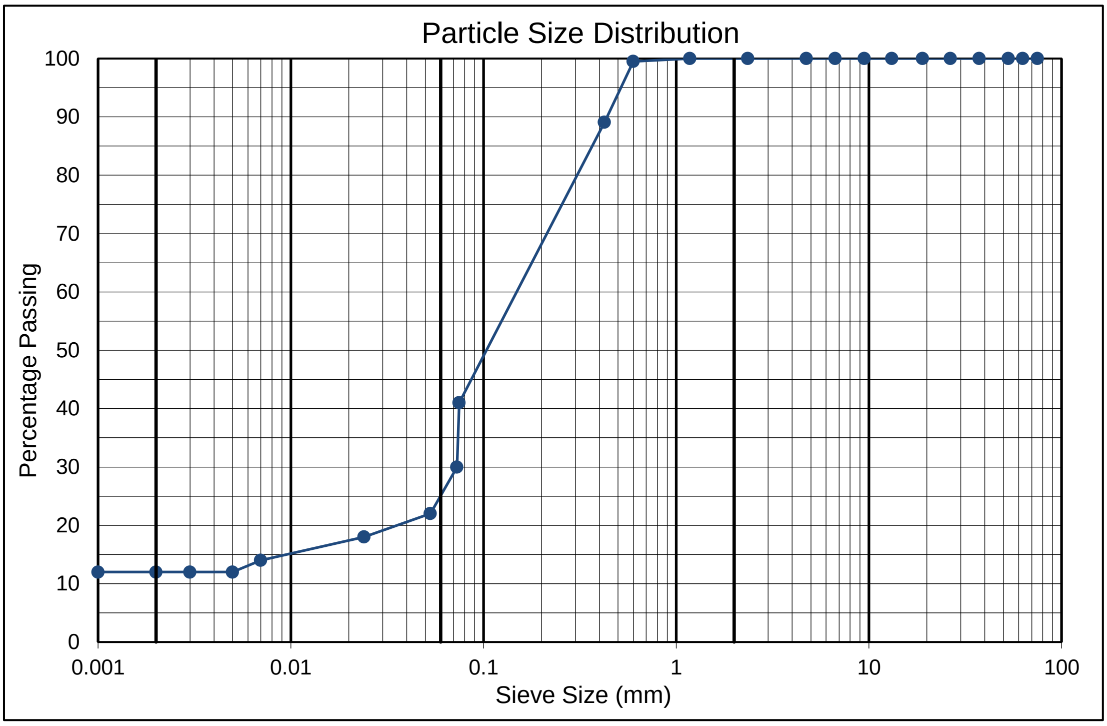
Customer :	Outeniqua Geotechnical Services P O Box 964 Knysna 6570	Project :	Portion 91 of Matjiesfontein 304 - Keurboomstrand
		Date Received :	08/02/2023
		Date Reported :	06/03/2023
		Req. Number :	0322/22
Attention :	Iain Paton	No. of Pages :	2/3

TEST REPORT

FOUNDATION INDICATOR - (ASTM Method D422)

Sample Position (SV)		TP4
Depth (mm):		800-2600
Sample No.:		85883
Materials Description	Source	In-situ
	Colour	Light Yellowish Orange
	Soil Type	Sand
	Classification	Existing

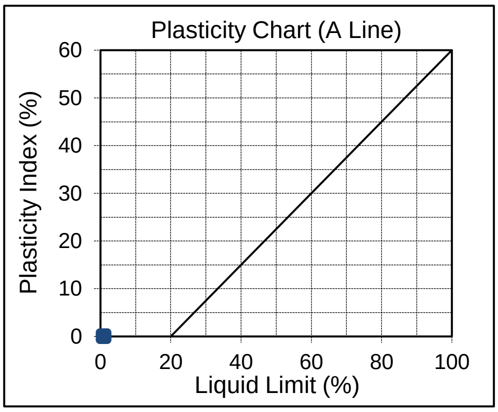
Percentage Passing	
75.0mm	100
63.0mm	100
53.0mm	100
37.5mm	100
26.5mm	100
19mm	100
13.2mm	100
9.5mm	100
6.7mm	100
4.75mm	100
2.36mm	100
1.18mm	100
0.6mm	100
0.425mm	89
0.075mm	41
0.073mm	30
0.053mm	22
0.024mm	18
0.007mm	14
0.005mm	12
0.003mm	12
0.002mm	12
0.001mm	12

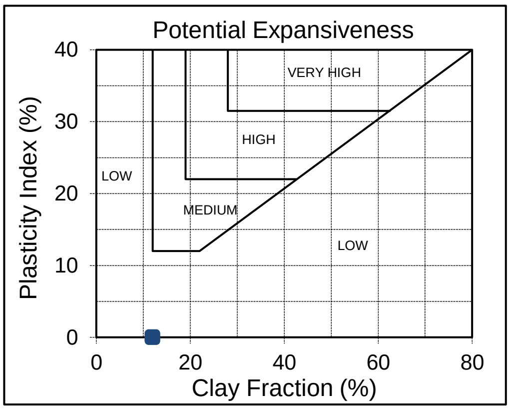


Liquid Limit (%)	NP
Plasticity Index (%)	NP
Linear Shrinkage (%)	NP
Moisture Content (%)	3.2

% Clay	12
% Silt	13
% Sand	75
% Gravel	0

Unified Soil Classification	SM
AASHTO Soil Classification	A-4





- **Specimen delivered to Outeniqua Lab in good order.**

Ruaan Lesch
Technical Signatory
For Outeniqua Lab (Pty) Ltd.

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OUTENIQUA LAB (Pty) Ltd.

R-FIND-1-6 Jan-22

Registration No. 95/07742/07

Materials Testing Laboratory

6 Mirrorball Street, George : PO Box 3186, George Industria, 6536

Tel: 044 8743274 : Fax: 044 8745779 : e-mail: llewelyn@outeniqualab.co.za T0347

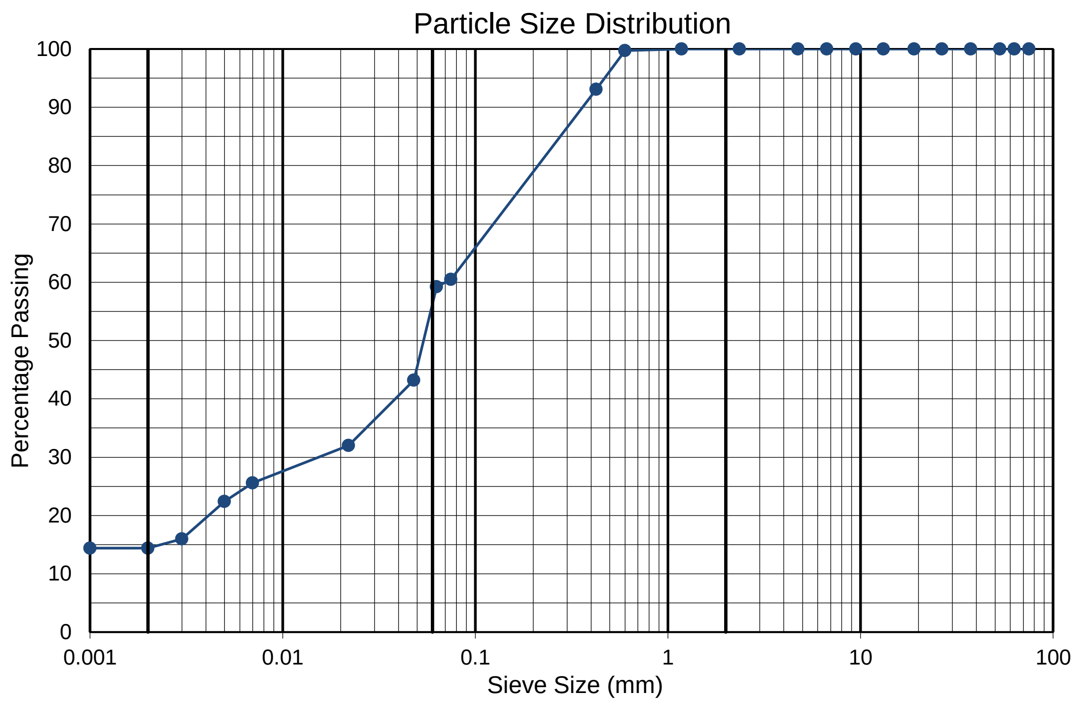
Customer :	Outeniqua Geotechnical Services	Project :	Portion 91 of Matjiesfontein 304 - Keurboomstrand
	P O Box 964	Date Received :	08/02/2023
	Knysna	Date Reported :	06/03/2023
	6570	Req. Number :	0322/22
Attention :	Iain Paton	No. of Pages :	3/3

TEST REPORT

FOUNDATION INDICATOR - (ASTM Method D422)

Sample Position (SV)		TP4
Depth (mm):		700-2500
Sample No.:		85884
Materials Description	Source	In-situ
	Colour	Light Yellowish Orange to Light Grey
	Soil Type	Sandy Silt
	Classification	Existing

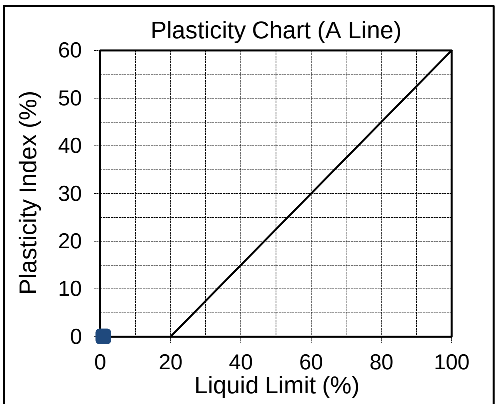
Percentage Passing		
	75.0mm	100
	63.0mm	100
	53.0mm	100
	37.5mm	100
	26.5mm	100
	19mm	100
	13.2mm	100
	9.5mm	100
	6.7mm	100
	4.75mm	100
	2.36mm	100
	1.18mm	100
	0.6mm	100
	0.425mm	93
	0.075mm	61
	0.063mm	59
	0.048mm	43
	0.022mm	32
	0.007mm	26
	0.005mm	22
	0.003mm	16
	0.002mm	14
	0.001mm	14

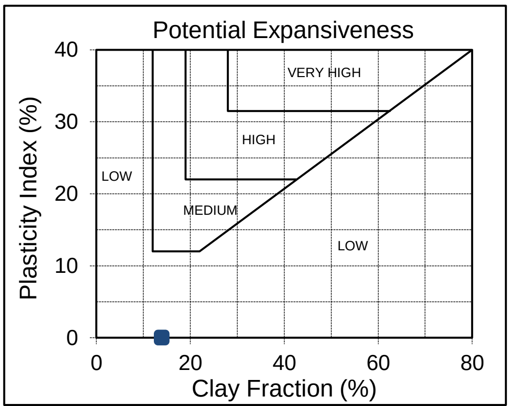


Liquid Limit (%)	NP
Plasticity Index (%)	NP
Linear Shrinkage (%)	NP
Moisture Content (%)	10.7

% Clay	14
% Silt	42
% Sand	44
% Gravel	0

Unified Soil Classification	ML
AASHTO Soil Classification	A-4





- **Specimen delivered to Outeniqua Lab in good order.**

Ruaan Lesch
Technical Signatory
For Outeniqua Lab (Pty) Ltd.

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Registration No. 95/07742/07

Materials Testing Laboratory

6 Mirrorball Street, George : PO Box 3186, George Industria, 6536

Tel: 044 8743274 : Fax: 044 8745779 : e-mail: llewelyn@outeniqualab.co.za

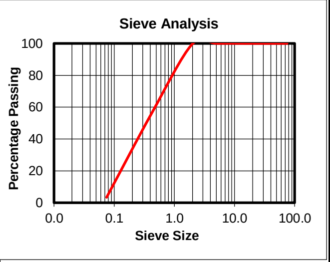
T0347

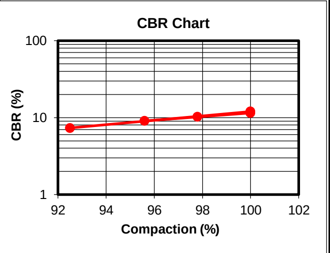
Customer :	Outeniqua Geotechnical Services	Project :	Portion 91 of Matjiesfontein 304 - Keurboomstrand
	P O Box 964	Date Received :	08/02/2023
	Knysna	Date Reported :	22/02/2023
	6570	Req. Number :	0322/23
Attention :	Iain Paton	No. of Pages :	1/3

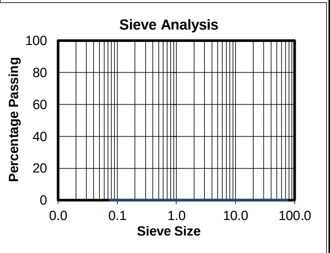
TEST REPORT
CALIFORNIA BEARING RATIO

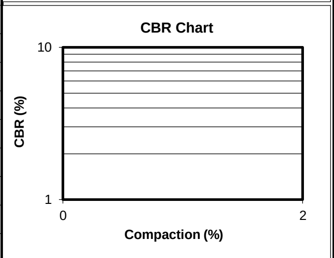
Sample Position (SV)		TP1	**COLTO:**		
Depth (mm)		500-2000	**G8 SSG**		
Sample No		**85880**			
Materials Description	Source	In-situ			
	Colour	Dark Yellowish Orange			
	Soil Type	Sand			
	Classification	Proposed (G7)			
Material Indicators - (SANS 3001 Method GR1)					
Percentage Passing	75 mm	100		Opinion	
	63 mm	100			
	50 mm	100			
	37.5 mm	100			
	28 mm	100			
	20 mm	100			
	14 mm	100			
	5 mm	100			
	2 mm	100			
	0.425 mm	56			
	0.075 mm	3.4			
Material Indicators - (SANS 3001 Method PR5)					
Grading Modulus *		1.40	0.75 - 2.70	✓	
Coarse Sand Soil-Mortar (%)		43			
Atterberg Limits - (SANS 3001 Method GR10)					
Liquid Limit (%)		Undetermined			
Plasticity Index (%)		NP	≤ 12	✓	
Linear Shrinkage (%)		NP			
Material Strength - (SANS 3001 Method GR30,GR40 - SCALPED)					
MDD	Max Dry Density (kg/m^3)	1669			
	Optimum Moisture Content (%)	11.6			
	Mould Moisture Content (%)	11.8			
A	Relative Compaction (%)	100.0			
	Swell (%)	0.0	≤ 1.5	✓	
B	Relative Compaction (%)	95.6			
	Swell (%)	0.0			
C	Relative Compaction (%)	92.5			
	Swell (%)	0.0			
CBR	@100% Max Dry Density	12			
	@98% Max Dry Density	10			
	@95% Max Dry Density	9			
	@93% Max Dry Density	8	≥ 10	⁎	
	@90% Max Dry Density	6			
Material Condition					
Insitu Moisture Content (%)					
Soil Classification Achieved By The Material					
COLTO:		G8 SSG			
AASHTO System		A-3 / A-2-4			
Unified System		SW			

85880

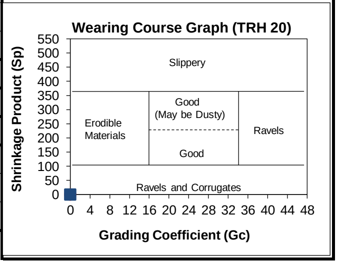








● 85880 ■



- **Tests marked with a (*) are NOT SANAS Accredited results.**
- **Specimens delivered to Outeniqua Lab in good order.**

Ruaan Lesch

Technical Signatory

For Outeniqua Lab (Pty) Ltd.

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1. 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.
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.
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Materials Testing Laboratory

6 Mirrorball Street, George : PO Box 3186, George Industria, 6536

Tel: 044 8743274 : Fax: 044 8745779 : e-mail: llewelyn@outeniqualab.co.za

sanas Testing Laboratory

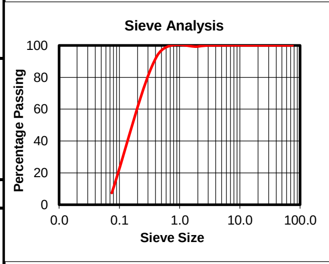
T0347

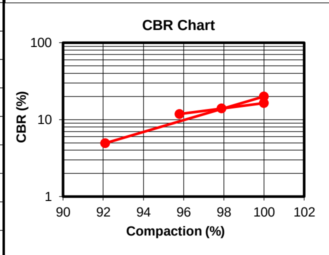
Customer :	Outeniqua Geotechnical Services P O Box 964 Knysna 6570	Project :	Portion 91 of Matjiesfontein 304 - Keurboomstrand
		Date Received :	08/02/2023
		Date Reported :	22/02/2023
		Req. Number :	0322/23
Attention :	Iain Paton	No. of Pages :	2/3

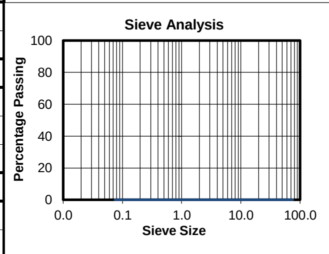
TEST REPORT
CALIFORNIA BEARING RATIO

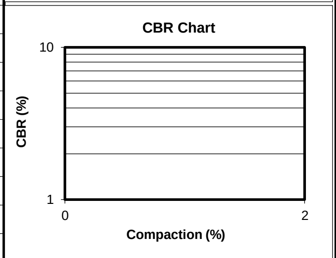
Sample Position (SV)	TP3	**COLTO:**		
Depth (mm)	0-700	**G9**		
Sample No	**85882**	**Subgrade**		
Materials Description: Source	In-situ			
Materials Description: Colour	Dark Grey			
Materials Description: Soil Type	Silty Sand			
Materials Description: Classification	Proposed (G9)			
Material Indicators - (SANS 3001 Method GR1)			Opinion	
Percentage Passing: 75 mm	100			
Percentage Passing: 63 mm	100			
Percentage Passing: 50 mm	100			
Percentage Passing: 37.5 mm	100			
Percentage Passing: 28 mm	100			
Percentage Passing: 20 mm	100			
Percentage Passing: 14 mm	100			
Percentage Passing: 5 mm	100			
Percentage Passing: 2 mm	99			
Percentage Passing: 0.425 mm	94			
Percentage Passing: 0.075 mm	7.4			
Material Indicators - (SANS 3001 Method PR5)				
Grading Modulus *	1.00	0.75 - 2.70	✓	
Coarse Sand Soil-Mortar (%)	6			
Atterberg Limits - (SANS 3001 Method GR10)				
Liquid Limit (%)	Undetermined			
Plasticity Index (%)	NP	≤ 12	✓	
Linear Shrinkage (%)	NP			
Material Strength - (SANS 3001 Method GR30,GR40 - SCALPED)				
MDD: Max Dry Density (kg/m^3)	1751			
MDD: Optimum Moisture Content (%)	12.2			
MDD: Mould Moisture Content (%)	12.1			
A: Relative Compaction (%)	100.0			
A: Swell (%)	0.0	≤ 1.5	✓	
B: Relative Compaction (%)	95.8			
B: Swell (%)	0.0			
C: Relative Compaction (%)	92.1			
C: Swell (%)	0.0			
CBR: @100% Max Dry Density	20			
CBR: @98% Max Dry Density	14			
CBR: @95% Max Dry Density	8			
CBR: @93% Max Dry Density	6	≥ 7	∗	
CBR: @90% Max Dry Density	3			
Material Condition				
Insitu Moisture Content (%)				
Soil Classification Achieved By The Material				
COLTO:	G9 Subgrade			
AASHTO System	A-3 / A-2-4			
Unified System	SP-SM			

85882

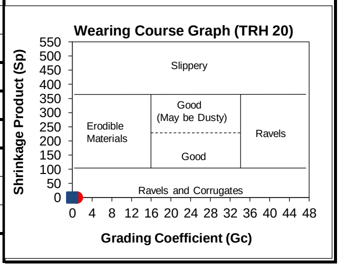








● 85882 ■



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- **Specimens delivered to Outeniqua Lab in good order.**

Ruaan Lesch
Technical Signatory
For Outeniqua Lab (Pty) Ltd.

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R-CBR-1-8 May-19

OUTENIQUA LAB (Pty) Ltd.

Registration No. 95/07742/07

Materials Testing Laboratory

6 Mirrorball Street, George : PO Box 3186, George Industria, 6536

Tel: 044 8743274 : Fax: 044 8745779 : e-mail: llewelyn@outeniqualab.co.za

sanas Testing Laboratory

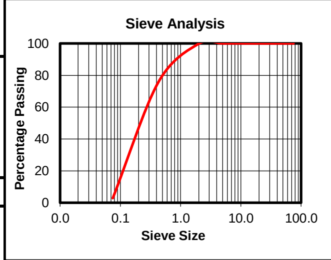
T0347

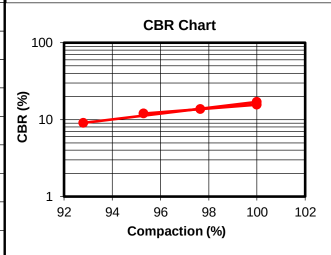
Customer :	Outeniqua Geotechnical Services P O Box 964 Knysna 6570	Project :	Portion 91 of Matjiesfontein 304 - Keurboomstrand
		Date Received :	08/02/2023
		Date Reported :	22/02/2023
		Req. Number :	0322/23
Attention :	Iain Paton	No. of Pages :	3/3

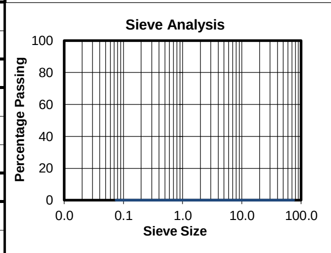
TEST REPORT
CALIFORNIA BEARING RATIO

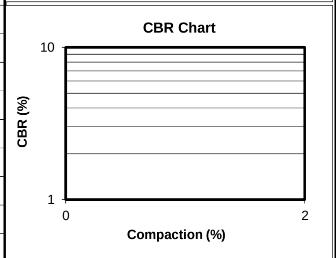
Sample Position (SV)	TP4	**COLTO:**		
Depth (mm)	800-2600	**G8 SSG**		
Sample No	**85883**			
Materials Description: Source	In-situ			
Colour	Light Yellow Orange			
Soil Type	Sand			
Classification	Proposed (G7)			
Material Indicators - (SANS 3001 Method GR1)				
Percentage Passing			Opinion	
75 mm	100			
63 mm	100			
50 mm	100			
37.5 mm	100			
28 mm	100			
20 mm	100			
14 mm	100			
5 mm	100			
2 mm	100			
0.425 mm	75			
0.075 mm	2.9			
Material Indicators - (SANS 3001 Method PR5)				
Grading Modulus *	1.22	0.75 - 2.70	✓	
Coarse Sand Soil-Mortar (%)	24			
Atterberg Limits - (SANS 3001 Method GR10)				
Liquid Limit (%)	Undetermined			
Plasticity Index (%)	NP	≤ 12	✓	
Linear Shrinkage (%)	NP			
Material Strength - (SANS 3001 Method GR30,GR40 - SCALPED)				
MDD: Max Dry Density (kg/m^3)	1614			
MDD: Optimum Moisture Content (%)	11.2			
MDD: Mould Moisture Content (%)	11.2			
A: Relative Compaction (%)	100.0			
A: Swell (%)	0.0	≤ 1.5	✓	
B: Relative Compaction (%)	95.3			
B: Swell (%)	0.0			
C: Relative Compaction (%)	92.8			
C: Swell (%)	0.0			
CBR: @100% Max Dry Density	17			
CBR: @98% Max Dry Density	14			
CBR: @95% Max Dry Density	11			
CBR: @93% Max Dry Density	9	≥ 10	⁎	
CBR: @90% Max Dry Density	7			
Material Condition				
Insitu Moisture Content (%)				
Soil Classification Achieved By The Material				
COLTO:	G8 SSG			
AASHTO System	A-3 / A-2-4			
Unified System	SP			

85883

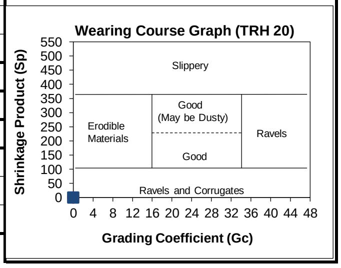








● 85883 ■



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Ruaan Lesch
Technical Signatory
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Appendix 4

DCP test data

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Registration No. 1999/062743/23

18 Clyde Street, Knysna : PO Box 964, Knysna, 6570

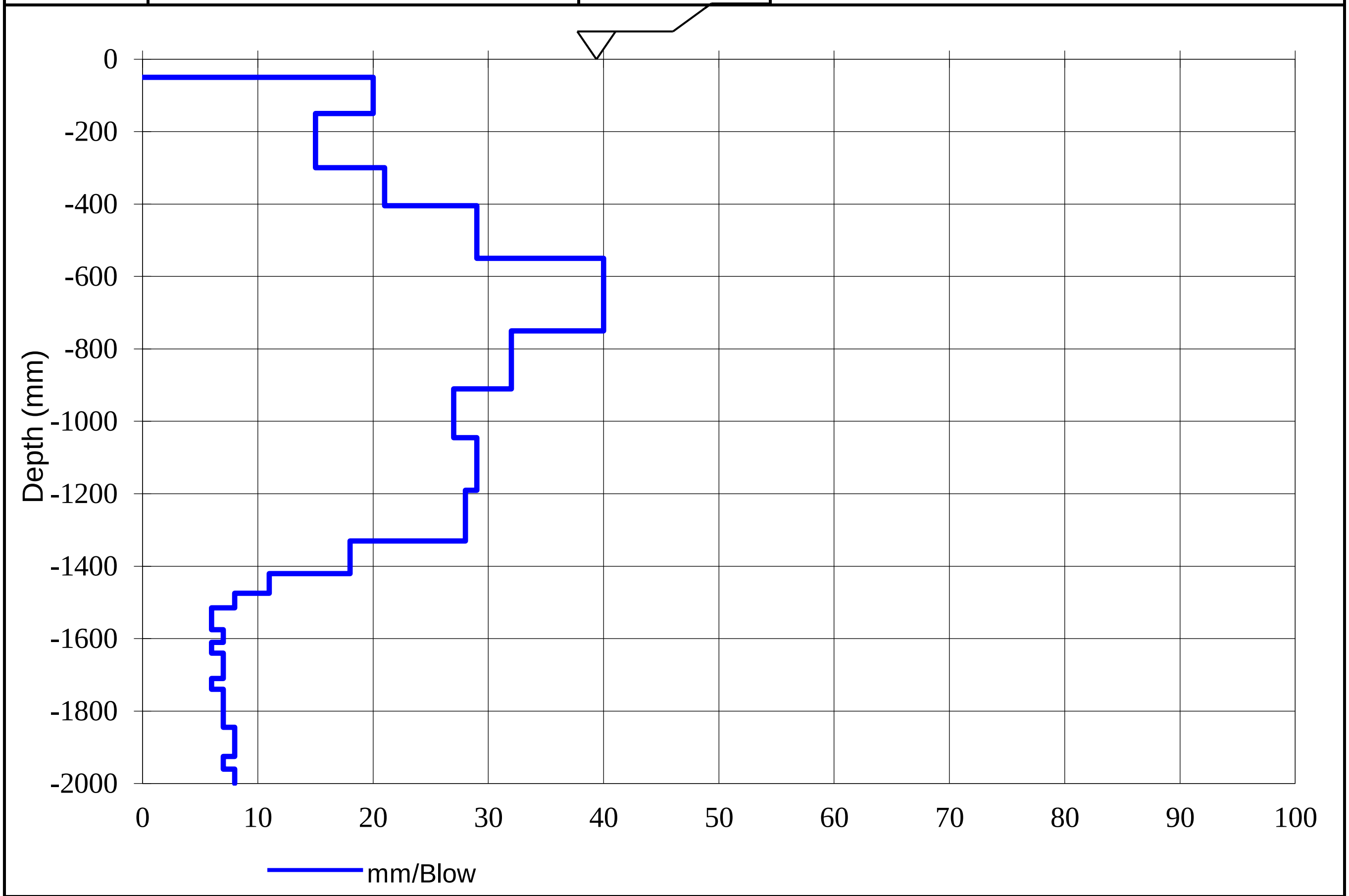
Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Poise Consulting Engineers	Project :	Portion 91 of Matjiesfontein 304 Keurboomstrand
	P.O. Box 1018	Date Received :	24.01.2023
	Plettenberg Bay	Date Reported :	01.02.2023
	6600	Req. Number :	
Attention :	Deon Botes	No. of Pages :	1 of 10

TEST REPORT

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

Position:	TP1	Datum Level:	NGL



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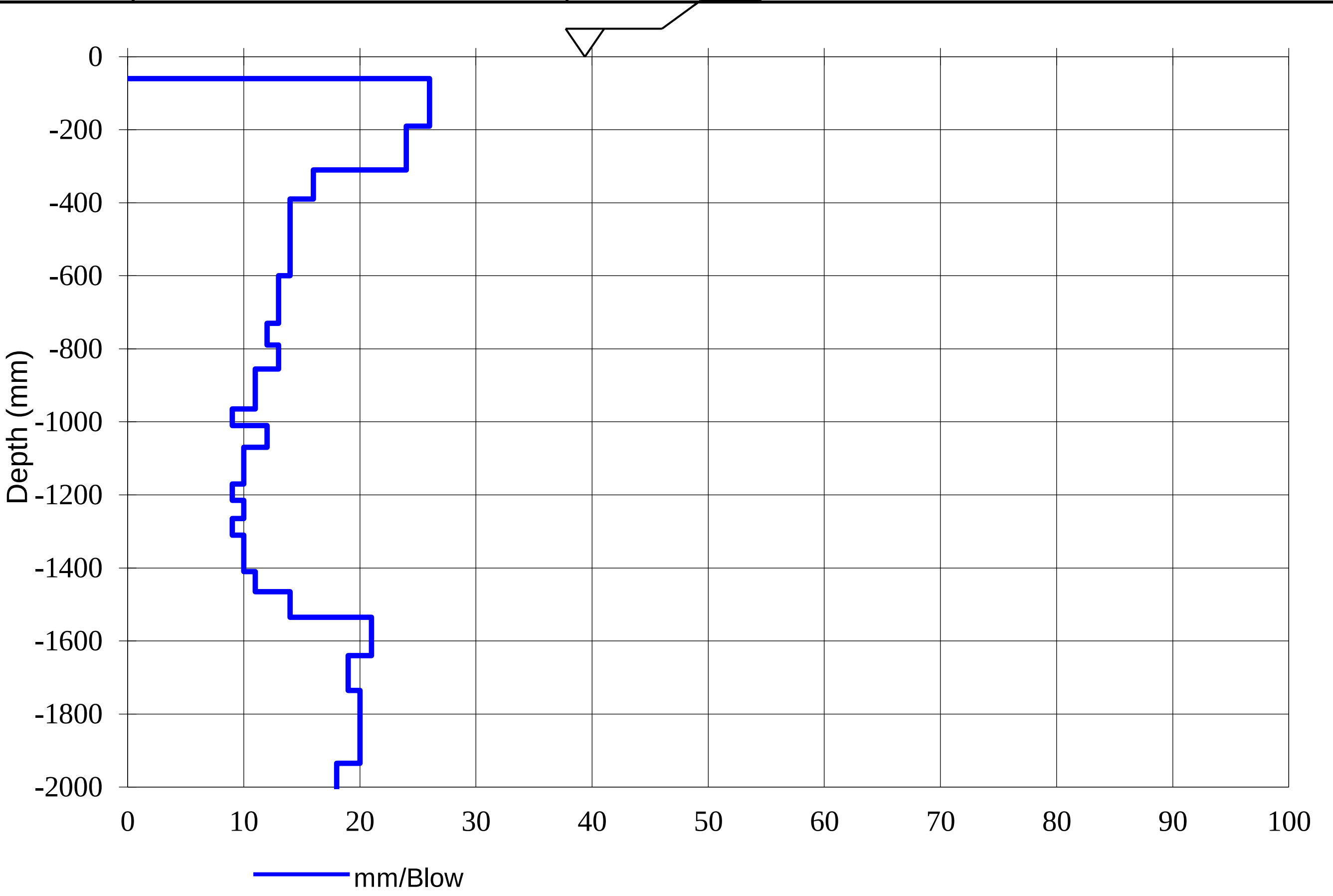
		Date Reported :	01.02.2023
		Req. Number :	
Attention :	Deon Botes	No. of Pages :	2 of 10

TEST REPORT

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

Position:	TP2	Datum Level:	NGL



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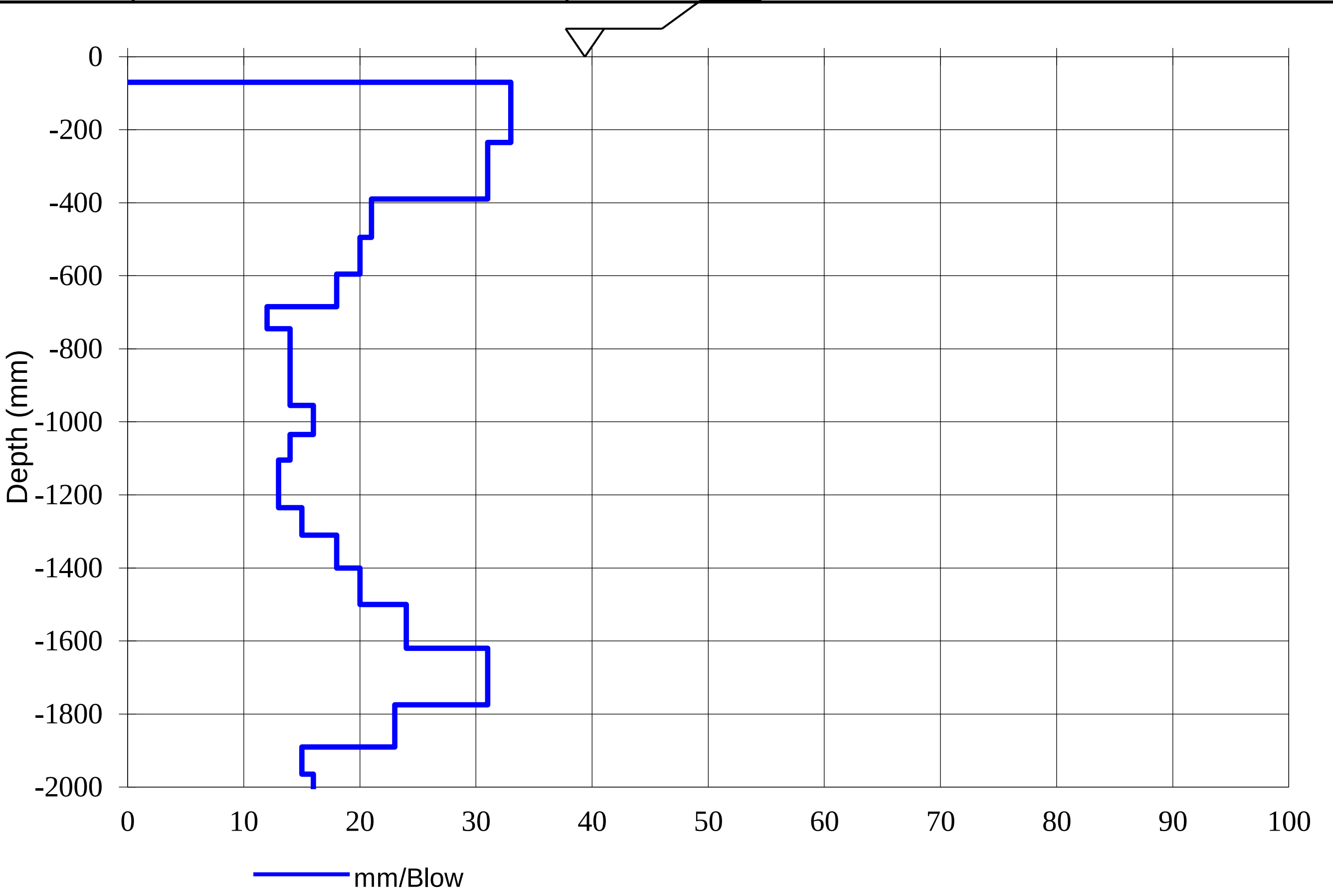
TEST REPORT

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

Position:	TP3	Datum Level:	NGL



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	6600	Req. Number :	
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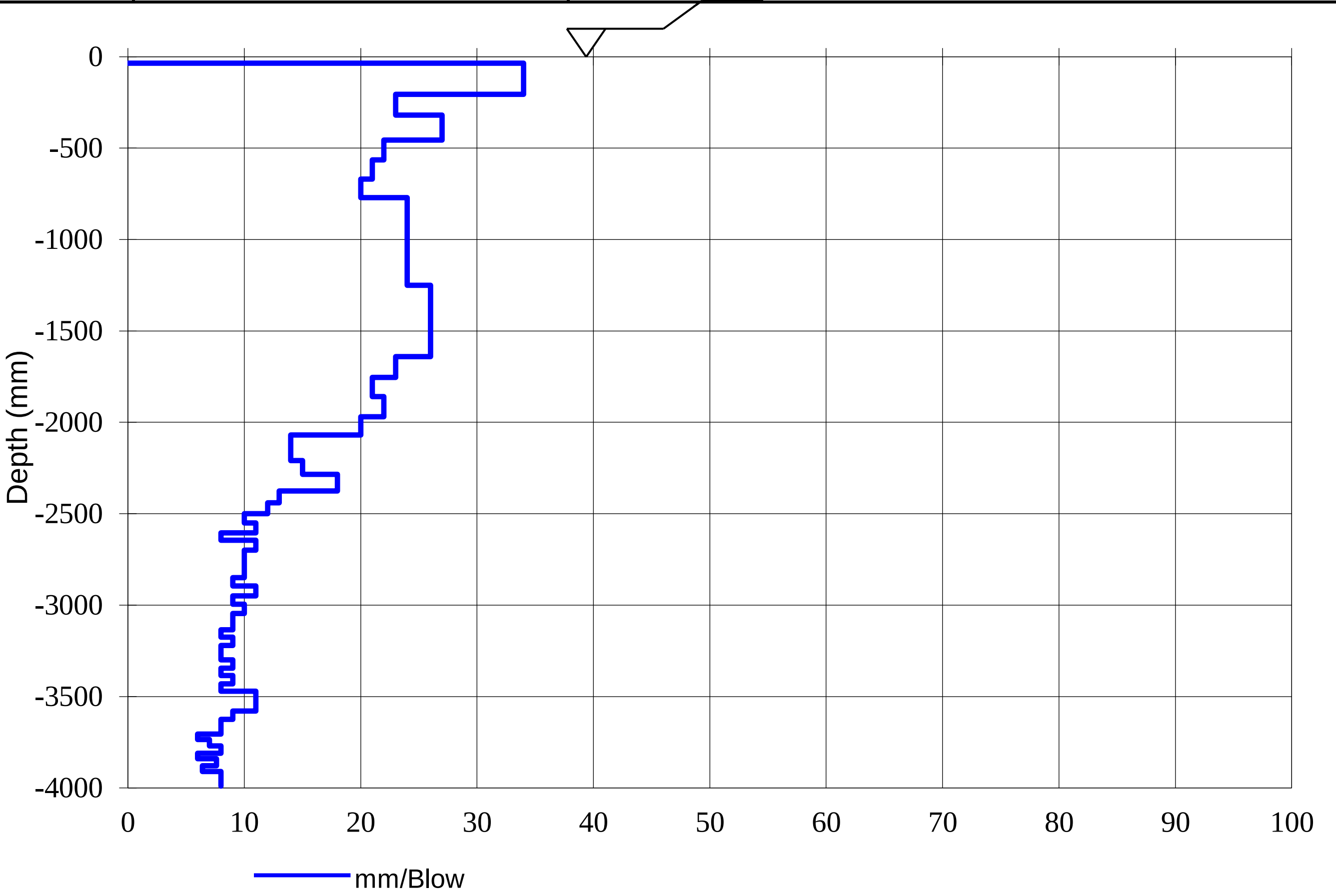
TEST REPORT

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

Position:	TP4	Datum Level:	NGL



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	Plettenberg Bay	Date Reported :	01.02.2023
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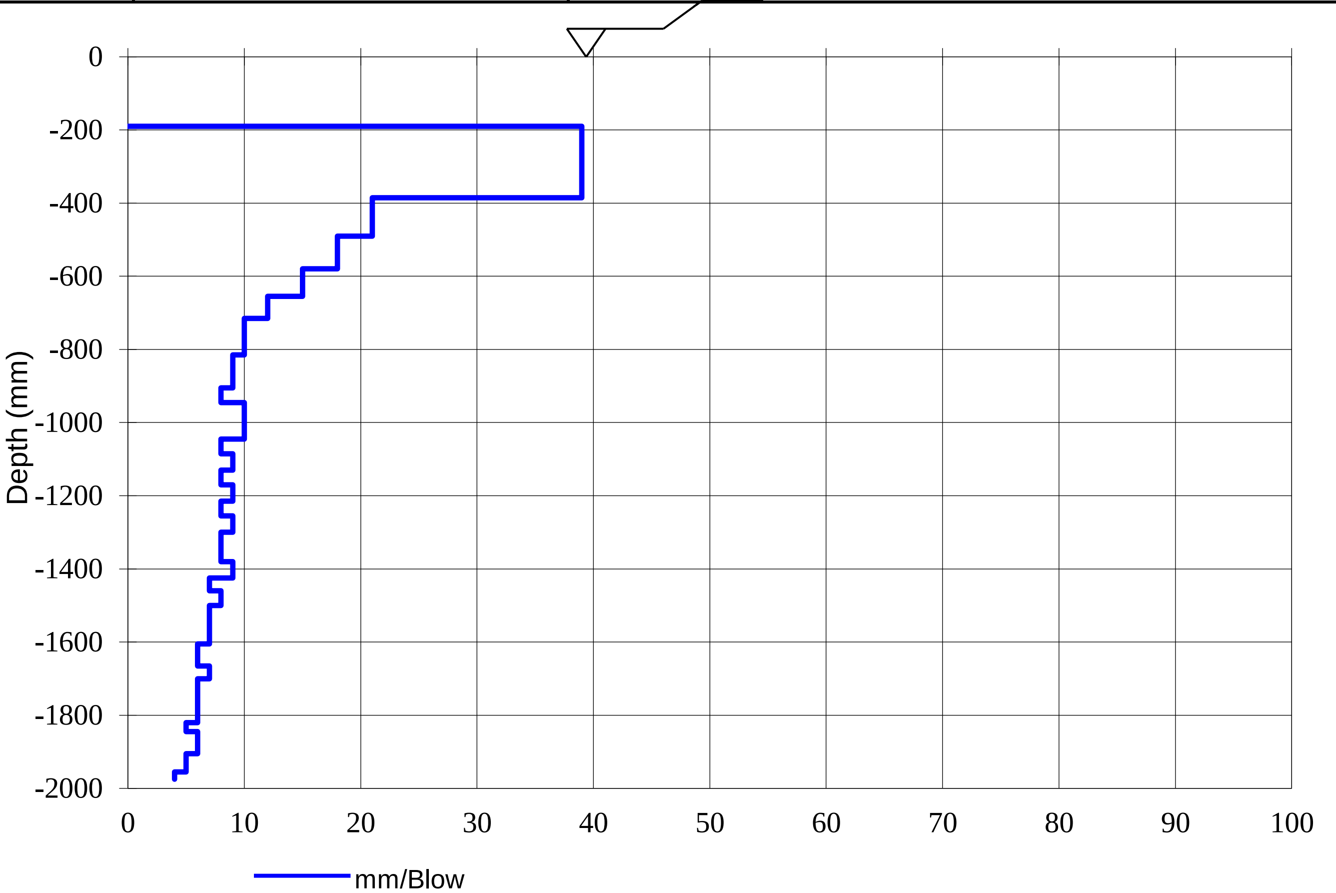
TEST REPORT

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

Position:	TP5	Datum Level:	NGL



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

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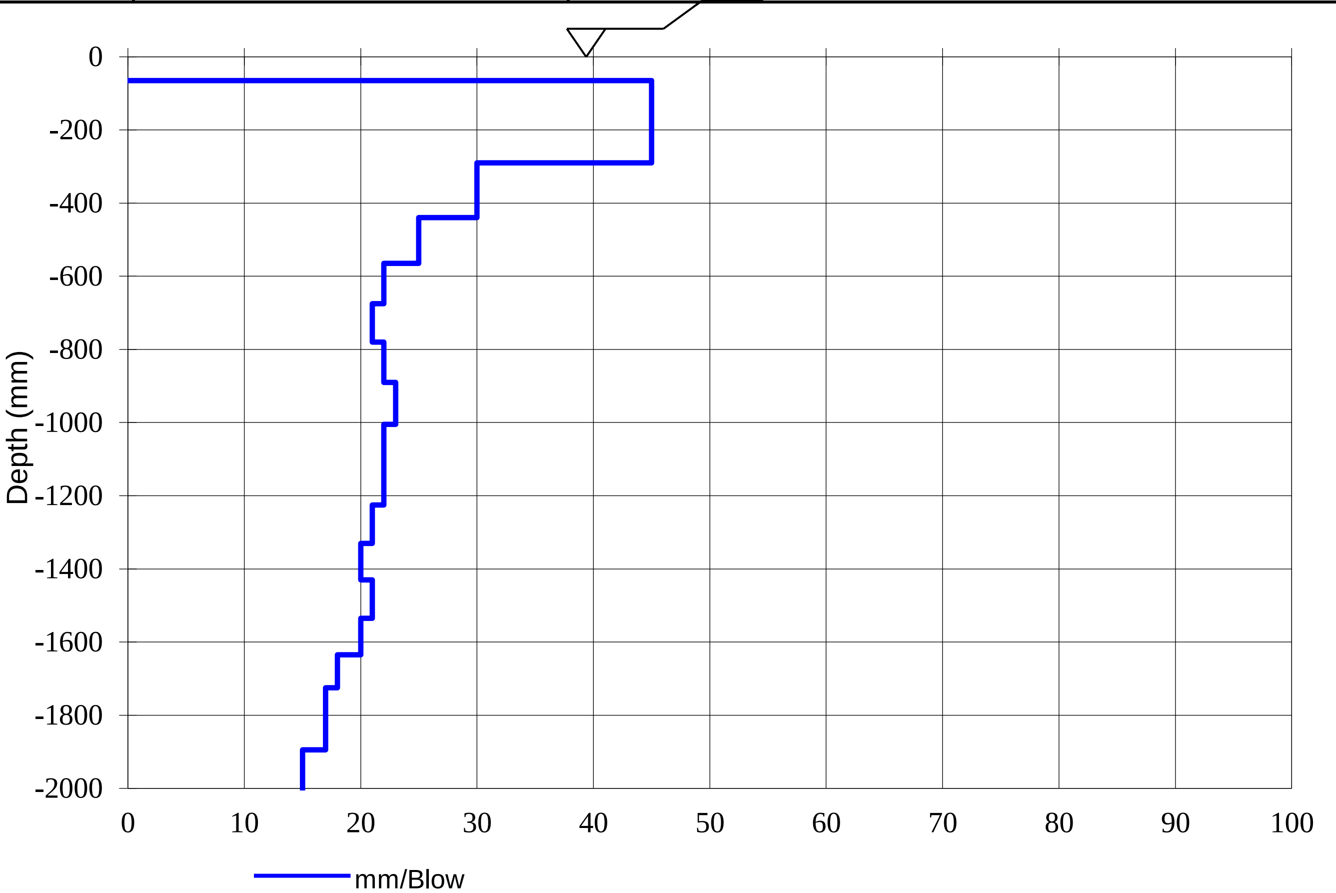
	6600	Req. Number :	
Attention :	Deon Botes	No. of Pages :	6 of 10

TEST REPORT

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

Position:	TP6	Datum Level:	NGL



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	Plettenberg Bay	Date Reported :	01.02.2023
	6600	Req. Number :	
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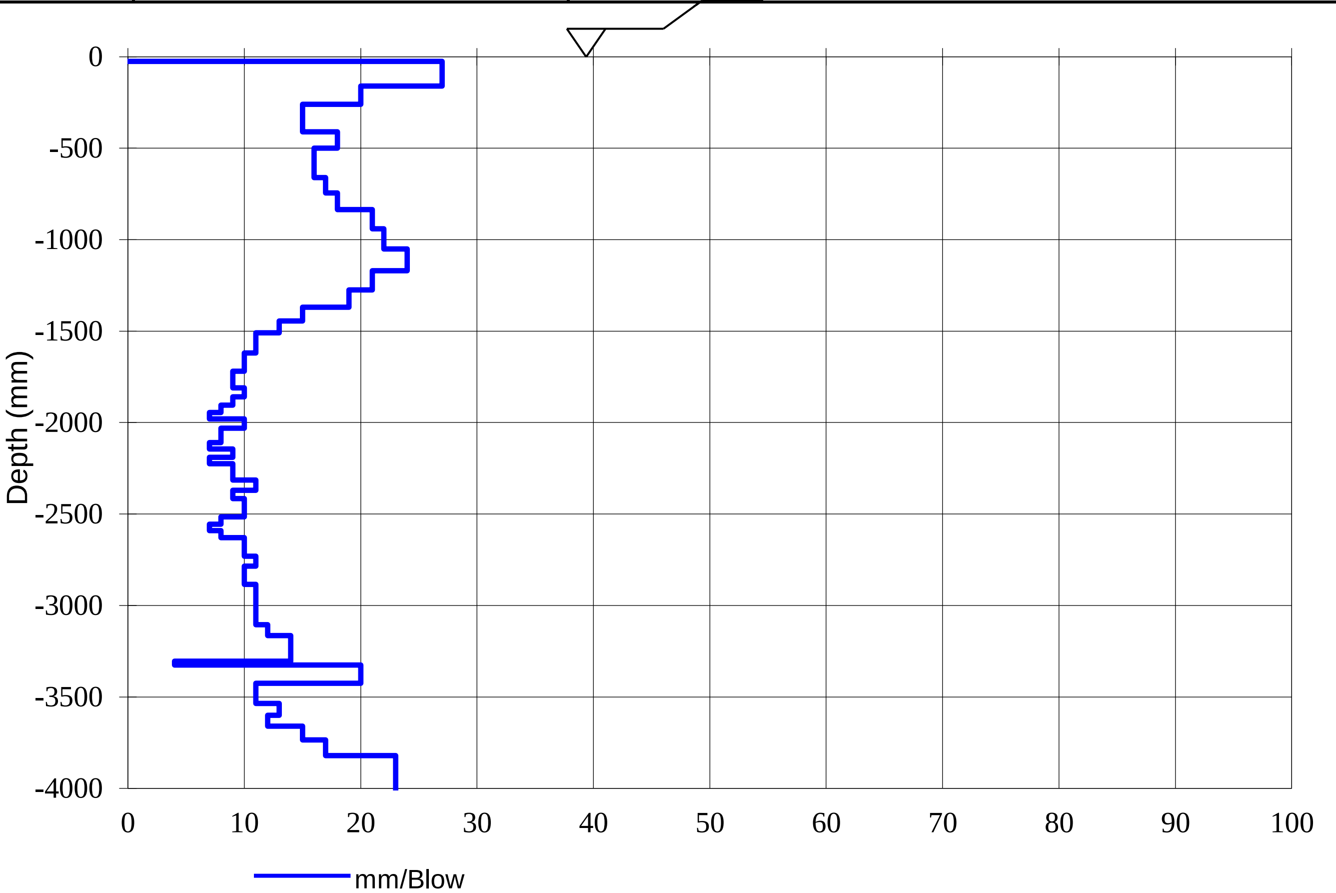
TEST REPORT

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

Position:	TP7	Datum Level:	NGL



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Customer :	Poise Consulting Engineers P.O. Box 1018 Plettenberg Bay 6600	Project :	Portion 91 of Matjiesfontein 304 Keurboomstrand
		Date Received :	24.01.2023
		Date Reported :	01.02.2023
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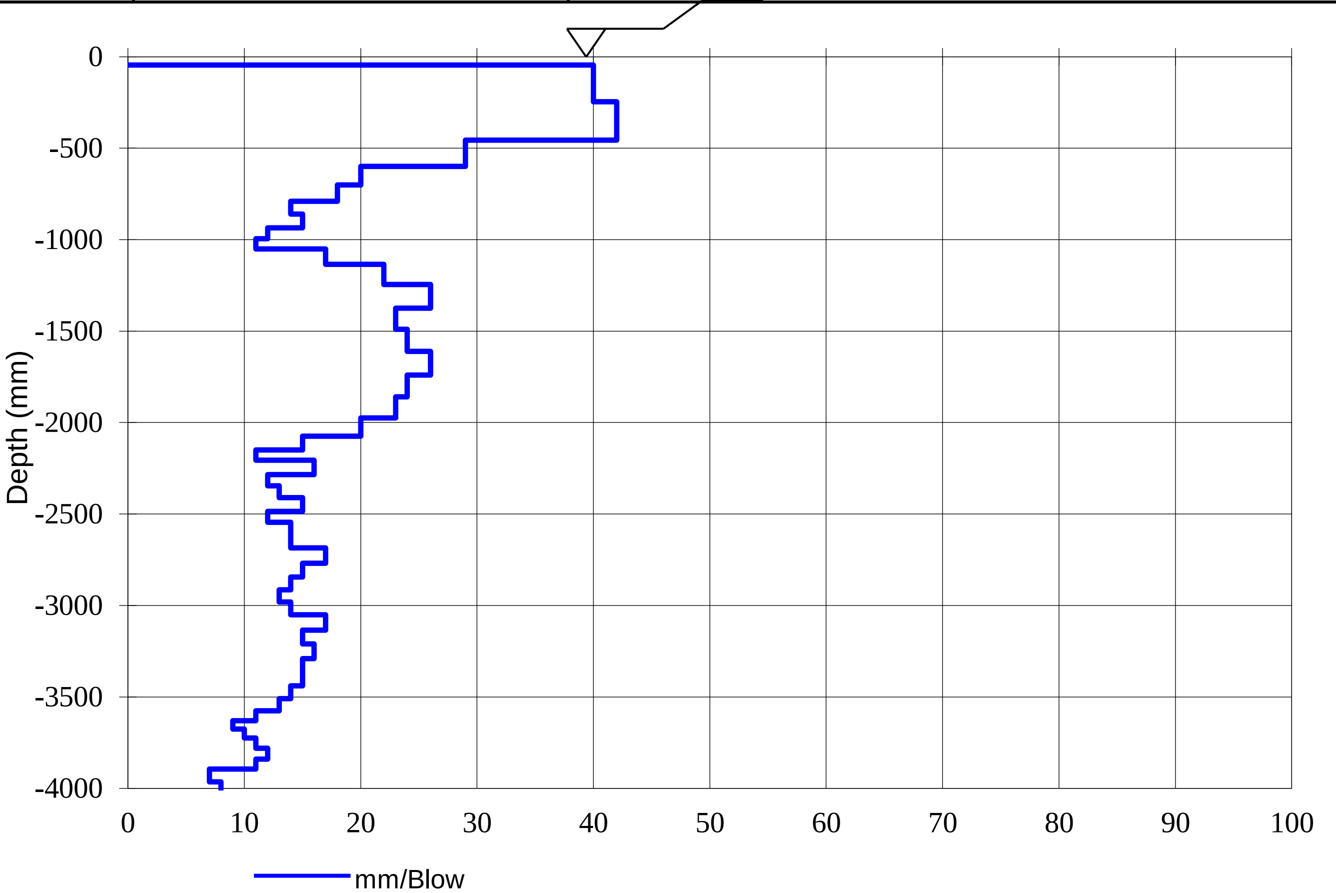
TEST REPORT

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

Position:	TP8	Datum Level:	NGL



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

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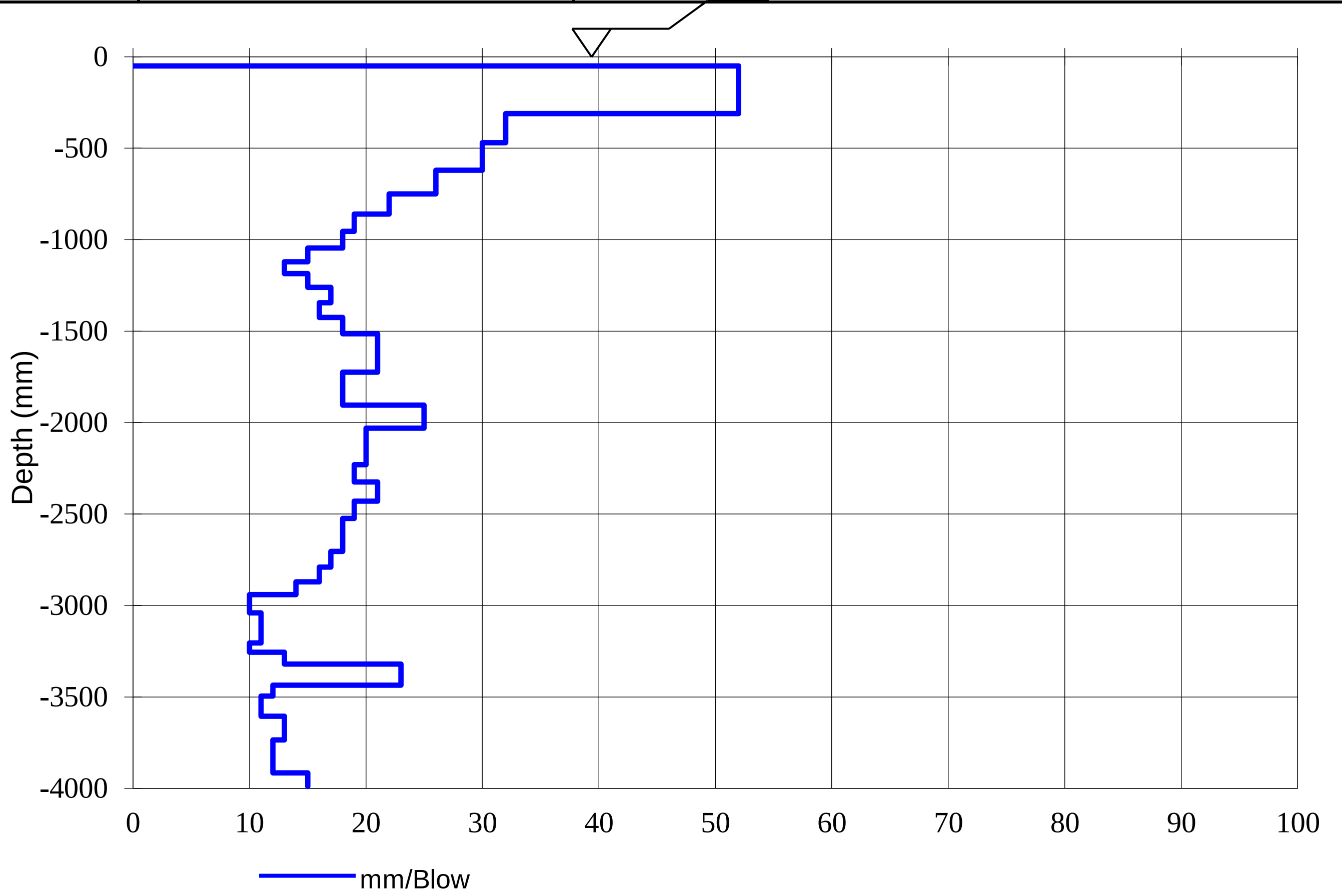
		Date Reported :	01.02.2023
		Req. Number :	
Attention :	Deon Botes	No. of Pages :	9 of 10

TEST REPORT

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

Position:	TP9	Datum Level:	NGL



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

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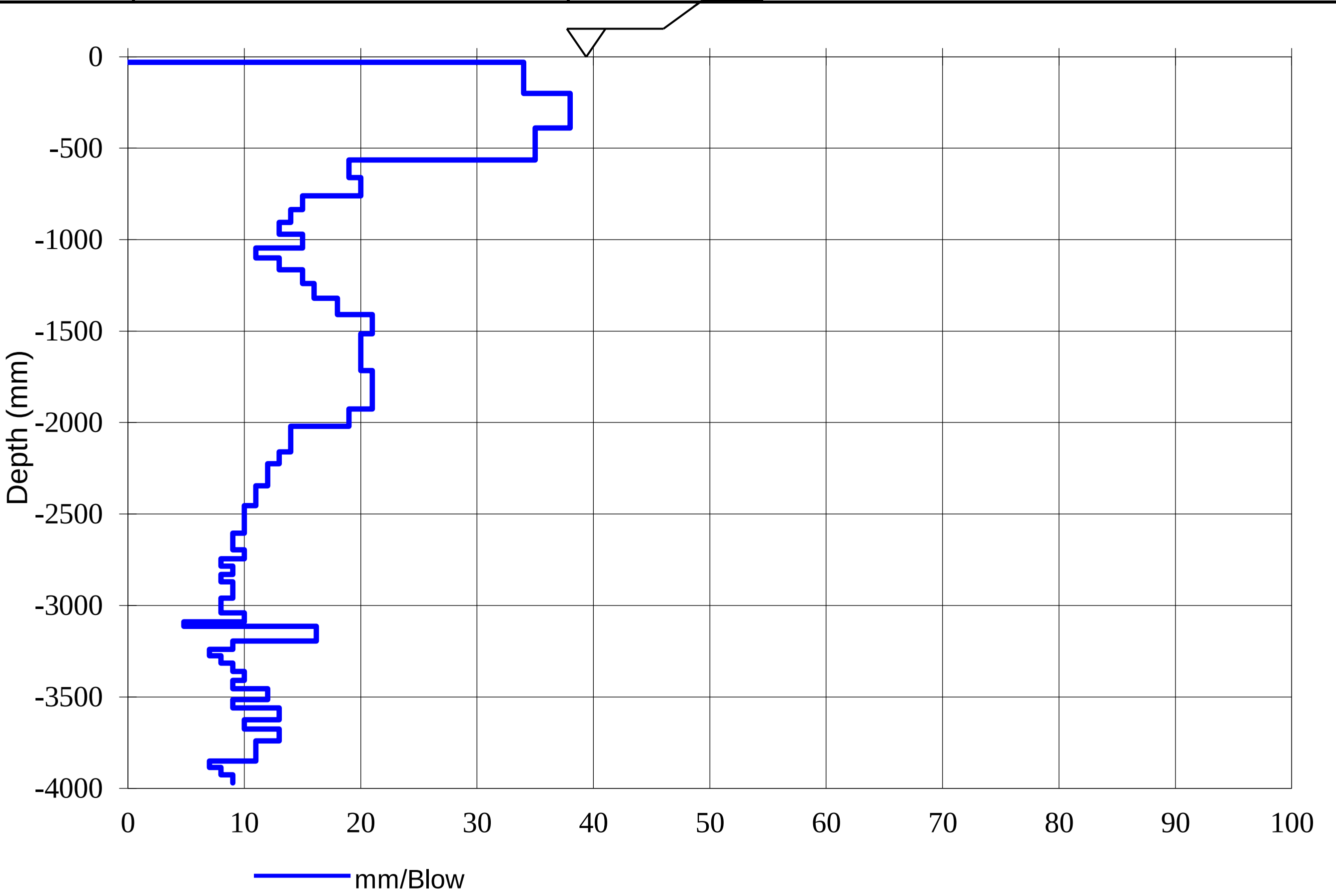
		Date Reported :	01.02.2023
		Req. Number :	
Attention :	Deon Botes	No. of Pages :	10 of 10

TEST REPORT

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

Position:	TP10	Datum Level:	NGL



I Paton (Member)
For Outeniqua Geotech. Services cc.
Technical Signatory

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18 Clyde St
Knysna
PO Box 964
Knysna
6570
044 3820502(T)
044 3820503(F)
iain@outeniqualab.co.za

10 January 2024

Familie Roux Eiendomme (Pty) Ltd
25 Soutpansbergweg
Pretoria
0084

Dear Sir/Madam

RE: ADDENDUM TO THE GEOTECHNICAL REPORT – PORTION 91 OF MATJIESFONTEIN 304, PLETTENBERG BAY

1. Introduction and scope of work

As per our appointment received on 13 November 2023, we have undertaken addition testing on the above site. The scope of the work was to excavate additional trial pits along the northern boundary of the development area to determine depth of any water tables in this area, as requested by Eco Route Environmental Consultants on behalf of the DEA&DP. The methodology proposed and accepted was as follows:

- Review the geological and geotechnical data for the site;
- Conduct a subsurface investigation consisting of the following methods:
  - Excavate 5x new test pits spread out along the northern boundary of the development footprint with a TLB/back-actor to max depth of 2.5m or refusal.
  - Profile and photograph of test pits by qualified engineering geologist according to SAICE Code of Practice.
  - Record water tables if any.
- Present results in a short factual addendum report.

The testing commenced on the 23 November 2023 and was completed on the same day. The environmental conditions at the time were generally sunny and warm.

2. Results

The new test positions are indicated on the plan attached in Appendix 1, as TP12-16. The profiles for these test positions are also attached in the same appendix.

A summary of the soil profiles is provided in Table 1 below. The test pits were slightly variable, but generally exposed a dominantly sandy or silty sandy profile consisting mainly of naturally transported soils (aeolian/ alluvial/colluvial). Some localised deposits of imported fill/disturbed soil of variable thickness were also encountered above the naturally occurring soil horizons (refer specifically to TP12). Residual soils were encountered below the transported soils in one test pit (TP16) which were derived from the insitu weathering of the underlying shale rock, which was also exposed towards the base of TP16. ***No ground water was encountered in any of the test pits.***

Table 1: Summary of test pit profiles

Test pos. No.	Imported (fill) soil	Transported soil	Pedogenic soil	Residual soil	Rock	Final depth of test pit	Refusal	Water table depth
TP12	0-2000	2000-3000	-	-	-	3000	None	-
TP13	0-400	400-2400	-	-	-	2400	None	-
TP14	0-150	150-2500	-	-	-	2500	None	-
TP15	-	0-2400	-	-	-	2400	None	-
TP16	-	0-900	-	900-1900	1900-2300	2300	None	-

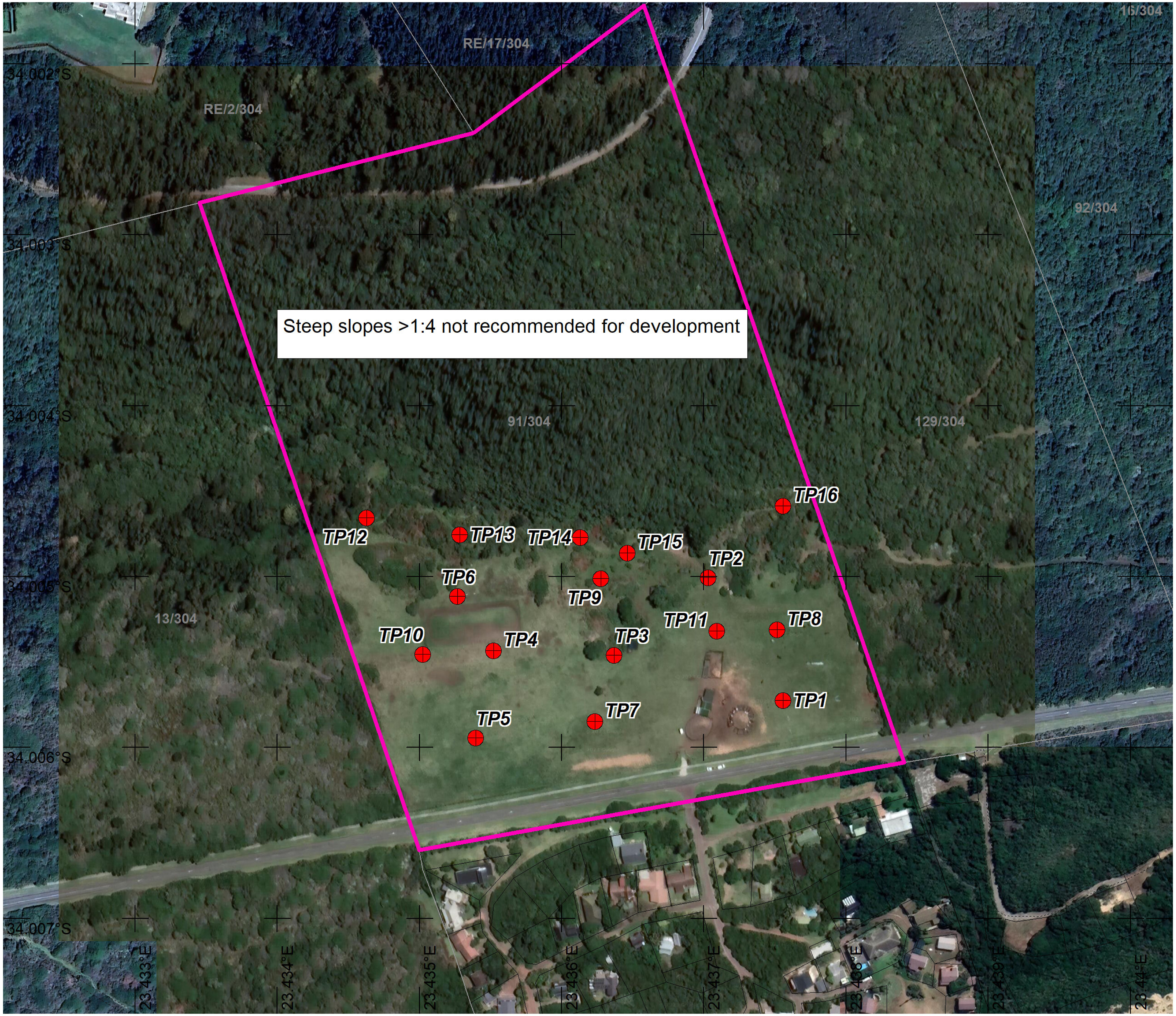
3. Conclusions

The additional tests did not encounter any perched water tables or groundwater seepage, but this may be due to the generally dry conditions at the time of the investigation.

Yours faithfully

Iain Paton Pr Sci Nat Pr Tech Eng

Appendix 1



N

Legend

- Property boundary
- Test positions

Project: New residential development
Site: Portion 91 of Matjiesfontein 304
Area: Plettenberg Bay

Dwg Name: Geotechnical map
Date: December 2023
Rev no: 1
Drawn: IP

Client: Familie Roux Eiendomme (Pty) Ltd
Structural/Civil Eng: Poise Consulting
Architect:

OUTENIQUA
GEOTECHNICAL SERVICES

18 Clyde St
Knysna
6571
South Africa
+27443820502
info@outeniqualab.co.za

Scale 1:3500

OUTENIQUA GEOTECHNICAL SERVICES

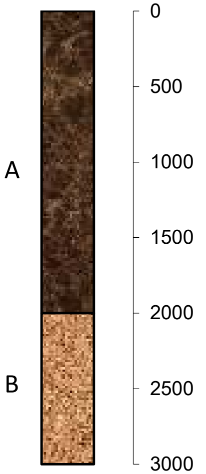
Geotechnical Soil Profile

Client:	Eco Route Environmental Consultancy
Project:	Portion 91 of Matjiesfontein 304 Keurboomssstrand
Area:	Plettenberg Bay
Date:	23.11.2023
Excavator:	TLB

TP 12

Datum: NGL | Co-ords: 23 Y-040151 X3764263

Key to symbols: ● Sample taken | Groundwater



(0 to 2000)	Moist, dark brown mottled dark yellow, medium dense, pinholed and voided, **SILTY SAND**, imported (fill, infilled ground)
(2000 to 3000)	Moist, dark reddish brown, dense, pinholed, **SAND**, transported.

TP Stopped
No Water

Dynamic Cone Penetrometer (DCP)

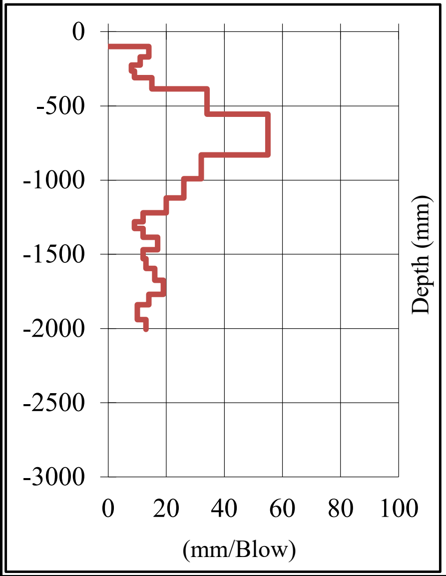
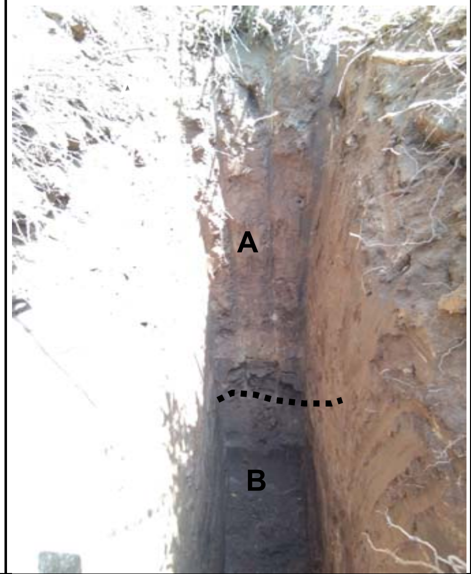


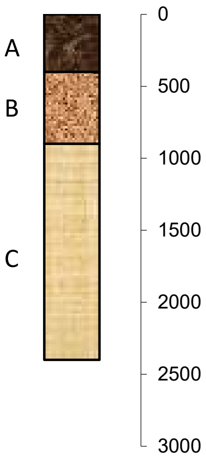
Photo of Test Pit



TP 13

Datum: NGL | Co-ords: 23 Y-040211 X3764274

Key to symbols: ● Sample taken | Groundwater



(0 to 400)	Slightly moist, dark reddish brown, medium dense, intact, **SILTY SAND**, imported (fill, infilled ground)
(400 to 900)	Moist, dark reddish brown, loose, intact, **SILTY SAND**, transported.
(900 to 2400)	Moist, light yellow light yellowish orange, medium dense, intact, **SAND**, transported.

TP Stopped
No Water

Dynamic Cone Penetrometer (DCP)

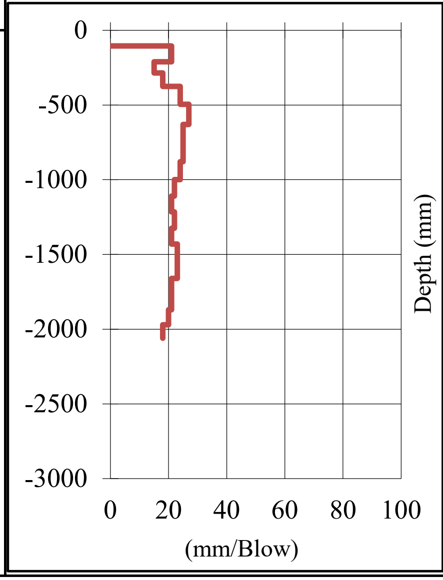


Photo of Test Pit

Geotechnical Soil Profile

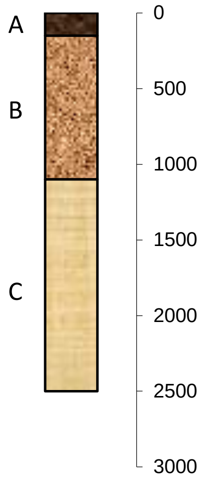
OUTENIQUA GEOTECHNICAL SERVICES

Client:	Eco Route Environmental Consultancy
Project:	Portion 91 of Matjiesfontein 304 Keurboomssstrand
Area:	Plettenberg Bay
Date:	23.11.2023
Excavator:	TLB

TP 14

Datum: NGL | Co-ords: 23 Y-040290 X3764276

Key to symbols: ● Sample taken | Groundwater



(0 to 150)	Slightly moist, pale red, dense, intact, **CLAYEY SANDY GRAVEL**, imported (fill, infilled ground)
(150 to 1100)	Moist, dark reddish brown, very loose, intact, **SILTY SAND**, transported.
(1100 to 2500)	Moist, light yellow, medium, intact, **SAND**, transported.

TP Stopped
No Water

Dynamic Cone Penetrometer (DCP)

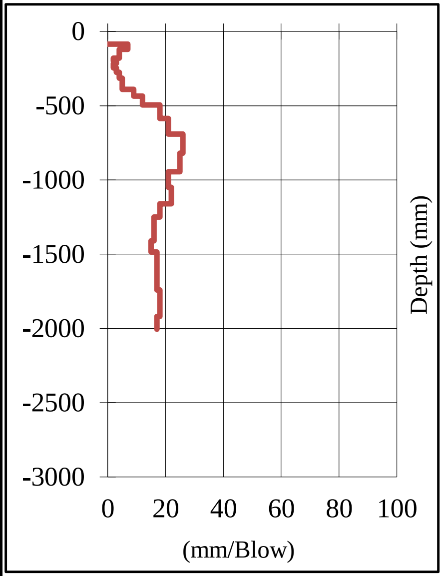
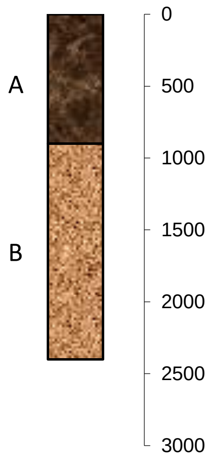


Photo of Test Pit

TP 15

Datum: NGL | Co-ords: 23 Y-040320 X3764287

Key to symbols: ● Sample taken | Groundwater



(0 to 900)	Moist, dark reddish brown, very loose, intact, **SILTY SAND**, transported.
(900 to 2400)	Moist, light yellowish orange, medium dense, intact, **SAND**, transported.

TP Stopped
No Water

Dynamic Cone Penetrometer (DCP)

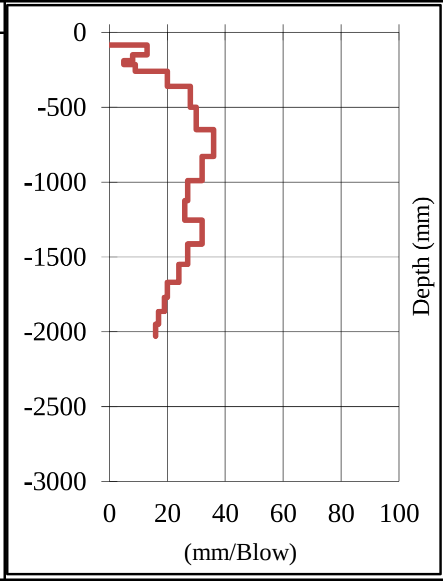


Photo of Test Pit

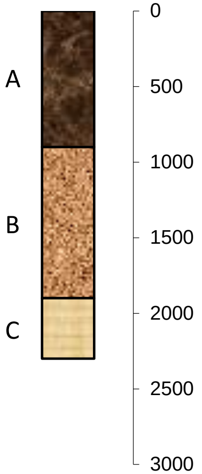
Geotechnical Soil Profile

OUTENIQUA GEOTECHNICAL SERVICES

Client:	Eco Route Environmental Consultancy
Project:	Portion 91 of Matjiesfontein 304 Keurboomssstrand
Area:	Plettenberg Bay
Date:	23.11.2023
Excavator:	TLB

TP 16

Datum:	NGL	Co-ords:	23 Y-040422 X3764256
Key to symbols:	● Sample taken		Groundwater



(0 to 900)	Moist, light reddish brown, medium dense, pinholed, **CLAYEY SILTY SAND**, transported.
(900 to 1900)	Moist, dark red mottled light grey, stiff, fissured, **CLAYEY SAND**, residual.
(1900 to 2300)	Dark brown, highly weathered, fine grained, foliated, Soft rock, soft rock **Shale**.

TP Stopped
No Water

Dynamic Cone Penetrometer (DCP)

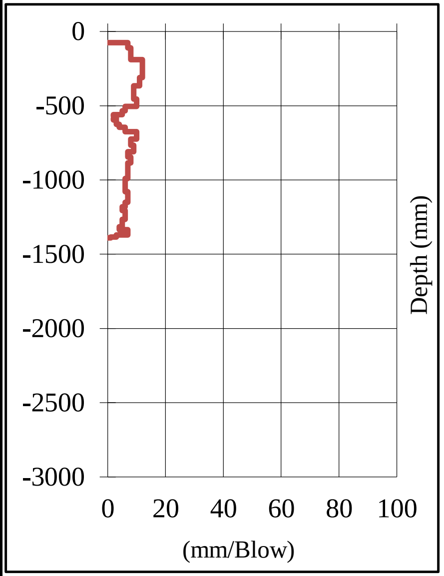
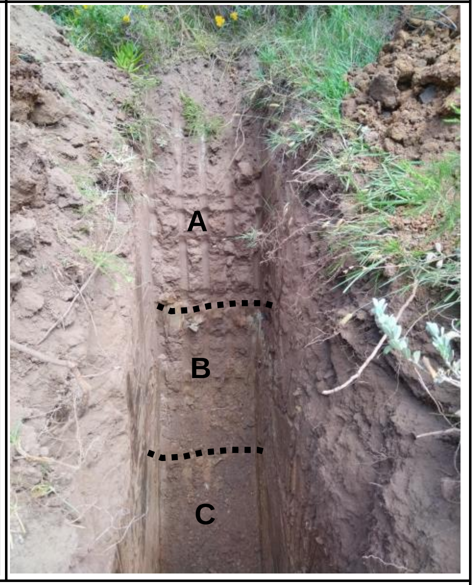


Photo of Test Pit



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Geotechnical Engineering Consultants

Registration No. 1999/062743/23

18 Clyde Street, Knysna : PO Box 964, Knysna, 6570

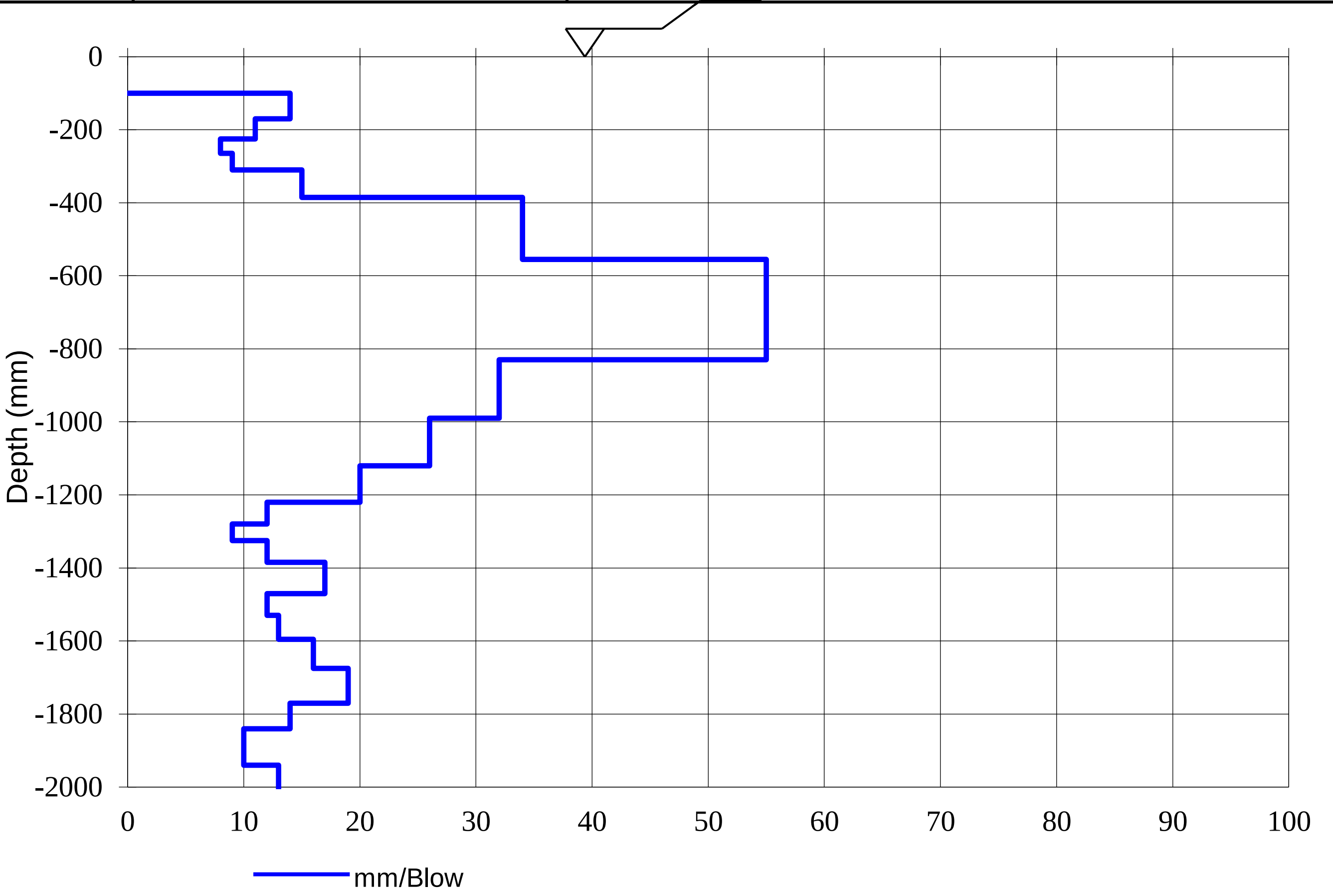
Tel: 044 3820502 : Fax: 044 3820503 : e-mail: iain@outeniqualab.co.za

Customer :	Eco Route Environmental Consultancy	Project :	Portion 91 of Matjiesfontein 304 Keurboomsstrand Plettenberg Bay
	Office 14 Main Road	Date Received :	15.11.2023
	Sedgefield	Date Reported :	23.11.2023
	6573	Req. Number :	
Attention :	Joslyn Marshall	No. of Pages :	1 of 5

TEST REPORT

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

Position:	TP12	Datum Level:	NGL



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	6573	Req. Number :	
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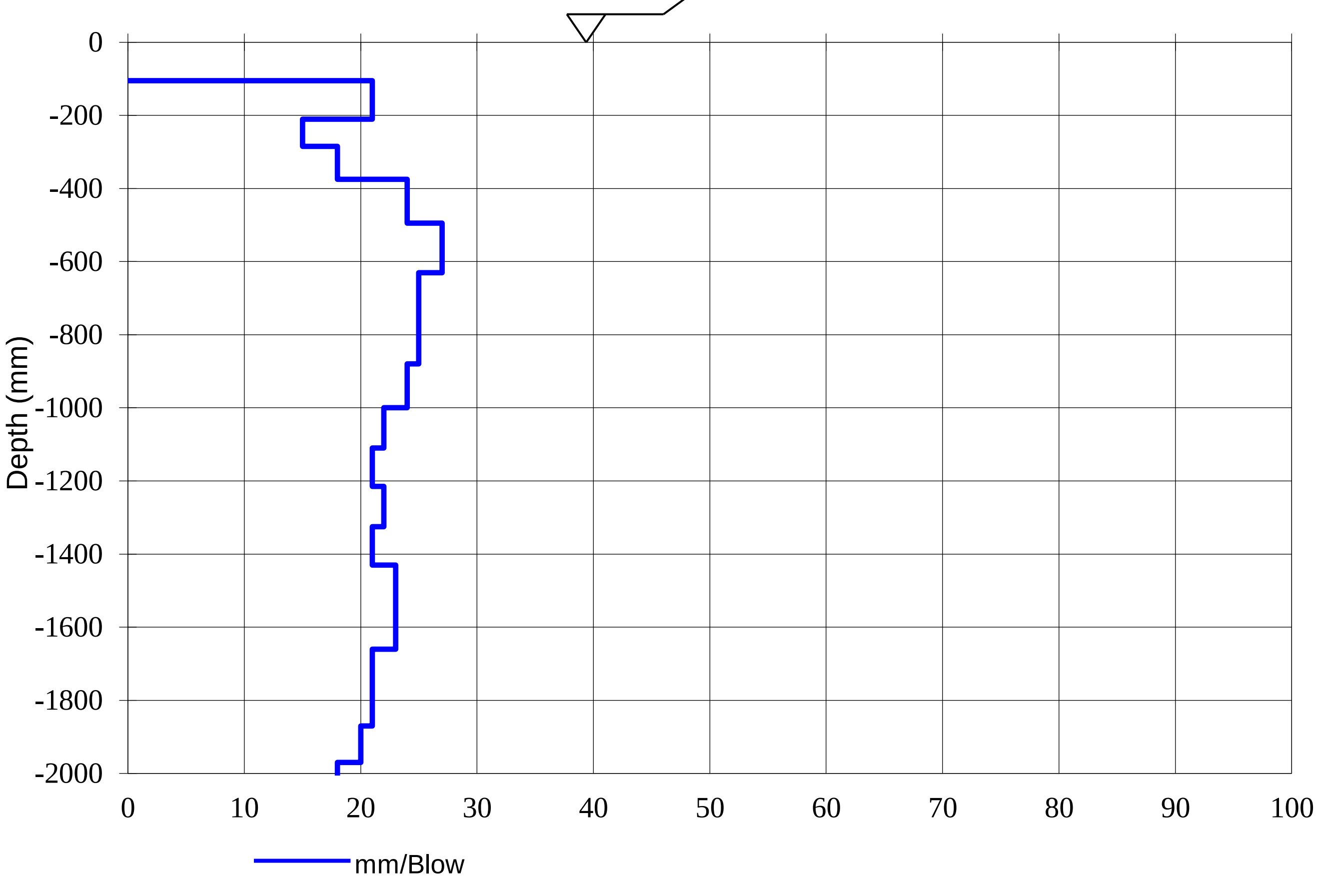
TEST REPORT

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

Position:	TP13	Datum Level:	NGL



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	6573	Req. Number :	
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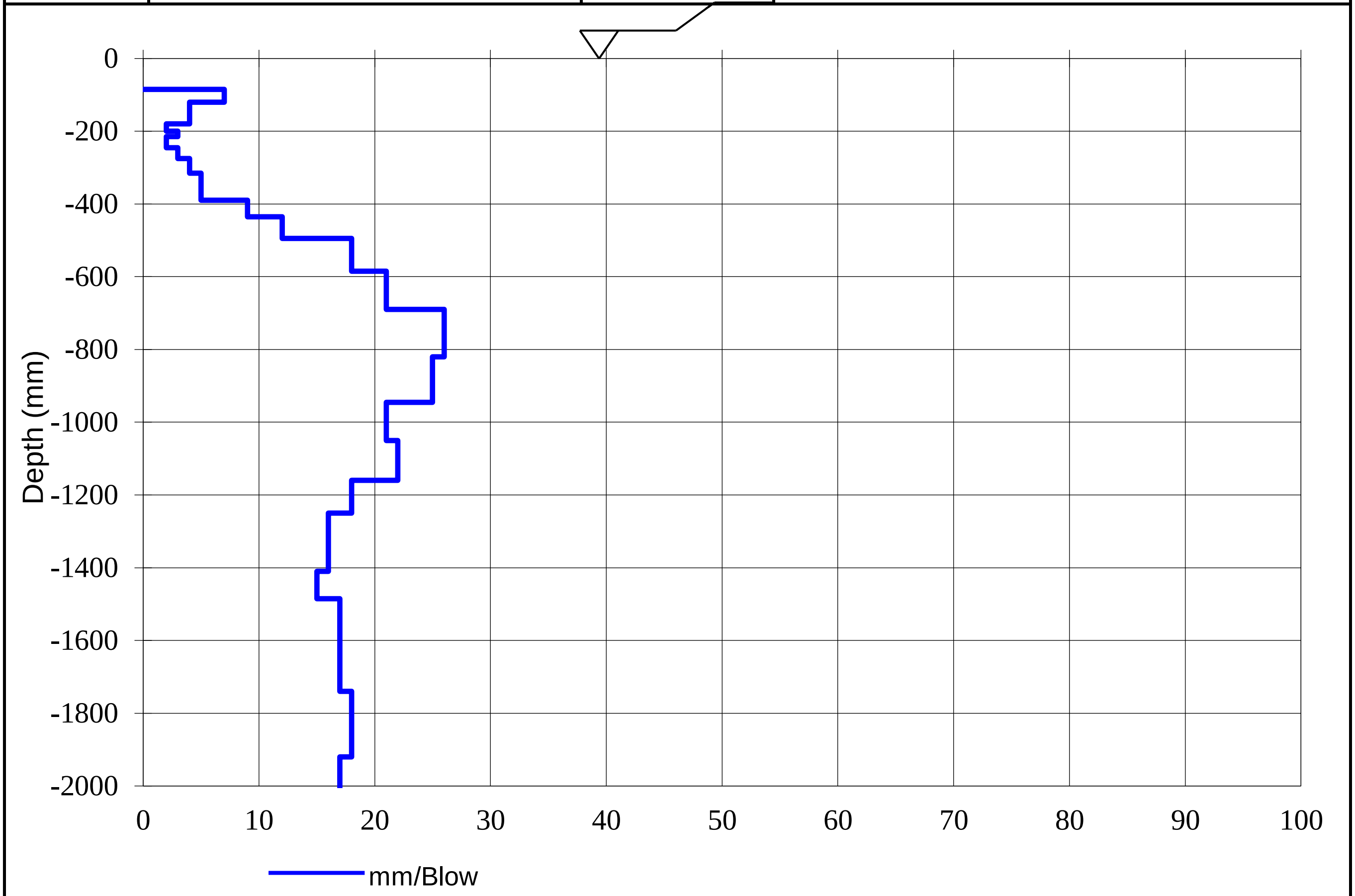
TEST REPORT

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

Position:	TP14	Datum Level:	NGL



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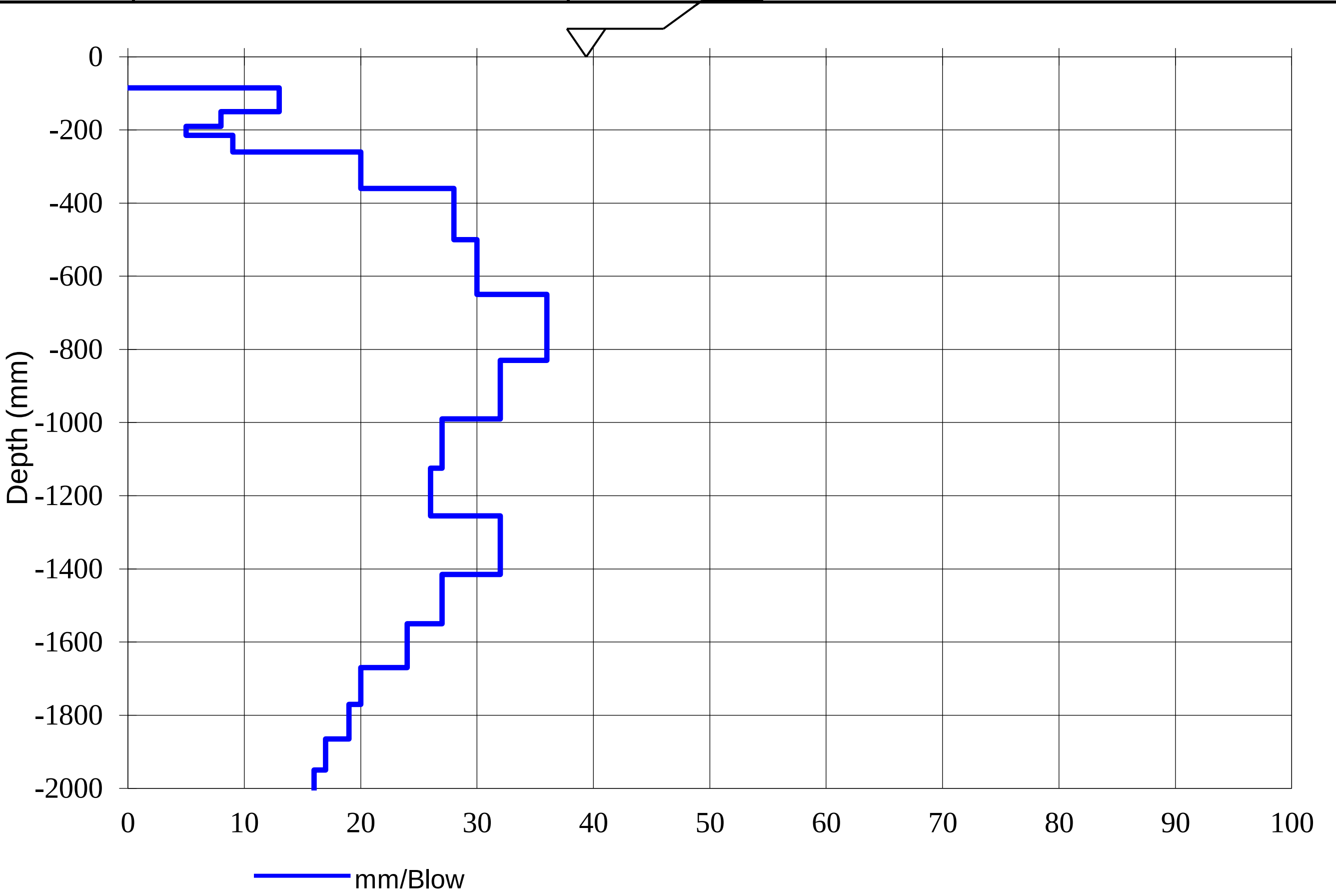
TEST REPORT

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

Position:	TP15	Datum Level:	NGL



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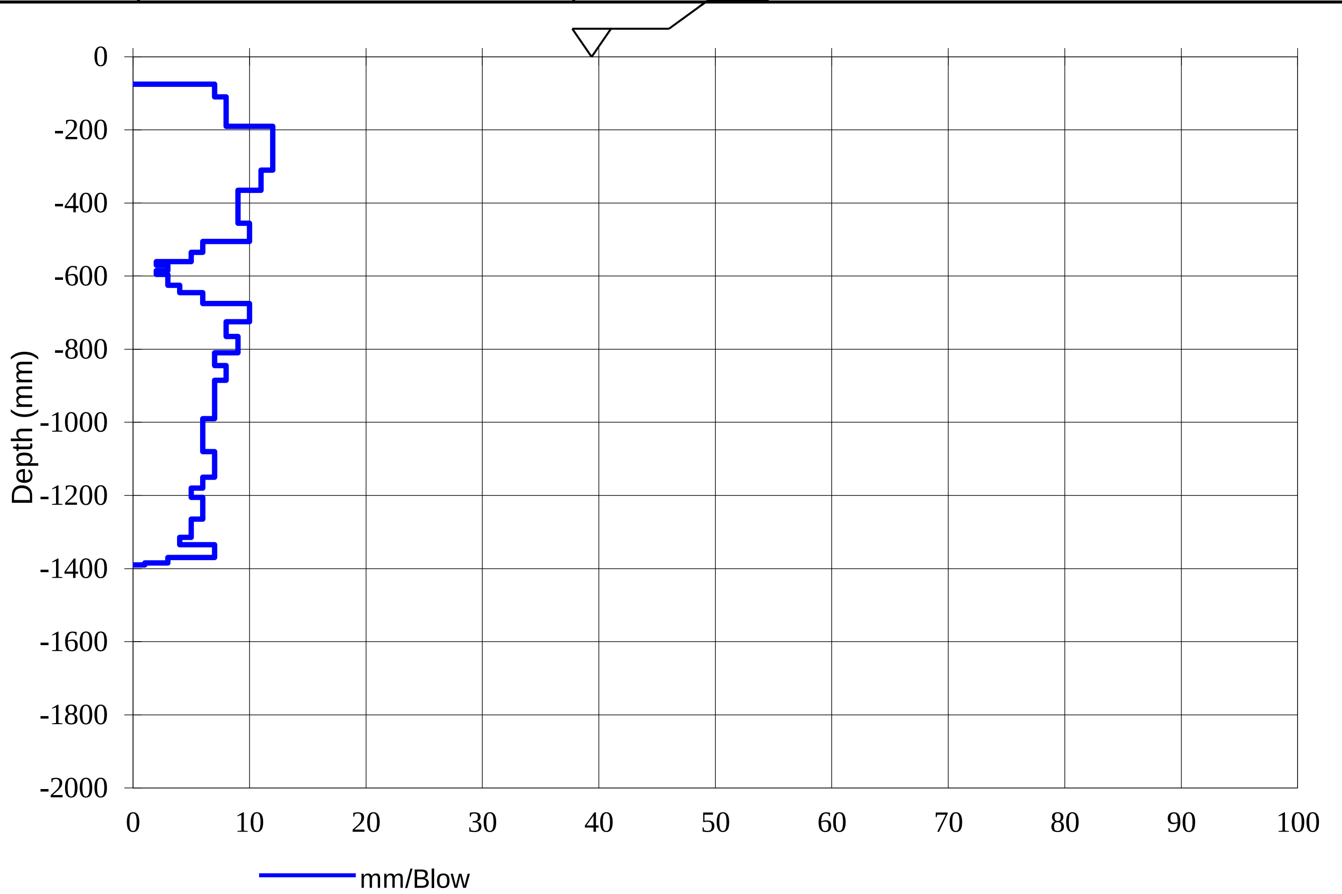
Attention :	Joslyn Marshall	No. of Pages :	5 of 5

TEST REPORT

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

Position:	TP16	Datum Level:	NGL



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