# REPORT TO

# PROJECT AND DEVELOPMENT MANAGERS

# ON A BROWNFIELDS

# GEOTECHNICAL INVESTIGATION

# OF THE

# AMANYUSWA RURAL HOUSING PROJECT

# UBUHLEBEZWE LOCAL MUNICIPALITY

**Ref № 17213**

**MARCH 2019**

**DRENNAN MAUD (PTY) LTD**
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# CONTENTS

# REPORT TO PROJECT AND DEVELOPMENT MANAGERS ON A BROWNFIELDS GEOTECHNICAL INVESTIGATION OF THE AMANYUSWA RURAL HOUSING PROJECT, UBUHLEBEZWE LOCAL MUNICIPALITY

## 1. INTRODUCTION

Drennan, Maud and Partners undertook a preliminary geotechnical study of the Amanyuswa Rural Housing Project in Ubuhlebezwe Local Municipality in May 2013. The proposed housing initiative incorporates the rural upgrade of approximately 500 households over an area in excess of 2500 hectares.

In February 2019, Mr. Pieter Kleinhans of Project and Development Management (PDM) appointed Drennan Maud (Pty) Ltd (DML) to conduct the Phase 1 - Brownfields geotechnical investigation of the area indicated on the Locality Plan Drawing № 17213-01 attached to this report.

A settlement plan provided by PDM shows that the approximately 500 beneficiaries are scattered across the areas of Ndunduma, Mpondo, Ndonyane and Emkhubane. The investigation was thus focused in areas where development is to take place. Therefore, less accessible areas with no existing development such as most valleys and very steep slopes have not been reviewed or investigated as they do not form part of the present development. However, general recommendations for the development in the non-investigated areas are given as a guideline in the report.

## 2. SITE DESCRIPTION

The study area is located some 40 km as the 'crow flies' inland (westward) of Scottburgh.

The study area has a strongly undulating conformation with numerous deep non-perennial stream valleys etched into the landscape. The drainage pattern in the study area is strongly dendritic with almost all runoff toward the generally eastward flowing Mpambanyoni River being via the Bhobhobho and KuNongengane tributaries. However, the central district road running south to north crosses the highly diverse landscape.

General access to the study area is via the R612 Main Road traveling in a westerly direction from Umzinto then turning right onto the central district road at Njane Wholesalers Store. The southern boundary of the study area is reached after traversing a further 1.5 km in a northerly direction. Access to most beneficiaries is via minor roads stemming from the central district road however in some areas only tracks and foot paths provide access as no roads are available or have been eroded past the point of being traversed by a vehicle.

## 3. PROPOSED DEVELOPMENT

As understood, the proposed development initiative incorporates the rural upgrade of approximately 500 households, using a standard raft foundation, where possible.

## 4. FIELDWORK

The fieldwork was carried out during February 2019.

The field investigation comprised mapping the geology and related soils occurring in the area, by means of logging both natural and man-made building platforms or roadside cutting exposures.

The approximate position of all exposures and topographical/geotechnical features encountered are indicated on the Site Plan, Drawing № 17213-02 attached to this report.

### 4.1 Exposures (EXP 1 - 118)

A total of 118 exposures, EXP 1 - 118, within the study area were examined and logged. The profiles are included in Appendix A.

From the exposures a number of representative soil samples were taken to the Thekwini Soils Laboratory in Durban for preparation and testing.

### 4.2 Material Sampling

A total of 15 indicator samples (S1 - S15), 4 disturbed bulk samples (S16 - S19) and 10 pH and Conductivity samples (S1, S3, S5, S6, S8 - S12, S15) of the subsoils occurring across the site were recovered from the exposures and the following tests were carried out.

- Grading analysis including wet sieving to an aperture of 0.075mm and hydrometer analysis to a diameter of 0.002mm.
- Indicator testing consisting of Liquid Limit, Plastic Limit and Linear Shrinkage tests.
- pH and Conductivity testing.
- Rapid re-compacted swell testing.

Test results are summarised in Appendix B together with the material analyses, and are discussed under Section 6 of this report.

## 5. GEOLOGY AND SOILS

The study area is underlain for the most part by undifferentiated rocks of the Natal Structural and Metamorphic Province comprising essentially of the Mapumulo Metamorphic Suite and the Mkomazi and Mzumbe Gneiss Suites and are intruded by a more recent Jurassic age dolerite. Natal Group sandstone has been down faulted along the northern portion of the site.

### 5.1 Colluvium

Colluvium was observed across the majority of the study area, ranging from 0.1 to 2.2m thickness and in some exposures being non existent. The colluvium occurs as dark brown, loose to dense, clayey sandy gravel to sandy silty clay. Granite or dolerite cobbles and boulder corestones were occasionally observed within the horizon.

### 5.2 Pebble Marker/Colluvium

A thin 0.1 to 0.9m thick, matrix-supported, light red to dusky red, dense to very dense, slightly clayey sandy gravel layer containing pebble to cobble sized quartz and feldspar fragments is typically present at the base of the colluvial horizon. The gravel layer occurs at depths ranging from ground level to 2.2m below ground level and constitutes the pebble marker which typically overlies granitic bedrock.

### 5.3 Karoo Dolerite

Dolerite was mainly observed in exposures located in the eastern central and western regions of the study area. It occurs as a soft to hard rock, completely weathered and residual material.

Where exposed, dolerite was noted as a 0.8 to 1.6m thick, grey weathered brown and orange brown, highly to medium weathered, very closely jointed, soft to hard rock in a slightly clayey sandy matrix. The rock was exposed at depths ranging from ground level to 1.9m below ground level.

Completely weathered dolerite is typically orange brown, medium dense to dense, slightly silty, sandy gravel containing occasional sub-rounded to rounded cobble to boulder sized corestones. The material was noted to be 0.4 to 1.8m thick exposed from ground level to 2.5m below ground level.

The residuum where present occurs as a 0.5 to 2.0m thick, dusky red brown speckled yellow orange, firm to very stiff, slightly fissured to micro-shattered, sandy silty clay containing occasional sub-rounded to rounded cobble to boulder sized corestones. The material is exposed from ground level to 2.0m below ground level.

### 5.4 Granite

The granitic basement rocks of the Natal Structural and Metamorphic Province are exposed across the majority of the study area. Where encountered, the granite occurs as very soft rock and as residual material.

The bedrock is generally exposed from ground level to depths 3.0m as a 0.1m to 2.7m light yellowish orange to dusky red and orange brown occasionally banded light grey, completely weathered, medium to coarse-grained, intensely foliated, very soft rock, micaceous granitic gneiss.

The residual material is a 0.1 to 2.1m thick dusky reddish brown to dark yellowish orange, medium dense to dense, occasionally fissured, clayey sand to gravelly sand. The residuum is exposed from ground level to depths of 2.1m below ground level.

## 6. LABORATORY TESTING

Sampling was carried out on selected indicator and disturbed bulk samples collected from the study area. As the study area covers in excess 2500 hectares the testing was undertaken in the development areas to provide a broad indication of the physical and chemical characteristics of the rock and soil types present therein so that the information can firstly assist in the broad classification of the prevailing materials and secondly in the design of appropriate foundation types on these materials.

### 6.1 Grading and Atterberg Limits

#### 6.1.1 *Colluvium*

Three samples, S 1, 2 & 4 classify as clayey sand to silty clay with a clay content of between 10.9 and 51.9% and a grading modulus of between 0.89 and 2.25. The colluvium has a liquid limit of between 27.9 and 45.3, plasticity index of between 9.8 and 13.5% and linear shrinkage of between 4.0 and 12.7%.

In terms of the AASHTO Classification System, the material classifies as A-2-4(0) to A-7-5(13), highly variable from good to poor sub-grade, with all round 'low' potential expansiveness in terms of van der Merwe's Classification System.

#### 6.1.2 *Pebble Marker/Colluvium*

A single pebble marker sample at the base of the colluvial horizon, S 13, classifies as sandy gravel, with a clay content of 5.1% and a grading modulus of 2.34. The material has a liquid limit of 26.4%, plasticity index of 7.0 and a linear shrinkage of 2.0%.

In terms of the AASHTO Classification System, the material classifies as A-2-4(0), a good sub-grade, with a 'low' potential expansiveness in terms of van der Merwe's Classification System.

### 6.1.3 *Residual Dolerite*

Three samples, S 3, 7 & 9 classify as clayey sand to silty clay with a clay content of between 31.3 and 52.5% and a grading modulus of between 0.31 and 1.02. The residuum has a liquid limit of between 32.1 and 34.9, plasticity index of between 10.3 and 13.0% and linear shrinkage of between 3.7 and 6.7%.

In terms of the AASHTO Classification System, the material classifies as A-6(2-9), a poor sub-grade, with all round 'low' potential expansiveness in terms of van der Merwe's Classification System.

### 6.1.4 *Weathered Dolerite*

Two samples, S 8 & S14, classify as clayey sandy gravel to sandy clayey gravel, with a clay content of between 16.3 and 17.2% and a grading modulus of between 1.70 and 1.94. The weathered material has a liquid limit of between 38.0 and 38.2, plasticity index of between 8.0 and 11.0% and linear shrinkage of between 4.0 and 6.7%.

In terms of the AASHTO Classification System, the material classifies as A-2-4(0) to A-2 -6(0), a good sub-grade, with a 'low' potential expansiveness in terms of van der Merwe's Classification System.

### 6.1.5 *Ferricrete*

A single ferricrete sample, S 6, classifies as clayey gravelly sand, with a clay content of 25.1% and a grading modulus of 1.34. The ferricrete has a liquid limit of 34.3%, plasticity index of 12.2 and a linear shrinkage of 2.7%.

In terms of the AASHTO Classification System, the material classifies as A-6(1), a poor sub-grade, with a 'low' potential expansiveness in terms of van der Merwe's Classification System.

### 6.1.6 *Residual Granite*

Four samples, S 5, 11, 12 & S15, classify as silty sand to clayey sand, with a clay content of between 9.0 and 32.6% and a grading modulus of between 0.85 and 1.23. The residuum has a liquid limit of between 22.5 and 29.0%, plasticity index of between 6.6 and 8.5% and linear shrinkage of between 2.0 and 4.0%.

In terms of the AASHTO Classification System, the material classifies as A-2-4(0) to A-4(1), a variably good to poor sub-grade, with a 'low' potential expansiveness in terms of van der Merwe's Classification System.

### 6.1.7 *Weathered Granite*

A single weathered granite sample, S 10, classifies as silty clayey sand, with a clay content of 23.7% and a grading modulus of 0.87. The weathered material has a liquid limit of 38.0%, plasticity index of 11.4% and a linear shrinkage of 4.7%.

In terms of the AASHTO Classification System, the material classifies as A-6(3), a poor sub-grade, with a 'low' potential expansiveness in terms of van der Merwe's Classification System.

## 6.2 Swell Test Results

A total of four samples were tested for rapid swell and the results are shown in Table 1 below.

**Table 1 : Rapid Swell Test Results**

| EXP | Depth (m) | Description | Swell (%) |
|---|---|---|---|
| 11 | 1.0 | Colluvium | 3.82 |
| 42 | 0.6 | Residual Dolerite | 1.02 |
| 82 | 1.0 | Weathered Granite | 1.83 |
| 102 | 0.8 | Weathered Dolerite | 1.39 |

Depending on the clay contents, the swell results of the selected samples vary but are in general low to moderate.

- The colluvium has a swell of 3.82%, which is moderately high.

- The residual dolerite, weathered granite and weathered dolerite samples all resulted in low swell.

## 6.3 pH and Conductivity Test Results

A total of ten samples were selected for pH and Conductivity testing. The results are included in the laboratory test summary included in Appendix B and are summarized in Table 2 and discussed overleaf.

**Table 2 : Summary of pH and Conductivity Test Results**

| EXP | Depth (m) | Description | pH | Conductivity [mS/m] |
|---|---|---|---|---|
| 4 | 0.5 | Colluvium | 6.3 | 660 |
| 12 | 1.4 | Residual Dolerite | 6.9 | 360 |
| 34 | 0.9 | Residual Granite | 6.5 | 6320 |
| 41 | 1.0 | Ferricrete | 6.4 | 1200 |
| 60 | 1.8 | Weathered Dolerite | 6.5 | 4210 |
| 81 | 0.3 | Residual Dolerite | 6.6 | 850 |
| 82 | 1.0 | Weathered Granite | 6.1 | 570 |
| 83 | 0.5 | Residual Granite | 5.5 | 1310 |
| 97 | 1.5 | Residual Granite | 7.7 | 420 |
| 105 | 1.0 | Residual Granite | 6.0 | 3350 |

The colluvial material sampled in EXP 4 is slightly acidic with a pH value of 6.3 and a conductivity of 660 [mS/m].

The residual dolerite sampled in EXP 12 and EXP 81 is slightly acidic with a pH values in the range of 6.5 to 6.6 and a conductivity values in the range of 360 to 850 [mS/m].

The weathered dolerite sampled at EXP 60 is slightly acidic with a pH value of 6.5 and a conductivity value of 4210 [mS/m].

The ferricrete sampled in EXP 41 is slightly acidic with a pH value of 6.4 and a conductivity value of 1200 [mS/m].

The residual granite material sampled In EXP 34, 83, 97 and 105 is slightly acidic to slightly basic, with pH values in the range of 5.5 and 7.7 and conductivity values in the range of 420 and 6320 [mS/m].

The weathered granite sampled at EXP 82 is slightly acidic with a pH value of 6.1 and a conductivity value of 570 [mS/m].

## 7. GEOTECHNICAL ASSESSMENT

### 7.1 Soil Stability

As alluded to above, the entire study area is covered by granite of the Natal Structural and Metamorphic Province. The granite and gneiss are generally massive and hence not likely to experience slope instability. However minor failures can occur on steep slopes due to foliation in granite rock.

The area is also predominantly covered by colluvium and granite derived residual sands which are likely to slough when saturated and when steeply cut.

## 7.2 Collapse Potential, Erosion and Activity

The upper residual sands overlying the granitic bedrock is considered to have a slight to moderate collapse potential in the sense that the material will undergo a sudden densification under an imposed load with a critical increase in the materials moisture content.

The colluvium, residual granite sands and weathered bedrock are very susceptible to sheet and channeled water flow erosion as seen by erosional dongas present in places in the study area. Therefore, proper storm water drainage measures must be implemented during and after construction to limit erosion on the platforms and ponding around the completed houses.

Based on the swell test results, the on-site soils generally classify as having a low activity however, the colluvium can be expected to have a low to moderately high activity. That is, to undergo volume changes with a critical change in moisture content, i.e. swell when wet and shrink when dry. This will need to be taken into account when designing the foundations of the proposed structures.

## 7.3 Seepage

Seepage was not encountered in any of the logged exposures, however, ferricrete nodules were observed in the residual soils underlying the site. The ferricrete nodules indicate that seasonal seepage and a fluctuating water table occurs within the residual soils during periods of prolonged rainfall.

Seepage is also expected along the contact between the residual soils and weathered bedrock during periods of prolonged rainfall.

Low lying areas along the streams and platform cuttings made along the steeper slopes close to the mountainous ridge may also encounter seepage.

Potential seepage zones as shown in Drawing № 17213-02 coincide with some of the perennial and non-perennial streams within the valleys of the deeply incised granitic bedrock which are likely to extend further up the valleys during periods of seasonal rainfall.

Seepage will need to be dealt with on a site to site basis where encountered may require the installation of subsoil drains.

## 7.4 Percolation Characteristics

The colluvium, residual and weathered dolerite as well as residual and weathered granitic soils are generally unsuitable for on-site subsoil percolation disposal of septic tank waste water and sewage effluent. However, where deep fills associated with the platforms occur, percolation may be satisfactory. Be that as it may, it would be advised to adopt conventional VIP latrines placed in cut except in areas of hard rock if waterborne sewage is not to be part of the development. VIP systems will function satisfactorily, provided all surface and subsurface water access to the pits are appropriately channeled away and/or the pit suitably lined.

## 7.5 Construction Materials

The colluvium, residual dolerite, ferricrete and weathered granite are not suitable for general fill purposes, while the residual granite and weathered dolerite are generally suitable as selected layers, subgrade and fill.

Where fill material is to be imported, this should be specifically tested to ensure its suitability for the intended purpose.

## 7.6 NHBRC Classification

Based on our assessment of the laboratory test results, our knowledge of the materials underlying the study area and observation in the field, NHBRC residential class designations are provided in Table 3 below.

**Table 3 : NHBRC Residential Class Designations**

| Material Type | Character of Founding Material | Expected Range of Total Soil Movement (mm) | Assumed Differential Movement (% of Total Movement) | Site Class |
|---|---|---|---|---|
| Colluvium/ Ferricrete | Expansive/ Compressible & Potentially Collapsible | 7,5 - 15<br>5,0 -10 | 50%<br>75% | H - H1<br>C - C1 |
| Residual Dolerite | Expansive | 7,5 - 30 | 50% | H1 - H2 |
| Weathered Dolerite | Expansive | < 7,5<br>7,5 - 15 | 50%<br>50% | H<br>H - H1 |
| Residual Granite | Compressible & Potentially Collapsible | 5,0 - | 75% | C1 - C2 |
| Weathered Granite | Stable/ Compressible | 5,0 - 10 | 75% | R - C1 |
| Dolerite | Stable/ Expansive | 7.5 - 15 | 50% | R - H1 |

# 8. RECOMMENDATIONS FOR DEVELOPMENT

Although the development recommendations contained in this report are considered universally applicable, some local variations may be found necessary by the Geotechnical Engineer/Civil Engineer. Consequently it is imperative that the Geotechnical Engineer be given the opportunity to inspect the dwelling foundations and pit latrine excavation before construction of the top structure commences to make whatever changes are considered necessary, including possible relocation, as this may result in costly changes if left too late.

## 8.1 Earthworks

Given the undulating conformation of the study area, significant cutting and filling will be required to accommodate development thereon in terms of infrastructure and in particular building platforms.

### 8.1.1 *Cuts*

As soon as the individual sites have been identified more specific recommendations can be made:

- Building platforms should ideally be created entirely in cut or at least the dwelling footprint and pit-latrine must be entirely in cut.
- All permanent cuts in the clayey and sandy colluvial and residual materials should be restricted to a maximum of 1:2 (26°). Steeper cut slopes may be created individually, at the discretion of the Engineer. The maximum height of any cut slope should not exceed 3.0 m without being assessed by the Engineer.
- Temporary excavations greater than 1.2 m depth within the more clay rich material can be battered back to 1:1.5 (33°) or alternatively shored to ensure safe working conditions.
- In the soft weathered bedrock, cut slopes may be steepened to 1:1 or steeper at the discretion of the Engineer.
- All cut embankments must be protected against surface erosion by the planting of vegetation immediately after construction.

Abundant dolerite core-stones should be expected within the weathered dolerite rock mass. These core-stones are very hard and generally require blasting or pneumatic tools to break up into manageable sizes for removal.

“Whale back” outcrops in the granite, should be avoided as it can only be removed by blasting or pneumatic tools.

### 8.1.2 *Fill*

Where fill platforms have to be created the following generalized recommendations apply:

- Prior to construction of any fill, all topsoil containing vegetation and organic material, should be removed and stockpiled for later use.
- Filling on natural slopes steeper than 1:6 or 10° should be benched into the slope.
- The fills should be constructed of suitable material (G10 or better) placed in layers of 300 mm loose thickness and compacted to 93% Mod AASHTO dry density prior to the placement of the next layer.
- A fill batter of 1:2 (26°) should be applied for engineered fill provided it does not exceed a height of 3.0m. The fill must be adequately vegetated after construction to prevent surface erosion.

## 8.2 Site Drainage

Due to poor percolation properties of the on-site soils, it is recommended that storm water be collected from roofed areas and piped into tanks for later use or piped to the nearest water course if possible.

After construction, the individual sites should be graded to facilitate storm water runoff and prevent ponding of storm water around the surface adjacent to any of the dwellings or structures.

## 8.3 General Founding Conditions

Housing in the already populated areas is in a generally fair condition as most locals have avoided the obvious geotechnical unsuitable sites for their construction. However, some general constrains should be applied for the development of sites:

- Slopes steeper then 18° as marked on Drawing № 17213-02 attached should be classified unsuitable for construction.
- Any slopes covered by thick hillwash or talus materials should be considered unsuitable as these materials are likely to be unstable. Furthermore, creating cut faces into these materials is likely to destabilize parts of the entire slope resulting in an increased possibility of destructive slope failures.
- Any development within the 100 year flood line should not be permitted due to possible flooding.

The choice of foundation on individual sites would depend on the depth to fill, compaction achieved and activity. As a guide, but not restricted to, the following foundations present themselves for single storey structures based on the NHBRC classifications in the area.

**Table 4 : Recommended Foundations Based on NHBRC Residential Class**

| Foundation Type | NHBRC Classification |
|---|---|
| Normal strip footing foundations | R |
| Light Raft or deep column base foundations | H1 / C1 |
| Heavy Raft or deep column base foundations | H2 / C2 |
| Ground beams spanning between piled or deep column base foundations | H2 / C2 |

Should ground beams spanning piled or column base foundations be adopted as the preferred founding method, ground floor slabs should be isolated from all walls, ground beams, columns and foundations, to accommodate any heave that may occur.

Strict control of drainage is required to prevent seepage of groundwater into the subsoils at founding level as well as surface flows.

Notwithstanding the above, its essential that a detailed geotechnical assessment be carried out on each platform by the geotechnical engineer/engineering geologist during construction.

## 8.4 Sanitation

As the project is not serviced by waterborne sanitation and the majority of the houses do not have individual water connections, it is not feasible to implement a septic tank french drain system. VIP latrines are recommended as they are currently being successfully utilized in the study area. The VIP latrines should be suitably designed taking into account the geology and soils as highlighted in this report.

The VIP system can be upgraded to full waterborne sanitation system once upgrades to water and sewerage infrastructure have been completed.

# 9. CONCLUSION

In conclusion the study area has a strongly undulating conformation with numerous deep non-perennial stream valleys etched into the landscape, with less steep spurs located in the area of Mpondo at the eastern extent of the area.

Extensive earthworks will be necessary to develop the steeper slopes and the recommendations in this report should be followed closely. Hard rock conditions are not expected to cover any significant proportion of the site, but boulders may pose a problem in some areas highlighted on the site plan.

Founding recommendations have been provided taking into account the low to moderate activity of the residual soils underlying the study area.

The community is not serviced with running water to their respective homes and until such time, it is not considered feasible to implement a septic tank sanitation system and thus VIP latrines should be considered.

Accessibility to certain sites will be a problem due to the absence of maintained roads, with some roads destroyed by erosion and lack of maintenance.

During the construction phase of the project, each site (dwelling and pit latrine) must be individually inspected by the appointed Geotechnical practitioner, experienced in such matters, and classified in accordance with the information contained in this document and the NHBRC Manual, prior to the construction of the house.

**M J-F BÉNET Pr.Sci.Nat** **D GINA BSc. (Hons)**

**REFERENCE 17213**
**MARCH 2019**
**/dg/kc**

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**APPENDIX A**

**EXPOSURES**
**(EXP 1 - EXP 118)**

DRENNAN MAUD (PTY) LTD

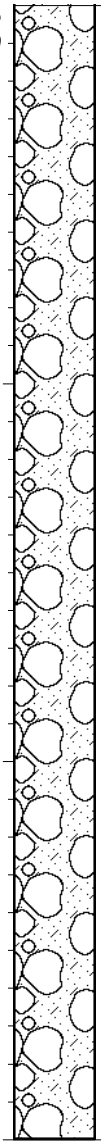
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 1**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:20*



*0.00*

Dry to slightly moist, light reddish orange occasionally pale red, medium dense to dense, very gravelly clayey SAND containing ± 40 – 50% of sub-angular to sub-rounded cobble to boulder sized granite corestones up to 1500mm in diameter – (Completely weathered granite)

*1*

*2*

*3*

*3.00*

NOTES

1) Road cutting

2) No ground water seepage encountered

3) No samples taken

4) Top of Slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :* NA
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346967
*Y-COORD :* - 0061670

***HOLE No:*** **EXP 1**

DRENNAN MAUD (PTY) LTD

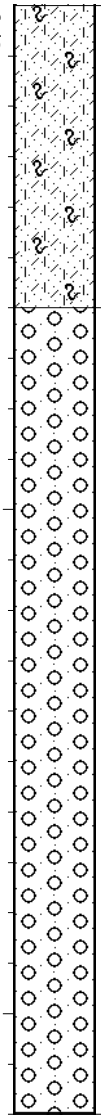
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 2**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:15*



*0.00*

Dry, dark brown, loose to medium dense, micro-shattered, silty clayey SAND containing occasional gravel sized fragments and containing roots in upper 0.20m – (Colluvium)

*0.60*

Dry to slightly moist, light red, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/colluvium)

*1*

*2*

*2.20*

NOTES

1) Road cutting

2) No ground water seepage encountered

3) No samples taken

4) Top of Slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
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*Y-COORD :* - 0061675

***HOLE No:*** **EXP 2**

DRENNAN MAUD (PTY) LTD

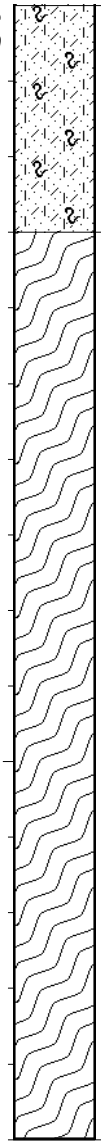
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 3**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry, dark brown, medium dense to dense, micro-shattered, silty clayey SAND containing occasional gravel sized fragments and containing roots in upper 0.20m – (Colluvium)

*0.30*

Light olive brown, completely weathered, medium to coarse grained, very intensely foliated, slightly fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.50*

NOTES

1) Cutting on site J613

2) No ground water seepage encountered

3) No samples taken

4) Top of Slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347315
*Y-COORD :* - 0061824

***HOLE No:*** **EXP 3**

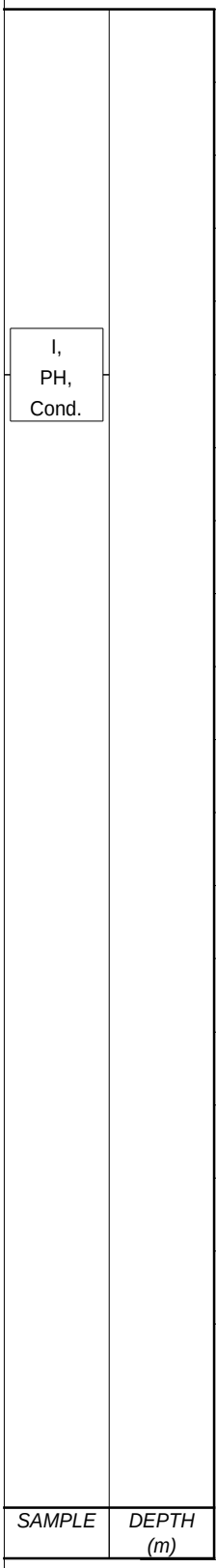
DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 4**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**




| SAMPLE | DEPTH (m) |
|---|---|
| I, PH, Cond. | 0.50 |

0.00 – Dry to slightly moist, dark brown, medium dense to dense, fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

0.70 – Dry to slightly moist, light red, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

0.80 – Light olive and dark yellow, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

1.80

NOTES

1) Cutting on site J609

2) No ground water seepage encountered

3) Full Indicator (I), (PH) & Conductivity samples at 0.50m

4) Top of Slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347369
*Y-COORD :* - 0061861

***HOLE No:*** **EXP 4**

DRENNAN MAUD (PTY) LTD

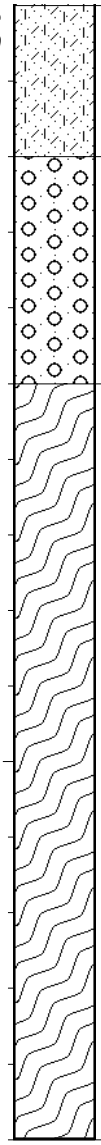
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 5**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | *0.00* Dry to slightly moist, dark brown, dense to very dense, fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium) |
| | | *0.20* Dry to slightly moist, light red, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium) |
| | | *0.50* Light olive and dark yellow, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province) |
| | *1* | |
| | | *1.50* |

NOTES

1) Cutting on site J611

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347435
*Y-COORD :* - 0061879

***HOLE No:*** **EXP 5**

DRENNAN MAUD (PTY) LTD

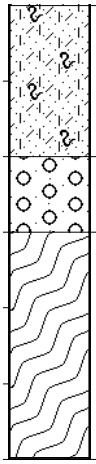
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 6**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



| | |
|---|---|
| *0.00* | Dry to slightly moist, dark brown, very dense, fissured, silty clayey SAND containing occasional gravel sized fragments and containing roots in upper 0.20m – (Colluvium) |
| *0.20* | Dry to slightly moist, light red, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium) |
| *0.30* | Light olive and dark yellow, completely weathered, medium to coarse grained, very intensely foliated, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province) |
| *0.60* | |

NOTES

1) Road cutting

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347468
*Y-COORD :* - 0061889

***HOLE No:*** **EXP 6**

DRENNAN MAUD (PTY) LTD

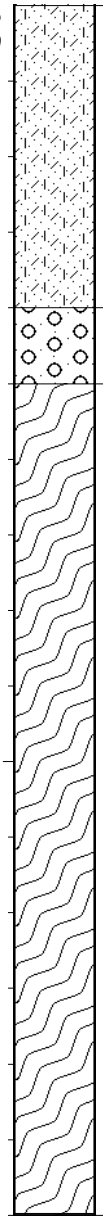
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 7**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00* Dry to slightly moist, dark brown, very dense, fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*0.40* Dry to slightly moist, light red, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.50* Light olive and dark yellow, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.60*

NOTES

1) Cutting on site J649

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347523
*Y-COORD :* - 0061792

***HOLE No:*** **EXP 7**

DRENNAN MAUD (PTY) LTD

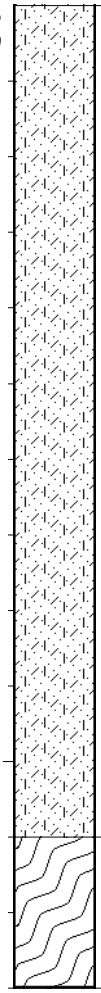
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 8**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, very dense, micro-shattered, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*1*

*1.10*

Light olive and dark yellow, completely weathered, medium to coarse grained, very intensely foliated, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1.30*

NOTES

1) Cutting on site J649

2) No ground water seepage encountered

3) No samples taken

4) Bottom of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346066
*Y-COORD :* - 0061738

***HOLE No:*** **EXP 8**

DRENNAN MAUD (PTY) LTD

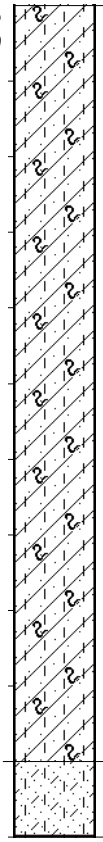
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 9**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | *0.00* Dry to slightly moist, dark brown speckled orangey brown, very stiff, slightly fissured, sandy silty CLAY containing occasional gravel sized fragments and containing roots in upper 0.30m – (Colluvium) |
| | 1 | *1.00* Dry to slightly moist, dark yellowish orange, medium dense to dense, slightly gravelly silty clayey SAND – (Residual granite of the Natal Metamorphic Province) |
| | | *1.10* |

NOTES

1) Cutting west of site J678

2) No ground water seepage encountered

3) No samples taken

4) Bottom of slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345997
*Y-COORD :* - 0061665

***HOLE No:*** **EXP 9**

DRENNAN MAUD (PTY) LTD

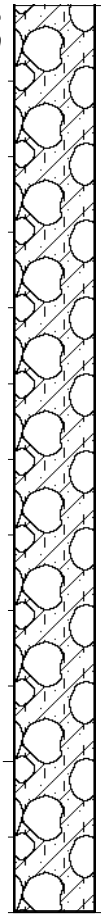
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 10
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown speckled orangey brown, firm to stiff, micro-shattered, sandy silty CLAY containing ± 30 – 50% of sub-rounded to rounded cobble to boulder sized dolerite fragments up to 900mm in diameter – (Colluvium)

*1.20*

NOTES

1) Cutting on St. Michael's School sports field

2) No ground water seepage encountered

3) No samples taken

4) Bottom of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|
| | 1 |

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345874
*Y-COORD :* - 0061460

*HOLE No:* EXP 10

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 11**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*

| SAMPLE | DEPTH (m) |
|---|---|
| Swell, I | 1.00m |

*0.00*

Dry to slightly moist, dark brown speckled orangey brown, firm to stiff, micro-shattered, sandy silty CLAY containing ± 30 – 50% of angular to sub-angular cobble sized dolerite fragments – (Colluvium)

*1.80*

NOTES

1) Cutting on site J675

2) No ground water seepage encountered

3) Swell and Full Indicator (I) samples at 1.00m

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345869
*Y-COORD :* - 0061402

***HOLE No:*** **EXP 11**

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 12**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*

*0.00*

Dry to slightly moist, dark brown speckled orangey brown, firm to stiff, fissured, sandy silty CLAY containing roots in upper 0.40m and containing occasional sub-rounded to rounded cobble to boulder sized dolerite corestones up to 700mm in diameter – (Colluvium)

*0.40*

Dry to slightly moist, dusky red speckled orangey brown, very stiff, fissured, slightly silty clayey SAND – (Residual Karoo Dolerite)

*1*

*1.40m*

I, PH, Cond.

*1.60*

NOTES

1) Cutting on site I077

2) No ground water seepage encountered

3) Full Indicator (I), (PH) & Conductivity samples at 1.40m

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345778
*Y-COORD :* - 0061346

***HOLE No:*** **EXP 12**

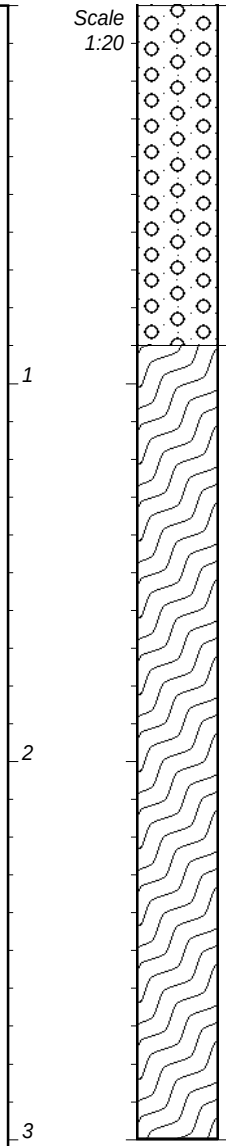
DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 13**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**




0.00

Dry to slightly moist, dusky red blotched orangey brown, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of angular to sub-angular pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

0.90

Light olive and light grey brown, completely weathered, coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

3.00

NOTES

1) Road Cutting

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345667
*Y-COORD :* - 0061216

***HOLE No:*** **EXP 13**

DRENNAN MAUD (PTY) LTD

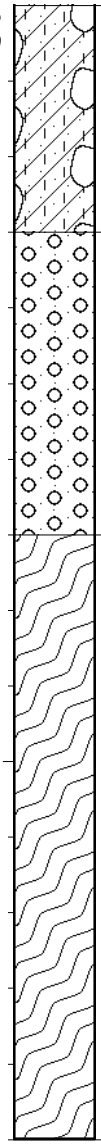
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 14**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Slightly moist, dark brown speckled orangey brown, stiff to very stiff, micro-shattered, sandy silty CLAY containing ± 30 – 50% of sub-rounded to rounded, cobble sized dolerite fragments – (Colluvium)

*0.30*

Slightly moist, dusky red speckled and blotched light grey and pale red, dense to very dense, slightly clayey sandy GRAVEL containing occasional angular cobble sized granite fragments – (Pebble marker/ colluvium)

*0.70*

Dusky red and orange brown, completely weathered, medium to coarse grained, very intensely foliated, slightly fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.50*

NOTES

1) Cutting on site D093

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345617
*Y-COORD :* - 0061091

***HOLE No:*** **EXP 14**

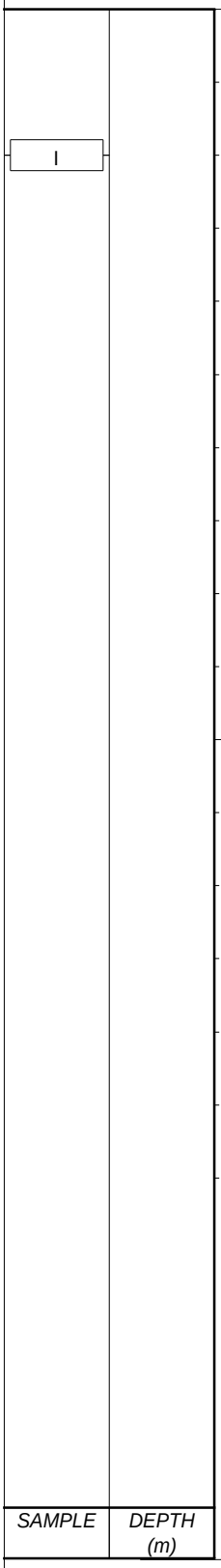
DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 15**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**




Dry to slightly moist, dark brown, very dense, slightly fissured, clayey sandy GRAVEL – (Colluvium)

Slightly moist, dusky red speckled and blotched pale red and yellow, dense to very dense, slightly clayey sandy GRAVEL containing ± 10 – 30% angular to sub-angular pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

NOTES

1) Cutting on site I073

2) No ground water seepage encountered

3) Full Indicator (I) sample at 0.20m

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345855
*Y-COORD :* - 0060808

***HOLE No:*** **EXP 15**

DRENNAN MAUD (PTY) LTD

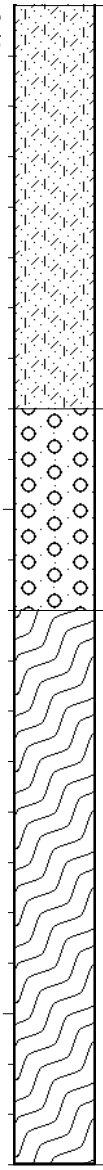
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 16**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:15*



*0.00*

Dry to slightly moist, dark brown, very dense, slightly fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*0.80*

Slightly moist, dusky red speckled and blotched pale red and yellow, dense to very dense, slightly clayey sandy GRAVEL containing occasional angular to sub-angular cobble sized granite fragments – (Pebble marker/ colluvium)

*1.20*

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*2.30*

NOTES

1) Road cutting

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|
| | *1* |
| | *2* |

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345925
*Y-COORD :* - 0060768

***HOLE No:*** **EXP 16**

DRENNAN MAUD (PTY) LTD

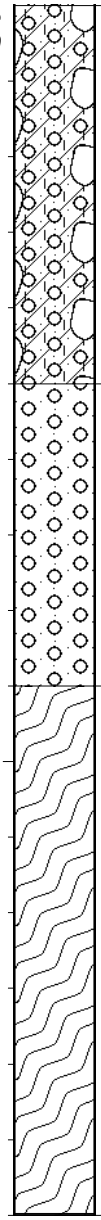
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 17**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown mottled and blotched light reddish brown, stiff to very stiff, slightly fissured, silty sandy CLAY containing ± 30 – 50% of sub-angular to sub-rounded, gravel to cobble sized dolerite fragments – (Colluvium)

*0.50*

Slightly moist, dusky red speckled and blotched pale red and yellow, dense to very dense, slightly clayey sandy GRAVEL containing occasional angular to sub-angular cobble sized granite fragments – (Pebble marker/ colluvium)

*0.90*

*1*

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1.60*

NOTES

1) Cutting on site B017

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345979
*Y-COORD :* - 0060703

***HOLE No:*** **EXP 17**

DRENNAN MAUD (PTY) LTD

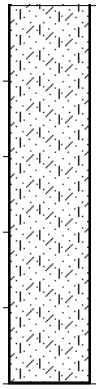
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 18**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, dense to very dense, slightly fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*0.50*

NOTES

1) Cutting on site I071

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345862
*Y-COORD :* - 0060712

***HOLE No:*** **EXP 18**

DRENNAN MAUD (PTY) LTD

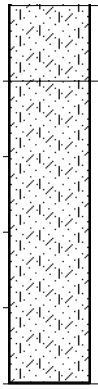
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 19**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, dense to very dense, slightly fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*0.10*

Dry to slightly moist, dusky red and light reddish orange, medium dense to dense, slightly gravelly silty clayey SAND – (Residual granite of the Natal Metamorphic Province)

*0.50*

NOTES

1) Cutting on site I075

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345544
*Y-COORD :* - 0060672

***HOLE No:*** **EXP 19**

DRENNAN MAUD (PTY) LTD

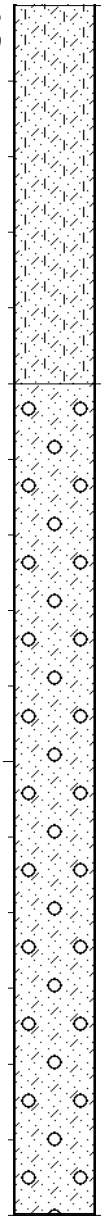
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 20
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:10*



*0.00* Dry to slightly moist, dark brown, dense to very dense, slightly fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*0.50* Dry to slightly moist, dusky red speckled light reddish brown, medium dense to dense, clayey gravelly SAND – (Residual granite of the Natal Metamorphic Province)

*1*

*1.60*

NOTES

1) Road cutting

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345359
*Y-COORD :* - 0060683

*HOLE No:* EXP 20

DRENNAN MAUD (PTY) LTD

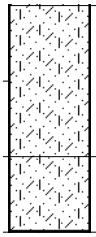
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 21**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00* Dry to slightly moist, dark brown, dense to very dense, slightly fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*0.20* Slightly moist, dusky red speckled light reddish brown, medium dense to dense, slightly gravelly silty clayey SAND – (Residual granite of the Natal Metamorphic Province)

*0.30*

NOTES

1) Cutting on site D118

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345359
*Y-COORD :* - 0060683

***HOLE No:*** **EXP 21**

DRENNAN MAUD (PTY) LTD

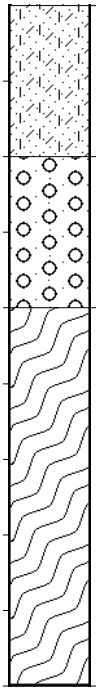
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 22**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00* Dry to slightly moist, dark brown, dense to very dense, slightly fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*0.20* Dry to slightly moist, light reddish orange, dense to very dense, slightly clayey sandy GRAVEL – (Pebble marker/ colluvium)

*0.40* Dusky red and light reddish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*0.90*

NOTES

1) Cutting on site J226

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345179
*Y-COORD :* - 0060596

***HOLE No:*** **EXP 22**

DRENNAN MAUD (PTY) LTD

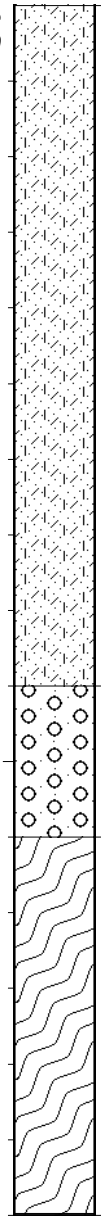
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 23**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | *0.00* Dry to slightly moist, dark brown, dense to very dense, slightly fissured, silty clayey SAND – (Colluvium) |
| | 1 | *0.90* Dry to slightly moist, dusky red mottled yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium) |
| | | *1.10* Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province) |
| | | *1.60* |

NOTES

1) Cutting on site D014

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345155
*Y-COORD :* - 0060409

***HOLE No:*** **EXP 23**

DRENNAN MAUD (PTY) LTD

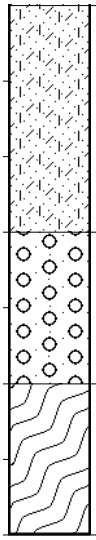
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 24**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00* Dry to slightly moist, dark brown, dense to very dense, slightly fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*0.30* Dry to slightly moist, dusky red mottled light reddish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.50* Light yellowish orange and light red, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*0.70*

NOTES

1) Cutting on site J218

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345077
*Y-COORD :* - 0060284

***HOLE No:*** **EXP 24**

DRENNAN MAUD (PTY) LTD

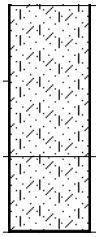
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 25**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, dense to very dense, slightly fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*0.20*

Slightly moist, light reddish orange, very dense, silty clayey SAND containing occasional gravel sized fragments – (Residual granite of the Natal Metamorphic Province)

*0.30*

NOTES

1) Cutting on site J221

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3344958
*Y-COORD :* - 0060000

***HOLE No:*** **EXP 25**

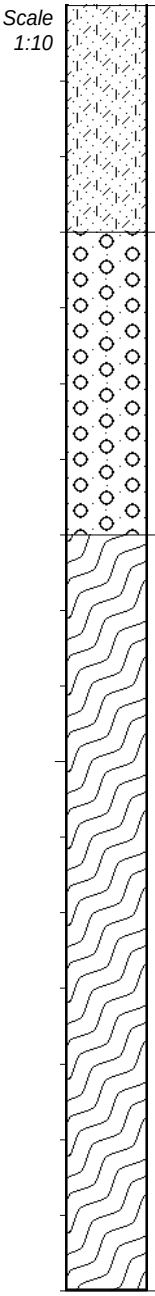
DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 26**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**




0.00 Dry to slightly moist, dark brown, dense to very dense, slightly fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

0.30 Dry to slightly moist, dusky red and light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

0.70 Light yellowish orange and light red, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

1.70

NOTES

1) Cutting on site B001

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3344859
*Y-COORD :* - 0059971

***HOLE No:*** **EXP 26**

DRENNAN MAUD (PTY) LTD

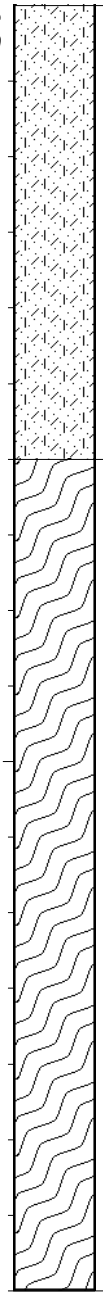
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 27**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, very dense, fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*0.60*

Light red to pale red, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.70*

NOTES

1) Cutting on site J223

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION : -*
*X-COORD : -*
*Y-COORD : -*

***HOLE No:*** **EXP 27**

DRENNAN MAUD (PTY) LTD

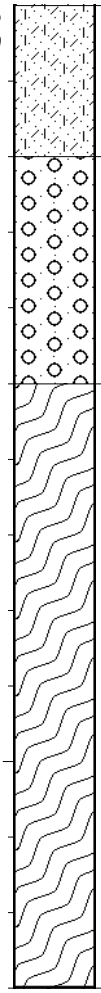
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 28**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, very dense, fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*0.20*

Dry to slightly moist, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.50*

Light yellowish orange and pale red, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.30*

NOTES

1) Cutting on site J224

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345035
*Y-COORD :* - 0060313

***HOLE No:*** **EXP 28**

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 29**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*

*0.00*

Light yellowish orange and pale red, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.50*

NOTES

1) Road cutting

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345150
*Y-COORD :* - 0060563

***HOLE No:*** **EXP 29**

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

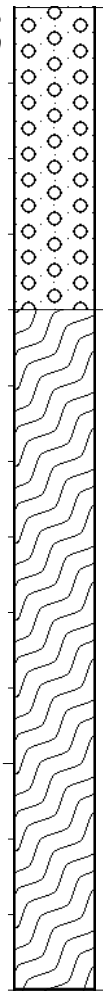
PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 30
*Sheet 1 of 1*

*JOB NUMBER:* 17213

| SAMPLE | DEPTH (m) |
|---|---|
| | 0.00 |

Scale 1:10



Dry to slightly moist, light red mottled and blotched light grey, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

0.40

Light yellowish orange and pale red, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

1

1.30

NOTES

1) Road cutting

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345094
*Y-COORD :* - 0060567

*HOLE No:* EXP 30

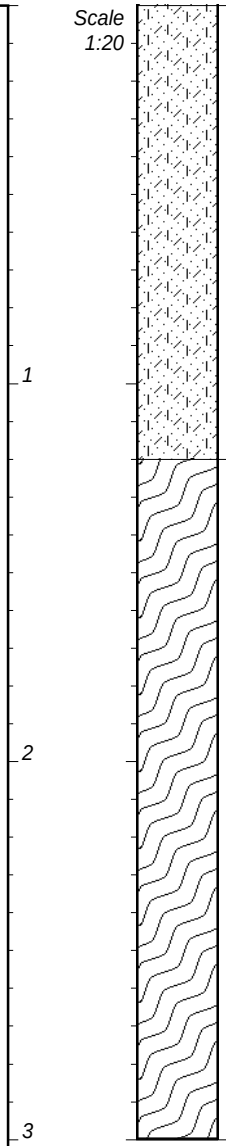
DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 31**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**




0.00

Dry to slightly moist, dark brown, very dense, fissured, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

1.20

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

3.00

NOTES

1) Cutting on site J510

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345099
*Y-COORD :* - 0060507

***HOLE No:*** **EXP 31**

DRENNAN MAUD (PTY) LTD

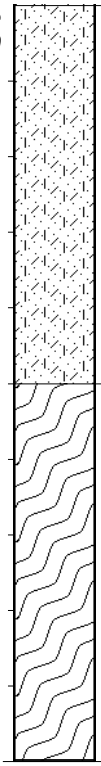
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 32**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, very dense, fissured, silty clayey SAND containing gravel sized fragments at base – (Colluvium)

*0.50*

Light reddish orange, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.00*

NOTES

1) Cutting on site I076

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3344920
*Y-COORD :* - 0060432

***HOLE No:*** **EXP 32**

DRENNAN MAUD (PTY) LTD

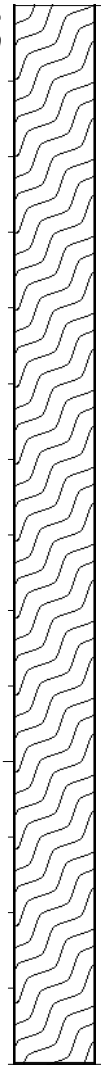
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 33**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Light grey and dusky red, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1.40*

*1*

NOTES

1) Road cutting 20m east of I075

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3344869
*Y-COORD :* - 0060398

***HOLE No:*** **EXP 33**

DRENNAN MAUD (PTY) LTD

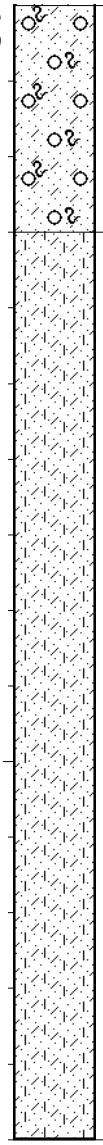
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 34**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, very dense, fissured, gravelly clayey SAND containing roots in upper 0.30m – (Colluvium)

*0.30*

Dry to slightly moist, dusky red, dense to very dense, silty clayey SAND containing occasional gravel sized fragments – (Residual granite of the Natal Metamorphic Province)

*1.50*

| SAMPLE | DEPTH (m) |
|---|---|
| I, PH, Cond. | *0.90m* |
| | *1* |

NOTES

1) Cutting on site I075

2) No ground water seepage encountered

3) Full Indicator (I), (PH) & Conductivity samples at 0.90m

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3344856
*Y-COORD :* - 0060414

***HOLE No:*** **EXP 34**

DRENNAN MAUD (PTY) LTD

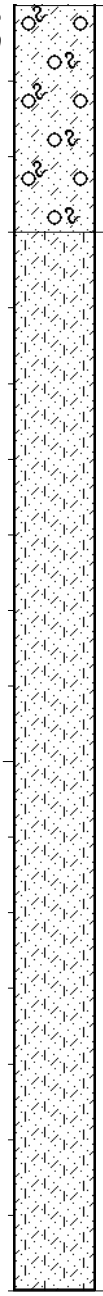
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 35**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, very dense, fissured, gravelly clayey SAND containing roots in upper 0.30m – (Colluvium)

*0.30*

Dry to slightly moist, dusky red, dense to very dense, silty clayey SAND containing occasional gravel sized fragments – (Residual granite of the Natal Metamorphic Province)

*1*

*1.70*

NOTES

1) Cutting on site D076

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3344895
*Y-COORD :* - 0060551

***HOLE No:*** **EXP 35**

DRENNAN MAUD (PTY) LTD

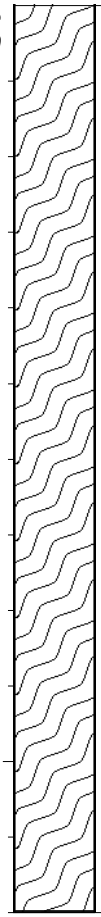
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 36**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Light red and light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1.20*

*1*

NOTES

1) Cutting on site D074

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3344600
*Y-COORD :* - 0060451

***HOLE No:*** **EXP 36**

DRENNAN MAUD (PTY) LTD

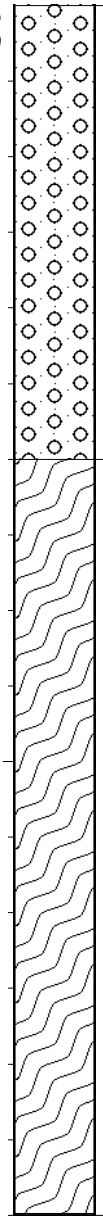
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 37**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, light red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.60*

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.60*

NOTES

1) Cutting on site D001

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345621
*Y-COORD :* - 0060553

***HOLE No:*** **EXP 37**

DRENNAN MAUD (PTY) LTD

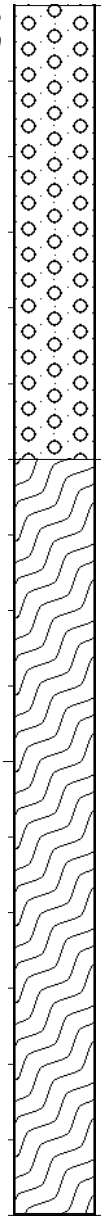
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 38**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, light red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.60*

Light yellowish orange occasionally banded light grey, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.60*

NOTES

1) Cutting on site J211

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345515
*Y-COORD :* - 0060558

***HOLE No:*** **EXP 38**

DRENNAN MAUD (PTY) LTD

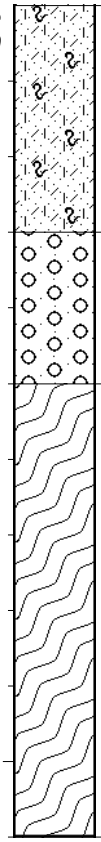
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 39
*Sheet 1 of 1*

*JOB NUMBER:* 17213

Scale 1:10



| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | 0.00 — Dry to slightly moist, dark brown, very dense, fissured, silty clayey SAND containing roots in upper 0.30m – (Colluvium) |
| | | 0.30 — Dry to slightly moist, dusky red speckled and mottled light grey and light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium) |
| | | 0.50 — Light yellowish orange and pale red, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province) |
| | 1 | |
| | | 1.10 |

NOTES

1) Cutting on site J213

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345661
*Y-COORD :* - 0060493

*HOLE No:* EXP 39

DRENNAN MAUD (PTY) LTD

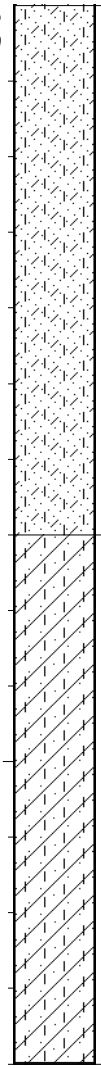
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 40**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, very dense, slightly fissured, silty clayey SAND containing few roots in upper 0.20m – (Colluvium)

*0.70*

Dry to slightly moist, dusky red speckled yellow brown, very stiff to hard, slightly fissured, sandy silty CLAY containing occasional gravel sized fragments – (Residual Karoo Dolerite)

*1*

*1.40*

NOTES

1) Cutting on site J214

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345823
*Y-COORD :* - 0060468

***HOLE No:*** **EXP 40**

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 41**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*

| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | *0.00* Dry to slightly moist, dusky red speckled yellow brown, very stiff to hard, slightly fissured, sandy silty CLAY containing occasional gravel sized fragments – (Residual Karoo Dolerite) |
| | | *0.70* Slightly moist, light yellowish orange mottled black, very dense, cemented clayey, gravelly SAND comprising ferricrete nodules – (Pedogenic material) |
| I, PH, Cond. | *1.00m* | |
| | | *1.40* |

NOTES

1) Cutting on site B058

2) No ground water seepage encountered

3) Full Indicator (I), (PH) & Conductivity samples at 1.00m

4) Bottom of slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345909
*Y-COORD :* - 0060503

***HOLE No:*** **EXP 41**

DRENNAN MAUD (PTY) LTD

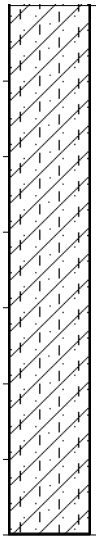
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 42**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry, dark yellowish orange and dusky red, very stiff, micro-shattered, slightly gravelly silty sandy CLAY containing occasional sub-rounded to rounded cobble to boulder sized dolerite corestones up to 700mm in diameter – (Residual Karoo Dolerite)

Swell, I, PH & Cond.

*0.60m*

*0.70*

NOTES

1) Cutting on site C016

2) No ground water seepage encountered

3) Swell, Full Indicator (I), (PH) & Conductivity samples at 0.60m

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346030
*Y-COORD :* - 0060572

***HOLE No:*** **EXP 42**

DRENNAN MAUD (PTY) LTD

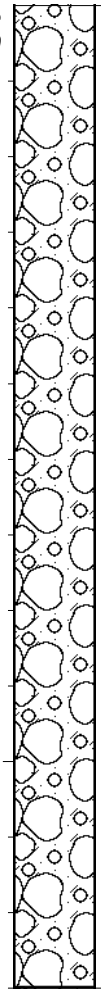
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 43**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry, dusky red and pale red, dense to very dense, micro-shattered, clayey sandy GRAVEL containing ± 30 – 50% of sub-rounded to rounded cobble to boulder sized dolerite corestones up to 650mm in diameter – (Completely weathered dolerite)

*1.30*

*1*

NOTES

1) Cutting on site J133

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346058
*Y-COORD :* - 0060565

***HOLE No:*** **EXP 43**

DRENNAN MAUD (PTY) LTD

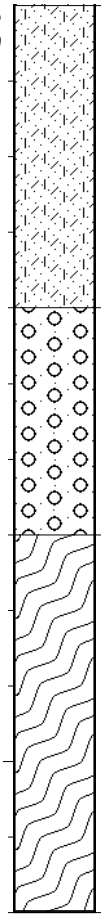
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 44**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry, dark brown and dusky red, dense to very dense, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*0.40*

Dry, dusky red mottled and blotched light reddish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.70*

Light reddish orange occasionally banded light grey, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.20*

NOTES

1) Cutting on site J200

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345994
*Y-COORD :* - 0060369

***HOLE No:*** **EXP 44**

DRENNAN MAUD (PTY) LTD

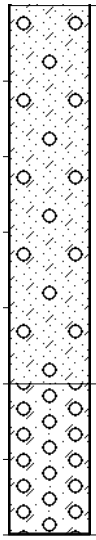
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 45
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:10*



*0.00* Dry, dark brown, dense to very dense, slightly fissured, gravelly clayey SAND – (Colluvium)

*0.50* Dry, light yellowish orange, dense to very dense sandy clayey GRAVEL – (Pebble marker/ colluvium)

*0.70*

NOTES

1) Cutting on site C027

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345908
*Y-COORD :* - 0060285

*HOLE No:* EXP 45

DRENNAN MAUD (PTY) LTD

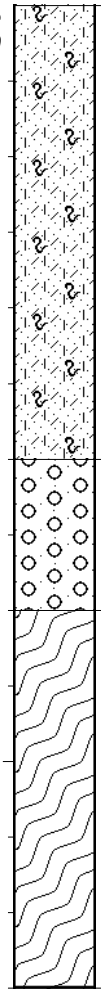
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 46
*Sheet 1 of 1*

*JOB NUMBER:* 17213

Scale 1:10



| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | 0.00 Dry, dark brown, very dense, fissured, silty clayey SAND containing occasional gravel sized fragments and containing roots in upper 0.30m – (Colluvium) |
| | | 0.60 Dry, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium) |
| | 1 | 0.80 Light yellowish orange occasionally banded light grey, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province) |
| | | 1.30 |

NOTES

1) Cutting on site B056

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345843
*Y-COORD :* - 0060319

*HOLE No:* EXP 46

DRENNAN MAUD (PTY) LTD

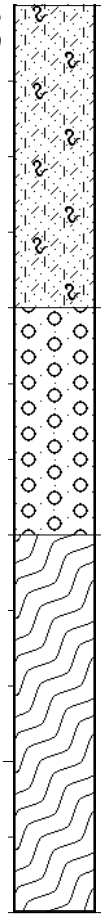
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 47
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:10*



*0.00* Dry, dark brown, very dense, fissured, silty clayey SAND containing occasional gravel sized fragments and containing roots in upper 0.30m – (Colluvium)

*0.40* Dry, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.70* Light red and light reddish orange, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1.20*

*1*

NOTES

1) Cutting on site D009

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345767
*Y-COORD :* - 0060300

*HOLE No:* EXP 47

DRENNAN MAUD (PTY) LTD

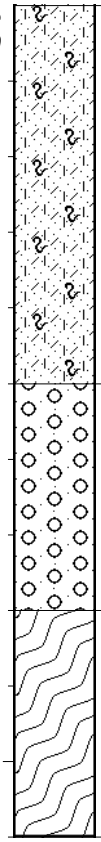
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 48
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:10*



*0.00* Dry, dark brown, very dense, fissured, silty clayey SAND containing occasional gravel sized fragments and containing roots in upper 0.30m – (Colluvium)

*0.50* Dry, dusky red mottled and blotched light yellowish orange and light grey, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.80* Light yellowish orange banded light grey, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1.10*

*1*

NOTES

1) Cutting on site J216

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345694
*Y-COORD :* - 0060279

*HOLE No:* EXP 48

DRENNAN MAUD (PTY) LTD

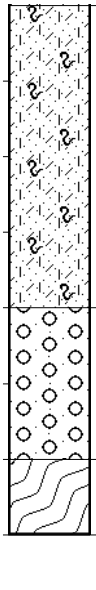
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 49**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00* Dry, dark brown, very dense, fissured, silty clayey SAND containing occasional gravel sized fragments and containing roots in upper 0.30m – (Colluvium)

*0.40* Dry, dusky red mottled and blotched light yellowish orange and light grey, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.60* Light yellowish orange banded light grey, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*0.70*

NOTES

1) Cutting on site B055

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345829
*Y-COORD :* - 0060083

***HOLE No:*** **EXP 49**

DRENNAN MAUD (PTY) LTD

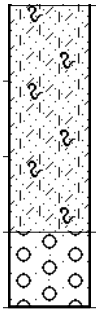
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 50
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:10*



*0.00* Dry, dark brown, very dense, fissured, silty clayey SAND containing occasional gravel sized fragments and containing roots in upper 0.30m – (Colluvium)

*0.30* Dry, dusky red mottled and blotched light yellowish orange and light grey, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.40*

NOTES

1) Cutting on site D011

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345734
*Y-COORD :* - 0060022

*HOLE No:* EXP 50

DRENNAN MAUD (PTY) LTD

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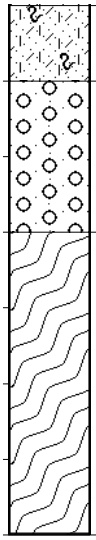
PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 51**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry, dark brown, very dense, fissured, silty clayey SAND containing occasional gravel sized fragments and containing roots in upper 0.30m – (Colluvium)

*0.10*

Dry, dusky red mottled and blotched light yellowish orange and light grey, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.30*

Light reddish orange, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*0.70*

NOTES

1) Cutting on site D002

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345685
*Y-COORD :* - 0060023

***HOLE No:*** **EXP 51**

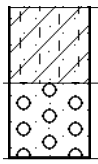
DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 52**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | Scale 1:10  |
| | 0.00 | Dry to slightly moist, dark brown speckled light yellowish orange, very stiff, fissured, sandy silty CLAY – (Colluvium) |
| | 0.10 | Dry, light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium) |
| | 0.20 | |

NOTES

1) Cutting on site D010

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345703
*Y-COORD :* - 0059916

***HOLE No:*** **EXP 52**

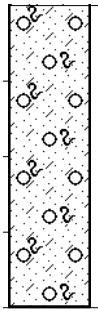
DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 53**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | *Scale 1:10*  |
| | | *0.00* Dry to slightly moist, dark brown, medium dense to dense, fissured, gravelly clayey SAND containing roots in upper 0.3m – (Colluvium) |
| | | *0.40* |

NOTES

1) Cutting on site J140

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345760
*Y-COORD :* - 0059927

***HOLE No:*** **EXP 53**

DRENNAN MAUD (PTY) LTD

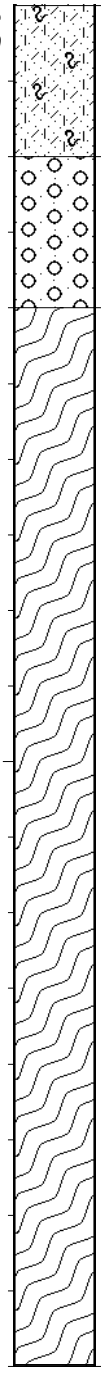
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 54**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry, dark brown, very dense, fissured, silty clayey SAND containing occasional gravel sized fragments and containing roots in upper 0.20m – (Colluvium)

*0.20*

Dry, dusky red mottled and blotched light yellowish orange and light grey, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.40*

Light yellowish orange banded pale red, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.80*

NOTES

1) Cutting on site J145

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345852
*Y-COORD :* - 0059990

***HOLE No:*** **EXP 54**

DRENNAN MAUD (PTY) LTD

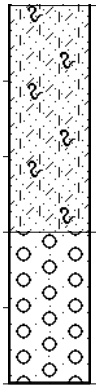
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 55
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:10*



*0.00*

Dry, dark brown, very dense, fissured, silty clayey SAND containing occasional gravel sized fragments and containing roots in upper 0.20m – (Colluvium)

*0.30*

Dry, dusky red mottled and blotched light yellowish orange and light grey, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.50*

NOTES

1) Cutting on site J137A

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345917
*Y-COORD :* - 0060178

*HOLE No:* EXP 55

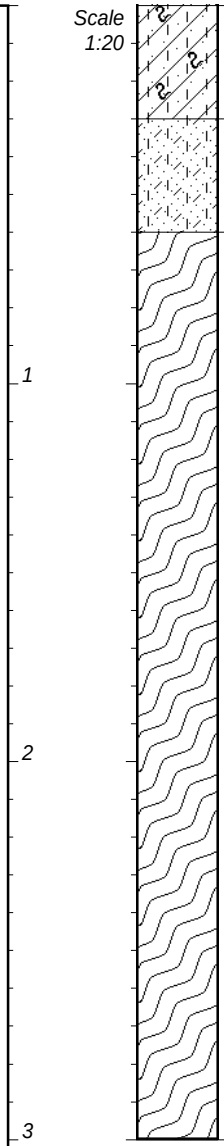
DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 56**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**




Dry, dark brown speckled yellowish orange, very stiff to hard, fissured, sandy silty CLAY containing roots in upper 0.20m – (Colluvium)

Dry, dusky red speckled and mottled light yellowish orange, dense to very dense, fissured, slightly gravelly silty clayey SAND – (Residual granite of the Natal Metamorphic Province)

Light yellowish orange occasionally banded light grey, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

NOTES

1) Cutting on site D052

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346013
*Y-COORD :* - 0060231

***HOLE No:*** **EXP 56**

DRENNAN MAUD (PTY) LTD

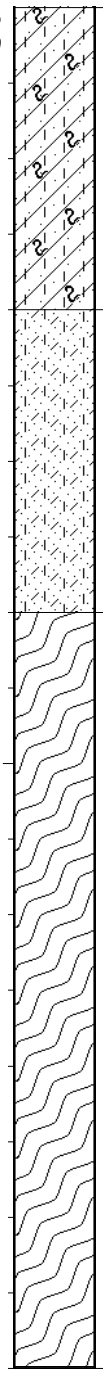
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 57**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry, dark brown speckled light yellowish orange, very stiff to hard, fissured, sandy silty CLAY containing roots in upper 0.20m – (Colluvium)

*0.40*

Dry, dusky red speckled and mottled light yellowish orange, dense to very dense, fissured, slightly gravelly silty clayey SAND – (Residual granite of the Natal Metamorphic Province)

*0.80*

Light yellowish orange occasionally banded light grey, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.80*

NOTES

1) Cutting on site D051

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346075
*Y-COORD :* - 0060255

***HOLE No:*** **EXP 57**

DRENNAN MAUD (PTY) LTD

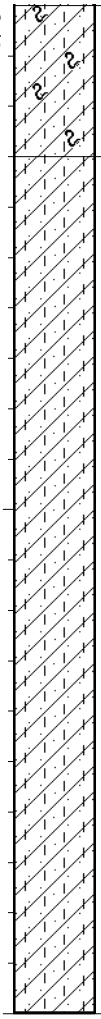
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 58**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:15*



| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | 0.00 Dry, dark brown speckled light yellowish orange, very stiff to hard, fissured, sandy silty CLAY containing roots in upper 0.20m – (Colluvium) |
| | | 0.30 Dry to slightly moist, dusky red speckled yellowish orange, firm to stiff, slightly fissured, sandy silty CLAY containing occasional gravel sized fragments – (Residual Karoo Dolerite) |
| | 1 | |
| | 2 | 2.00 |

NOTES

1) Cutting on site D051

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346083
*Y-COORD :* - 0060257

***HOLE No:*** **EXP 58**

DRENNAN MAUD (PTY) LTD

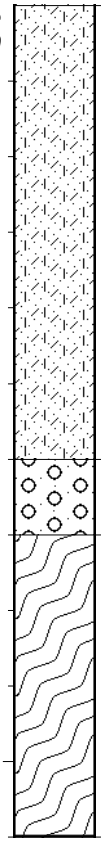
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 59**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry, dark brown and dusky red, dense to very dense, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*0.60*

Dry, dusky red mottled and blotched light reddish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.70*

Light reddish orange occasionally banded light grey, completely weathered, medium to coarse grained, very intensely foliated, slightly to moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.10*

NOTES

1) Cutting on site J138

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE :* *DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:18*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346061
*Y-COORD :* - 0060404

***HOLE No:*** **EXP 59**

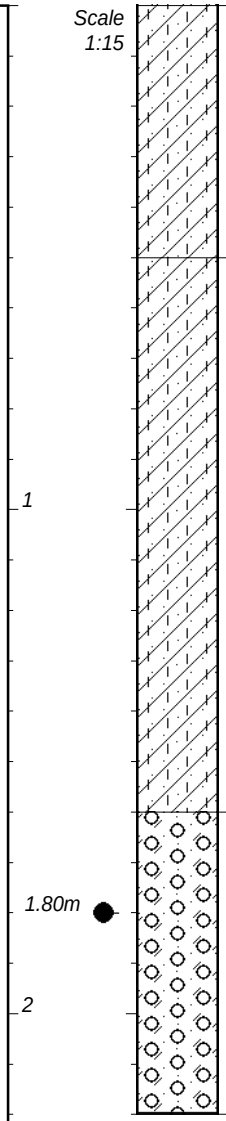
DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 60
*Sheet 1 of 1*

*JOB NUMBER:* 17213




Dry to slightly moist, dark brown occasionally speckled light yellowish orange, stiff to very stiff, fissured, sandy silty CLAY containing few roots in upper 0.20m – (Colluvium)

Dry to slightly moist, dusky red occasionally speckled light yellowish orange, very stiff, fissured, sandy silty CLAY containing occasional gravel sized fragments – (Residual Karoo Dolerite)

Slightly moist, dusky red and light yellow speckled and mottled black, medium dense to dense clayey sandy GRAVEL – (Completely weathered dolerite)

| SAMPLE | DEPTH (m) |
|---|---|
| I, PH, Cond. | 1.80 |

NOTES

1) Road cutting

2) No ground water seepage encountered

3) Full Indicator (I), (PH) & Conductivity samples at 1.80m

4) Top of slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :* NA
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346079
*Y-COORD :* - 0060464

*HOLE No:* EXP 60

DRENNAN MAUD (PTY) LTD

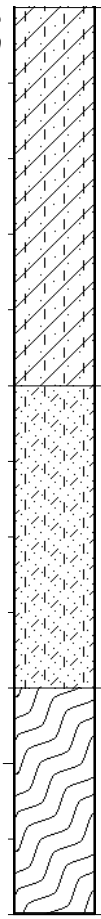
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 61**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | *0.00* Dry to slightly moist, dark brown and dusky red speckled light yellowish orange, very stiff, micro-shattered, sandy silty CLAY – (Colluvium) |
| | | *0.50* Dry, dusky red speckled and mottled light yellowish orange, dense to very dense, fissured, slightly gravelly silty clayey SAND – (Residual granite of the Natal Metamorphic Province) |
| | | *0.90* Light yellowish orange and dusky red, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province) |
| | *1* | *1.20* |

NOTES

1) Cutting on site B009

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346195
*Y-COORD :* - 0060324

***HOLE No:*** **EXP 61**

DRENNAN MAUD (PTY) LTD

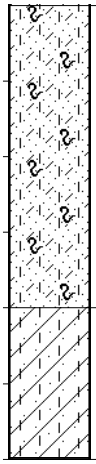
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 62**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00* Dry to slightly moist, dark brown, dense to very dense, fissured, silty clayey SAND containing roots in upper 0.40m – (Colluvium)

*0.40* Dry to slightly moist, dusky red, very stiff, micro-shattered, sandy silty CLAY containing occasional gravel sized fragments – (Residual Karoo Dolerite)

*0.60*

NOTES

1) Cutting on site I062

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346286
*Y-COORD :* - 0060268

***HOLE No:*** **EXP 62**

DRENNAN MAUD (PTY) LTD

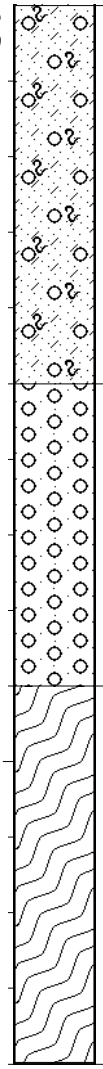
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 63
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:10*



*0.00* Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND containing roots in upper 0.50m – (Colluvium)

*0.50* Dry, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.90* Light yellowish orange occasionally banded light grey, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1.40*

NOTES

1) Cutting on site C001

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|
| | 1 |

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346215
*Y-COORD :* - 0060142

*HOLE No:* EXP 63

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 64**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | *Scale 1:10* |
| | | *0.00* Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND containing roots in upper 0.50m – (Colluvium) |
| | | *0.50* Dry, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium) |
| | | *0.70* |

NOTES

1) Cutting on site I055

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346213
*Y-COORD :* - 0060064

***HOLE No:*** **EXP 64**

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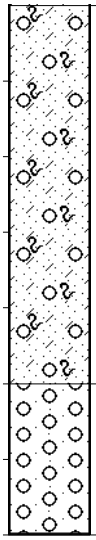
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 65
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND containing roots in upper 0.50m – (Colluvium)

*0.50*

Dry, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.70*

NOTES

1) Cutting on site D043

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346140
*Y-COORD :* - 0059900

*HOLE No:* EXP 65

DRENNAN MAUD (PTY) LTD

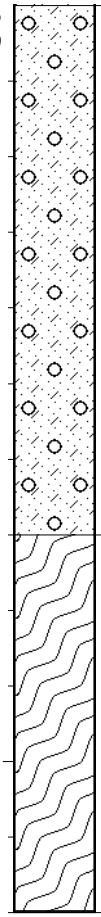
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 66**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND – (Colluvium)

*0.70*

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.20*

NOTES

1) Cutting on site I066

2) No ground water seepage encountered

3) No samples taken

4) Bottom of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE :* *DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346081
*Y-COORD :* - 0060140

***HOLE No:*** **EXP 66**

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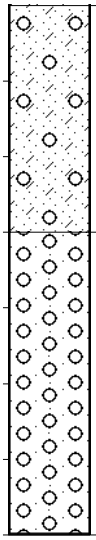
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 67**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND – (Colluvium)

*0.30*

Dry, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.70*

NOTES

1) Cutting on site I070

2) No ground water seepage encountered

3) No samples taken

4) Bottom of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346041
*Y-COORD :* - 0059962

***HOLE No:*** **EXP 67**

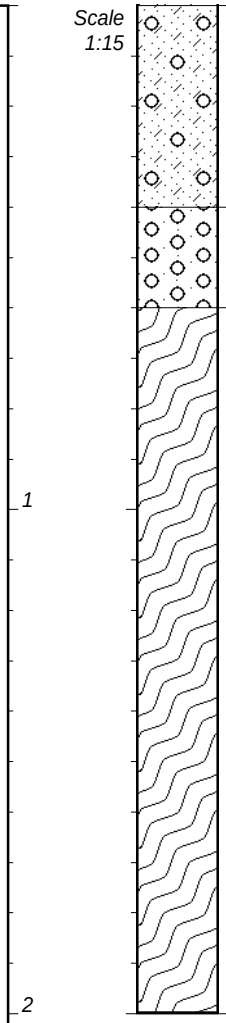
DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 68**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**




*0.00*

Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND – (Colluvium)

*0.40*

Dry, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.60*

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*2.00*

NOTES

1) Cutting on site I058

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE :* *DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346236
*Y-COORD :* - 0059940

***HOLE No:*** **EXP 68**

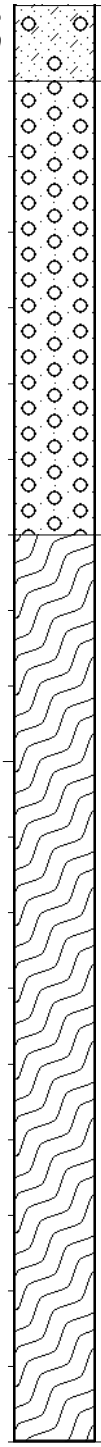
DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 69
*Sheet 1 of 1*

*JOB NUMBER:* 17213




0.00 — Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND – (Colluvium)

0.10 — Dry, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

0.70 — Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

1.90

NOTES

1) Cutting on site I054

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346457
*Y-COORD :* - 0060222

*HOLE No:* EXP 69

DRENNAN MAUD (PTY) LTD

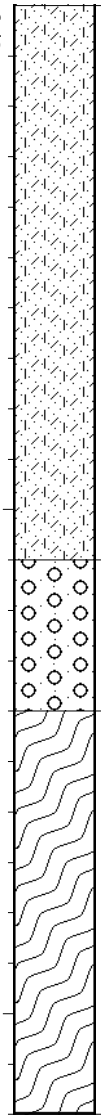
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 70**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:15*



*0.00*

Dry, dark brown and dusky red, dense to very dense, silty clayey SAND containing occasional gravel sized fragments – (Colluvium)

*1*

*1.10*

Dry, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*1.40*

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*2*

*2.20*

NOTES

1) Cutting on site C014

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346433
*Y-COORD :* - 0060162

***HOLE No:*** **EXP 70**

DRENNAN MAUD (PTY) LTD

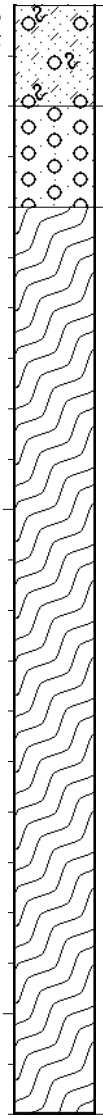
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 71**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:15*



| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | *0.00* Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND containing roots in upper 0.20m – (Colluvium) |
| | | *0.20* Dry, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium) |
| | | *0.40* Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province) |
| | *1* | |
| | *2* | |
| | | *2.20* |

NOTES

1) Cutting on site I048

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346395
*Y-COORD :* - 0060062

***HOLE No:*** **EXP 71**

DRENNAN MAUD (PTY) LTD

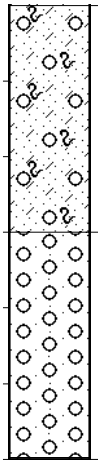
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 72**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND containing roots in upper 0.30m – (Colluvium)

*0.30*

Dry, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.60*

NOTES

1) Cutting on site E012

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346552
*Y-COORD :* - 0059950

***HOLE No:*** **EXP 72**

DRENNAN MAUD (PTY) LTD

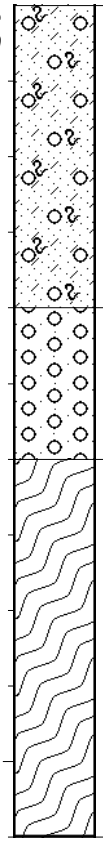
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 73**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



| | |
|---|---|
| *0.00* | Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND containing roots in upper 0.40m – (Colluvium) |
| *0.40* | Dry, pale red and light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium) |
| *0.60* | Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province) |
| *1.10* | |

*1*

NOTES

1) Cutting on site C014

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346496
*Y-COORD :* - 0059802

***HOLE No:*** **EXP 73**

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

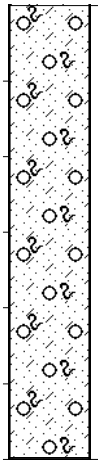
PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 74**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

| SAMPLE | DEPTH (m) |
|---|---|
| | |

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND containing roots in upper 0.60m – (Colluvium)

*0.60*

NOTES

1) Cutting on site I027

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346610
*Y-COORD :* - 0059819

***HOLE No:*** **EXP 74**

DRENNAN MAUD (PTY) LTD

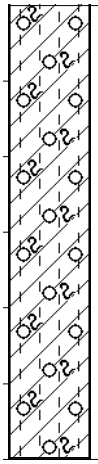
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 75**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown speckled yellowish orange, stiff to very stiff, fissured, gravelly silty CLAY containing roots in upper 0.60m – (Colluvium)

*0.60*

NOTES

1) Cutting on site I030

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346723
*Y-COORD :* - 0059801

***HOLE No:*** **EXP 75**

DRENNAN MAUD (PTY) LTD

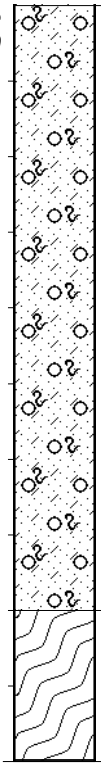
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 76**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND containing roots in upper 0.40m – (Colluvium)

*0.80*

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.00*

NOTES

1) Cutting on site I032

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346779
*Y-COORD :* - 0059898

***HOLE No:*** **EXP 76**

DRENNAN MAUD (PTY) LTD

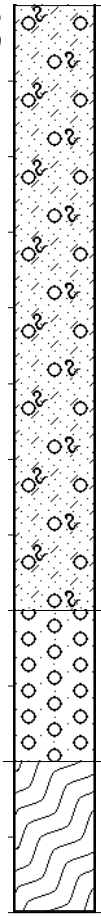
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 77**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | *0.00* Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND containing roots in upper 0.40m – (Colluvium) |
| | | *0.80* Dry, pale red and light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium) |
| | *1* | *1.00* Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province) |
| | | *1.20* |

NOTES

1) Cutting on site I035

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346791
*Y-COORD :* - 0060068

***HOLE No:*** **EXP 77**

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

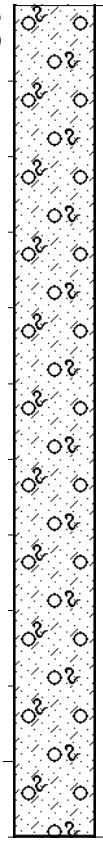
PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 78**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

| SAMPLE | DEPTH (m) |
|---|---|
| | |

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND containing roots in upper 0.60m – (Colluvium)

*1*

*1.10*

NOTES

1) Cutting on site B017

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346649
*Y-COORD :* - 0060029

***HOLE No:*** **EXP 78**

DRENNAN MAUD (PTY) LTD

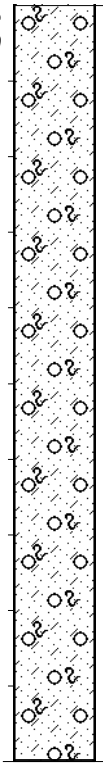
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 79
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND containing roots in upper 0.50m – (Colluvium)

*1*

*1.00*

NOTES

1) Cutting on site I025

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346708
*Y-COORD :* - 0060182

*HOLE No:* EXP 79

DRENNAN MAUD (PTY) LTD

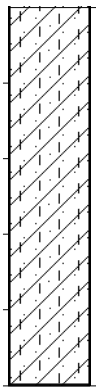
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 80**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dusky red speckled yellowish orange, firm to stiff, slightly fissured, slightly gravelly sandy silty CLAY containing occasional sub-rounded to rounded cobble sized dolerite fragments – (Residual Karoo Dolerite)

*0.50*

NOTES

1) Cutting on site A025

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347400
*Y-COORD :* - 0059895

***HOLE No:*** **EXP 80**

DRENNAN MAUD (PTY) LTD

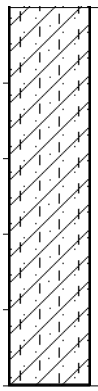
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 81
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:10*



| SAMPLE | DEPTH (m) | |
|---|---|---|
| I, PH, Cond. | 0.30m | 0.00 Dry to slightly moist, dusky red, firm to stiff, slightly fissured, sandy silty CLAY containing occasional gravel sized fragments – (Residual Karoo Dolerite) |
| | | 0.50 |

NOTES

1) Cutting on site A014

2) No ground water seepage encountered

3) Full Indicator (I), (PH) & Conductivity samples at 0.30m

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347315
*Y-COORD :* - 0059867

*HOLE No:* EXP 81

DRENNAN MAUD (PTY) LTD

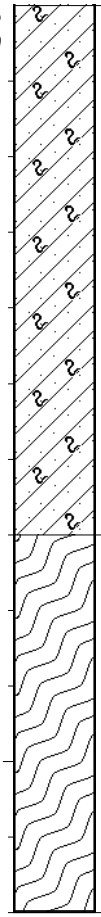
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 82
*Sheet 1 of 1*

*JOB NUMBER:* 17213

Scale 1:10



0.00 Dry, dusky reddish brown, stiff to very stiff, micro-shattered, sandy, silty CLAY containing roots in upper 0.50m – (Colluvium)

0.70 Dusky reddish orange speckled light grey and yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, slightly fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

1.20

| SAMPLE | DEPTH (m) |
|---|---|
| Swell, I, PH, Cond. | 1.00m |

NOTES

1) Cutting on site A018

2) No ground water seepage encountered

3) Swell, Full Indicator (I), (PH) & Conductivity samples at 1.00m

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347262
*Y-COORD :* - 0059744

*HOLE No:* EXP 82

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 83**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*

| SAMPLE | DEPTH (m) |
|---|---|
| I, PH, Cond. | 0.50m |

*0.00*

Dry to slightly moist, dusky reddish brown, medium dense to dense, clayey silty SAND containing occasional gravel sized fragments – (Residual granite of the Natal Metamorphic Province)

*0.90*

NOTES

1) Cutting on site I009

2) No ground water seepage encountered

3) Full Indicator, (PH) & Conductivity samples at 0.50m

4) Bottom of slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347217
*Y-COORD :* - 0059724

***HOLE No:*** **EXP 83**

DRENNAN MAUD (PTY) LTD

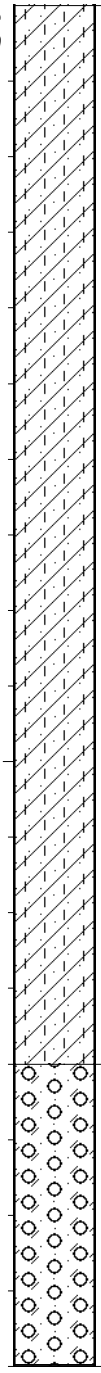
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 84**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Slightly moist to moist, dusky red, firm to stiff, slightly fissured, sandy silty CLAY containing occasional sub-rounded to rounded cobble to boulder sized dolerite corestones up to 550mm in diameter – (Residual Karoo Dolerite)

*1*

*1.40*

Slightly moist, dusky red and light yellow, medium dense to dense, very gravelly, clayey sandy GRAVEL – (Completely weathered dolerite)

*1.80*

NOTES

1) Cutting on site I007

2) No ground water seepage encountered

3) No sample taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347404
*Y-COORD :* - 0059679

***HOLE No:*** **EXP 84**

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 85**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | Scale 1:10 |
| | | 0.00 Dry to slightly moist, dark brown speckled and mottled yellowish orange, stiff to very stiff, gravelly silty CLAY containing roots in upper 0.60m – (Colluvium) |
| | 1 | 1.00 |

NOTES

1) Cutting on site I001

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3348023
*Y-COORD :* - 0059608

***HOLE No:*** **EXP 85**

DRENNAN MAUD (PTY) LTD

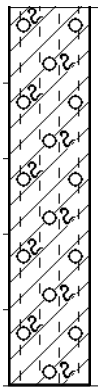
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 86**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown speckled and mottled yellowish orange, stiff to very stiff, gravelly silty CLAY containing roots in upper 0.60m – (Colluvium)

*0.50*

NOTES

1) Cutting on site I002

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347787
*Y-COORD :* - 0059675

***HOLE No:*** **EXP 86**

DRENNAN MAUD (PTY) LTD

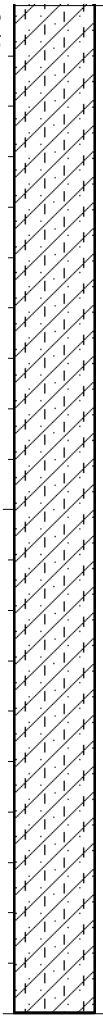
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 87**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:15*



*0.00*

Slightly moist to moist, dusky red, firm to stiff, slightly fissured, sandy silty CLAY containing ± 30 – 50% sub-rounded to rounded cobble to boulder sized dolerite corestones up to 1100mm in diameter – (Residual Karoo Dolerite)

*1*

*2*

*2.00*

NOTES

1) Cutting on site H083

2) No ground water seepage encountered

3) No sample taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347596
*Y-COORD :* - 0059786

***HOLE No:*** **EXP 87**

DRENNAN MAUD (PTY) LTD

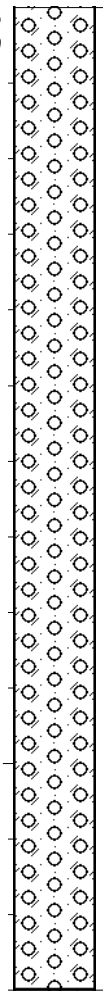
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 88
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:10*



*0.00*

Slightly moist, dusky red and orange brown, medium dense, very gravelly, clayey sandy GRAVEL containing occasional sub-rounded to rounded cobble sized dolerite fragments – (Completely weathered dolerite)

*1.30*

NOTES

1) Cutting on site A042

2) No ground water seepage encountered

3) No sample taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|
| | 1 |

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347490
*Y-COORD :* - 0060001

*HOLE No:* EXP 88

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 89
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:15*

| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | *0.00* Dry to slightly moist, dark brown, dense to very dense, micro-shattered, silty clayey SAND containing occasional gravel sized fragments – (Colluvium) |
| | | *0.70* Slightly moist, orange brown, medium dense to dense, slightly silty, sandy clayey GRAVEL – (Completely weathered dolerite) |
| | *1* | |
| | *2* | |
| | | *2.50* |

NOTES

1) Cutting on site A014

2) No ground water seepage encountered

3) No sample taken

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347482
*Y-COORD :* - 0060098

*HOLE No:* EXP 89

DRENNAN MAUD (PTY) LTD

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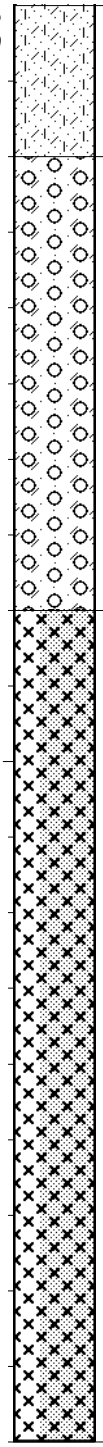
PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 90
*Sheet 1 of 1*

*JOB NUMBER:* 17213

Scale 1:10



| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | 0.00 Dry to slightly moist, dark brown, dense to very dense, fissured and micro-shattered, silty clayey SAND containing occasional gravel sized fragments – (Colluvium) |
| | | 0.20 Slightly moist, orange brown, medium dense to dense, slightly silty, sandy clayey GRAVEL – (Completely weathered dolerite) |
| | 1 | 0.80 Grey weathered brown and orange brown, highly to medium weathered with depth, very closely jointed, soft to hard rock DOLERITE in slightly clayey sandy matrix – (Karoo Dolerite) |
| | | 1.90 |

NOTES

1) Cutting on site J105

2) No ground water seepage encountered

3) No sample taken

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347330
*Y-COORD :* - 0060194

*HOLE No:* EXP 90

DRENNAN MAUD (PTY) LTD

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Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 91
*Sheet 1 of 1*

*JOB NUMBER:* 17213

| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | Scale 1:10 |
| | 0.00 | Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND – (Colluvium) |
| | 0.50 | Dry, dusky red speckled and mottled light yellowish orange, dense to very dense, fissured, slightly gravelly clayey silty SAND containing occasional gravel sized fragments – (Residual granite of the Natal Metamorphic Province) |
| | 0.80 | |

NOTES

1) Cutting on site H010

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346821
*Y-COORD :* - 0060244

*HOLE No:* EXP 91

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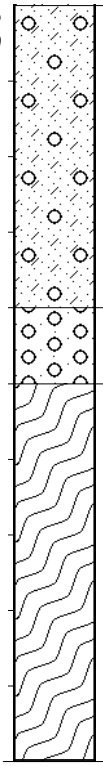
PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 92
*Sheet 1 of 1*

*JOB NUMBER:* 17213




Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND – (Colluvium)

Dry, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

NOTES

1) Cutting on site J121

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| SAMPLE | DEPTH (m) |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE :* DMPSP.SET

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346566
*Y-COORD :* - 0060351

*HOLE No:* EXP 92

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PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 93
*Sheet 1 of 1*

*JOB NUMBER:* 17213

| SAMPLE | DEPTH (m) |
|---|---|
| | 0.00 |

*Scale 1:10*

1

Grey weathered brown and orange brown, highly to medium weathered with depth, very closely jointed, soft to hard rock DOLERITE in slightly clayey sandy matrix – (Karoo Dolerite)

1.60

NOTES

1) Cutting on site E015

2) No ground water seepage encountered

3) No sample taken

4) Top of slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346302
*Y-COORD :* - 0060379

*HOLE No:* EXP 93

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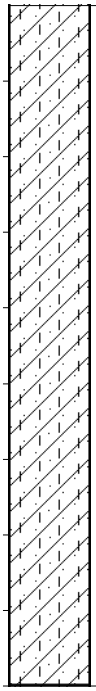
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 94**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dusky red speckled yellow and orange, stiff to very stiff, sandy silty CLAY containing occasional gravel sized fragments – (Residual Karoo Dolerite)

*0.90*

NOTES

1) Cutting on site I110

2) No ground water seepage encountered

3) No sample taken

4) Bottom of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345269
*Y-COORD :* - 0061458

***HOLE No:*** **EXP 94**

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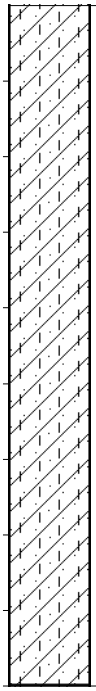
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 95**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dusky red, firm to stiff, micro-shattered sandy silty CLAY containing occasional gravel size fragments – (Residual Karoo Dolerite)

*0.90*

NOTES

1) Cutting on site I108

2) No ground water seepage encountered

3) No sample taken

4) Bottom of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345312
*Y-COORD :* - 0061498

***HOLE No:*** **EXP 95**

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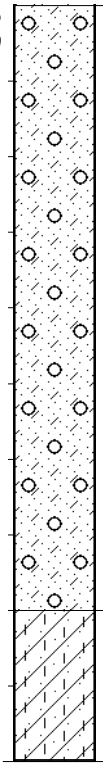
PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 96
*Sheet 1 of 1*

*JOB NUMBER:* 17213




| SAMPLE | DEPTH (m) | |
|---|---|---|
| | | 0.00 Dry, dark brown, medium dense to dense, micro-shattered, gravelly clayey SAND – (Colluvium) |
| | | 0.80 Dry to slightly moist, dusky red, firm to stiff, micro-shattered sandy silty CLAY containing occasional gravel sized fragments – (Residual Karoo Dolerite) |
| | 1 | 1.00 |

NOTES

1) Cutting on site I081

2) No ground water seepage encountered

3) No sample taken

4) Bottom of slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345441
*Y-COORD :* - 0061570

*HOLE No:* EXP 96

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PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

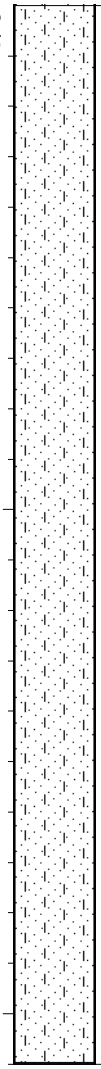
*HOLE No:* EXP 97
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:15*

*0.00*

Dry to slightly moist, dusky reddish, medium dense to dense, slightly clayey silty SAND – (Residual granite of the Natal Metamorphic Province)



*1*

*1.50m*

*2*

*2.10*

| SAMPLE | DEPTH (m) |
|---|---|
| I, PH, Cond. | 1.50 |

NOTES

1) Cutting on site I087

2) No ground water seepage encountered

3) Full Indicator (I), (PH) & Conductivity samples at 1.50m

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345425
*Y-COORD :* - 0061860

*HOLE No:* EXP 97

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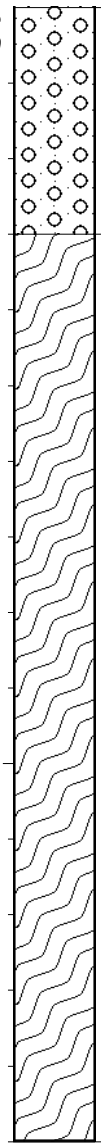
PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 98**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry, pale red and light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.30*

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.50*

NOTES

1) Cutting on site I090

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345394
*Y-COORD :* - 0062006

***HOLE No:*** **EXP 98**

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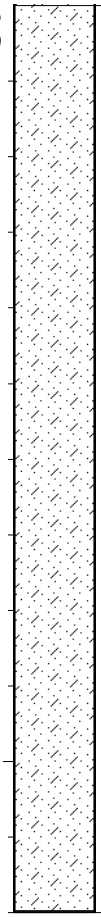
PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

*HOLE No:* EXP 99
*Sheet 1 of 1*

*JOB NUMBER:* 17213

*Scale 1:10*



*0.00*

Dry to slightly moist, dusky reddish brown, medium dense to dense, slightly gravelly clayey SAND – (Residual granite of the Natal Metamorphic Province)

*1*

*1.20*

NOTES

1) Cutting on site D089

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345572
*Y-COORD :* - 0061883

*HOLE No:* EXP 99

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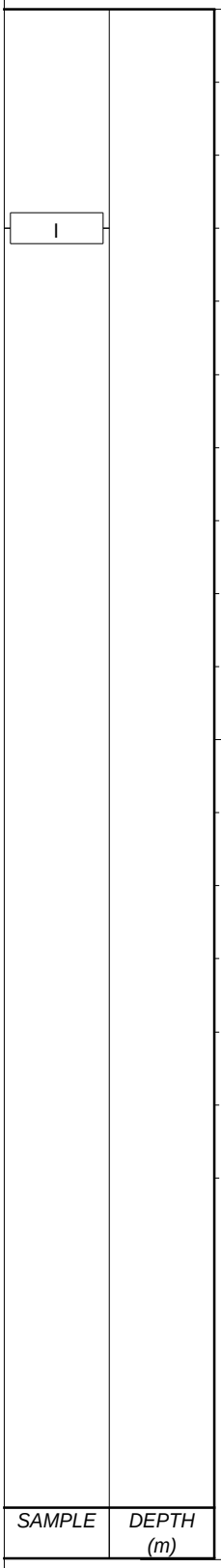
PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 100**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**




| SAMPLE | DEPTH (m) | |
|---|---|---|
| | 0.00 | Dry, pale red and light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium) |
| | 0.50 | Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province) |
| | 1.60 | |

NOTES

1) Cutting on site D054

2) No ground water seepage encountered

3) Full Indicator (I) sample at 0.30m

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345591
*Y-COORD :* - 0061660

***HOLE No:*** **EXP 100**

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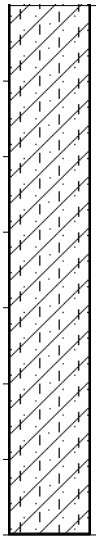
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 101**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dusky reddish brown, firm to stiff, micro-shattered sandy silty CLAY containing occasional gravel sized fragments – (Residual Karoo Dolerite)

*0.70*

NOTES

1) Cutting on site B045

2) No ground water seepage encountered

3) No sample taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347245
*Y-COORD :* - 0060094

***HOLE No:*** **EXP 101**

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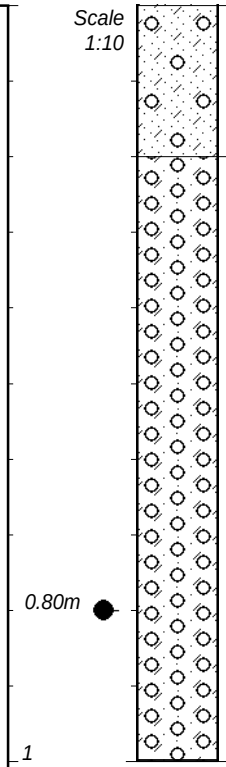
PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 102**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**




Dry to slightly moist, dark brown, medium dense to dense, micro-shattered, gravelly clayey SAND – (Colluvium)

Slightly moist, orange brown, medium dense to dense sandy clayey GRAVEL – (Completely weathered dolerite)

| SAMPLE | DEPTH (m) |
|---|---|
| Swell, I | 0.80m |

NOTES

1) Cutting on site J115

2) No ground water seepage encountered

3) Swell, Full Indicator (I) samples at 0.80m

4) Top of slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 17:12*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3347084
*Y-COORD :* - 0060192

***HOLE No:*** **EXP 102**

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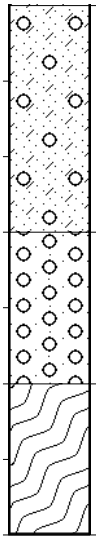
PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 103**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



| | |
|---|---|
| *0.00* | Dry to slightly moist, dark brown, dense to very dense, fissured, gravelly clayey SAND – (Colluvium) |
| *0.30* | Dry, dusky red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium) |
| *0.50* | Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province) |
| *0.70* | |

NOTES

1) Cutting on site I252

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346765
*Y-COORD :* - 0060276

***HOLE No:*** **EXP 103**

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 104**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*

*0.00*

Grey weathered brown and orange brown, highly to medium weathered with depth, very closely jointed, soft to hard rock DOLERITE in slightly clayey sandy matrix – (Karoo Dolerite)

*0.90*

NOTES

1) Cutting on site B016

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346088
*Y-COORD :* - 0060626

***HOLE No:*** **EXP 104**

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 105**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*

*0.00* Dry to slightly moist, dark brown, very dense, fissured, gravelly clayey SAND – (Colluvium)

*0.40* Dry, pale red speckled and mottled yellowish orange, very dense, fissured, slightly gravelly clayey SAND – (Residual granite of the Natal Metamorphic Province)

*1.30*

| SAMPLE | DEPTH (m) |
|---|---|
| I, PH, Cond. | 1.00m |

NOTES

1) Cutting on site I115

2) No ground water seepage encountered

3) Full Indicator (I), (PH) & Conductivity samples taken at 1.00m

4) Mid – slope

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345886
*Y-COORD :* - 0061890

***HOLE No:*** **EXP 105**

DRENNAN MAUD (PTY) LTD

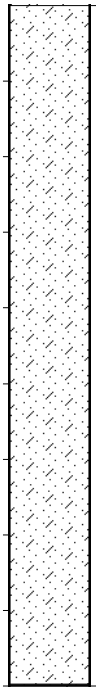
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 106**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry, pale red speckled and mottled yellowish orange, very dense, fissured, slightly gravelly clayey SAND – (Residual granite of the Natal Metamorphic Province)

*0.90*

NOTES

1) Cutting on site I115

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345922
*Y-COORD :* - 0061969

***HOLE No:*** **EXP 106**

DRENNAN MAUD (PTY) LTD

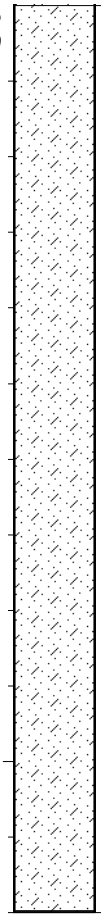
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 107**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry, pale red speckled and mottled yellowish orange, medium dense, fissured, slightly gravelly clayey SAND – (Residual granite of the Natal Metamorphic Province)

*1*

*1.20*

NOTES

1) Cutting on site G001

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346029
*Y-COORD :* - 0061999

***HOLE No:*** **EXP 107**

DRENNAN MAUD (PTY) LTD

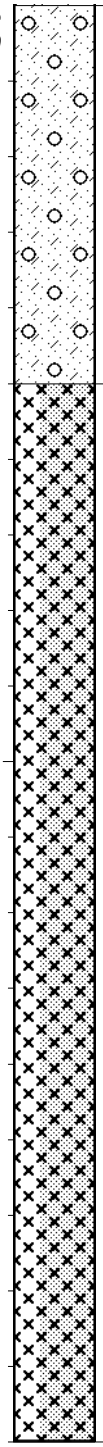
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 108**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry, dark brown, dense to very dense, gravelly clayey SAND containing occasional sub-rounded cobble sized dolerite fragments – (Colluvium)

*0.50*

Grey weathered brown and orange brown, highly to medium weathered with depth, very closely jointed, soft to hard rock DOLERITE in slightly clayey sandy matrix – (Karoo Dolerite)

*1*

*1.90*

NOTES

1) Cutting on site J500

2) No ground water seepage encountered

3) No sample taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346354
*Y-COORD :* - 0062214

***HOLE No:*** **EXP 108**

DRENNAN MAUD (PTY) LTD

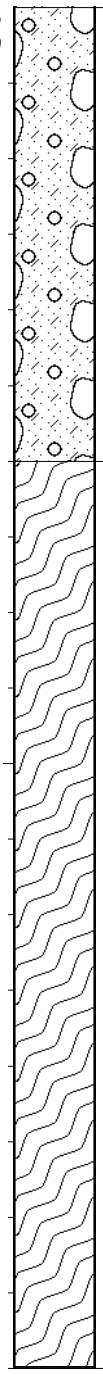
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 109**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown speckled light yellowish orange, dense to very dense, fissured, gravelly clayey SAND containing ± 30 – 50% sub-rounded to rounded cobble sized dolerite fragments – (Colluvium)

*0.60*

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.80*

NOTES

1) Cutting on site G010

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346557
*Y-COORD :* - 0062271

***HOLE No:*** **EXP 109**

DRENNAN MAUD (PTY) LTD

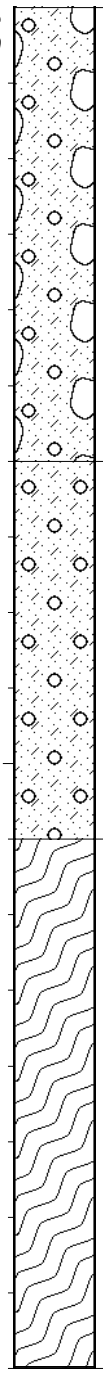
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 110**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown speckled light yellowish orange, dense to very dense, fissured, gravelly clayey SAND containing ± 30 – 50% sub-rounded to rounded cobble sized dolerite fragments – (Colluvium)

*0.60*

Dry, orange brown, medium dense to dense, intact, gravelly clayey SAND – (Residual granite of the Natal Metamorphic granite)

*1*

*1.10*

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1.80*

NOTES

1) Cutting on site I128

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346776
*Y-COORD :* - 0062339

***HOLE No:*** **EXP 110**

DRENNAN MAUD (PTY) LTD

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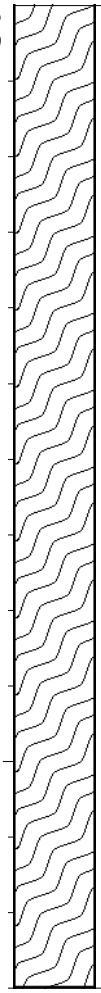
PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 111**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Pale red and light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1.30*

*1*

NOTES

1) Cutting on site G015

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3346528
*Y-COORD :* - 0062588

***HOLE No:*** **EXP 111**

DRENNAN MAUD (PTY) LTD

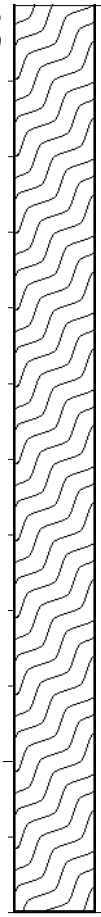
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 112**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Pale red and light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1.20*

*1*

NOTES

1) Cutting on site E015

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345668
*Y-COORD :* - 0061974

***HOLE No:*** **EXP 112**

DRENNAN MAUD (PTY) LTD

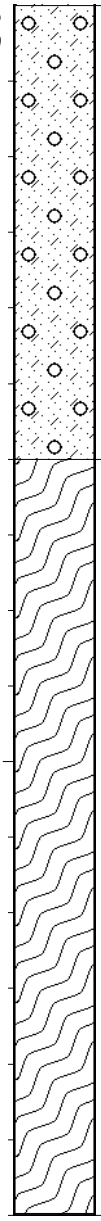
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 113**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown speckled light yellowish orange, medium dense to dense, fissured, gravelly clayey SAND – (Colluvium)

*0.60*

Pale red and light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.60*

NOTES

1) Cutting on site J275

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345268
*Y-COORD :* - 0062120

***HOLE No:*** **EXP 113**

DRENNAN MAUD (PTY) LTD

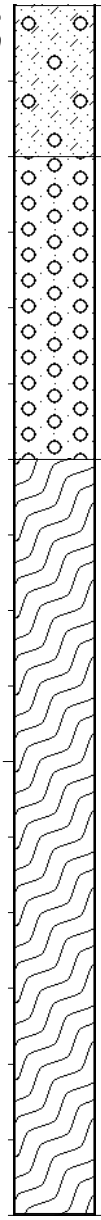
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 114**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry to slightly moist, dark brown speckled light yellowish orange, medium dense to dense, fissured, gravelly clayey SAND – (Colluvium)

*0.20*

Dry, pale red mottled and blotched light yellowish orange, dense to very dense, slightly clayey sandy GRAVEL containing ± 20 – 30% of sub-angular to sub-rounded pebble sized quartz and feldspar fragments – (Pebble marker/ colluvium)

*0.60*

Pale red and light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.60*

NOTES

1) Cutting on site J273

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345268
*Y-COORD :* - 0062120

***HOLE No:*** **EXP 114**

DRENNAN MAUD (PTY) LTD

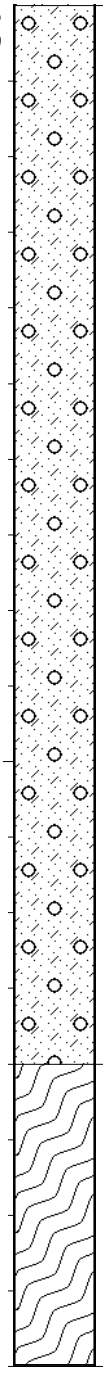
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 115**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Dry, pale red speckled yellowish orange, medium dense to dense, intact, gravelly clayey SAND – (Residual granite of the Natal Metamorphic Province)

*1*

*1.40*

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1.80*

NOTES

1) Cutting on site D059

2) No ground water seepage encountered

3) No samples taken

4) Mid – slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345580
*Y-COORD :* - 0062021

***HOLE No:*** **EXP 115**

DRENNAN MAUD (PTY) LTD

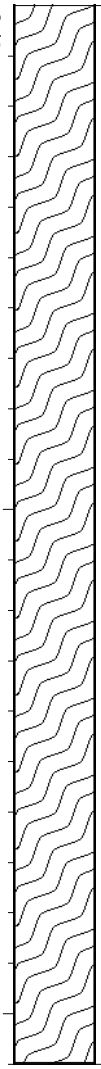
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 116**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:15*



*0.00*

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*2*

*2.10*

NOTES

1) Cutting on site E036

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345477
*Y-COORD :* - 0062235

***HOLE No:*** **EXP 116**

DRENNAN MAUD (PTY) LTD

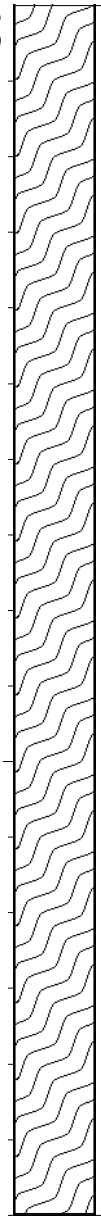
Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 117**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*



*0.00*

Light yellowish orange, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1.60*

*1*

NOTES

1) Cutting on site D109

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.

*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019

*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION : -*
*X-COORD :* - 3345440
*Y-COORD :* - 0062245

***HOLE No:*** **EXP 117**

DRENNAN MAUD (PTY) LTD

Geotechnical Engineers & Engineering Geologists

PROJECT & DEVELOPMENT MANAGEMENT
Amanyuswa Rural Housing Project – Phase 1

***HOLE No:*** **EXP 118**
***Sheet 1 of 1***

***JOB NUMBER:*** **17213**

*Scale 1:10*

*0.00*

Light red, completely weathered, medium to coarse grained, very intensely foliated, moderately fractured, very soft rock micaceous GRANITIC GNEISS – (Natal Metamorphic Province)

*1*

*1.40*

NOTES

1) Cutting on site E041

2) No ground water seepage encountered

3) No samples taken

4) Top of slope

| *SAMPLE* | *DEPTH (m)* |
|---|---|

*CONTRACTOR :*
*MACHINE :* NA
*DRILLED BY :* NA
*PROFILED BY :* D.G.
*TYPE SET BY :*
*SETUP FILE : DMPSP.SET*

*INCLINATION :*
*DIAM :* NA
*DATE :* NA
*DATE :* 26 February 2019 to 05 March 2019
*DATE : 28/03/19 16:19*
*TEXT : ..C:\DOTIN\SPMASTER.DOC*

*ELEVATION :* -
*X-COORD :* - 3345521
*Y-COORD :* - 0062745

***HOLE No:*** **EXP 118**

# APPENDIX B

## LABORATORY TEST RESULTS

# Laboratory Test Summary

THEKWINI SOILS LAB. CC
V.A.T. REGISTRATION NO. 4590210961.
68 Ridge Road, Tollgate, DURBAN Tel : (031) 201-8992
P.O. Box 30464, MAYVILLE, 4058 Fax : (031) 201-7920

**Job Description:** Amanyuswa RHP - Ref.17213
**Job no.:** 8864
**Date:** 14-03-2019

| Lab no. | | | 03029 | 03030 | 03031 | 03032 | 03033 | 03034 | 03035 | 03036 | 03037 | 03038 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | | | EXP.4 | EXP.11 | EXP.12 | EXP.15 | EXP.34 | EXP.41 | EXP.42 | EXP.60 | EXP.81 | EXP.82 |
| Depth | | | 0.5 | 1.0 | 1.4 | 0.2 | 0.9 | 1.0 | 0.6 | 1.8 | 0.3 | 1.0 |
| Description | | | Dk. Br | Dk Br. Sp. Or. | Dusky Red | Dk. Br | Dusky Red | Lt. Yel. Or. Mot. Blk | Dk. Yel. Or. & Red | Dusky Red & Lt. Yel. | Dusky Red | Dusky Red. Or. |
| | | | Colluvium | Colluvium | Res. Dolerite | Colluvium | Res. Granite | Ferricrete | Res. Dolerite | C/W Dolerite | Res. Dolerite | VSR Granite |
| Sample no. | | | **S1** | **S2/S16** | **S3** | **S4** | **S5** | **S6** | **S7/S17** | **S8** | **S9** | **S10/S18** |
| Particle Size (mm) | 75 | Cumulative % Passing | | | | | | | | | | |
| | 53 | | | | | | | | | | | |
| | 37.5 | | | | | | | | | | | |
| | 26.5 | | | | | | | | | | | |
| | 19 | | 100 | | | 100 | | | 100 | 100 | | |
| | 13.2 | | 97 | | | 92 | | 100 | 98 | 82 | | 100 |
| | 9.5 | | 96 | | 100 | 86 | | 98 | 96 | 75 | 100 | 98 |
| | 4.75 | | 96 | 100 | 99 | 59 | 100 | 87 | 95 | 62 | 100 | 97 |
| | 2 | | 93 | 100 | 87 | 38 | 96 | 73 | 94 | 55 | 99 | 95 |
| | 0.425 | | 72 | 93 | 62 | 23 | 72 | 54 | 86 | 44 | 91 | 72 |
| | 0.25 | | 64 | 90 | 56 | 20 | 64 | 49 | 81 | 40 | 87 | 63 |
| | 0.15 | | 56 | 87 | 52 | 17 | 57 | 45 | 77 | 35 | 84 | 55 |
| | 0.075 | | 45 | 83 | 48 | 15 | 46 | 39 | 72 | 30 | 79 | 47 |
| Hydrometer | 0.05 | % Passing | 40 | 83 | 48 | 15 | 45 | 38 | 70 | 29 | 75 | 42 |
| | 0.02 | | 33 | 69 | 39 | 13 | 40 | 32 | 66 | 23 | 62 | 33 |
| | 0.005 | | 29 | 59 | 34 | 12 | 36 | 27 | 55 | 18 | 55 | 27 |
| | 0.002 | | 26 | 52 | 31 | 11 | 33 | 25 | 53 | 16 | 51 | 24 |
| Soil Mortar | Coarse Sand <2.0 >0.425mm | % Passing | 22.7 | 6.5 | 28.7 | 39.7 | 25.0 | 26.2 | 8.4 | 20.1 | 8.1 | 24.5 |
| | Fine Sand <0.425>0.05mm | | 46.2 | 16.2 | 37.2 | 51.1 | 41.6 | 45.9 | 27.4 | 57.1 | 23.4 | 43.7 |
| | Silt <0.05 >0.005 | | 8.8 | 22.5 | 9.8 | 2.0 | 6.6 | 7.6 | 14.2 | 8.4 | 18.0 | 11.5 |
| | Clay <0.005 | | 22.3 | 54.8 | 24.3 | 7.3 | 26.8 | 20.3 | 50.0 | 14.5 | 50.4 | 20.3 |
| Atterberg Limits | Liquid Limit % (m/m) | | 27.9 | 45.3 | 32.1 | 30.5 | 29 | 34.3 | 34.9 | 38 | 34.5 | 38 |
| | Plasticity Index | | 11.4 | 13.5 | 10.3 | 9.8 | 8.5 | 12.2 | 11.1 | 11 | 13 | 11.4 |
| | Linear Shrinkage % | | 4 | 12.7 | 7 | 5.3 | 2 | 2.7 | 6.7 | 6.7 | 4.7 | 4.7 |
| | Natural MC % | | - | - | - | - | - | - | - | - | - | - |
| Mod AASHTO Density | Dry Density kg/m$^3$ | | | | | | | | | | | |
| | OMC % | | | | | | | | | | | |
| CBR | 100% MDD | | | | | | | | | | | |
| | 98% | | | | | | | | | | | |
| | 95% | | | | | | | | | | | |
| | 93% (Inferred) * | | | | | | | | | | | |
| | 90% | | | | | | | | | | | |
| | CBR Swell (%) | | | | | | | | | | | |
| AASHTO Soil Classification * | | | A - 6 (2) | A - 7 - 5 (13) | A - 6 (2) | A - 2 - 4 (0) | A - 4 (1) | A - 6 (1) | A - 6 (7) | A - 2 - 6 (0) | A - 6 (9) | A - 6 (3) |
| Grading Modulus | | | 0.89 | 0.24 | 1.02 | 2.24 | 0.85 | 1.34 | 0.48 | 1.70 | 0.31 | 0.87 |
| TRH 14 (1985) * | | | | | | | | | | | | |
| pH | | | 6.3 | | 6.9 | | 6.5 | 6.4 | | 6.5 | 6.6 | 6.1 |
| Conductivity mS/cm | | | 660 | | 360 | | 6320 | 1200 | | 4210 | 850 | 570 |

Technical Signatory: .....

# TEST REPORT

## MATERIALS ANALYSIS

THEKWINI SOILS LAB. CC
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Tel : (031) 201-8992
P.O. Box 30464, MAYVILLE, 4058
Fax : (031) 201-7920

**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03029 **Borehole/Pit no.:** EXP.4
**Description:** Dk. Br
**Depth:** 0.5 Colluvium

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 96.7 |
| 9.5 | 96.3 |
| 4.75 | 95.8 |
| 2 | 93.3 |
| 0.425 | 72.1 |
| 0.25 | 63.8 |
| 0.15 | 55.9 |
| 0.075 | 45.3 |
| 0.05 | 40.2 |
| 0.02 | 33.5 |
| 0.005 | 28.9 |
| 0.002 | 25.5 |

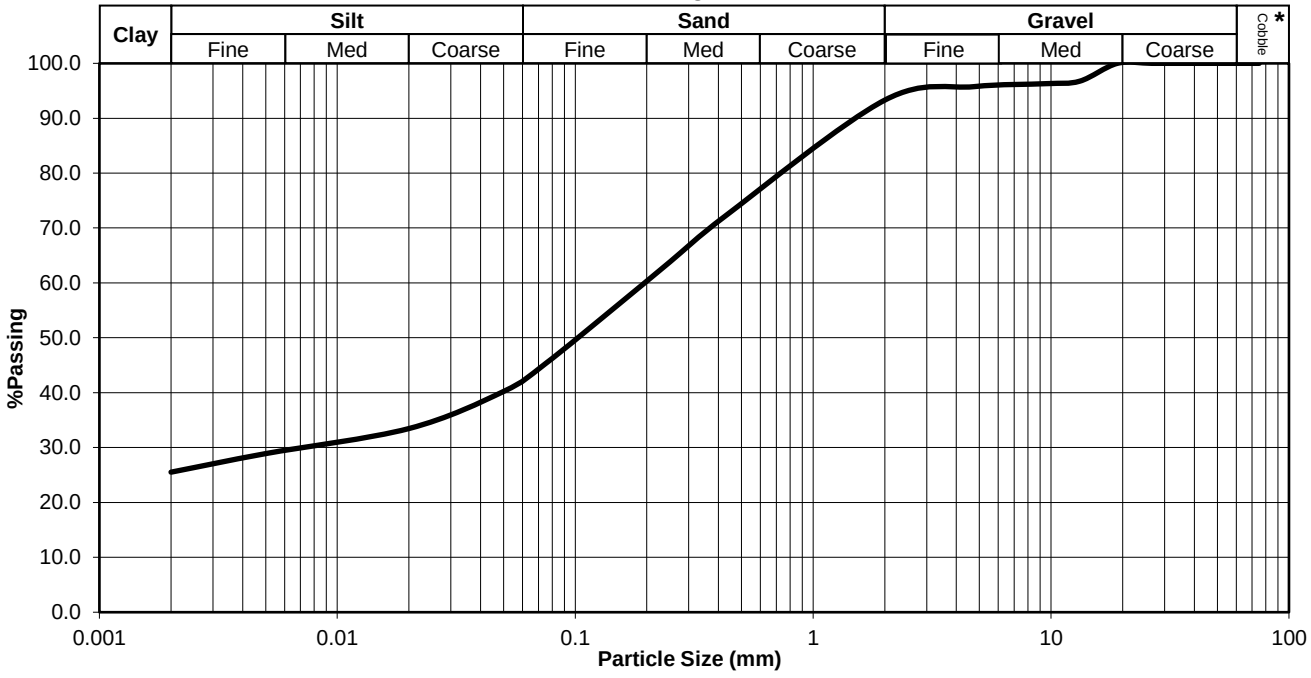
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 6.7 |
| Coarse | 0.0 |
| Medium | 4.1 |
| Fine | 2.6 |
| Sand% | 51.0 |
| Coarse | 18.8 |
| Medium | 14.6 |
| Fine | 17.6 |
| Silt% | 16.7 |
| Coarse | 8.8 |
| Medium | 4.3 |
| Fine | 3.7 |
| Clay% | 25.5 |

| PLASTICITY | |
|---|---|
| Liquid Limit, % | 27.9 |
| Plasticity Index | 11.4 |
| Linear Shrinkage, % (L/L) | 4 |

| GRADING | |
|---|---|
| D10 Size (mm) | <0.002 |
| Uniformity Coefficient | NA |
| Grading Modulus | 0.89 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 2 |
| AASHTO Soil Classification | A - 6 |
| Unified Classification | SC |

**Grading Curve**

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Fax : (031) 201-7920

**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03030 **Borehole/Pit no.:** EXP.11
**Description:** Dk Br. Sp. Or. Colluvium

**Depth:** 1

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 100.0 |
| 9.5 | 100.0 |
| 4.75 | 100.0 |
| 2 | 99.7 |
| 0.425 | 93.2 |
| 0.25 | 89.7 |
| 0.15 | 86.7 |
| 0.075 | 82.6 |
| 0.05 | 82.6 |
| 0.02 | 69.2 |
| 0.005 | 58.6 |
| 0.002 | 51.9 |

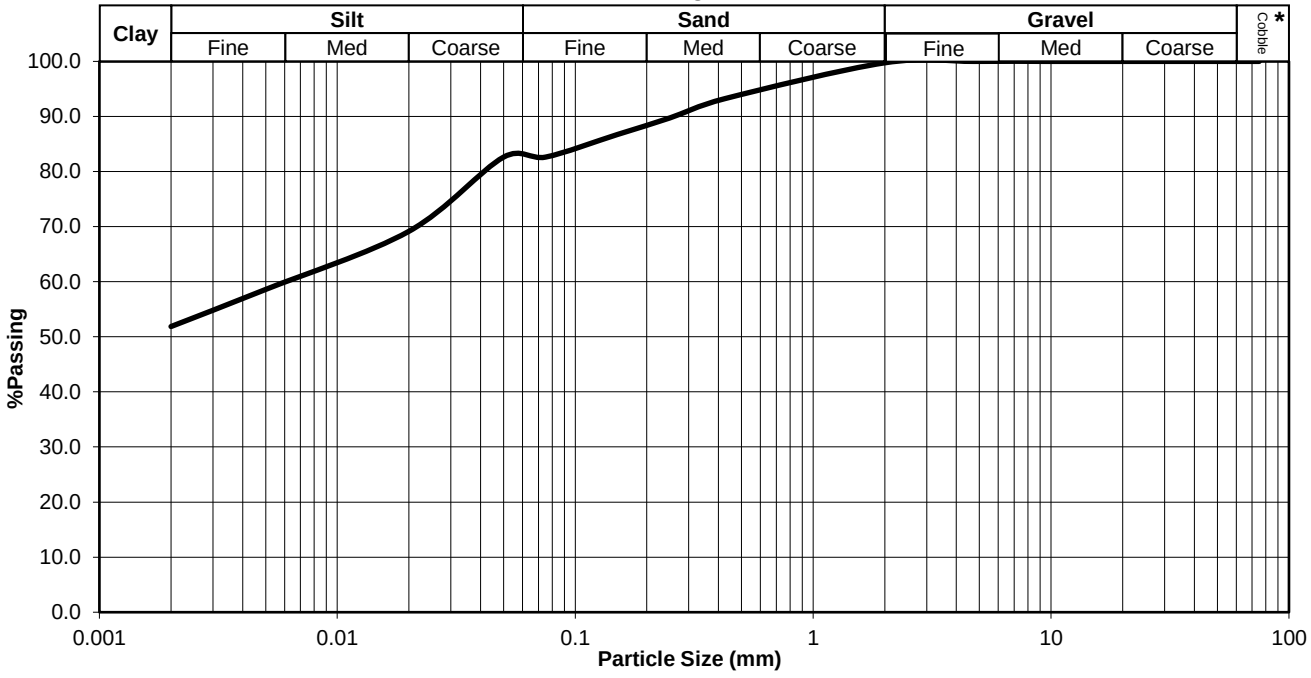
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 0.3 |
| Coarse | 0.0 |
| Medium | 0.0 |
| Fine | 0.3 |
| Sand% | 17.1 |
| Coarse | 5.8 |
| Medium | 5.7 |
| Fine | 5.6 |
| Silt% | 30.8 |
| Coarse | 13.5 |
| Medium | 9.8 |
| Fine | 7.4 |
| Clay% | 51.9 |

| PLASTICITY | |
|---|---|
| Liquid Limit | 45.3 |
| Plasticity Index | 13.5 |
| Linear Shrinkage | 12.7 |

| GRADING | |
|---|---|
| D10 Size (mm) | <0.002 |
| Uniformity Coefficient | NA |
| Grading Modulus | 0.24 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 13 |
| AASHTO Soil Classification | A - 7 - 5 |
| Unified Classification | ML or OL |

**Grading Curve**

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Fax : (031) 201-7920

**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03031 **Borehole/Pit no.:** EXP.12
**Description:** Dusky Red
**Depth:** 1.4 Res. Dolerite

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 100.0 |
| 9.5 | 100.0 |
| 4.75 | 99.1 |
| 2 | 87.4 |
| 0.425 | 62.3 |
| 0.25 | 56.3 |
| 0.15 | 52.0 |
| 0.075 | 47.8 |
| 0.05 | 47.8 |
| 0.02 | 39.3 |
| 0.005 | 34.1 |
| 0.002 | 31.3 |

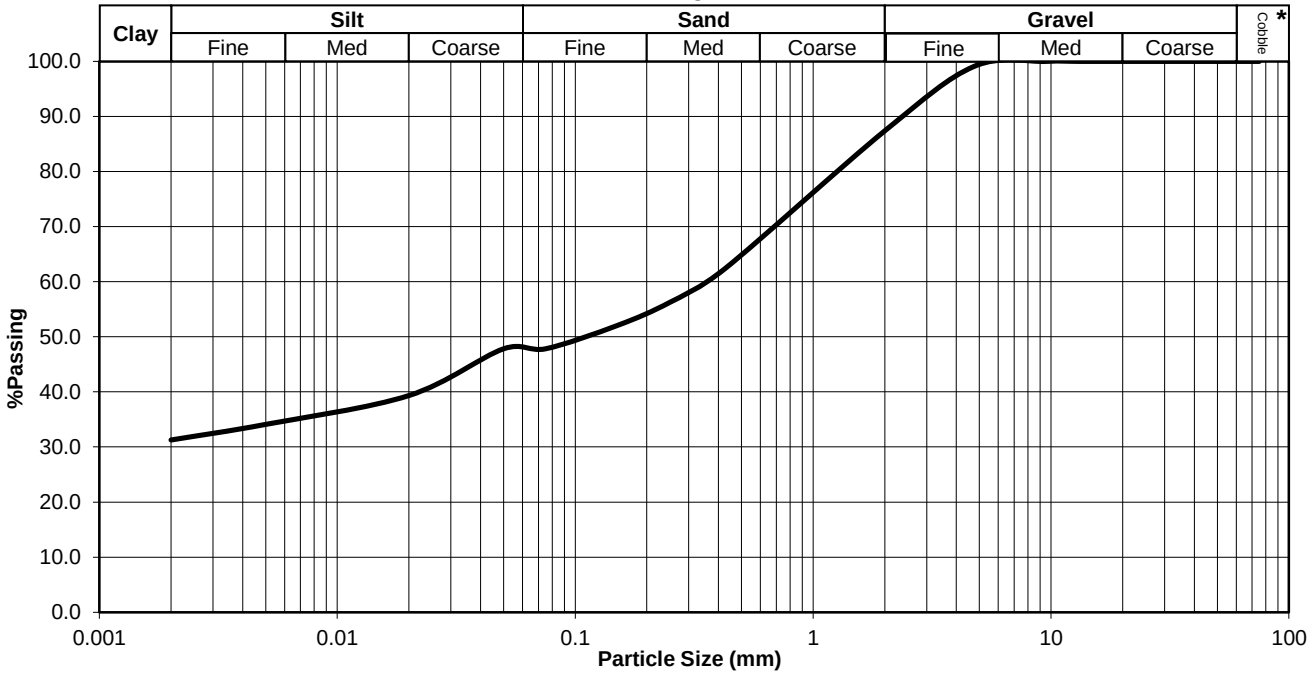
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 12.6 |
| Coarse | 0.0 |
| Medium | 0.7 |
| Fine | 11.9 |
| Sand% | 39.6 |
| Coarse | 22.3 |
| Medium | 11.0 |
| Fine | 6.3 |
| Silt% | 16.6 |
| Coarse | 8.5 |
| Medium | 4.9 |
| Fine | 3.2 |
| Clay% | 31.3 |

| PLASTICITY | |
|---|---|
| Liquid Limit | 32.1 |
| Plasticity Index | 10.3 |
| Linear Shrinkage | 7 |

| GRADING | |
|---|---|
| D10 Size (mm) | <0.002 |
| Uniformity Coefficient | NA |
| Grading Modulus | 1.02 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 2 |
| AASHTO Soil Classification | A - 6 |
| Unified Classification | SC |

**Grading Curve**

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## MATERIALS ANALYSIS

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P.O. Box 30464, MAYVILLE, 4058
Fax : (031) 201-7920

**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03032 **Borehole/Pit no.:** EXP.15
**Description:** Dk. Br
**Depth:** 0.2 Colluvium

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 92.1 |
| 9.5 | 86.0 |
| 4.75 | 59.1 |
| 2 | 37.7 |
| 0.425 | 22.7 |
| 0.25 | 19.7 |
| 0.15 | 17.4 |
| 0.075 | 15.3 |
| 0.05 | 15.3 |
| 0.02 | 13.0 |
| 0.005 | 12.0 |
| 0.002 | 10.9 |

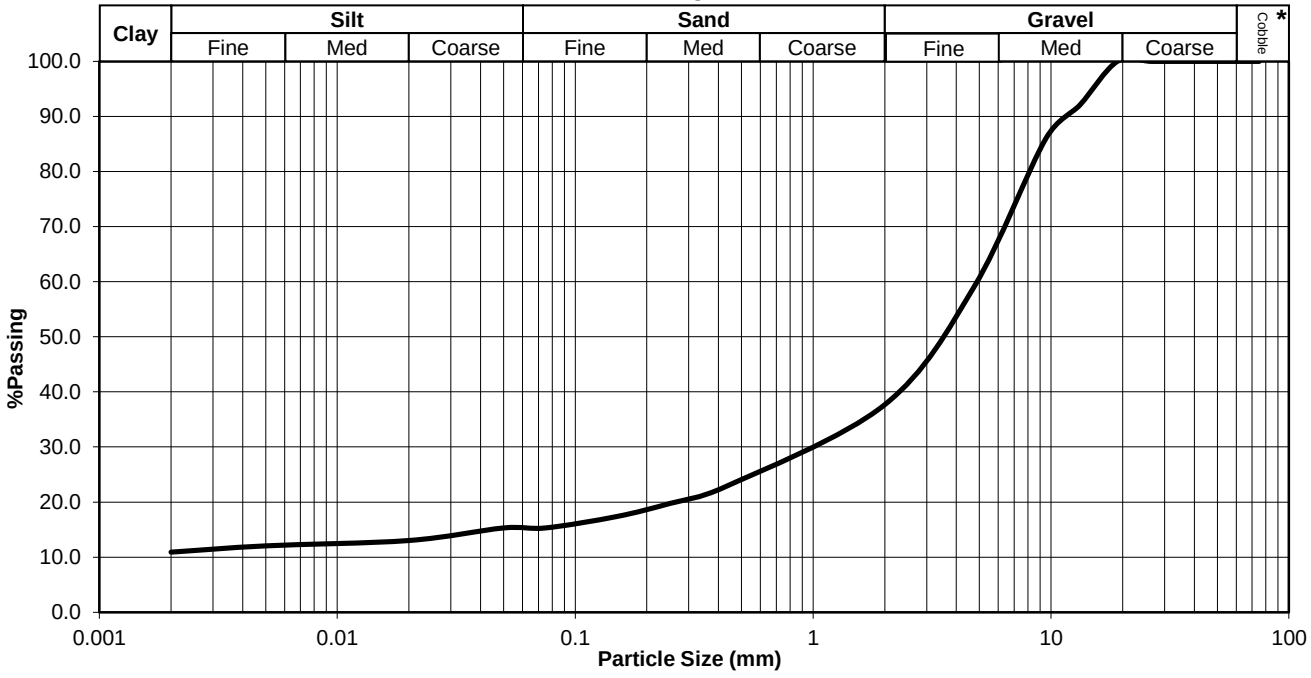
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 62.3 |
| Coarse | 0.0 |
| Medium | 33.8 |
| Fine | 28.5 |
| Sand% | 22.4 |
| Coarse | 13.3 |
| Medium | 5.8 |
| Fine | 3.3 |
| Silt% | 4.4 |
| Coarse | 2.3 |
| Medium | 0.9 |
| Fine | 1.2 |
| Clay% | 10.9 |

| PLASTICITY | |
|---|---|
| Liquid Limit | 30.5 |
| Plasticity Index | 9.8 |
| Linear Shrinkage | 5.3 |

| GRADING | |
|---|---|
| D10 Size (mm) | <0.002 |
| Uniformity Coefficient | NA |
| Grading Modulus | 2.24 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 0 |
| AASHTO Soil Classification | A - 2 - 4 |
| Unified Classification | SC |

**Grading Curve**

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Fax : (031) 201-7920

**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03033 **Borehole/Pit no.:** EXP.34
**Description:** Dusky Red
**Depth:** 0.9 Res. Granite

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 100.0 |
| 9.5 | 100.0 |
| 4.75 | 100.0 |
| 2 | 96.4 |
| 0.425 | 72.3 |
| 0.25 | 64.5 |
| 0.15 | 56.6 |
| 0.075 | 46.1 |
| 0.05 | 44.5 |
| 0.02 | 39.9 |
| 0.005 | 35.7 |
| 0.002 | 32.6 |

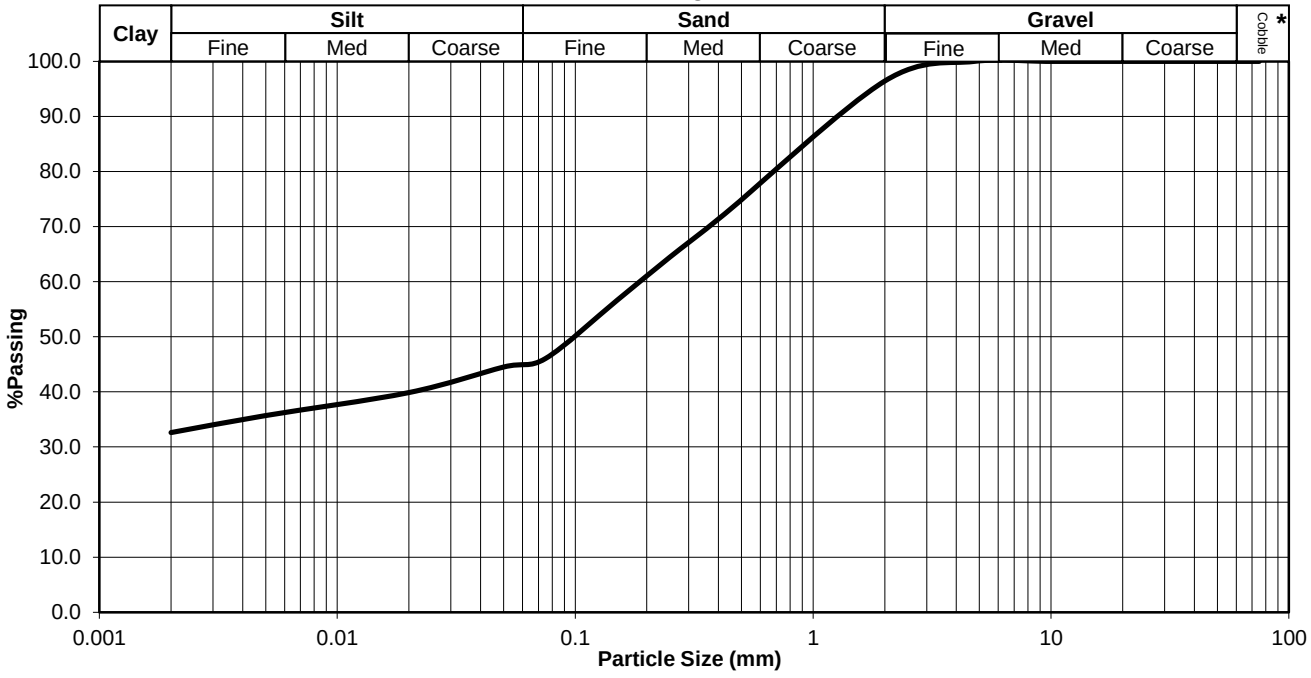
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 3.6 |
| Coarse | 0.0 |
| Medium | 0.0 |
| Fine | 3.6 |
| Sand% | 51.3 |
| Coarse | 21.4 |
| Medium | 14.4 |
| Fine | 15.4 |
| Silt% | 12.5 |
| Coarse | 5.3 |
| Medium | 3.9 |
| Fine | 3.4 |
| Clay% | 32.6 |

| PLASTICITY | |
|---|---|
| Liquid Limit | 29 |
| Plasticity Index | 8.5 |
| Linear Shrinkage | 2 |

| GRADING | |
|---|---|
| D10 Size (mm) | <0.002 |
| Uniformity Coefficient | NA |
| Grading Modulus | 0.85 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 1 |
| AASHTO Soil Classification | A - 4 |
| Unified Classification | SC |

**Grading Curve**

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Fax : (031) 201-7920

**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03034 **Borehole/Pit no.:** EXP.41
**Description:** Lt. Yel. Or. Mot. Blk Ferricrete

**Depth:** 1

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 100.0 |
| 9.5 | 98.2 |
| 4.75 | 86.8 |
| 2 | 73.2 |
| 0.425 | 54.1 |
| 0.25 | 49.4 |
| 0.15 | 44.8 |
| 0.075 | 39.0 |
| 0.05 | 37.8 |
| 0.02 | 31.9 |
| 0.005 | 27.5 |
| 0.002 | 25.1 |

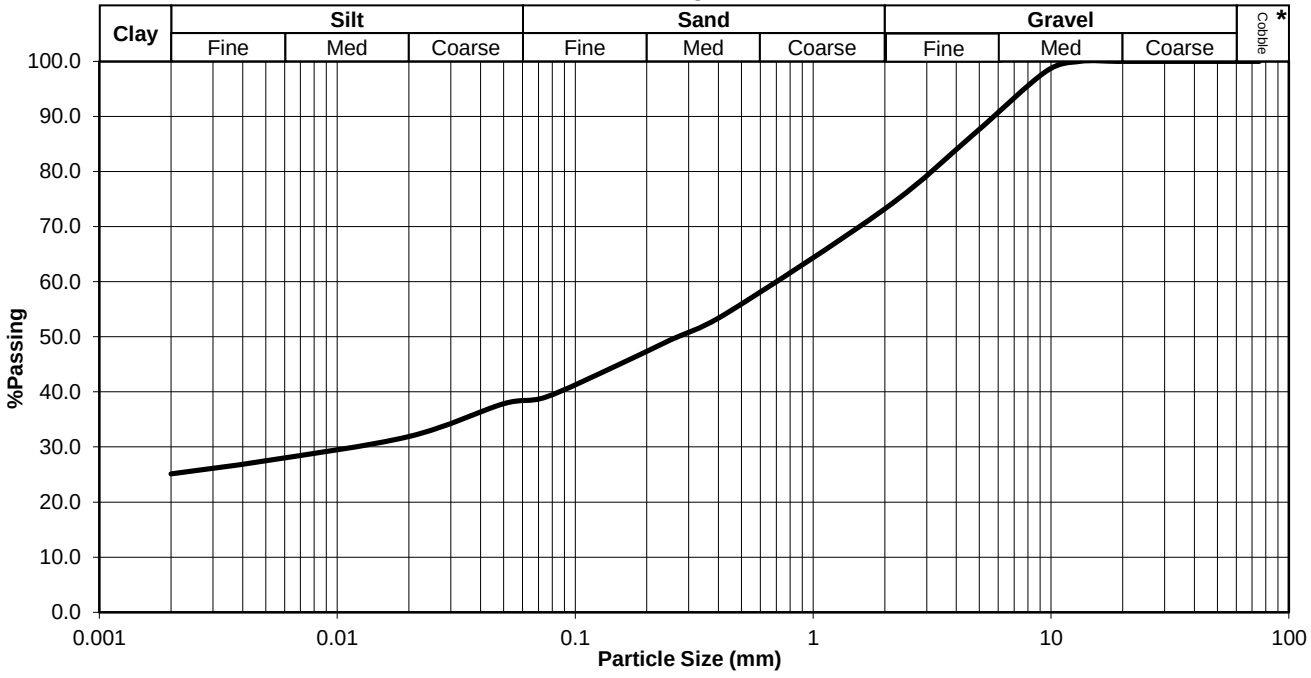
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 26.8 |
| Coarse | 0.0 |
| Medium | 10.2 |
| Fine | 16.6 |
| Sand% | 34.9 |
| Coarse | 17.0 |
| Medium | 9.1 |
| Fine | 8.8 |
| Silt% | 13.2 |
| Coarse | 6.4 |
| Medium | 4.1 |
| Fine | 2.7 |
| Clay% | 25.1 |

| PLASTICITY | |
|---|---|
| Liquid Limit | 34.3 |
| Plasticity Index | 12.2 |
| Linear Shrinkage | 2.7 |

| GRADING | |
|---|---|
| D10 Size (mm) | <0.002 |
| Uniformity Coefficient | NA |
| Grading Modulus | 1.34 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 1 |
| AASHTO Soil Classification | A - 6 |
| Unified Classification | SC |

**Grading Curve**

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Fax : (031) 201-7920

**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03035 **Borehole/Pit no.:** EXP.42
**Description:** Dk. Yel. Or. & Red Res. Dolerite

**Depth:** 0.6

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 98.3 |
| 9.5 | 95.9 |
| 4.75 | 94.5 |
| 2 | 93.7 |
| 0.425 | 85.8 |
| 0.25 | 81.4 |
| 0.15 | 77.0 |
| 0.075 | 72.0 |
| 0.05 | 70.0 |
| 0.02 | 66.0 |
| 0.005 | 54.5 |
| 0.002 | 52.5 |

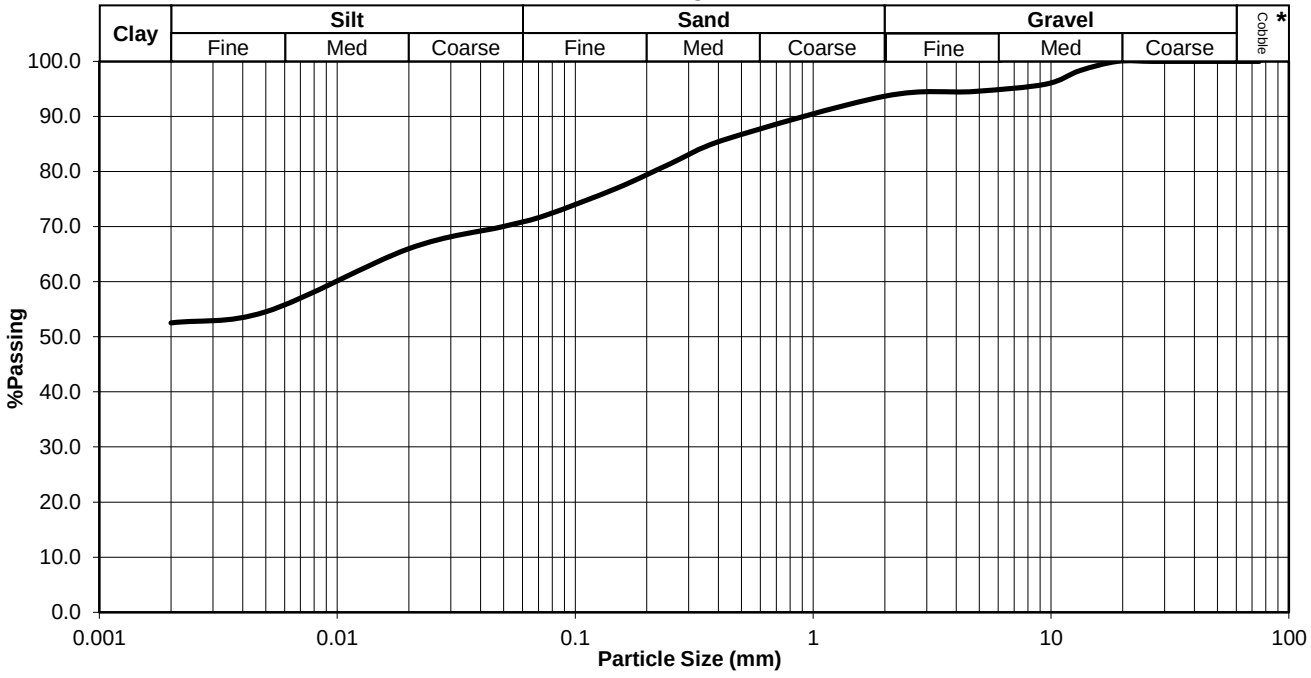
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 6.3 |
| Coarse | 0.0 |
| Medium | 5.1 |
| Fine | 1.2 |
| Sand% | 22.8 |
| Coarse | 7.0 |
| Medium | 7.5 |
| Fine | 8.4 |
| Silt% | 18.3 |
| Coarse | 4.8 |
| Medium | 10.7 |
| Fine | 2.8 |
| Clay% | 52.5 |

| PLASTICITY | |
|---|---|
| Liquid Limit | 34.9 |
| Plasticity Index | 11.1 |
| Linear Shrinkage | 6.7 |

| GRADING | |
|---|---|
| D10 Size (mm) | <0.002 |
| Uniformity Coefficient | NA |
| Grading Modulus | 0.48 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 7 |
| AASHTO Soil Classification | A - 6 |
| Unified Classification | CL or OL |

**Grading Curve**

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Fax : (031) 201-7920

**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03036 **Borehole/Pit no.:** EXP.60
**Description:** Dusky Red & Lt. Yel. C/W Dolerite
**Depth:** 1.8

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 82.2 |
| 9.5 | 74.9 |
| 4.75 | 61.8 |
| 2 | 55.3 |
| 0.425 | 44.2 |
| 0.25 | 40.0 |
| 0.15 | 35.4 |
| 0.075 | 30.4 |
| 0.05 | 28.6 |
| 0.02 | 23.2 |
| 0.005 | 18.1 |
| 0.002 | 16.3 |

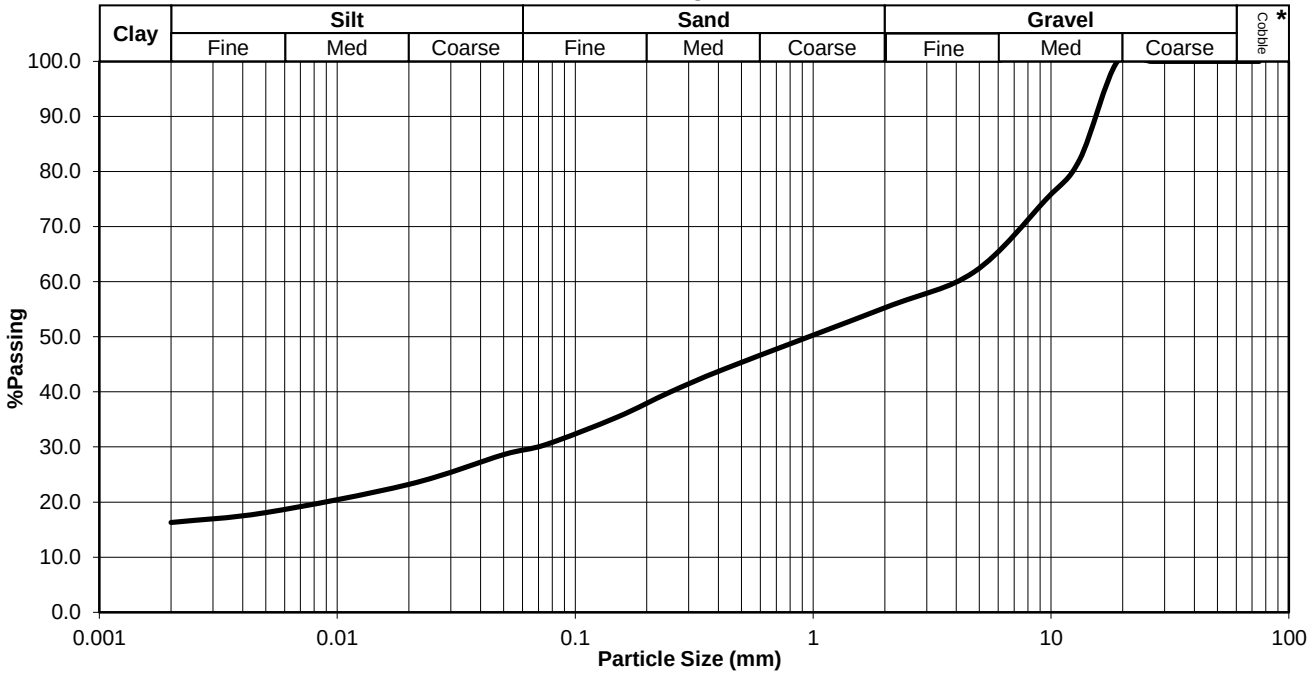
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 44.7 |
| Coarse | 0.0 |
| Medium | 34.8 |
| Fine | 10.0 |
| Sand% | 25.9 |
| Coarse | 9.9 |
| Medium | 7.7 |
| Fine | 8.4 |
| Silt% | 13.0 |
| Coarse | 6.1 |
| Medium | 4.8 |
| Fine | 2.1 |
| Clay% | 16.3 |

| PLASTICITY | |
|---|---|
| Liquid Limit | 38 |
| Plasticity Index | 11 |
| Linear Shrinkage | 6.7 |

| GRADING | |
|---|---|
| D10 Size (mm) | <0.002 |
| Uniformity Coefficient | NA |
| Grading Modulus | 1.70 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 0 |
| AASHTO Soil Classification | A - 2 - 6 |
| Unified Classification | SM |

**Grading Curve**




Ref no.: 8864 Fig no.: -

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**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03037 **Borehole/Pit no.:** EXP.81
**Description:** Dusky Red
**Depth:** 0.3 Res. Dolerite

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 100.0 |
| 9.5 | 100.0 |
| 4.75 | 99.9 |
| 2 | 99.1 |
| 0.425 | 91.0 |
| 0.25 | 87.3 |
| 0.15 | 83.7 |
| 0.075 | 78.6 |
| 0.05 | 74.5 |
| 0.02 | 62.4 |
| 0.005 | 54.9 |
| 0.002 | 50.8 |

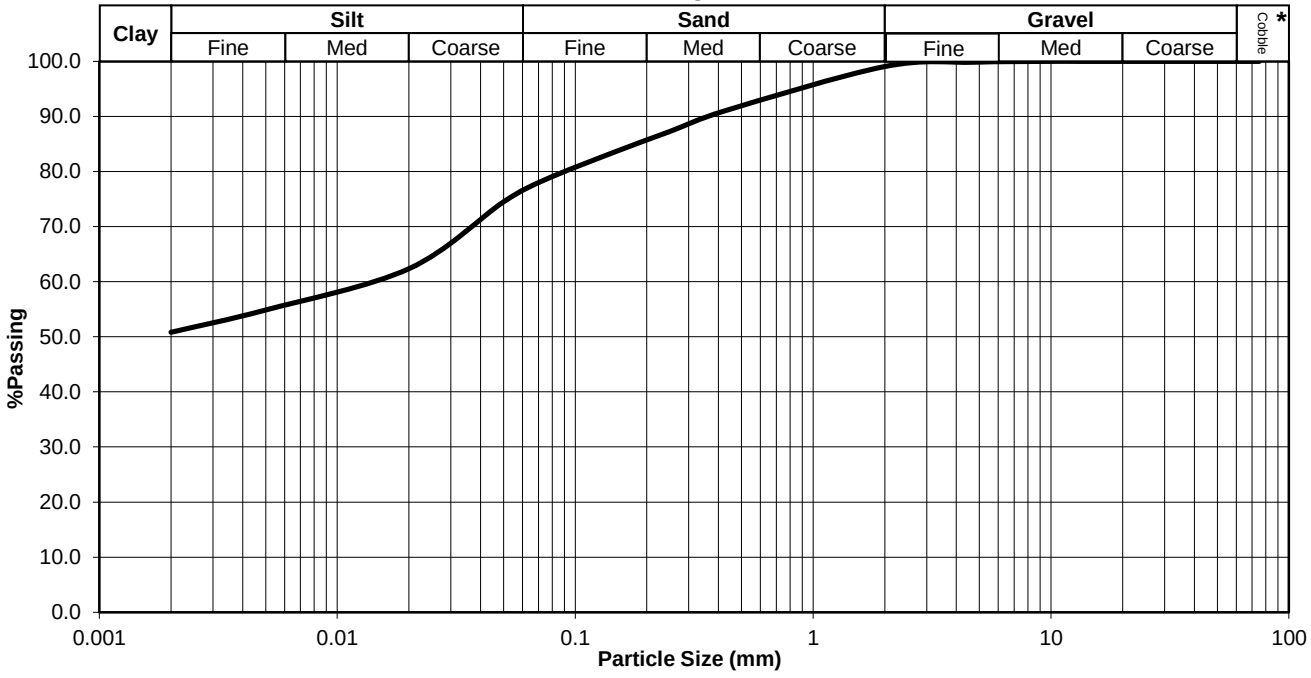
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 0.9 |
| Coarse | 0.0 |
| Medium | 0.1 |
| Fine | 0.8 |
| Sand% | 22.9 |
| Coarse | 7.2 |
| Medium | 6.4 |
| Fine | 9.4 |
| Silt% | 25.3 |
| Coarse | 13.8 |
| Medium | 7.0 |
| Fine | 4.5 |
| Clay% | 50.8 |

| PLASTICITY | |
|---|---|
| Liquid Limit | 34.5 |
| Plasticity Index | 13 |
| Linear Shrinkage | 4.7 |

| GRADING | |
|---|---|
| D10 Size (mm) | <0.002 |
| Uniformity Coefficient | NA |
| Grading Modulus | 0.31 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 9 |
| AASHTO Soil Classification | A - 6 |
| Unified Classification | CL or OL |

**Grading Curve**

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**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03038 **Borehole/Pit no.:** EXP.82
**Description:** Dusky Red. Or. VSR Granite

**Depth:** 1

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 100.0 |
| 9.5 | 98.1 |
| 4.75 | 97.0 |
| 2 | 94.8 |
| 0.425 | 71.5 |
| 0.25 | 62.9 |
| 0.15 | 55.3 |
| 0.075 | 46.8 |
| 0.05 | 42.1 |
| 0.02 | 32.7 |
| 0.005 | 26.9 |
| 0.002 | 23.7 |

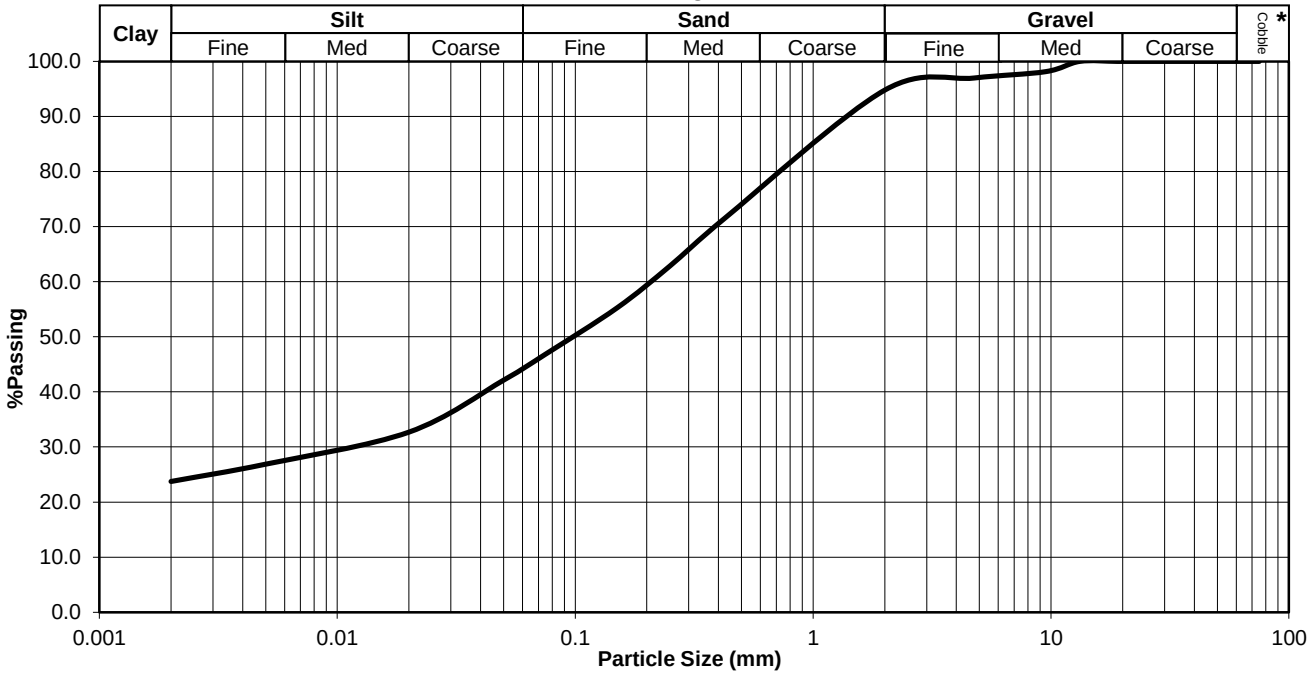
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 5.2 |
| Coarse | 0.0 |
| Medium | 2.7 |
| Fine | 2.5 |
| Sand% | 50.8 |
| Coarse | 20.7 |
| Medium | 15.0 |
| Fine | 15.0 |
| Silt% | 20.3 |
| Coarse | 11.3 |
| Medium | 5.4 |
| Fine | 3.5 |
| Clay% | 23.7 |

| PLASTICITY | |
|---|---|
| Liquid Limit | 38 |
| Plasticity Index | 11.4 |
| Linear Shrinkage | 4.7 |

| GRADING | |
|---|---|
| D10 Size (mm) | <0.002 |
| Uniformity Coefficient | NA |
| Grading Modulus | 0.87 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 3 |
| AASHTO Soil Classification | A - 6 |
| Unified Classification | SM |

**Grading Curve**




Ref no.: 8864 Fig no.: -

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# Laboratory Test Summary

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68 Ridge Road, Tollgate, DURBAN
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P.O. Box 30464, MAYVILLE, 4058
Fax : (031) 201-7920

**Job Description:** Amanyuswa RHP - Ref.17213
**Job no.:** 8864
**Date:** 14-03-2019

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab no. | | 03039 | 03040 | 03041 | 03042 | 03043 | | | | | |
| Location | | EXP.83 | EXP.97 | EXP.100 | EXP.102 | EXP.105 | | | | | |
| Depth | | 0.5 | 1.5 | 0.3 | 0.8 | 1 | | | | | |
| Description | | Dusky Red. Br. | Dusky Red | Dark. Brown | Orange Brown | Pale Red | | | | | |
| | | Res. Granite | Res. Granite | Pebble Marker | C/W Dolerite | Res. Granite | | | | | |
| Sample no. | | **S11** | **S12** | **S13** | **S14/S19** | **S15** | | | | | |
| Particle Size (mm) | 75 | | | | 91 | | | | | | |
| | 53 | | | | 87 | | | | | | |
| | 37.5 | | | | 84 | | | | | | |
| | 26.5 | | | | 78 | | | | | | |
| | 19 | | | 100 | 70 | | | | | | |
| | 13.2 | | | 94 | 58 | 100 | | | | | |
| | 9.5 | | | 87 | 51 | 100 | | | | | |
| | 4.75 | 100 | 100 | 67 | 44 | 98 | | | | | |
| | 2 | 97 | 99 | 39 | 41 | 92 | | | | | |
| | 0.425 | 69 | 67 | 17 | 36 | 55 | | | | | |
| | 0.25 | 61 | 52 | 14 | 34 | 45 | | | | | |
| | 0.15 | 55 | 43 | 12 | 32 | 37 | | | | | |
| | 0.075 | 48 | 35 | 9 | 29 | 29 | | | | | |
| Hydrometer | 0.05 | 45 | 30 | 9 | 28 | 27 | | | | | |
| | 0.02 | 35 | 17 | 7 | 23 | 23 | | | | | |
| | 0.005 | 29 | 13 | 6 | 20 | 20 | | | | | |
| | 0.002 | 23 | 9 | 5 | 17 | 18 | | | | | |
| Soil Mortar | Coarse Sand <2.0 >0.425mm | 28.0 | 33.0 | 55.2 | 12.2 | 39.6 | | | | | |
| | Fine Sand <0.425>0.05mm | 39.6 | 47.1 | 40.9 | 63.0 | 44.2 | | | | | |
| | Silt <0.05 >0.005 | 11.3 | 11.5 | 1.2 | 7.2 | 3.8 | | | | | |
| | Clay <0.005 | 21.0 | 8.4 | 2.7 | 17.6 | 12.3 | | | | | |
| Atterberg Limits | Liquid Limit % (m/m) | 27.1 | 27.7 | 26.4 | 38.2 | 22.5 | | | | | |
| | Plasticity Index | 8.4 | 6.6 | 7 | 8 | 7.6 | | | | | |
| | Linear Shrinkage % | 4 | 2 | 2 | 4 | 2.7 | | | | | |
| | Natural MC % | - | - | - | - | - | | | | | |
| Mod AASHTO Density | Dry Density kg/m$^3$ | | | | | | | | | | |
| | OMC % | | | | | | | | | | |
| CBR | 100% MDD | | | | | | | | | | |
| | 98% | | | | | | | | | | |
| | 95% | | | | | | | | | | |
| | 93% (Inferred) * | | | | | | | | | | |
| | 90% | | | | | | | | | | |
| | CBR Swell (%) | | | | | | | | | | |
| AASHTO Soil Classification * | | A - 4 (1) | A - 2 - 4 (0) | A - 2 - 4 (0) | A - 2 - 4 (0) | A - 2 - 4 (0) | | | | | |
| Grading Modulus | | 0.86 | 0.99 | 2.34 | 1.94 | 1.23 | | | | | |
| TRH 14 (1985) * | | | | | | | | | | | |
| pH | | 5.5 | 7.7 | | | 6 | | | | | |
| Conductivity mS/cm | | 1310 | 420 | | | 3350 | | | | | |

Technical Signatory: .....

# TEST REPORT

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Fax : (031) 201-7920

**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03039 **Borehole/Pit no.:** EXP.83
**Description:** Dusky Red. Br. Res. Granite

**Depth:** 0.5

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 100.0 |
| 9.5 | 100.0 |
| 4.75 | 100.0 |
| 2 | 96.5 |
| 0.425 | 69.4 |
| 0.25 | 60.7 |
| 0.15 | 54.8 |
| 0.075 | 48.1 |
| 0.05 | 44.9 |
| 0.02 | 35.2 |
| 0.005 | 29.2 |
| 0.002 | 22.8 |

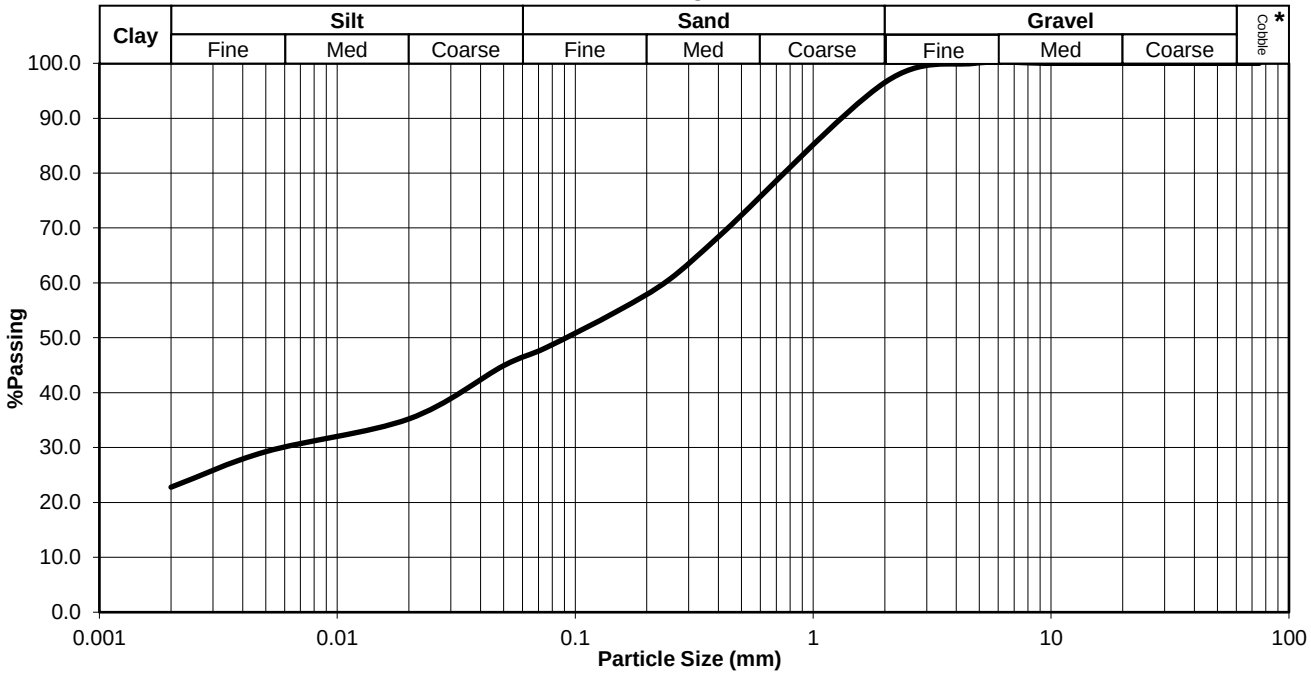
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 3.5 |
| Coarse | 0.0 |
| Medium | 0.0 |
| Fine | 3.5 |
| Sand% | 50.3 |
| Coarse | 24.1 |
| Medium | 14.7 |
| Fine | 11.6 |
| Silt% | 23.4 |
| Coarse | 11.0 |
| Medium | 5.6 |
| Fine | 6.9 |
| Clay% | 22.8 |

| PLASTICITY | |
|---|---|
| Liquid Limit, % | 27.1 |
| Plasticity Index | 8.4 |
| Linear Shrinkage, % (L/L) | 4 |

| GRADING | |
|---|---|
| D10 Size (mm) | <0.002 |
| Uniformity Coefficient | NA |
| Grading Modulus | 0.86 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 1 |
| AASHTO Soil Classification | A - 4 |
| Unified Classification | SC |

**Grading Curve**




Ref no.: 8864 Fig no.: -

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**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03040 **Borehole/Pit no.:** EXP.97
**Description:** Dusky Red
**Depth:** 1.5 Res. Granite

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 100.0 |
| 9.5 | 100.0 |
| 4.75 | 100.0 |
| 2 | 99.4 |
| 0.425 | 66.6 |
| 0.25 | 52.3 |
| 0.15 | 43.3 |
| 0.075 | 35.1 |
| 0.05 | 29.8 |
| 0.02 | 17.4 |
| 0.005 | 12.6 |
| 0.002 | 9.0 |

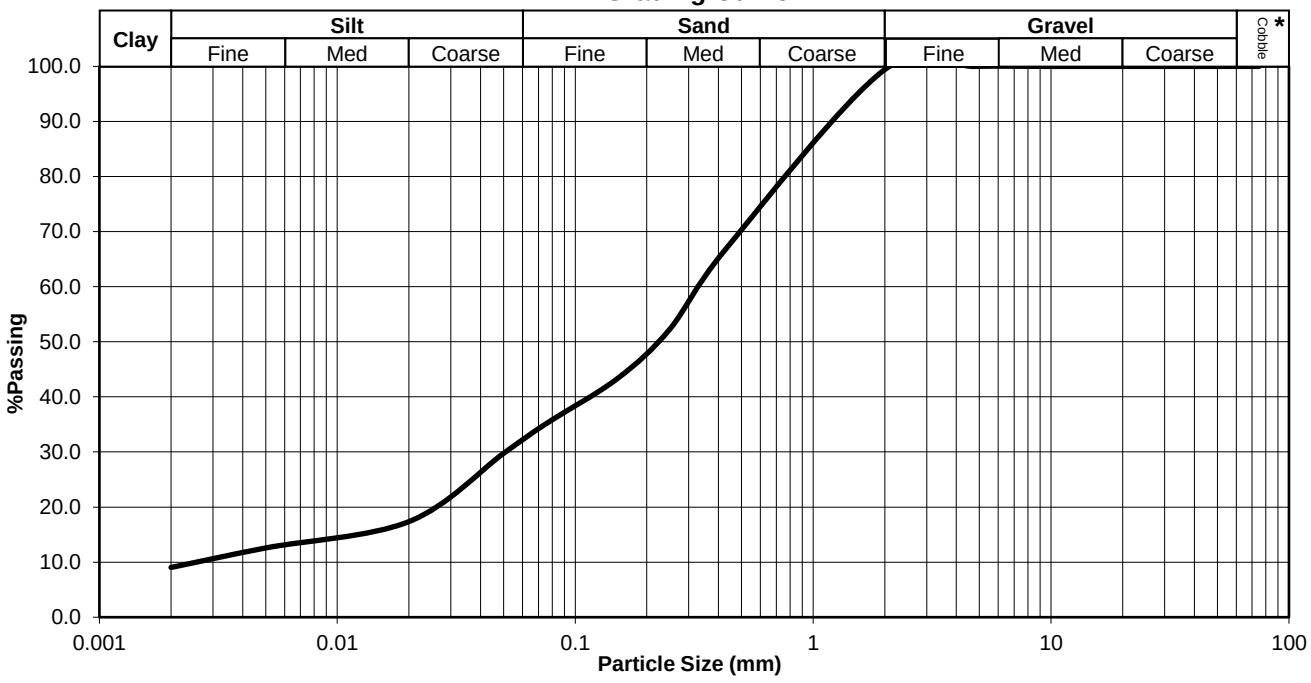
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 0.6 |
| Coarse | 0.0 |
| Medium | 0.0 |
| Fine | 0.6 |
| Sand% | 67.5 |
| Coarse | 29.2 |
| Medium | 22.5 |
| Fine | 15.9 |
| Silt% | 22.8 |
| Coarse | 14.5 |
| Medium | 4.5 |
| Fine | 3.9 |
| Clay% | 9.0 |

| PLASTICITY | |
|---|---|
| Liquid Limit | 27.7 |
| Plasticity Index | 6.6 |
| Linear Shrinkage | 2 |

| GRADING | |
|---|---|
| D10 Size (mm) | 0.0026 |
| Uniformity Coefficient | >99 |
| Grading Modulus | 0.99 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 0 |
| AASHTO Soil Classification | A - 2 - 4 |
| Unified Classification | SM - SC |

**Grading Curve**

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**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03041 **Borehole/Pit no.:** EXP.100
**Description:** Dark. Brown Pebble Marker
**Depth:** 0.3

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 93.9 |
| 9.5 | 87.5 |
| 4.75 | 66.7 |
| 2 | 39.0 |
| 0.425 | 17.5 |
| 0.25 | 14.1 |
| 0.15 | 11.8 |
| 0.075 | 9.5 |
| 0.05 | 8.6 |
| 0.02 | 6.8 |
| 0.005 | 6.0 |
| 0.002 | 5.1 |

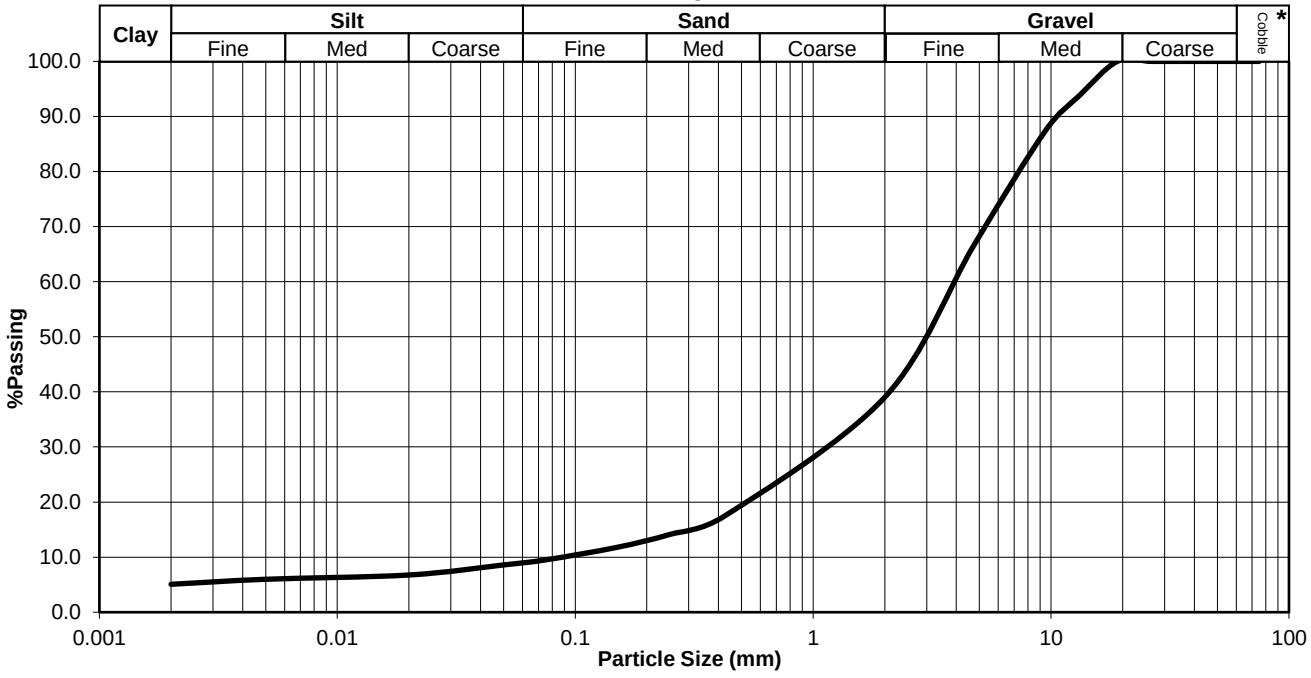
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 61.0 |
| Coarse | 0.0 |
| Medium | 27.8 |
| Fine | 33.1 |
| Sand% | 30.1 |
| Coarse | 19.2 |
| Medium | 6.9 |
| Fine | 4.0 |
| Silt% | 3.9 |
| Coarse | 2.2 |
| Medium | 0.7 |
| Fine | 1.0 |
| Clay% | 5.1 |

| PLASTICITY | |
|---|---|
| Liquid Limit | 26.4 |
| Plasticity Index | 7 |
| Linear Shrinkage | 2 |

| GRADING | |
|---|---|
| D10 Size (mm) | 0.087 |
| Uniformity Coefficient | 44.12 |
| Grading Modulus | 2.34 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 0 |
| AASHTO Soil Classification | A - 2 - 4 |
| Unified Classification | (SW-SP) |

**Grading Curve**

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**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03042 **Borehole/Pit no.:** EXP.102
**Description:** Orange Brown
**Depth:** 0.8 C/W Dolerite

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 90.6 |
| 53 | 87.5 |
| 37.5 | 83.8 |
| 26.5 | 78.4 |
| 19 | 70.1 |
| 13.2 | 57.6 |
| 9.5 | 50.7 |
| 4.75 | 43.6 |
| 2 | 40.7 |
| 0.425 | 35.8 |
| 0.25 | 33.9 |
| 0.15 | 32.0 |
| 0.075 | 29.2 |
| 0.05 | 28.3 |
| 0.02 | 22.6 |
| 0.005 | 20.0 |
| 0.002 | 17.2 |

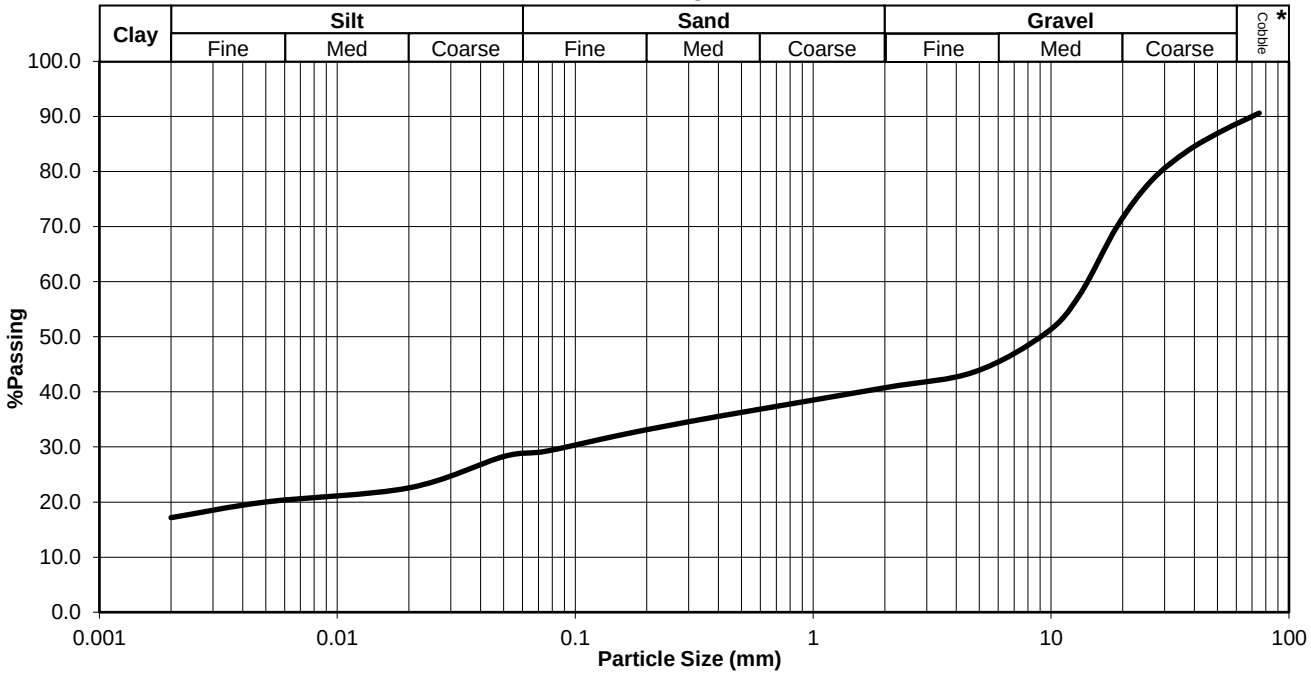
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 11.5 |
| Gravel% | 47.7 |
| Coarse | 17.2 |
| Medium | 25.8 |
| Fine | 4.7 |
| Sand% | 12.1 |
| Coarse | 4.4 |
| Medium | 3.3 |
| Fine | 4.3 |
| Silt% | 11.5 |
| Coarse | 6.1 |
| Medium | 2.4 |
| Fine | 3.0 |
| Clay% | 17.2 |

| PLASTICITY | |
|---|---|
| Liquid Limit | 38.2 |
| Plasticity Index | 8 |
| Linear Shrinkage | 4 |

| GRADING | |
|---|---|
| D10 Size (mm) | <0.002 |
| Uniformity Coefficient | NA |
| Grading Modulus | 1.94 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 0 |
| AASHTO Soil Classification | A - 2 - 4 |
| Unified Classification | GM |

**Grading Curve**




Ref no.: 8864 Fig no.: -

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**Project:** Amanyuswa RHP - Ref.17213

**Ref no.:** 8864 **Lab no.:** 03043 **Borehole/Pit no.:** EXP.105
**Description:** Pale Red
**Depth:** 1 Res. Granite

Test Methods: TMH1 METHOD A1(a), A2, A3 & A4, ASTMD422

| Grading Analysis | |
|---|---|
| Grain Size (mm) | %Passing |
| 75 | 100.0 |
| 53 | 100.0 |
| 37.5 | 100.0 |
| 26.5 | 100.0 |
| 19 | 100.0 |
| 13.2 | 100.0 |
| 9.5 | 99.5 |
| 4.75 | 98.0 |
| 2 | 91.8 |
| 0.425 | 55.4 |
| 0.25 | 44.9 |
| 0.15 | 36.9 |
| 0.075 | 29.5 |
| 0.05 | 26.8 |
| 0.02 | 22.7 |
| 0.005 | 20.4 |
| 0.002 | 17.7 |

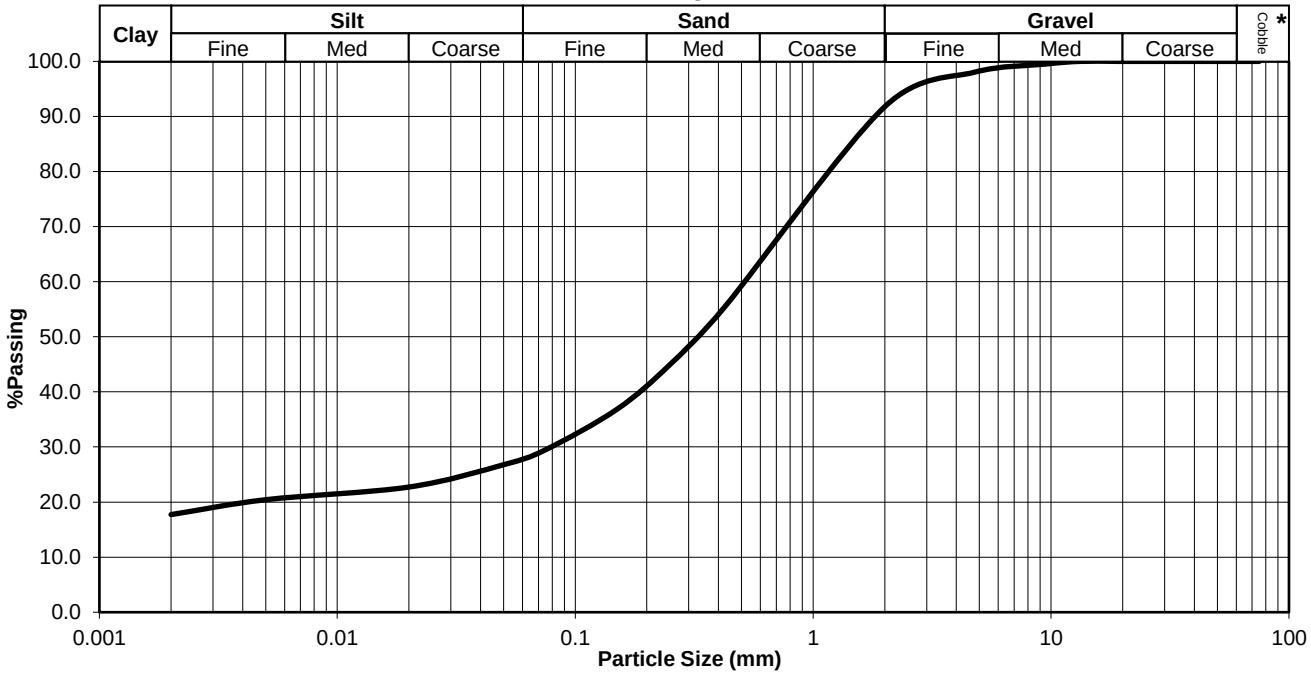
| M.I.T SIZE CLASSIFICATION * | |
|---|---|
| Cobble% | 0.0 |
| Gravel% | 8.2 |
| Coarse | 0.0 |
| Medium | 1.6 |
| Fine | 6.6 |
| Sand% | 63.9 |
| Coarse | 32.3 |
| Medium | 18.6 |
| Fine | 13.0 |
| Silt% | 10.1 |
| Coarse | 5.1 |
| Medium | 2.1 |
| Fine | 2.9 |
| Clay% | 17.7 |

| PLASTICITY | |
|---|---|
| Liquid Limit | 22.5 |
| Plasticity Index | 7.6 |
| Linear Shrinkage | 2.7 |

| GRADING | |
|---|---|
| D10 Size (mm) | <0.002 |
| Uniformity Coefficient | NA |
| Grading Modulus | 1.23 |

| CLASSIFICATION * | |
|---|---|
| Potential Expansiveness | Low |
| Group Index | 0 |
| AASHTO Soil Classification | A - 2 - 4 |
| Unified Classification | SC |

**Grading Curve**




Ref no.: 8864 Fig no.: -

* Information marked with an asterisk is outside the scope of Accreditation.
The results only relate to the samples tested.

# Free Swell.

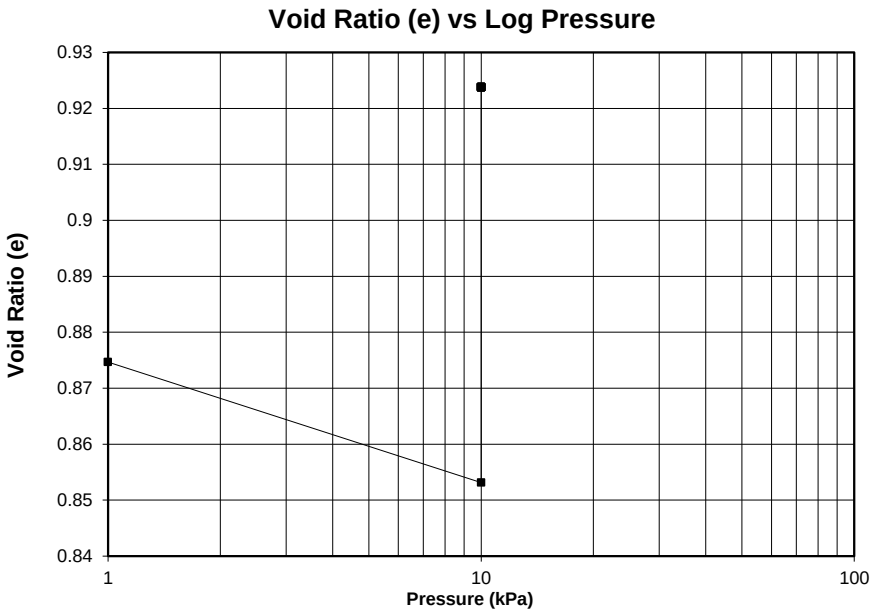
| | | | |
|---|---|---|---|
| **Project:** | Amanyuswa RHP | | |
| **Client.:** | Drennan Maud (Pty) Ltd | **Hole/Block:** | EXP 11 |
| **Date:** | 20-03-2019 | **Depth (m):** | 1 |
| **Sample No.:** | 03030/ S16 | **Consol No.:** | 1 |
| **Sample Description:** | Dk. Br. Sp. Or. Silty Clay | **Ring Dial. (mm):** | 76.15 |
| | | **Gauge Divs.(mm):** | 0.002 |
| | | **Specific Gravity:** | 2.66 |

| | | | |
|---|---|---|---|
| Container No.: | - | Moisture content before testing (%): | **21.99** |
| Mass of container (g): | 0 | Moisture content after testing (%): | **33.09** |
| Mass of wet sample + container before testing (g): | 102.5 | Dry density before testing (kg/m3): | **1419** |
| Mass of wet sample + container after testing (g): | 111.82 | Bulk density before testing (kg/m3): | **1731** |
| Mass of dry sample + container (g): | 84.02 | Percentage saturation before test (%): | **66.89** |
| | | Percentage saturation after test (%): | **95.27** |

| Applied Pressure (KPa) | Dial Reading (divs) | Void Ratio | Modulus of Compressibility Mv Stress Range(kPa) | Mv (kPa-1) | Stress Range(kPa | Mv (kPa-1) |
|---|---|---|---|---|---|---|
| 1 | 2500 | 0.875 | | | | |
| 10 | 2422 | 0.853 | 1 - 10 | **1.28E-03** | 1 - 10 | **1.28E-03** |
| 10 | 2667 | 0.924 | 10 - 10 | | | |

**Swell (%)**

**3.82**




**Reference no.: 8864**

**Drennan Maud and Partners**

Fig. no. -

# Free Swell.

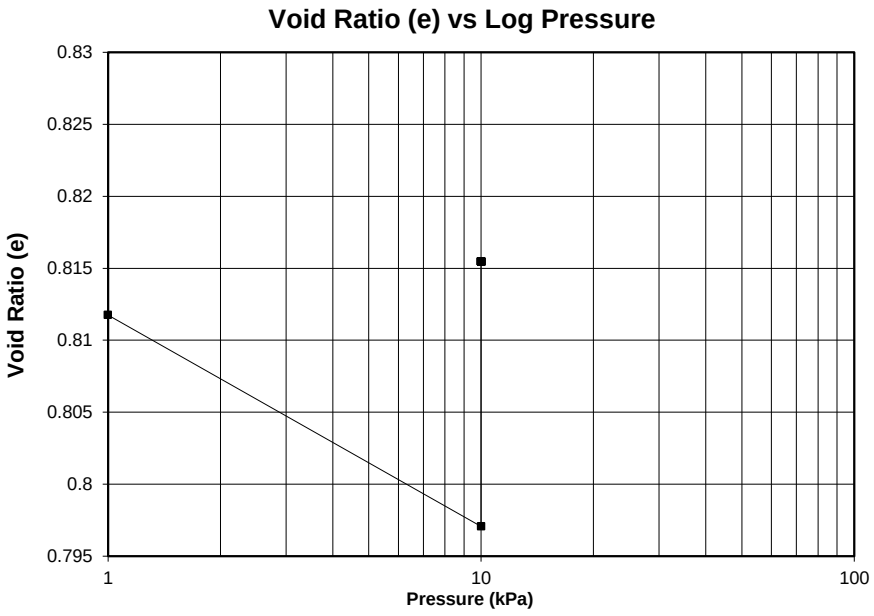
| | | | |
|---|---|---|---|
| **Project:** | Amanyuswa RHP | | |
| **Client.:** | Drennan Maud (Pty) Ltd | **Hole/Block:** | EXP 42 |
| **Date:** | 20-03-2019 | **Depth (m):** | 0.6 |
| **Sample No.:** | 03035/ S17 | **Consol No.:** | 2 |
| **Sample Description:** | Dk. Yel. Or. & Red Silty Sandy Clay | **Ring Dial. (mm):** | 76.25 |
| | | **Gauge Divs.(mm):** | 0.002 |
| | | **Specific Gravity:** | 2.69 |

| | | | |
|---|---|---|---|
| Container No.: | - | Moisture content before testing (%): | **18.60** |
| Mass of container (g): | 0 | Moisture content after testing (%): | **25.76** |
| Mass of wet sample + container before testing (g): | 104.55 | Dry density before testing (kg/m3): | **1485** |
| Mass of wet sample + container after testing (g): | 110.86 | Bulk density before testing (kg/m3): | **1761** |
| Mass of dry sample + container (g): | 88.15 | Percentage saturation before test (%): | **61.65** |
| | | Percentage saturation after test (%): | **84.99** |

| Applied Pressure (KPa) | Dial Reading (divs) | Void Ratio | Modulus of Compressibility Mv Stress Range(kPa) | Mv (kPa-1) | Stress Range(kPa | Mv (kPa-1) |
|---|---|---|---|---|---|---|
| 1 | 2500 | 0.812 | | | | |
| 10 | 2444 | 0.797 | 1 - 10 | **9.01E-04** | 1 - 10 | **9.01E-04** |
| 10 | 2510 | 0.815 | 10 - 10 | | | |

**Swell (%)**

**1.02**




**Reference no.: 8864**

**Drennan Maud and Partners**

Fig. no. -

# Free Swell.

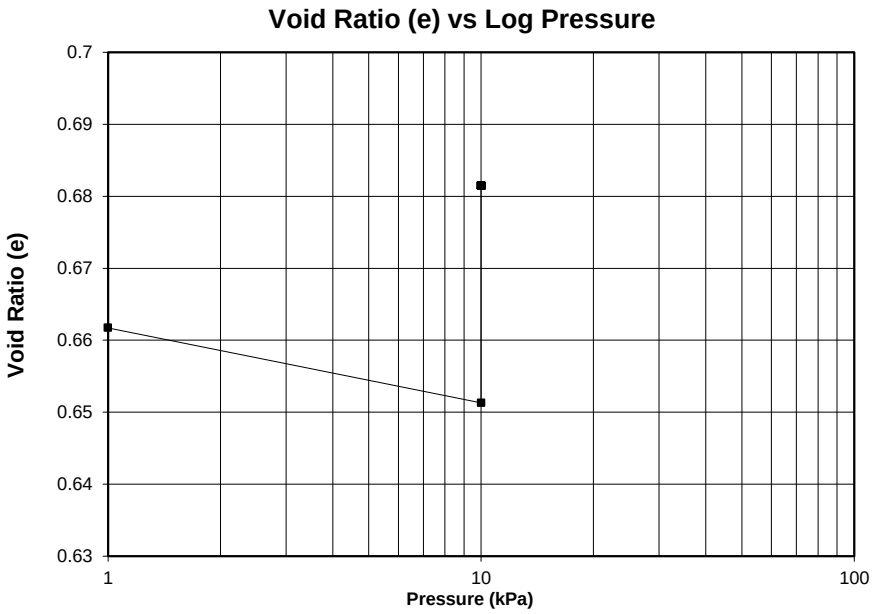
| | | | |
|---|---|---|---|
| **Project:** | Amanyuswa RHP | | |
| **Client.:** | Drennan Maud (Pty) Ltd | **Hole/Block:** | EXP 82 |
| **Date:** | 20-03-2019 | **Depth (m):** | 1 |
| **Sample No.:** | 03038/ S18 | **Consol No.:** | 3 |
| **Sample Description:** | Dusky Reddish Or. C/W Granite | **Ring Dial. (mm):** | 76.1 |
| | | **Gauge Divs.(mm):** | 0.002 |
| | | **Specific Gravity:** | 2.62 |

| | | | |
|---|---|---|---|
| Container No.: | - | Moisture content before testing (%): | **13.70** |
| Mass of container (g): | 0 | Moisture content after testing (%): | **22.74** |
| Mass of wet sample + container before testing (g): | 106.01 | Dry density before testing (kg/m3): | **1577** |
| Mass of wet sample + container after testing (g): | 114.44 | Bulk density before testing (kg/m3): | **1793** |
| Mass of dry sample + container (g): | 93.24 | Percentage saturation before test (%): | **54.23** |
| | | Percentage saturation after test (%): | **87.41** |

| Applied Pressure (KPa) | Dial Reading (divs) | Void Ratio | Modulus of Compressibility Mv Stress Range(kPa) | Mv (kPa-1) | Stress Range(kPa | Mv (kPa-1) |
|---|---|---|---|---|---|---|
| 1 | 2500 | 0.662 | | | | |
| 10 | 2456 | 0.651 | 1 - 10 | **6.96E-04** | 1 - 10 | **6.96E-04** |
| 10 | 2574 | 0.681 | 10 - 10 | | | |

**Swell (%)**

**1.83**




**Reference no.: 8864**

**Drennan Maud and Partners**

Fig. no. -

# Free Swell.

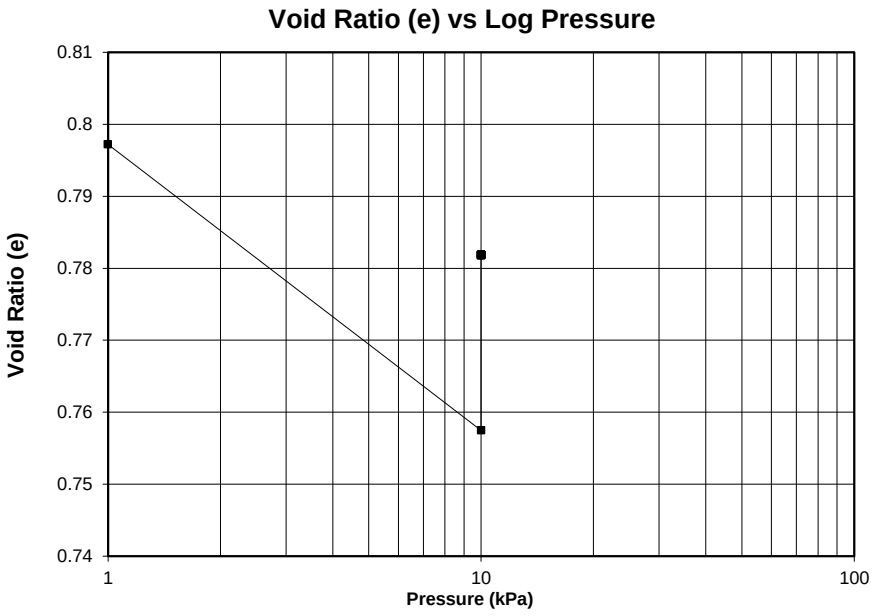
| | | | |
|---|---|---|---|
| **Project:** | Amanyuswa RHP | | |
| **Client.:** | Drennan Maud (Pty) Ltd | **Hole/Block:** | EXP 102 |
| **Date:** | 20-03-2019 | **Depth (m):** | 0.8 |
| **Sample No.:** | 03042/ S19 | **Consol No.:** | 4 |
| **Sample Description:** | Or. Br. C/W Dolerite | **Ring Dial. (mm):** | 76.45 |
| | | **Gauge Divs.(mm):** | 0.002 |
| | | **Specific Gravity:** | 2.69 |

| | | | |
|---|---|---|---|
| Container No.: | - | Moisture content before testing (%): | **12.91** |
| Mass of container (g): | 0 | Moisture content after testing (%): | **29.54** |
| Mass of wet sample + container before testing (g): | 100.86 | Dry density before testing (kg/m3): | **1497** |
| Mass of wet sample + container after testing (g): | 115.72 | Bulk density before testing (kg/m3): | **1690** |
| Mass of dry sample + container (g): | 89.33 | Percentage saturation before test (%): | **43.55** |
| | | Percentage saturation after test (%): | **101.65** |

| Applied Pressure (KPa) | Dial Reading (divs) | Void Ratio | Modulus of Compressibility Mv Stress Range(kPa) | Mv (kPa-1) | Stress Range(kPa | Mv (kPa-1) |
|---|---|---|---|---|---|---|
| 1 | 2500 | 0.797 | | | | |
| 10 | 2353 | 0.757 | 1 - 10 | **2.46E-03** | 1 - 10 | **2.46E-03** |
| 10 | 2441 | 0.782 | 10 - 10 | | | |

**Swell (%)**

**1.39**




**Reference no.: 8864**

**Drennan Maud and Partners**

Fig. no. -

**DRAWING 1**

**LOCALITY PLAN**

**DRAWING 2**

**GEOLOGICAL AND NHBRC CLASSIFICATION SITE PLAN**